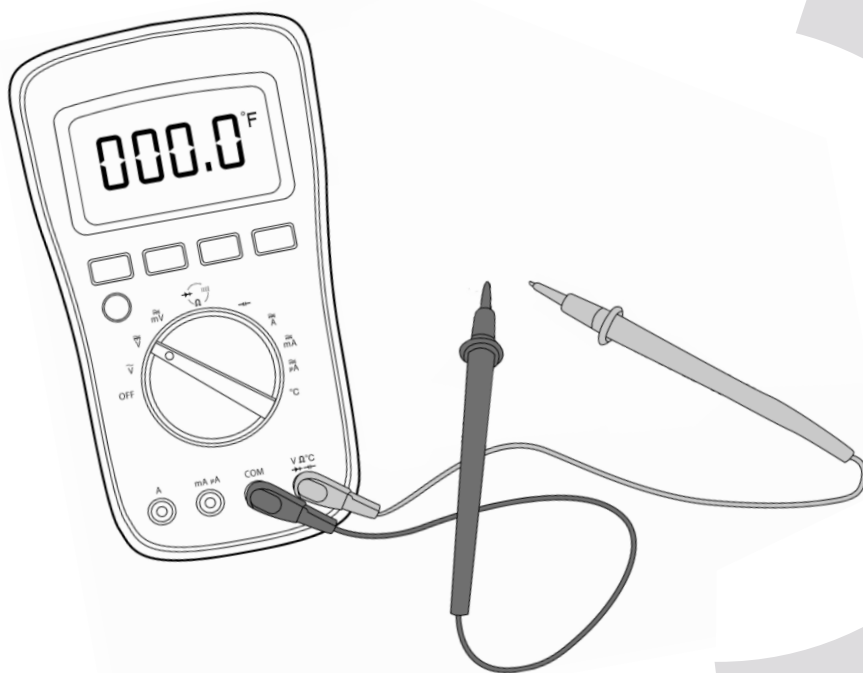


KMIR

2nd GENERATION

INVERTER ONE-TWO/ONE-THREE/ONE-FOUR/ONE-FIVE
SPLIT-TYPE AIR CONDITIONER

Troubleshooting



KLIMAIRE®



IMPORTANT NOTE:

Read this manual carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.

Please check the applicable models, technical data, F-GAS(if any) and manufacturer information from the "Owner's Manual - Product Fiche" in the packaging of the outdoor unit. (European Union products only)

Troubleshooting

Contents

1.	Safety Caution	197
2.	General Troubleshooting	198
2.1	Error Display (Indoor Unit).....	198
2.2	Error Display (Outdoor Unit).....	202
3.	Outdoor Unit Point Check Function	203
4.	Error Diagnosis and Troubleshooting Without Error Code.....	209
4.1	Remote maintenance.....	209
4.2	Field maintenance	210
5.	Troubleshooting by Error Code.....	215
	TS01-IDU: Indoor EEPROM parameter error diagnosis and solution	
	TS01-ODU: Outdoor EEPROM parameter error or Compressor driven chip EEPROM parameter error diagnosis and solution	
	TS02-M: Indoor and outdoor units communication error diagnosis and solution	
	TS03 Zero-crossing Signal Detection Error Diagnosis and Solution	
	TS04-L-IDU: The Indoor fan speed is operating outside of normal range diagnosis and solution)	
	TS04-ODU: The outdoor fan speed is operating outside of normal range diagnosis and solution)	
	TS05-IDU: Open circuit or short circuit of indoor temperature sensor(T1, T2) diagnosis and solution	
	TS05-ODU: Open circuit or short circuit of outdoor temperature sensor(T3, T4, TP, T2B,TH) diagnosis and solution	
	TS08-L-INV: Current overload protection diagnosis and solution	
	TS09-L: IPM malfunction or IGBT over-strong current protection or Inverter compressor	

Contents

drive error diagnosis and solution

TS10-L: Over voltage or too low voltage protection diagnosis and solution

TS11-L: Top temperature protection of compressor diagnosis and solution

TS14: Indoor units mode conflict (match with multi outdoor unit)

TS15: Water-Level Alarm Malfunction Diagnosis and Solution

TS23: Communication error between indoor two chips diagnosis and solution

TS13-INV: Low pressure protection diagnosis and solution

TS28: High pressure protection diagnosis and solution

TS31: Communication error between outdoor main PCB and IPM board diagnosis and solution

TS32: Discharge temperature protection of compressor diagnosis and solution

TS27-INV: High temperature protection of condenser diagnosis and solution

TS30: PFC module protection diagnosis and solution

TS07: Indoor PCB/Display Board Communication Error Diagnosis and Solution

TS38: Lack phase failure of outdoor DC fan motor diagnosis and solution

TS39: Outdoor compressor lack phase protection diagnosis and solution

TS40: Outdoor unit IR chip drive failure diagnosis and solution

TS41: Communication malfunction between adapter board and outdoor main board diagnosis and solution

TS44: Communication malfunction between external fan module and indoor unit or External fan DC bus voltage is too low protection or External fan DC bus voltage is too high fault diagnosis and solution

6.	Check Procedures.....	256
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1. Safety Caution

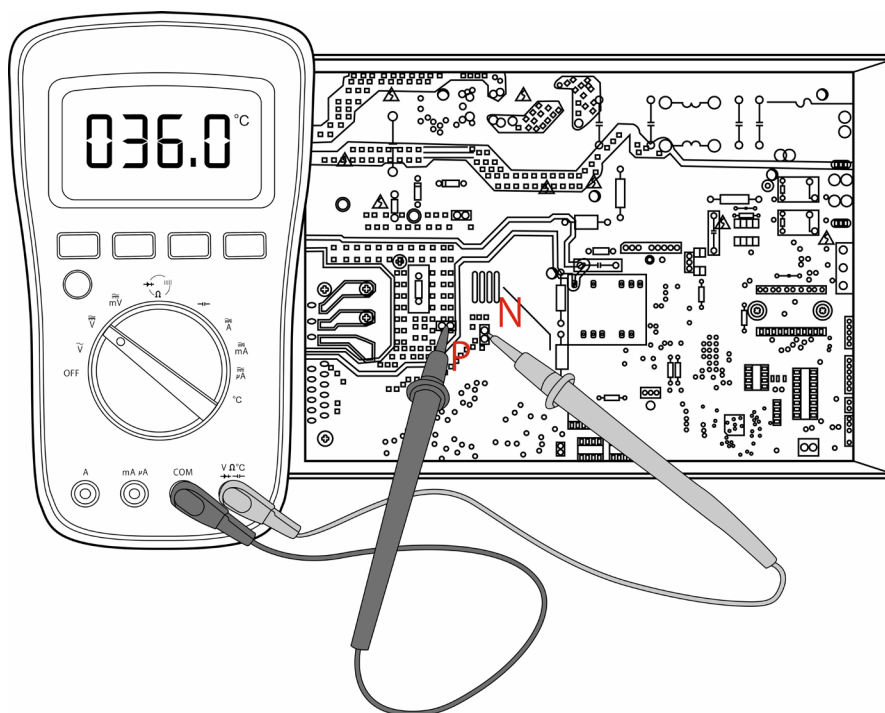
WARNING

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, the operation lamp will flash in a corresponding series, the timer lamp may turn on or begin flashing, and an error code will be displayed. These error codes are described in the following tables:

For Aurora(30k,36k), Compact Cassette, Floor Ceiling, A6 Duct

Operation Lamp	Timer Lamp	Display	Error Information	Solution
--	--	dF	Defrost	Normal Display, not error code
--	--	CF	Warming in heating mode	
--	--	SC	Self clean	
--	--	CL	Clean filter	
--	--	RF	Replacing filter	
--	--	FP	Heating in room temperature under 8°C	
--	--	FC	Forced cooling	
--	--	RP	AP mode of WIFI connection	
--	--	CP	Remote switched off	
1 time	OFF	E0	Indoor unit EEPROM parameter error	TS01-IDU
2 times	OFF	E1	Indoor / outdoor units communication error	TS02-M
4 times	OFF	E3	The indoor fan speed is operating outside of the normal range	TS04-L-IDU
5 times	OFF	E4	Indoor room temperature sensor T1 is in open circuit or has short circuited	TS05-IDU
6 times	OFF	E5	Evaporator coil inlet temperature sensor T2 is in open circuit or has short circuited	TS05-IDU
8 times	OFF	EE	Water-level alarm malfunction(for some models)	TS15
1 times	ON	F0	Current overload protection	TS08-L-INV
2 times	ON	F1	Outdoor room temperature sensor T4 is in open circuit or has short circuited	TS05-ODU
3 times	ON	F2	Condenser coil temperature sensor T3 is in open circuit or has short circuited	TS05-ODU
4 times	ON	F3	Compressor discharge temperature sensor TP is in open circuit or has short circuited	TS05-ODU
5 times	ON	F4	Outdoor unit EEPROM parameter error	TS01-ODU
6 times	ON	F5	The outdoor fan speed is operating outside of the normal range(for some models)	TS04-ODU
7 times	ON	F6	Evaporator coil outlet temperature sensor T2B is in open circuit or has short circuited	TS05-ODU
11 times	ON	FR	Communication error between indoor two chips (for some models)	TS23
1 times	FLASH	P0	IPM malfunction or IGBT over-strong current protection	TS09-L

2 times	FLASH	P1	Over voltage or over low voltage protection	TS10-L
3 times	FLASH	P2	High temperature protection of IPM module or High pressure protection or Top temperature protection of compressor	TS11-L
4 times	FLASH	P3	Low ambient temperature protection	--
5 times	FLASH	P4	Inverter compressor drive error	TS09-L
6 times	FLASH	--/P5	Indoor units mode conflict	TS14
7 times	FLASH	P6	High pressure protection or low pressure protection	TS28/ TS13-INV
8 times	FLASH	P7	Outdoor IGBT sensor is faulty(for some models)	TS05- ODU

For Air handler type,

Display	Error Information	Solution
EH00	Indoor unit EEPROM parameter error	TS01-IDU
EL01	Indoor / outdoor unit communication error	TS02-M
EL16	Communication malfunction between adapter board and outdoor main board	TS41
EH03	The indoor fan speed is operating outside of the normal range	TS04-L- IDU
EH60	Indoor room temperature sensor T1 is in open circuit or has short circuited	TS05-IDU
EH61	Evaporator coil temperature sensor T2 is in open circuit or has short circuited	TS05-IDU
EH62	Evaporator coil temperature sensor T2B is in open circuit or has short circuited(for some models)	TS05-IDU
EH65	Evaporator coil temperature sensor T2A is in open circuit or has short circuited(for some models)	TS05-IDU
EH0b	Communication error between indoor two chips	TS23
EH0E	Water-level alarm malfunction	TS15
EC53	Outdoor room temperature sensor T4 is in open circuit or has short circuited	TS05- ODU
EC52	Condenser coil temperature sensor T3 is in open circuit or has short circuited	TS05- ODU
EC54	Compressor discharge temperature sensor TP is in open circuit or has short circuited	TS05- ODU
EC56	Evaporator coil outlet temperature sensor T2B is in open circuit or has short circuited	TS05- ODU
EC51	Outdoor unit EEPROM parameter error	TS01- ODU
EC07	The outdoor fan speed is operating outside of the normal range(for some models)	TS04- ODU
PC00	IPM malfunction or IGBT over-strong current protection	TS09-L
PC01	Over voltage or over low voltage protection	TS10-L
PC02	Top temperature protection of compressor or High temperature protection of IPM module	TS11-L
PC04	Inverter compressor drive error	TS09-L
PC03	High pressure protection or low pressure protection	TS28/ TS13-INV
PC0L	Low ambient temperature protection	--
--	Indoor units mode conflict(match with multi outdoor unit)	TS14

For other models,

Running Lamp	Timer Lamp	Display	Information	Solution
--	--	dF	Defrost	Normal Display, not error code
--	--	SC	Self clean(for some units)	
--	--	CL	Filter cleaning reminder(power on display for 15 seconds)	
--	--	CL	Active clean(for some units)	
--	--	RF	Filter replacement reminder(power on display for 15 seconds)	
--	--	FP	Heating in room temperature under 8°C/12°C	
--	--	FC	Forced cooling	
--	--	RP	AP mode of WIFI connection	
--	--	CP	Remote switched off	
1 time	OFF	EH00/EH0A	Indoor unit EEPROM parameter error	TS01-IDU
2 times	OFF	EL01	Indoor/outdoor unit communication error	TS02-M
4 times	OFF	EH03	The indoor fan speed is operating outside of the normal range	TS04-L-IDU
5 times	OFF	EC51	Outdoor unit EEPROM parameter error	TS01-ODU
5 times	OFF	EC52	Condenser coil temperature sensor T3 is in open circuit or has short circuited	TS05-ODU
5 times	OFF	EC53	Outdoor room temperature sensor T4 is in open circuit or has short circuited	TS05-ODU
5 times	OFF	EC54	Compressor discharge temperature sensor TP is in open circuit or has short circuited	TS05-ODU
5 times	OFF	EC56	Evaporator coil outlet temperature sensor T2B is in open circuit or has short circuited	TS05-ODU
6 times	OFF	EH60	Indoor room temperature sensor T1 is in open circuit or has short circuited	TS05-IDU
6 times	OFF	EH61	Evaporator coil middle temperature sensor T2 is in open circuit or has short circuited	TS05-IDU
12 times	OFF	EC07	The outdoor fan speed is operating outside of the normal range	TS04-ODU
13 times	OFF	EH0E	Water-level alarm malfunction(for some models)	TS15
9 times	OFF	EH0b	Indoor PCB/Display board communication error(for some models)	TS07
7 times	FLASH	PC00	IPM malfunction or IGBT over-strong current protection	TS09-L
2 times	FLASH	PC01	Over voltage or over low voltage protection	TS10-L
3 times	FLASH	PC02	Top temperature protection of compressor or High temperature protection of IPM module or High pressure protection	TS11-L
5 times	FLASH	PC04	Inverter compressor drive error	TS09-L
7 times	FLASH	PC03	High pressure protection or low pressure protection	TS28/TS13-INV
4 times	FLASH	PC0L	Low ambient temperature protection	--
1 times	ON	--	Indoor units mode conflict(match with multi outdoor unit)	TS14
--	--	EHbA	Communication malfunction between external fan module and indoor unit	TS44
4 times	OFF	EH3A	External fan DC bus voltage is too low protection	TS44
4 times	OFF	EH3B	External fan DC bus voltage is too high fault	TS44

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:



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.

2.2 Error Display (Outdoor Unit)

Display	Malfunction or Protection	Solution
dF	Defrosting	Normal Display, not error code
FC	Forced cooling	
EE 51	Outdoor EEPROM malfunction	TS01-ODU
EL 01	Indoor / outdoor units communication error	TS02-M
PC 40	Communication malfunction between IPM board and outdoor main board	TS31
PC 08	Outdoor overcurrent protection	TS08-L-INV
PC 10	Outdoor unit low AC voltage protection	TS10-L
PC 11	Outdoor unit main control board DC bus high voltage protection	TS10-L
PC 12	Outdoor unit main control board DC bus high voltage protection /341 MCE error	TS10-L
PC 00	IPM module protection	TS09-L
PC 0F	PFC module protection	TS30
EE 71	Over current failure of outdoor DC fan motor	TS04-ODU
EE 72	Lack phase failure of outdoor DC fan motor	TS38
EE 07	Outdoor fan speed has been out of control	TS04-ODU
PC 43	Outdoor compressor lack phase protection	TS39
PC 44	Outdoor unit zero speed protection	TS08-L-INV
PC 45	Outdoor unit IR chip drive failure	TS40
PC 46	Compressor speed has been out of control	TS08-L-INV
PC 49	Compressor overcurrent failure	TS08-L-INV
PC 30	High pressure protection	TS28
PC 31	Low pressure protection	TS13-INV
PC 0A	High temperature protection of condenser	TS27-INV
PC 06	Temperature protection of compressor discharge	TS32
PC 02	Top temperature protection of compressor	TS11-L
EE 52	Condenser coil temperature sensor T3 is in open circuit or has short circuited	TS05-ODU
EE 53	Outdoor room temperature sensor T4 is in open circuit or has short circuited	TS05-ODU
EE 54	Compressor discharge temperature sensor TP is in open circuit or has short circuited	TS05-ODU
EE 56	Evaporator coil outlet temperature sensor T2B is in open circuit or has short circuited	TS05-ODU
EE 50	Open or short circuit of outdoor unit temperature sensor(T3,T4,TP)	TS05-ODU
LC 06	IPM module frequency limit shutdown/IPM high temperature protection	--
PC 0L	Low ambient temperature protection	--

3. Outdoor Unit Point Check Function

For M2OA-18HFN1-M,

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

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. For example, the digital display tube shows "Cd", it means AD value is 205.		
36	AD value of AC voltage			
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 $120 \times 4 = 480$ p.		
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			

For other models,

- 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.

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 voltage	The display value is a hex number. 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 $120 \times 4 = 480^\circ$.
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	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)		
44	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)		
45	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		
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			
53	EVI valve target angle(only for M5OA-55HFN1-M-[X]& M5OA-55HFN1-M-[X])	Actual data/4.		
54	EVI valve open angle(only for M5OA-55HFN1-M-[X]& M5OA-55HFN1-M-[X])	If the value is higher than 99, the digital display tube will show single digit and tens digit.		
55	MVI valve angle(only for M5OA-55HFN1-M-[X]& M5OA-55HFN1-M-[X])	For example, the digital display tube show “2.0”,it means the EXV open angle is 120×4=480p.)		

Automatic wiring/piping correction function

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.

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 211~212
2	The power switch is on but fans will not start	Page 211~212
3	The temperature on the display board cannot be set	Page 211~212
4	Unit is on but the wind is not cold(hot)	Page 211~212
5	Unit runs, but shortly stops	Page 211~212
6	The unit starts up and stops frequently	Page 211~212
7	Unit runs continuously but insufficient cooling(heating)	Page 211~212
8	Cool can not change to heat	Page 211~212
9	Unit is noisy	Page 211~212

4.2 Field maintenance

	Problem	Solution
1	Unit will not start	Page 213~214
2	Compressor will not start but fans run	Page 213~214
3	Compressor and condenser (outdoor) fan will not start	Page 213~214
4	Evaporator (indoor) fan will not start	Page 213~214
5	Condenser (Outdoor) fan will not start	Page 213~214
6	Unit runs, but shortly stops	Page 213~214
7	Compressor short-cycles due to overload	Page 213~214
8	High discharge pressure	Page 213~214
9	Low discharge pressure	Page 213~214
10	High suction pressure	Page 213~214
11	Low suction pressure	Page 213~214
12	Unit runs continuously but insufficient cooling	Page 213~214
13	Too cool	Page 213~214
14	Compressor is noisy	Page 213~214
15	Horizontal louver can not revolve	Page 213~214

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 larger 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	
	☆	☆	☆	☆	☆			☆								
				☆		☆			☆	☆				☆		
				☆		☆			☆	☆						
				☆		☆			☆		☆				☆	
				☆		☆			☆		☆				☆	
										☆		☆				
										☆			☆			
							☆	☆								
				☆	☆									☆		
	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. Troubleshooting by Error Code

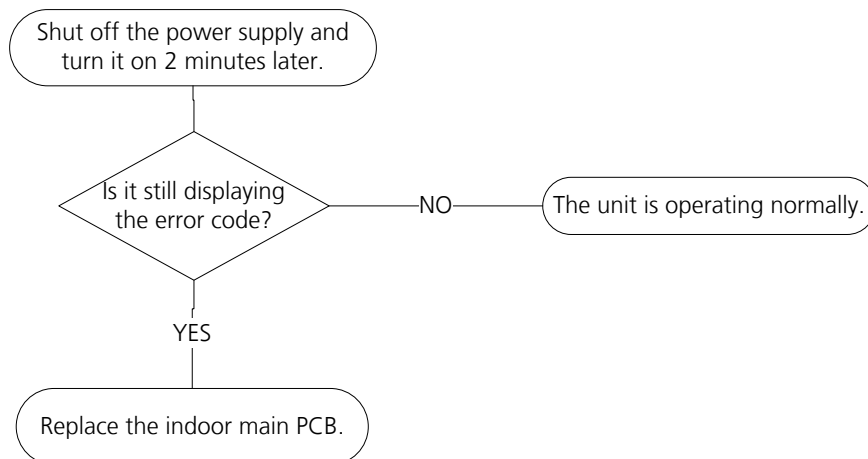
TS01-IDU: Indoor EEPROM parameter error diagnosis and solution

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

Recommended parts to prepare:

- Indoor PCB

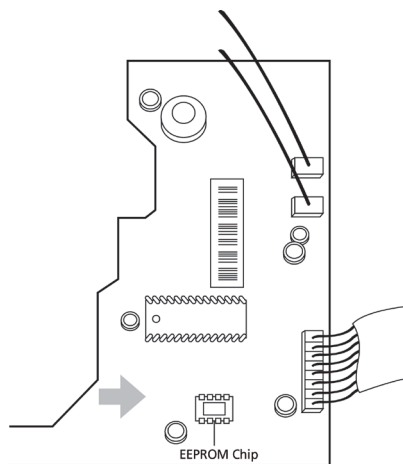
Troubleshooting and repair:



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 PCB is shown in the following image:



Note: This pictures are only for reference, actual appearance may vary.

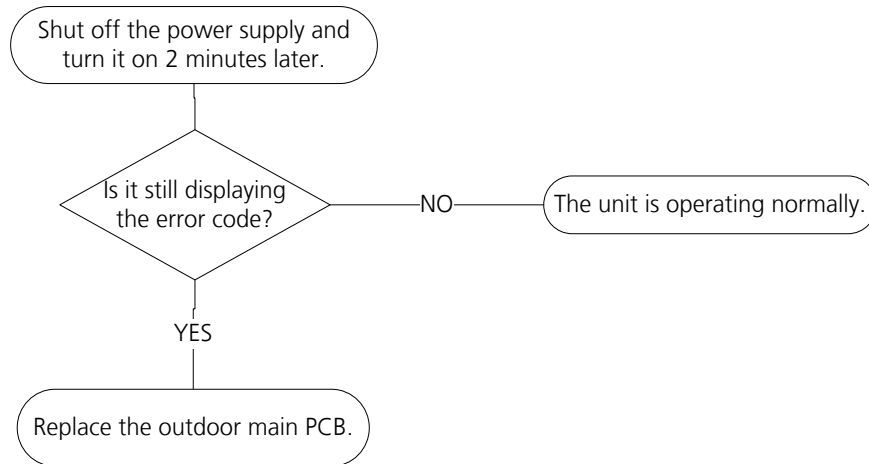
TS01-ODU: Outdoor EEPROM parameter error or Compressor driven chip EEPROM parameter error diagnosis and solution

Description: Outdoor PCB main chip does not receive feedback from EEPROM chip or compressor driven chip.

Recommended parts to prepare:

- Outdoor PCB

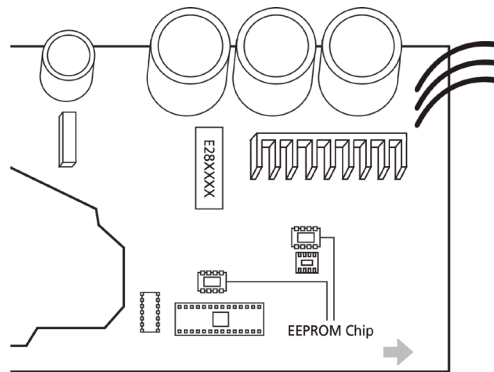
Troubleshooting and repair:



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 outdoor PCB is shown in the following image:



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.

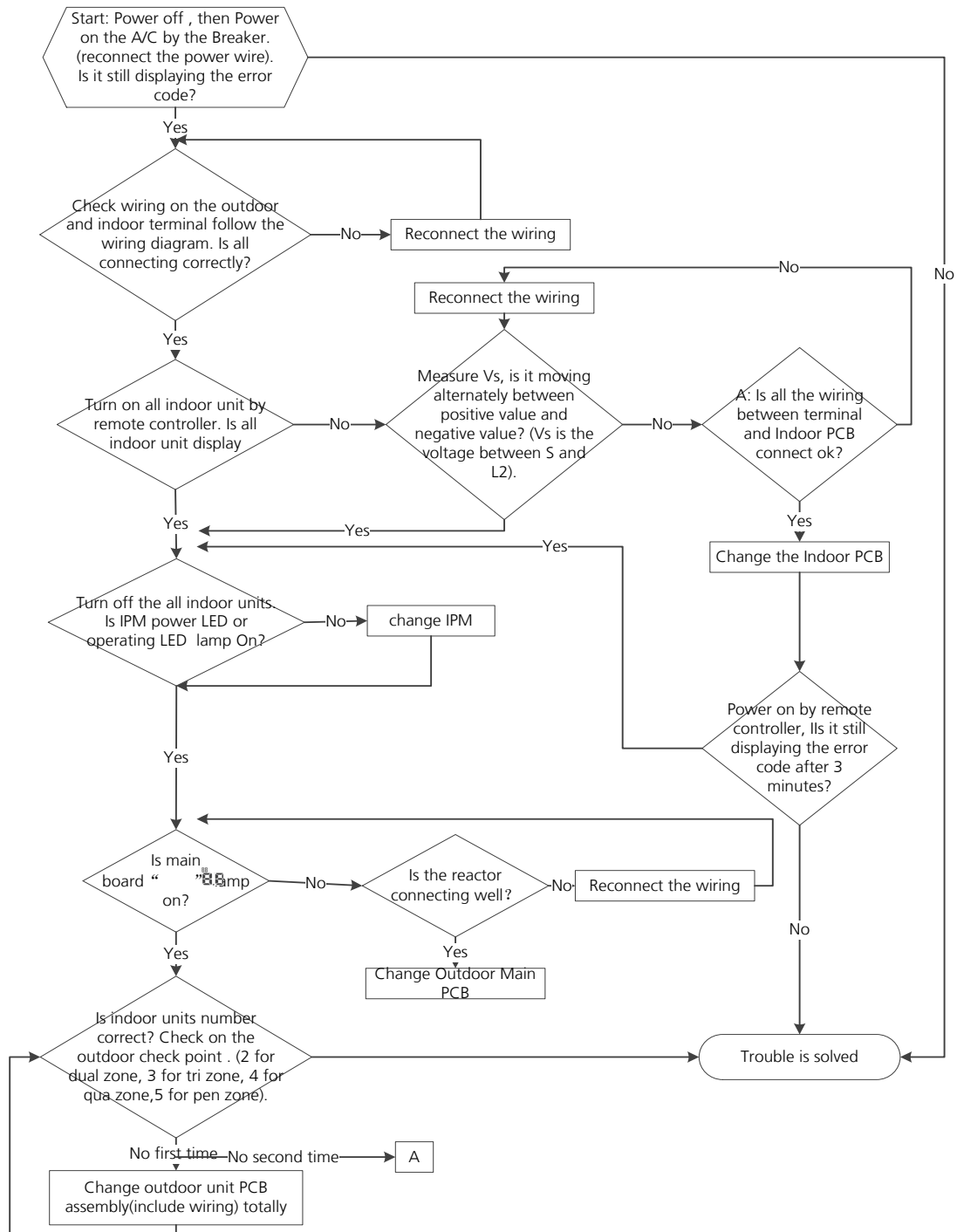
TS02-M: Indoor and outdoor units communication error diagnosis and solution

Description: Indoor unit can not communicate with outdoor unit

Recommended parts to prepare:

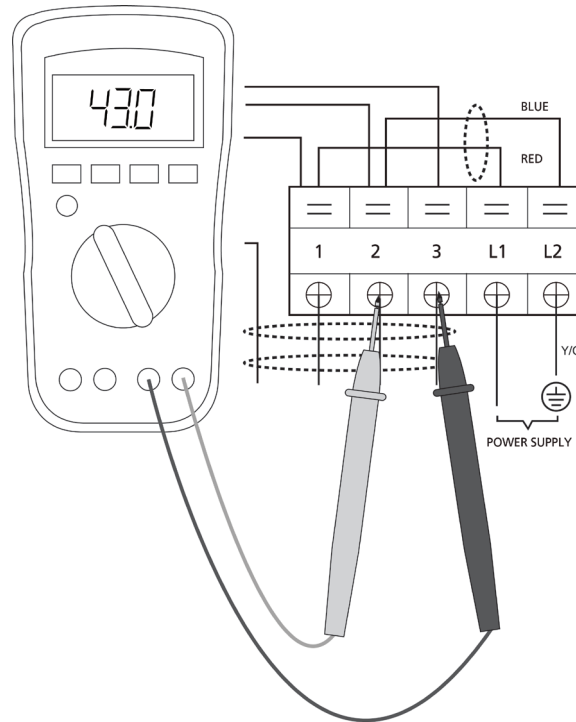
- Indoor PCB
- Outdoor PCB
- Short-circuited component

Troubleshooting and repair:



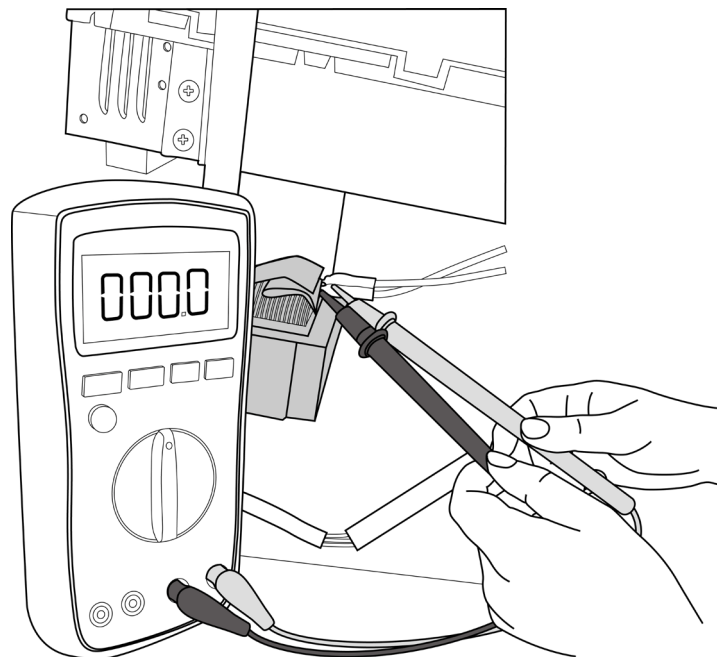
Remarks:

- Use a multimeter to test the DC voltage between 2 port(or S or L2 port) and 3 port(or N or S port) of outdoor unit. The red pin of multimeter connects with 2 port(or S or L2 port) while the black pin is for 3 port(or N or S port) .
- When AC is normal running, the voltage is moving alternately as positive values and negative values
- If the outdoor unit has malfunction, the voltage has always been the positive value.
- While if the indoor unit has malfunction, the voltage has always been a certain value.



**S and N
or
L2 and S
or
2 and 3**

- 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.

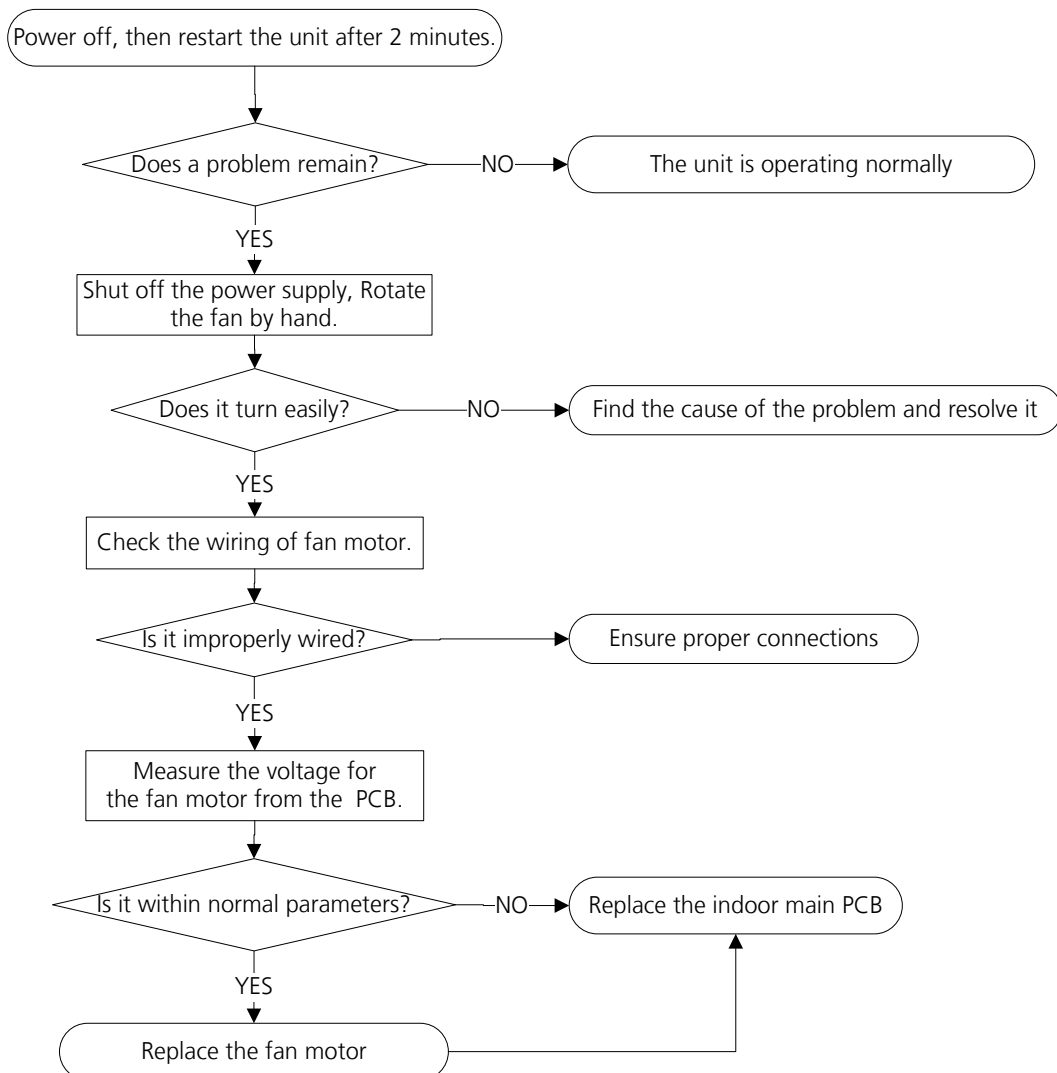
TS04-L-IDU: The Indoor fan speed is operating outside of normal range diagnosis and solution)

Description: When indoor 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
- Indoor main PCB

Troubleshooting and repair:



Index:

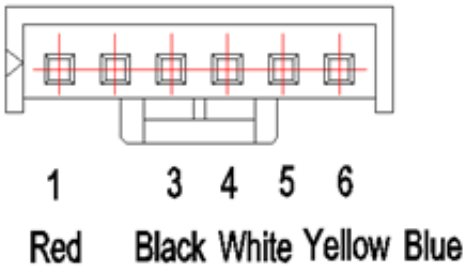
1. DC Fan Motor(control chip is in fan motor)

some models:

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.

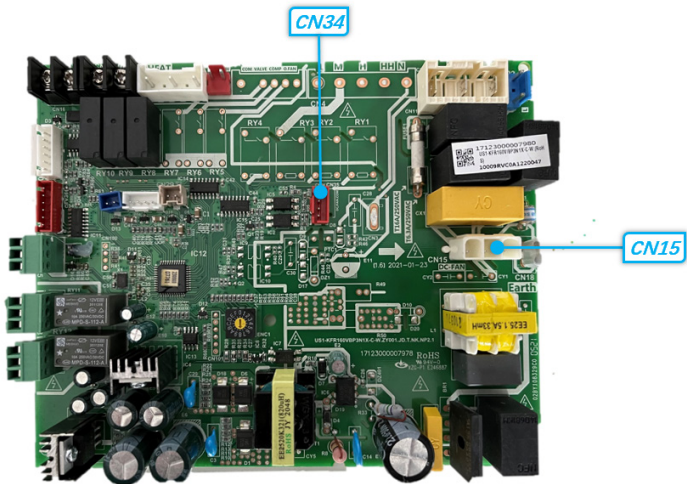
- DC motor voltage input and output:

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



some models:

Power on and when the unit is in standby, measure the voltage of pin1&pin2 of CN15, pin3 of CN34 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.

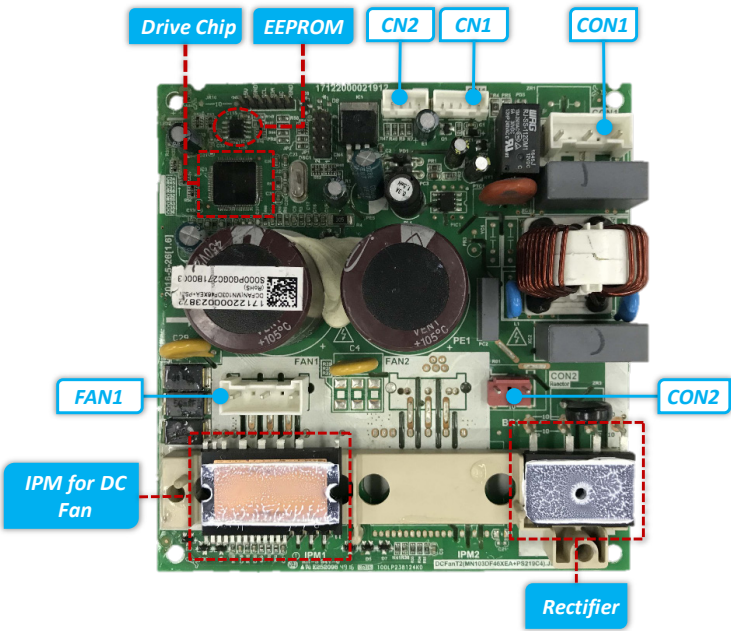


CN34 NO.	Color	Signal	Voltage
1	--	--	
2	Black	GND	
3	Orange	PWM	5-12VDC
4	Blue	FG	

CN15 NO.	Color	Signal	Voltage
1	Yellow		208/230VAC
2	Black		208/230VAC
3	Yellow-Green	GND	

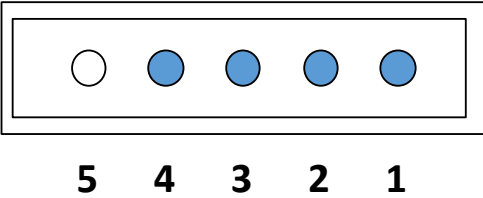
2.Indoor DC Fan IPM Board (Duct and Ceiling-floor Unit)

Power on and when the unit is in standby, measure the voltage of CON1, pin1-pin2 and pin3-pin2 of CN1 in DC motor driver board. If the value of the voltage is not in the range showing in below tables, the indoor main PCB must has problems and need to be replaced.



Port	Description	Parameter	Remark
CON1	Power input for the PCB	230V/AC	
CN1	Communication with main PCB	DC	
CN2	Test port	5V/DC	For debugging board
CN23	UVW output for DC fan motor		
CON2	Ports for reactor		

CN1 Communication with main PCB



NO.	Signal	Voltage
1	Vcc	+15V
2	GND	
3	TXD	0~6V
4	RXD	0~15V
5	--	--

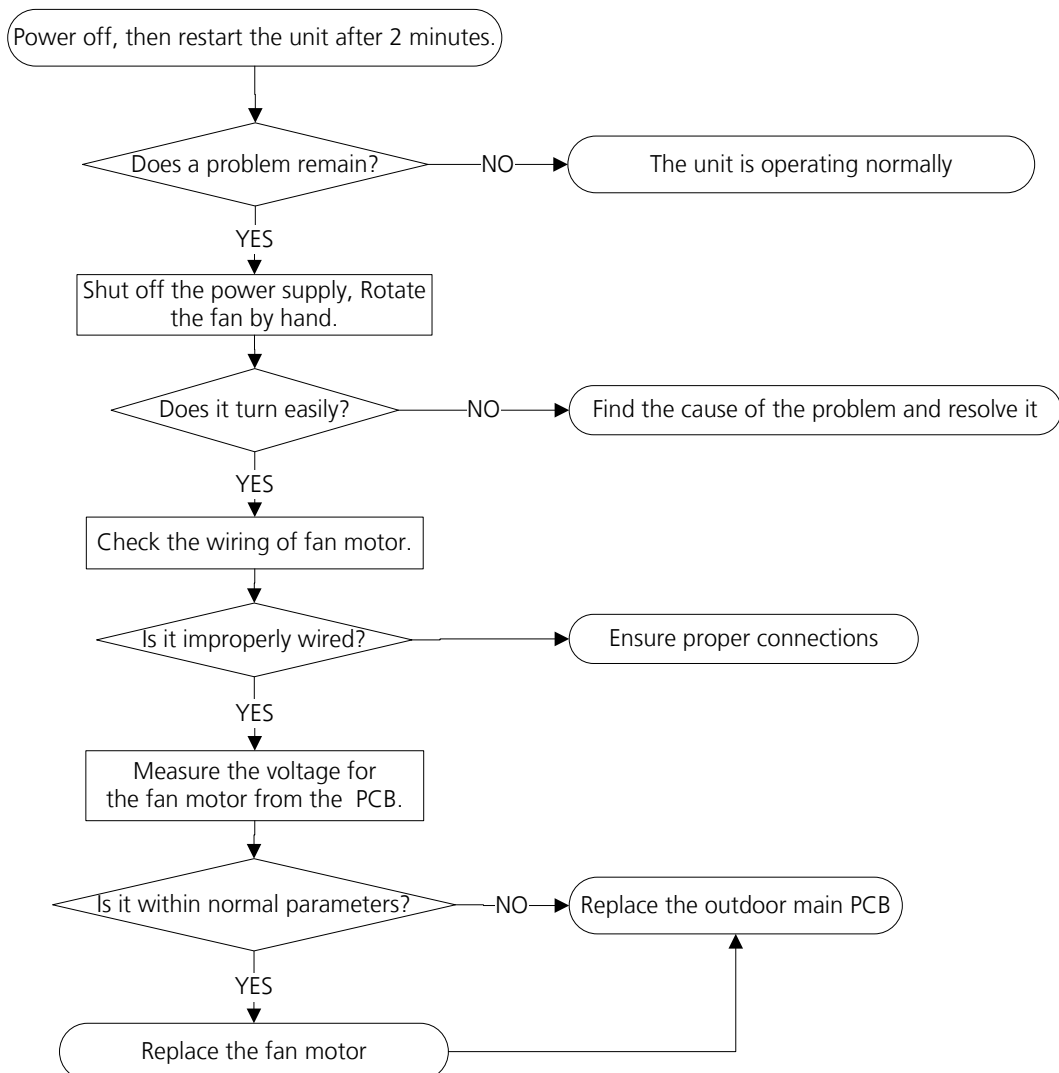
TS04-ODU: The outdoor fan speed is operating outside of normal range diagnosis and solution)

Description: When 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
- Outdoor main PCB

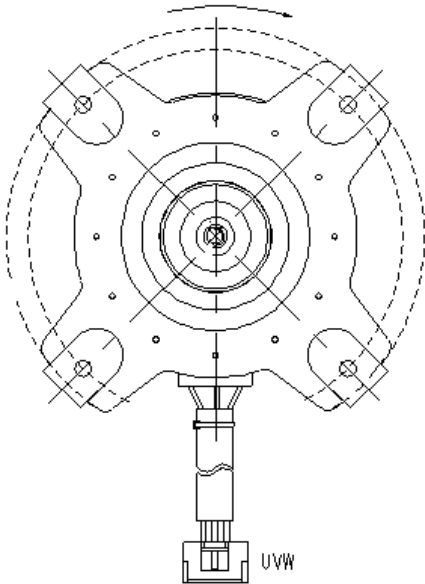
Troubleshooting and repair:



Index:

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

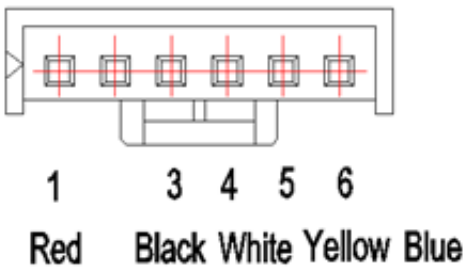
Release the UVW connector. Measure the resistance of U-V, U-W, V-W. If the resistance is not equal to each other, the fan motor must has problems and need to be replaced. otherwise the PCB must has problems and need to be replaced.



2. DC Fan Motor(control chip is in fan motor, single fan)

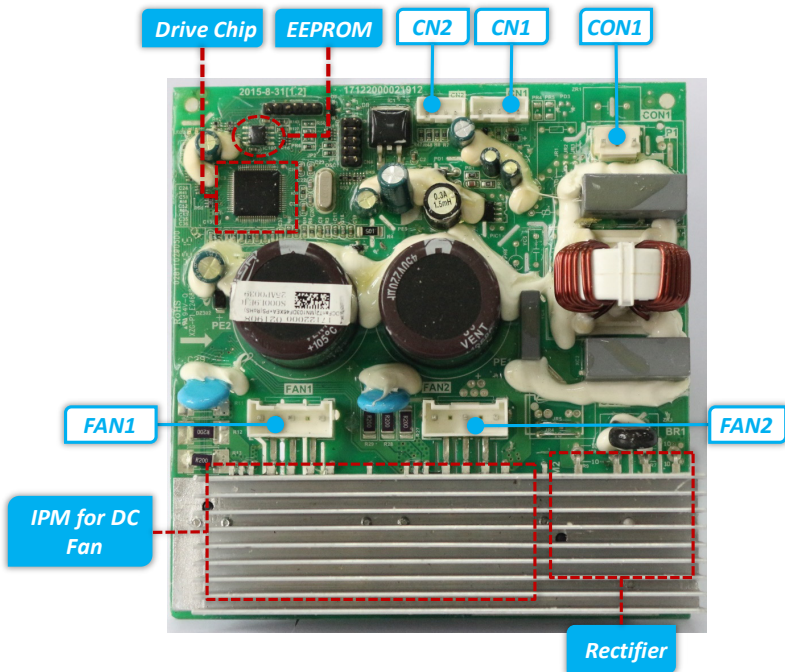
Power on and when the unit is in standby, measure the voltage of pin1-pin3, pin4-pin3 in fan motor connector. If the value of the voltage is not in the range showing in below table, the PCB must has problems and need to be replaced.

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



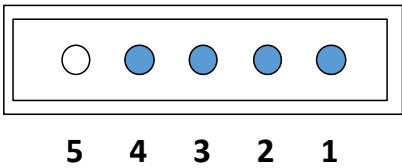
3. Outdoor DC Fan IPM Board(for some double fan models)

Power on and when the unit is in standby, measure the voltage of CON1, pin1-pin2 and pin3-pin2 of CN1 in DC motor driver board. If the value of the voltage is not in the range showing in below tables, the outdoor main PCB must has problems and need to be replaced.



Part	Description	Parameter	Remark
CON1	Power input for the PCB	192-380V/DC	
CN1	Communication with main PCB	DC	
CN2	Test port	5V/DC	For debugging board
FAN1	UVW output for DC fan motor		
FAN2	UVW output for DC fan motor		

CN1 Communication with main PCB



No.	Signal	Voltage
1	Vcc	13.5-16.5V
2	GND	0V
3	Vsp	0~6.5V
4	FG	13.5-16.5V
5	---	---

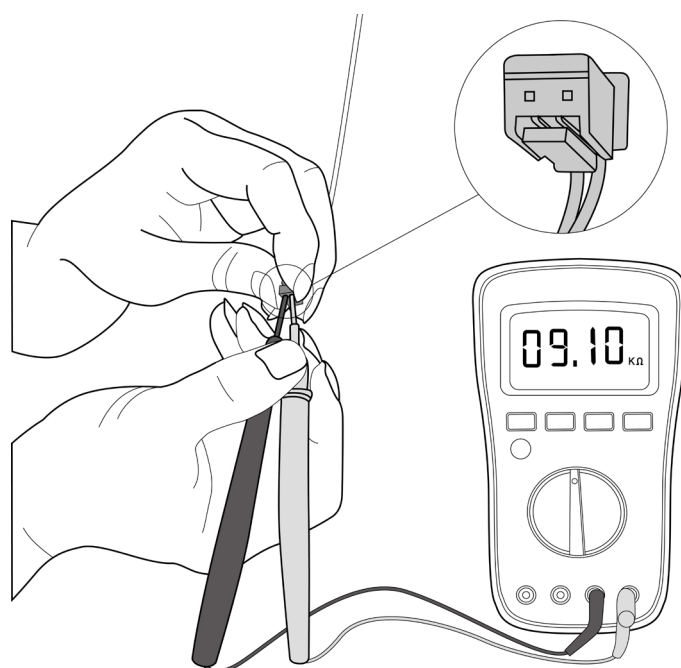
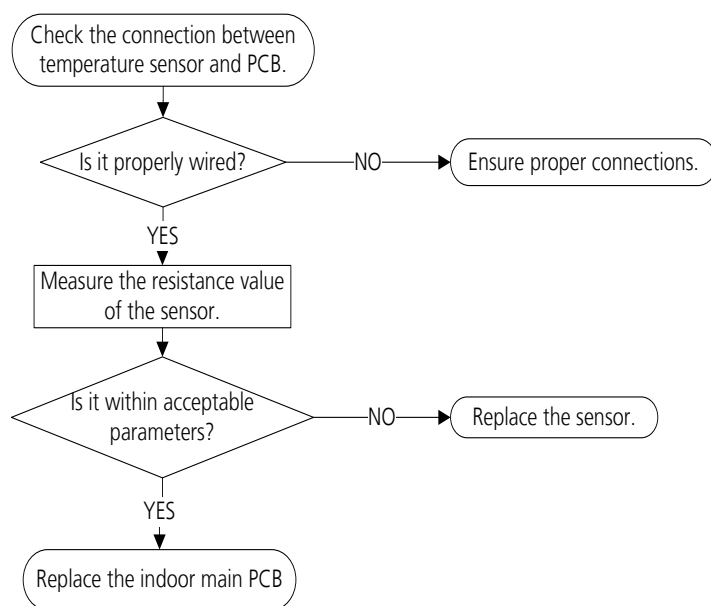
TS05-IDU: Open circuit or short circuit of indoor temperature sensor(T1, T2) diagnosis and solution

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
- Indoor main PCB

Troubleshooting and repair:



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

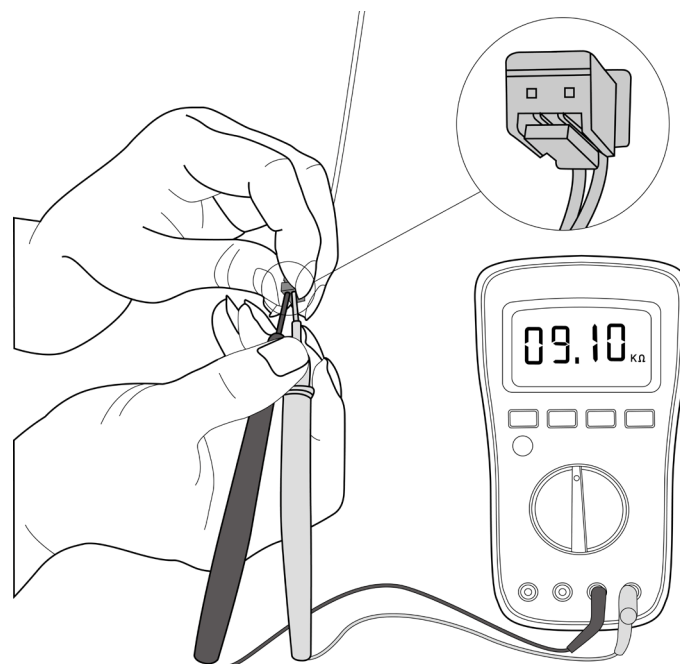
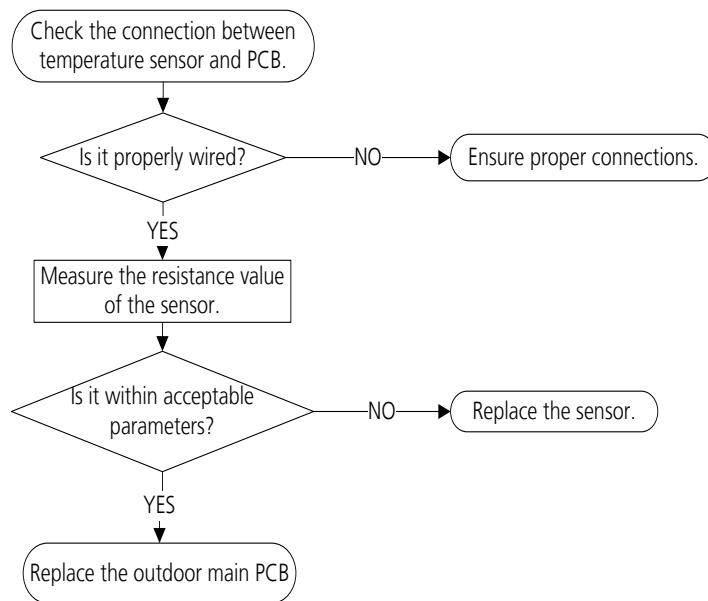
TS05-ODU: Open circuit or short circuit of outdoor temperature sensor(T3, T4, TP, T2B,TH) diagnosis and solution

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
- Outdoor main 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. For certain models, outdoor unit uses combination sensor, T3,T4 and TP are the same of sensor. This picture and the value are only for reference, actual appearance and value may vary.

TS08-L-INV: Current overload protection diagnosis and solution

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

Recommended parts to prepare:

- Connection wires
- Rectifier
- PFC circuit or reactor
- Blocked refrigeration piping system
- Pressure switch
- Outdoor fan
- IPM module board
- Outdoor 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.

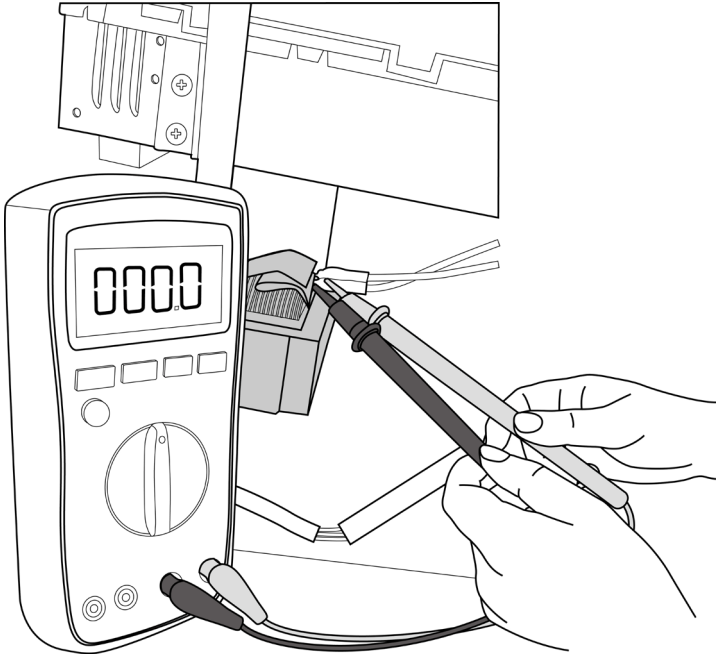
Index:

1. Normal voltage of P and N

208-240V(1-phase,3-phase)			380-415V(3-phase)
In standby			
around 310VDC			around 530VDC
In operation			
With passive PFC module	With partial active PFC module	With fully active PFC module	/
>200VDC	>310VDC	>370VDC	>450VDC

2.Reactor Check

Measure the resistance and voltage (to ground) of the reactor. The normal resistance should be around 0.1 ohm. Otherwise, the reactor must have malfunction.



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

TS09-L: IPM malfunction or IGBT over-strong current protection or Inverter compressor drive error diagnosis and solution

Description: 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.

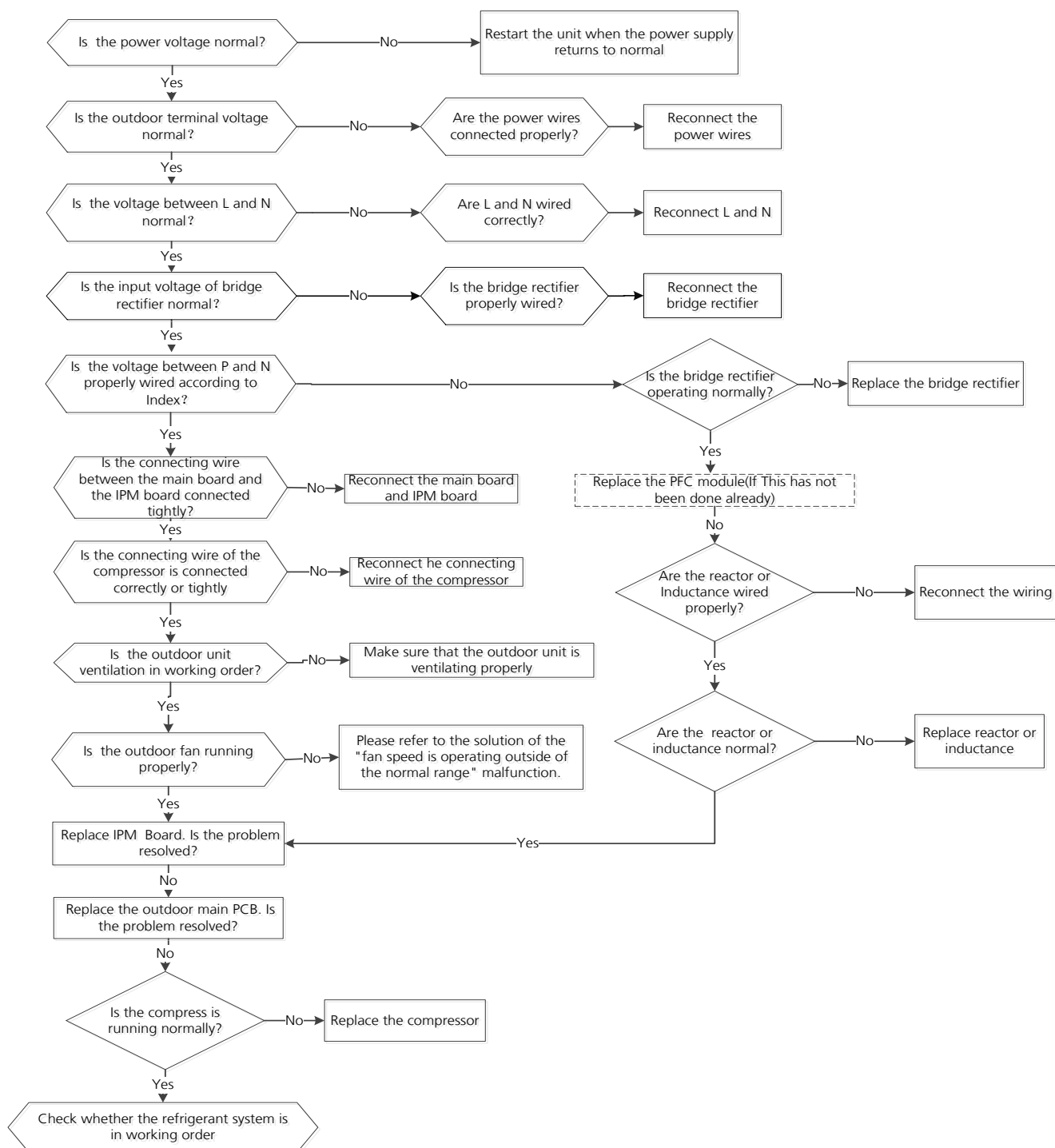
Or an abnormal inverter compressor drive is detected by a special detection circuit, including communication signal detection, voltage detection, compressor rotation speed signal detection and so on.

Recommended parts to prepare:

- Connection wires
- IPM module board
- Outdoor fan assembly
- Compressor
- Outdoor PCB
- High-voltage components
- PFC circuit or reactor

Troubleshooting and repair:


First, test the resistance between every two ports of U, V, the W of the IPM and P, N. If any of the results is 0 or close to 0, the IPM is defective. If not, follow the following procedure:



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:

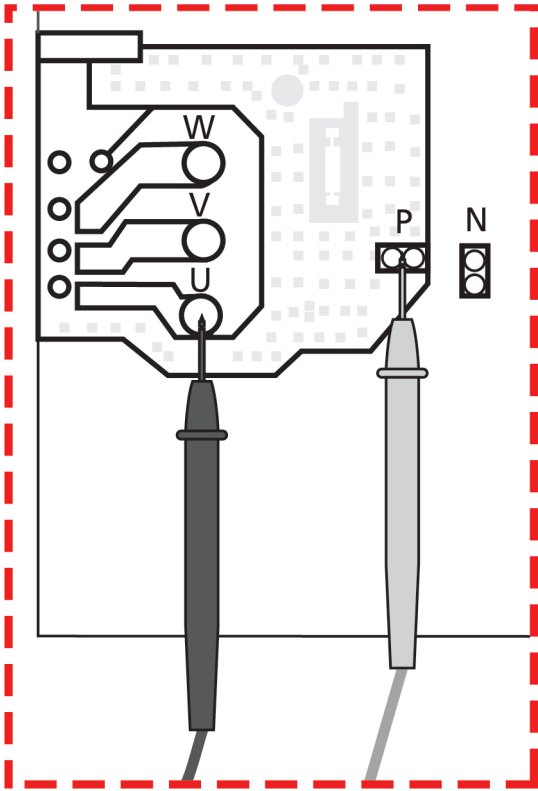
1. IPM Continuity Check

 **WARNING**

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

- 1. Turn off outdoor unit and disconnect power supply.
- 2. Discharge electrolytic capacitors and ensure all energy-storage unit has been discharged.
- 3. Disassemble outdoor PCB or disassemble IPM board.
- 4. Measure the resistance value between P and U(V, W, N); U(V, W) and N.

Digital tester		Resistance value	Digital tester		Resistance value
(+)Red	(-)Black	∞ (Several MΩ)	(+)Red	(-)Black	∞ (Several MΩ)
P	N		U	N	
	U		V		
	V		W		
	W		-		



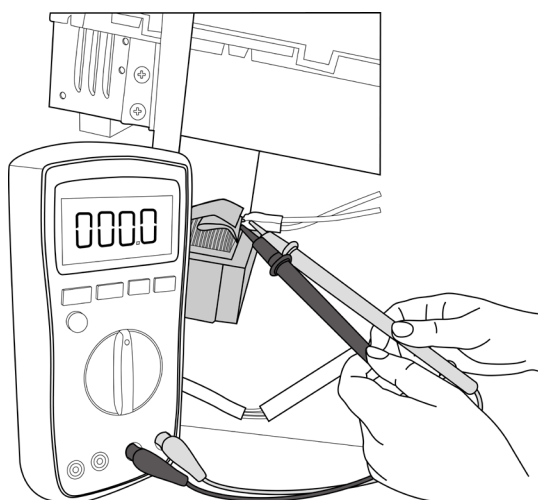
2. Normal voltage of P and N

208-240V(1-phase,3-phase)	380-415V(3-phase)
---------------------------	-------------------

In standby			
around 310VDC			around 530VDC
In operation			
With passive PFC module	With partial active PFC module	With fully active PFC module	/
>200VDC	>310VDC	>370VDC	>450VDC

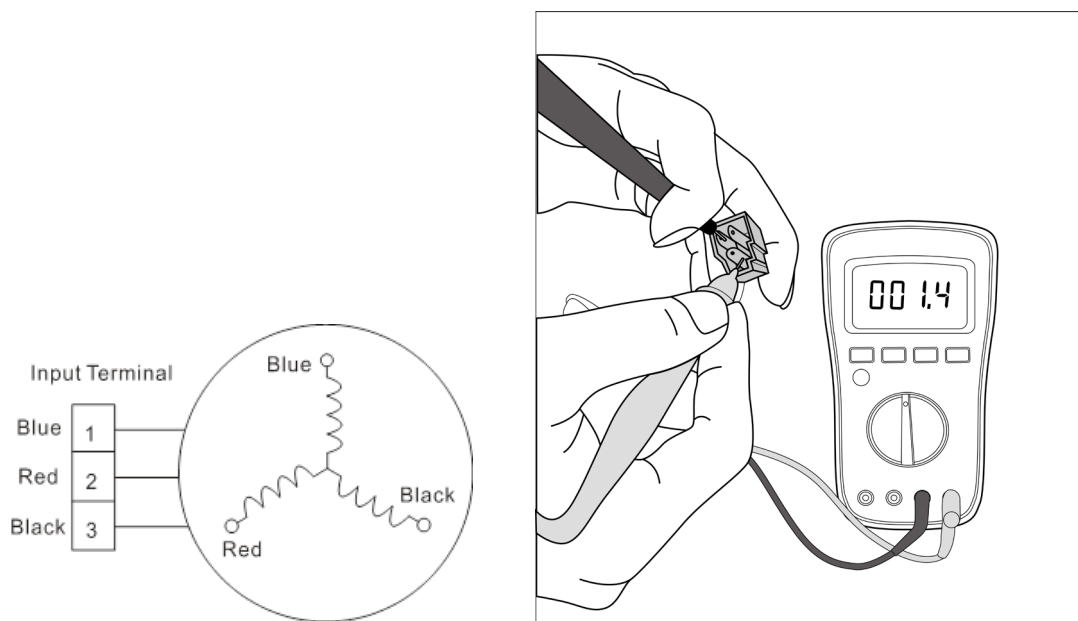
3. Reactor Check

Measure the resistance and voltage (to ground) of the reactor. The normal resistance should be around 0.1 ohm. Otherwise, the reactor must have malfunction.



4. Compressor check

Disconnect the compressor and check the resistance between U-V, V-W and U-W, and all 3 values should be equal. If not, the compressor is faulty and should be replaced.



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

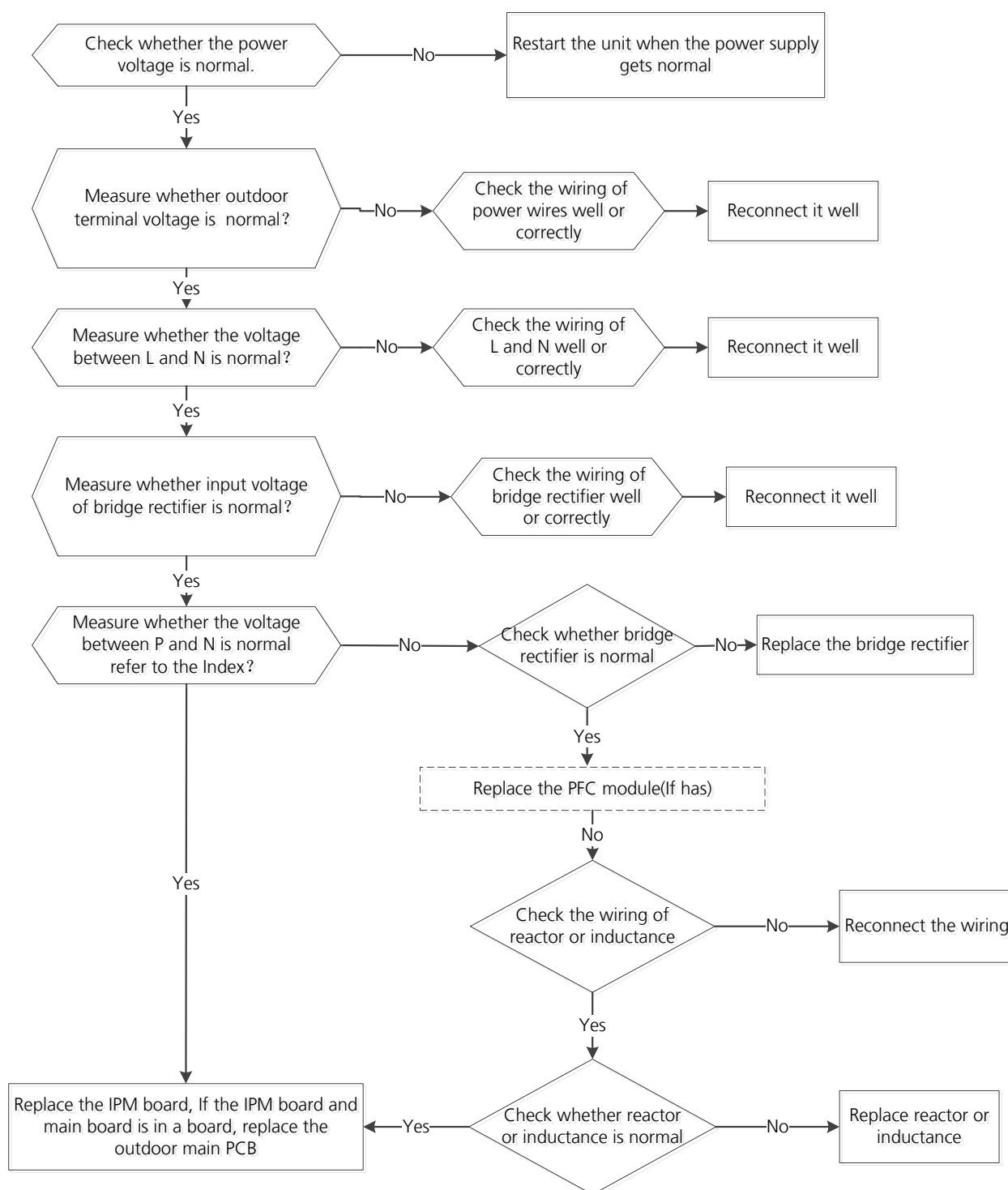
TS10-L: Over voltage or too low voltage protection diagnosis and solution

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
- PCB
- 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.

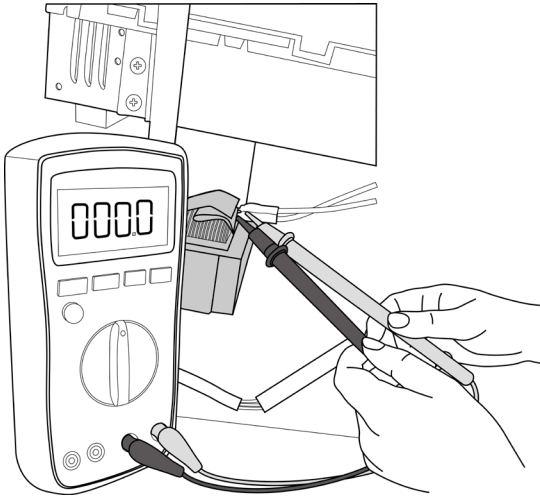
Index:

1. Normal voltage of P and N

208-240V(1-phase,3-phase)			380-415V(3-phase)
In standby			
around 310VDC			around 530VDC
In operation			
With passive PFC module	With partial active PFC module	With fully active PFC module	/
>200VDC	>310VDC	>370VDC	>450VDC

2. Reactor Check

Measure the resistance and voltage (to ground) of the reactor. The normal resistance should be around 0.1 ohm. Otherwise, the reactor must have malfunction.



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

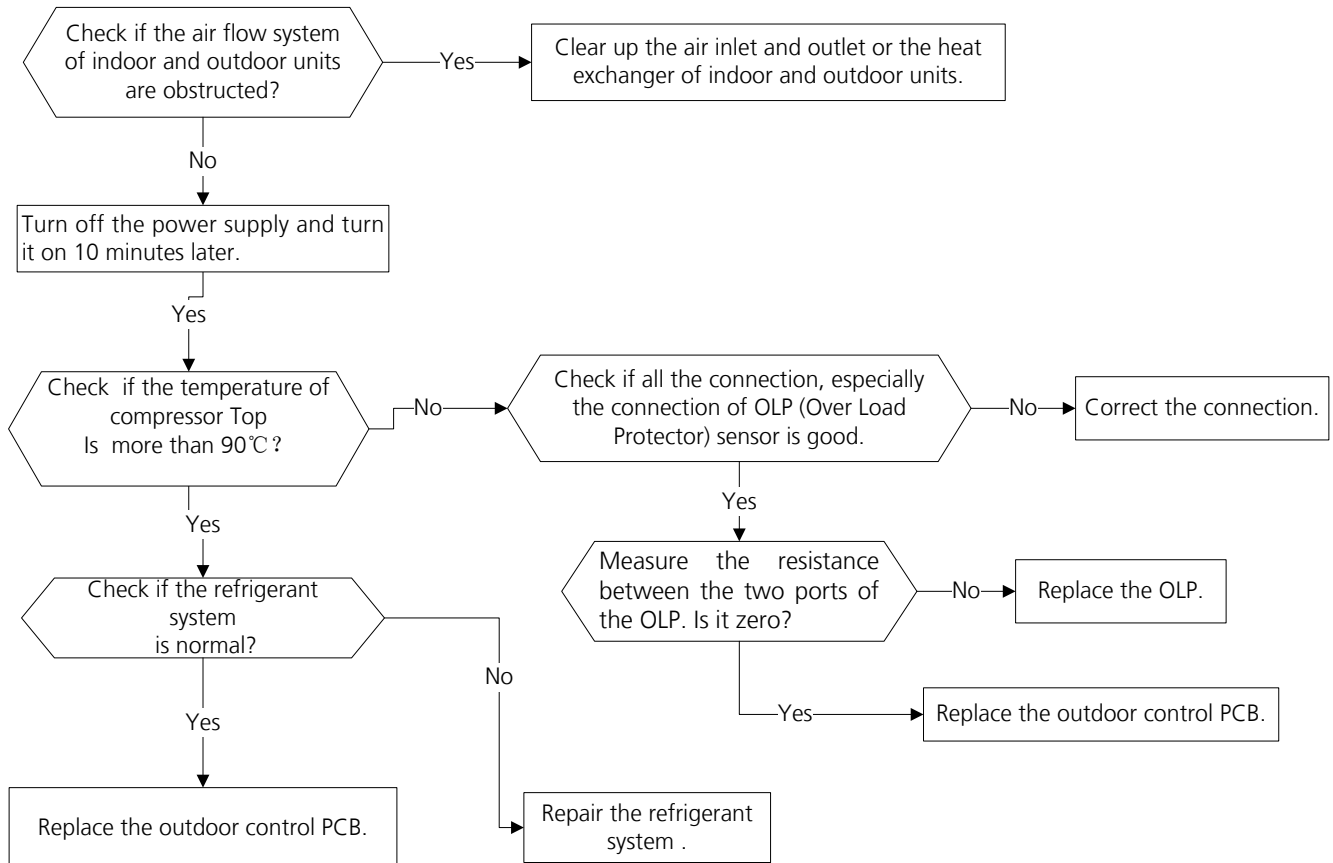
TS11-L: Top temperature protection of compressor diagnosis and solution

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

Recommended parts to prepare:

- Connection wires
- Outdoor PCB
- Over load protector

Troubleshooting and repair:



TS14: Indoor units mode conflict (match with multi outdoor unit)

Description: The indoor units cannot work cooling mode and heating at same time. Heating mode has a priority.

- Suppose Indoor unit A working in cooling mode or fan mode, and indoor unit B is set to heating mode, then A will change to off and B will work in heating mode.
- Suppose Indoor unit A working in heating mode, and indoor unit B is set to cooling mode or fan mode, then B will change to stand by and A will be no change.

	Cooling mode	Heating Mode	Fan	Off
Cooling mode	No	Yes	No	No
Heating Mode	Yes	No	Yes	No
Fan	No	Yes	No	No
Off	No	No	No	No

Note:

No: No mode conflict

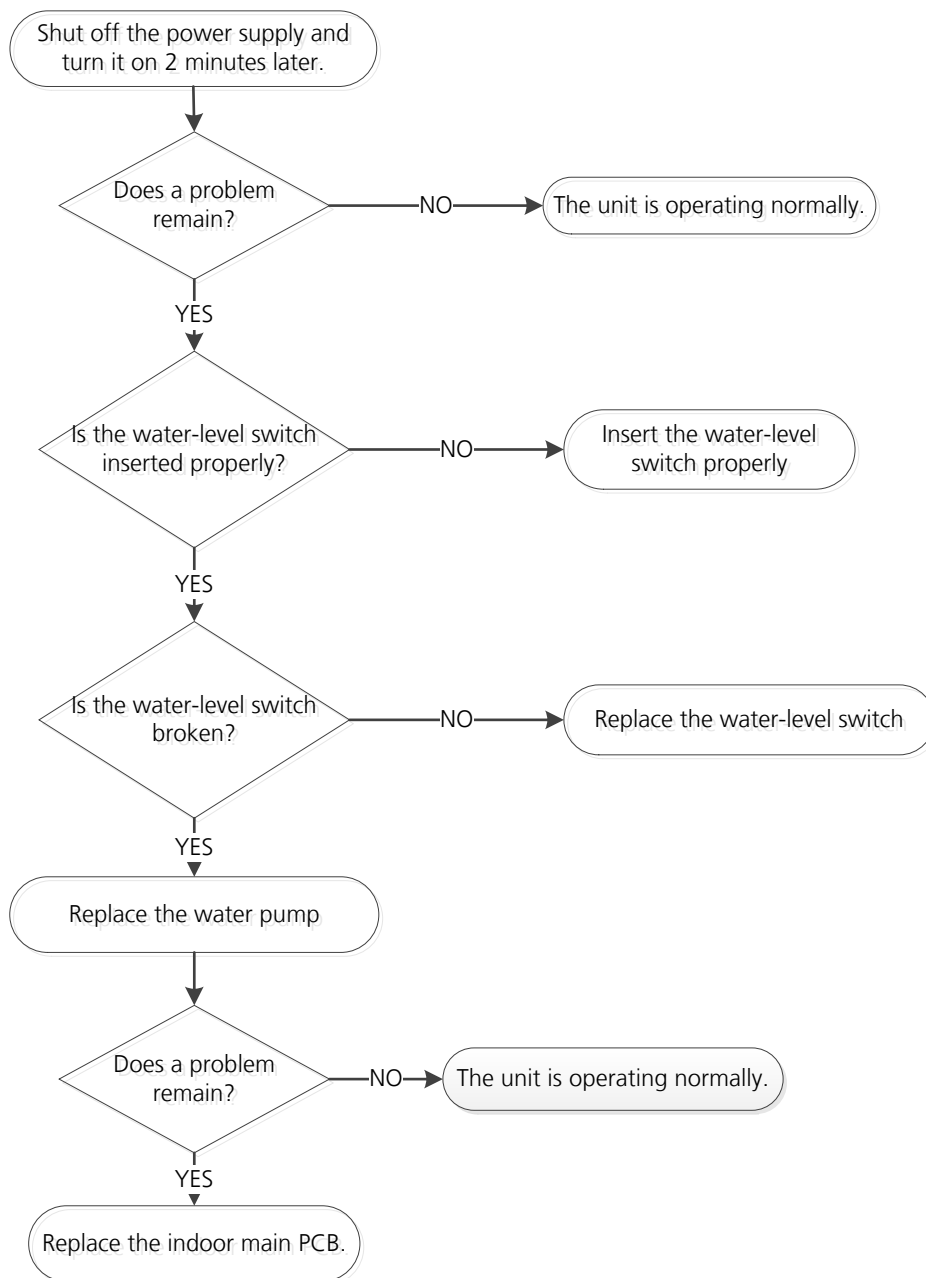
Yes: Mode conflict

TS15: Water-Level Alarm Malfunction Diagnosis and Solution

Description: If the sampling voltage is not 5V, the LED displays the failure code.

Recommended parts to prepare:

- Connection wires
- Water-level switch
- Water pump
- Indoor PCB



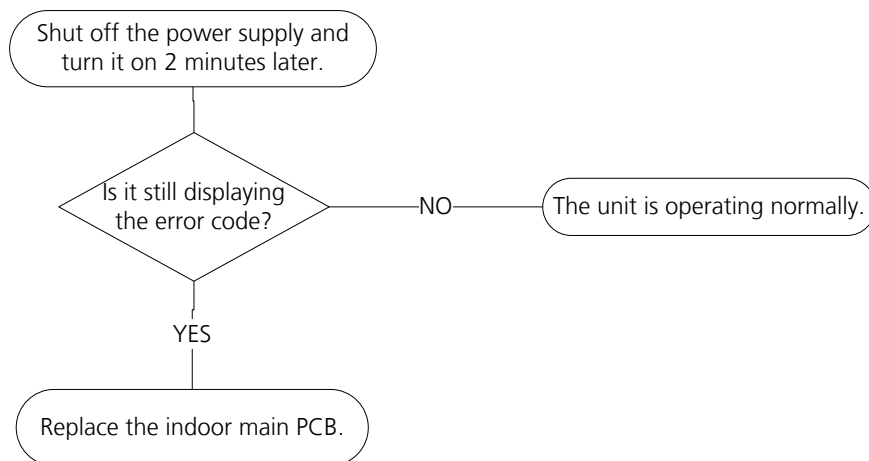
TS23: Communication error between indoor two chips diagnosis and solution

Description: Indoor PCB main chip does not receive feedback from another chip.

Recommended parts to prepare:

- Indoor PCB

Troubleshooting and repair:



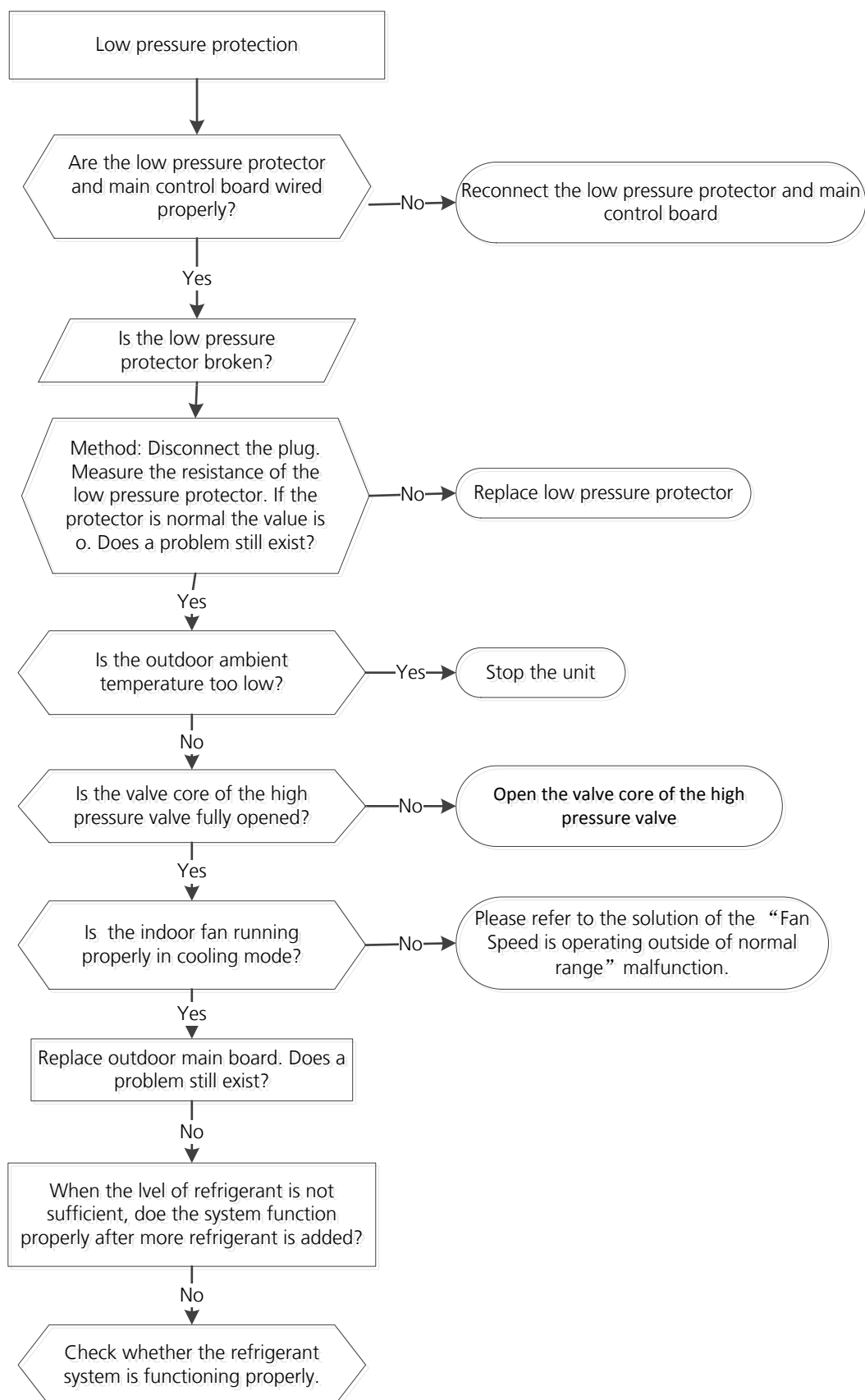
TS13-INV: Low pressure protection diagnosis and solution

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.

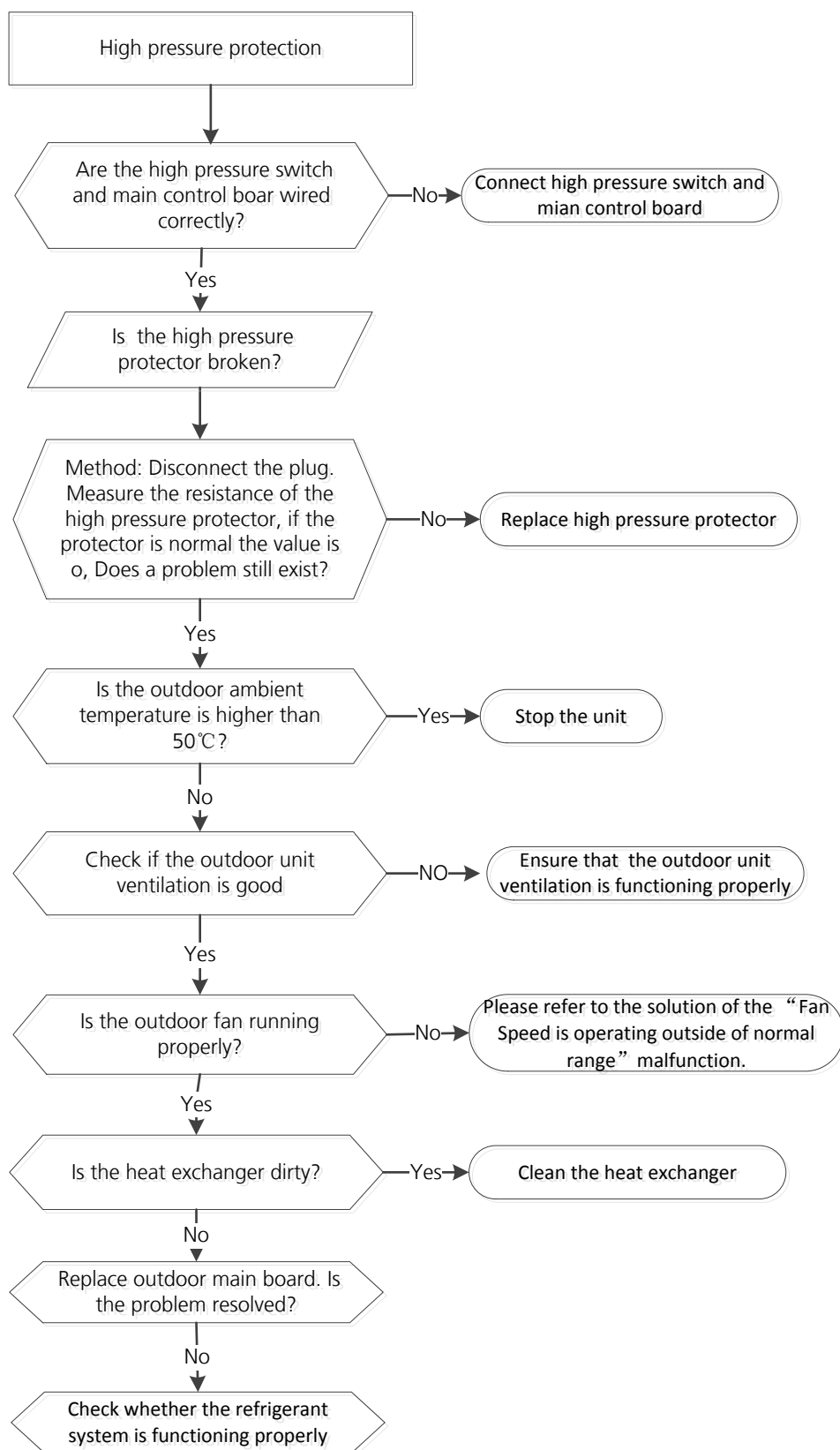
TS28: High pressure protection diagnosis and solution

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:



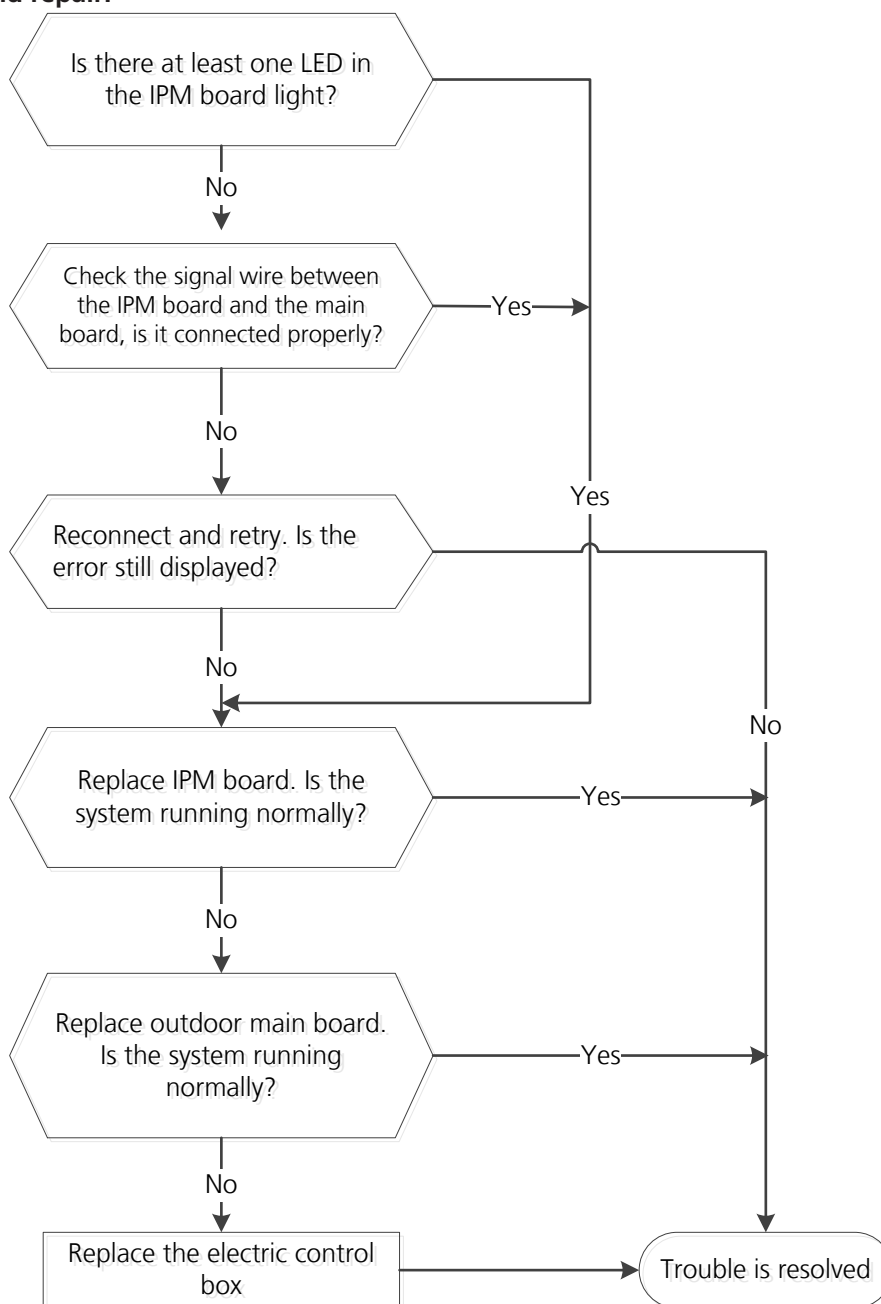
TS31: Communication error between outdoor main PCB and IPM board diagnosis and solution

Description: The main PCB cannot detect the IPM board.

Recommended parts to prepare:

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

Troubleshooting and repair:



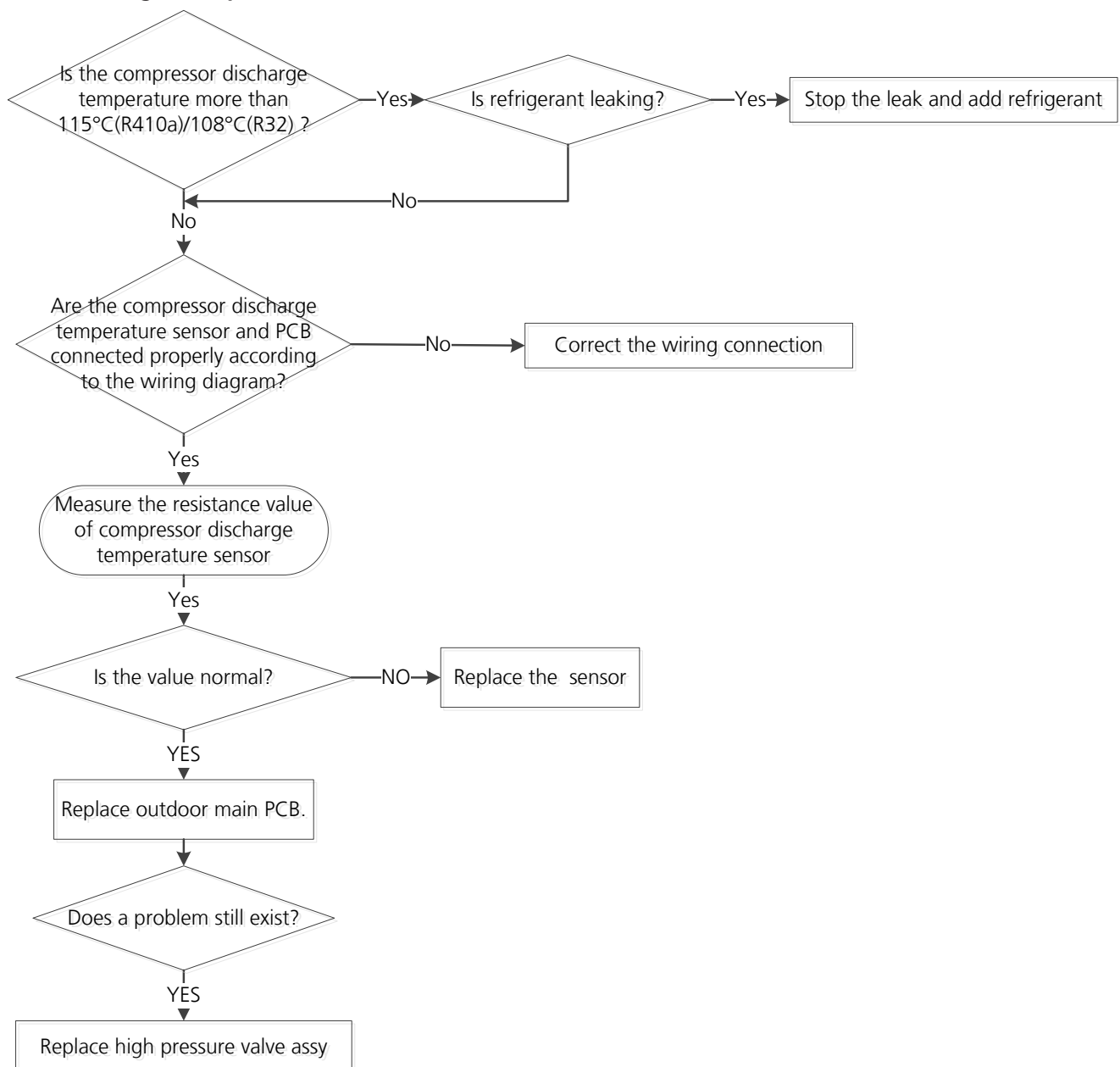
TS32: Discharge temperature protection of compressor diagnosis and solution

Description: If the compressor discharge temperature exceeds a certain level for nine seconds, the compressor ceases operation, the LED displays the failure code

Recommended parts to prepare:

- Connection wires
- Discharge temperature sensor
- Additional refrigerant
- Outdoor main PCB

Troubleshooting and repair:



Note: For certain models, outdoor unit uses combination sensor, T3,T4 and TP are the same of sensor. This picture and the value are only for reference, actual appearance and value may vary.

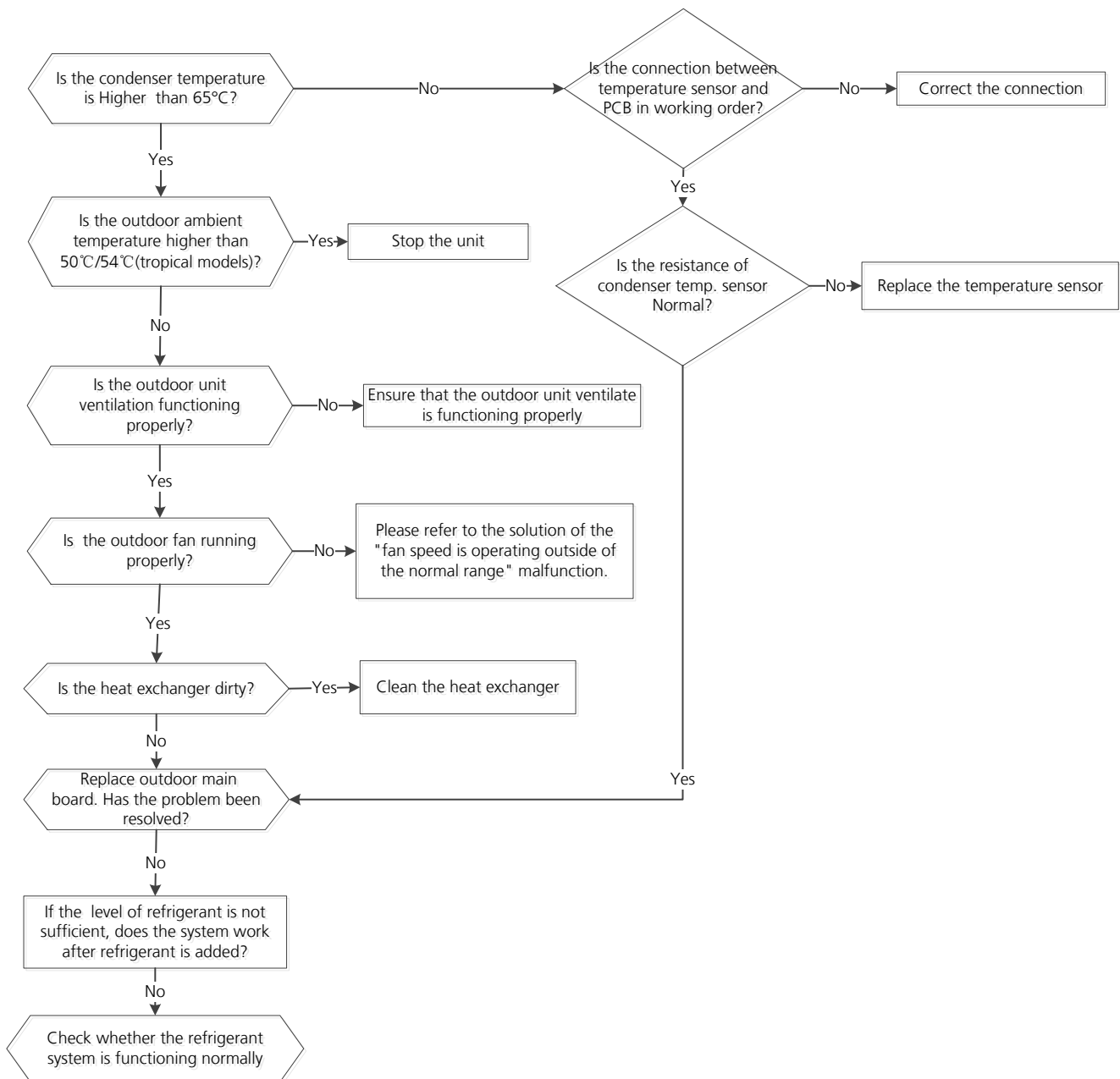
TS27-INV: High temperature protection of condenser diagnosis and solution

Description: When the outdoor pipe temperature is more than 65°C, the unit stops. It starts again only when the outdoor pipe temperature is less than 52°C.

Recommended parts to prepare:

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

Troubleshooting and repair:



TS30: PFC module protection diagnosis and solution

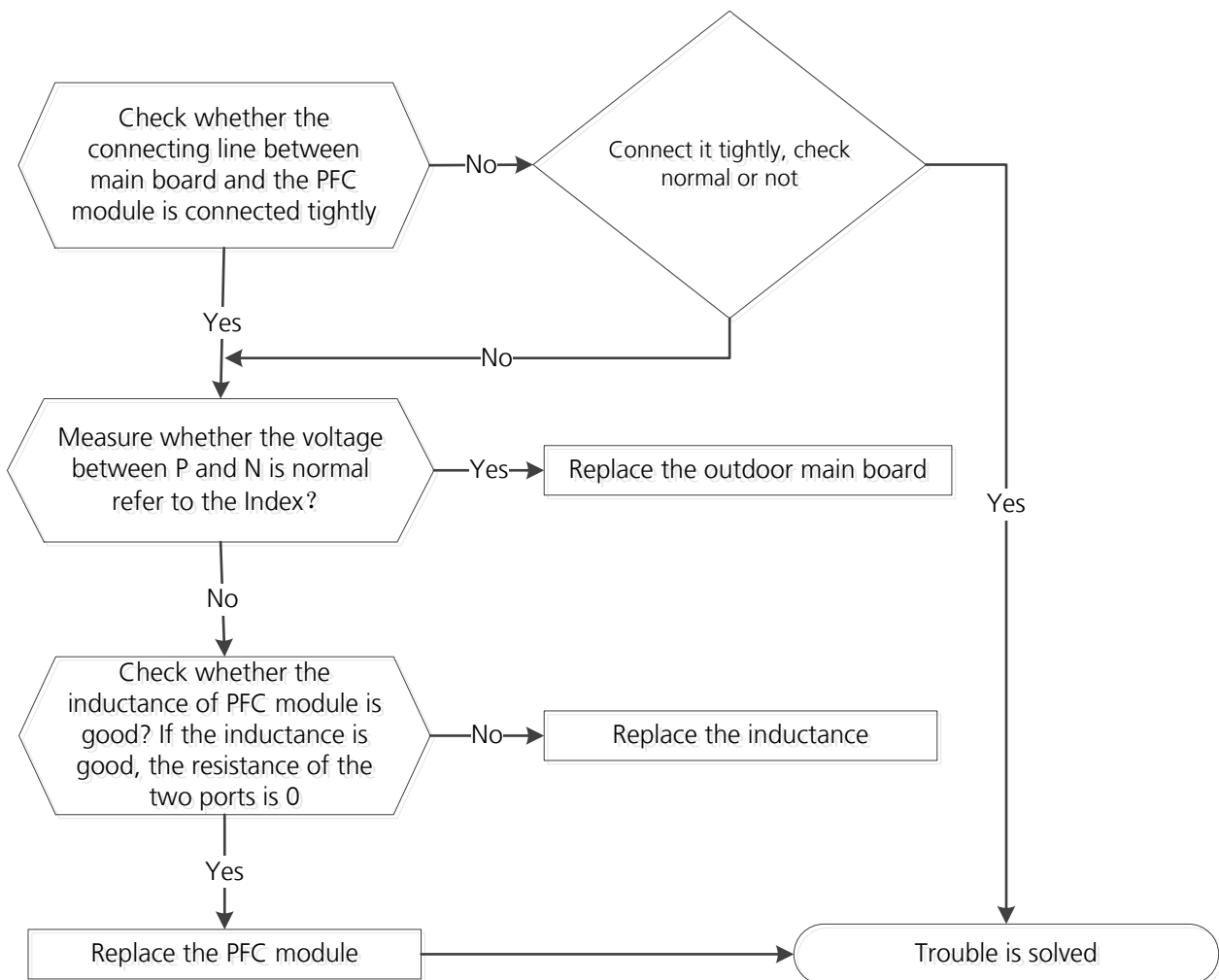
Description: When the voltage signal that IPM send to compressor drive chip is abnormal, the LED displays the failure code and the AC turns off.

Recommended parts to prepare:

- Connection wires
- Inductance
- Outdoor main PCB
- PFC module

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:



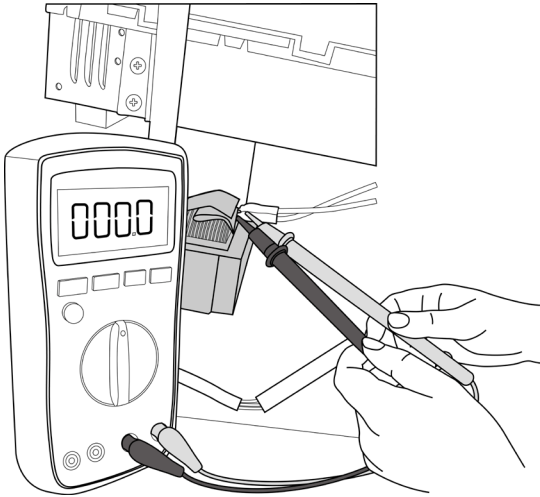
Index:

1. Normal voltage of P and N

208-240V(1-phase,3-phase)			380-415V(3-phase)
In standby			
around 310VDC			around 530VDC
In operation			
With passive PFC module	With partial active PFC module	With fully active PFC module	/
>200VDC	>310VDC	>370VDC	>450VDC

2. Reactor Check

Measure the resistance and voltage (to ground) of the reactor. The normal resistance should be around 0.1 ohm. Otherwise, the reactor must have malfunction.



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

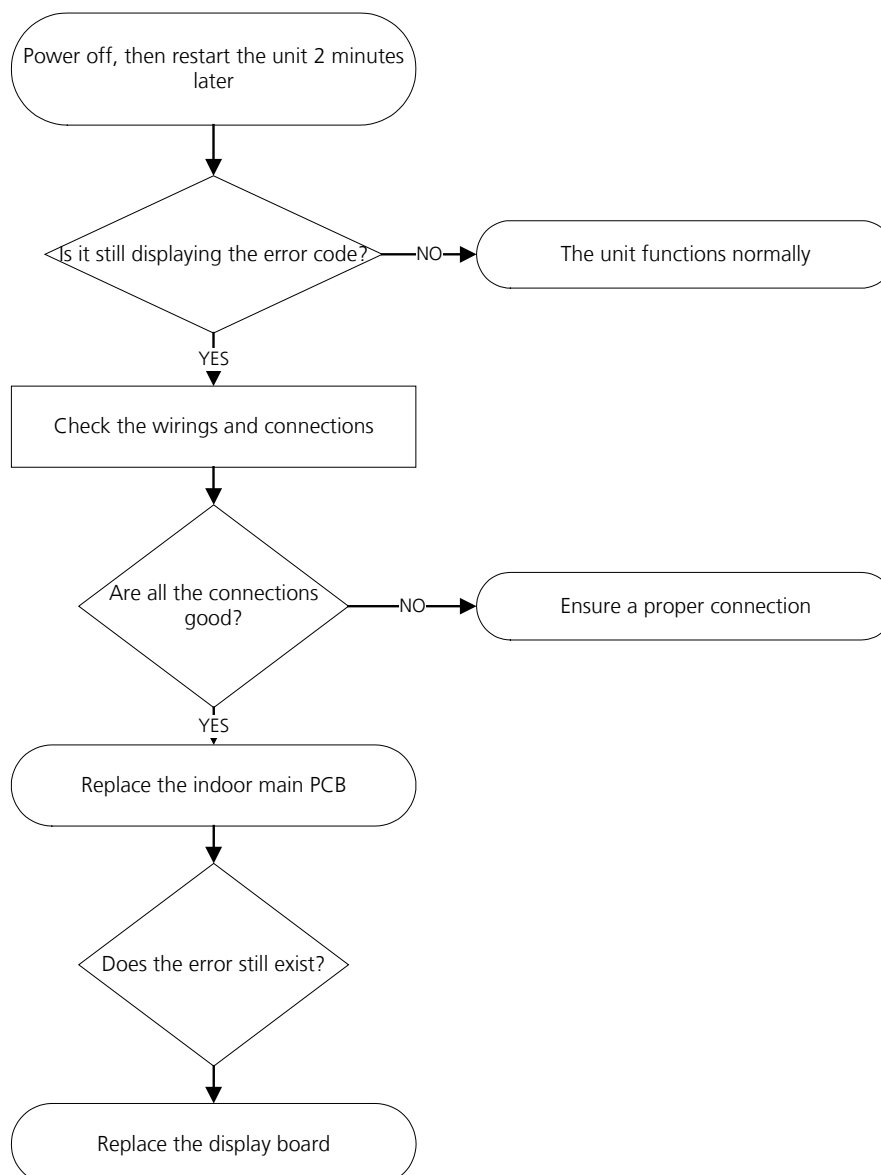
TS07: Indoor PCB / Display board communication error diagnosis and solution

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

Recommended parts to prepare:

- Communication wire
- Indoor PCB
- Display board

Troubleshooting and repair:



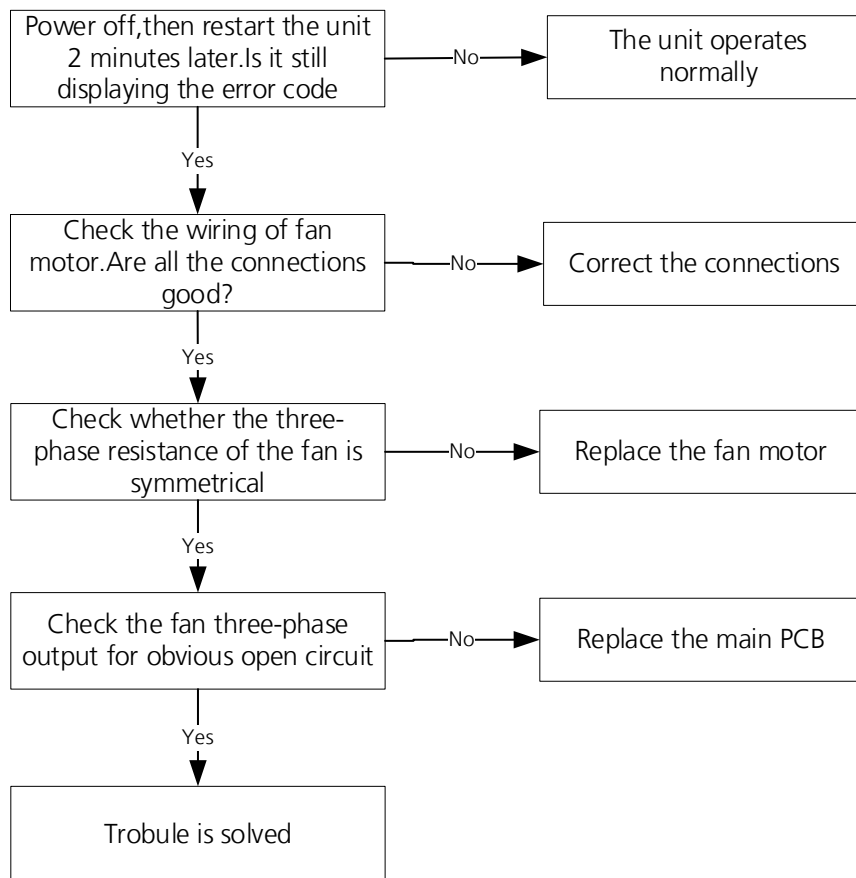
TS38: Lack phase failure of outdoor DC fan motor diagnosis and solution

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:



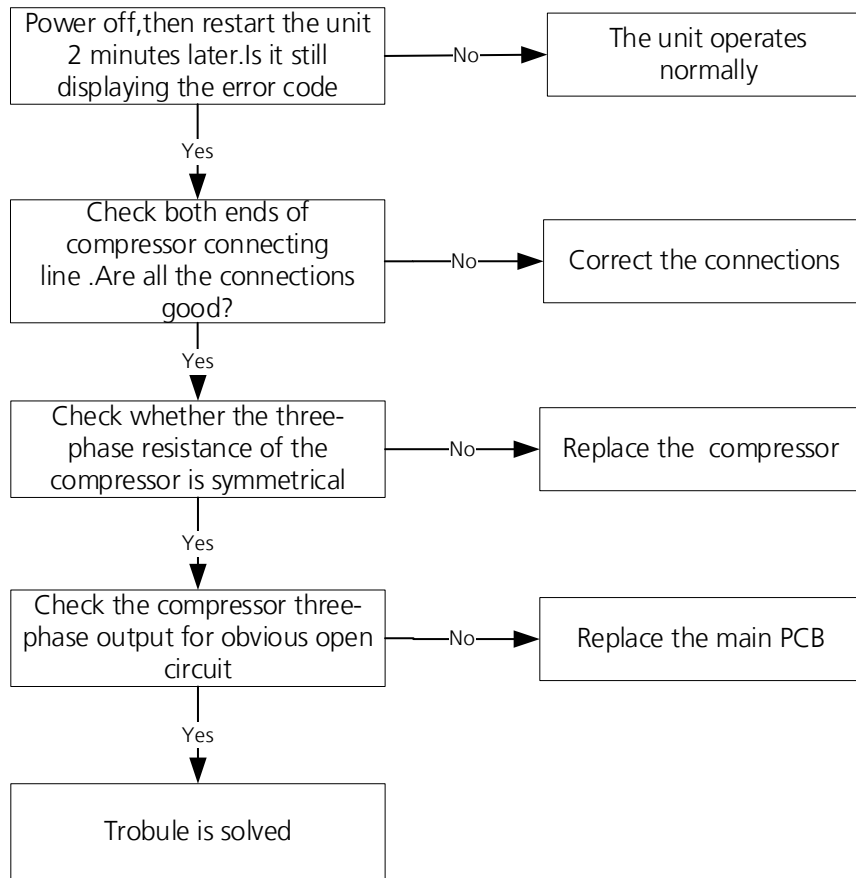
TS39: Outdoor compressor lack phase protection diagnosis and solution

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:



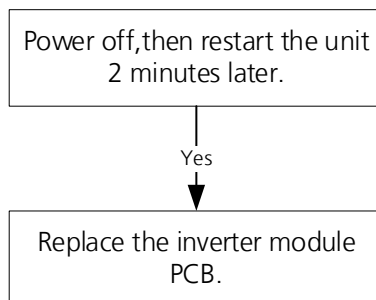
TS40: Outdoor unit IR chip drive failure diagnosis and solution

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:



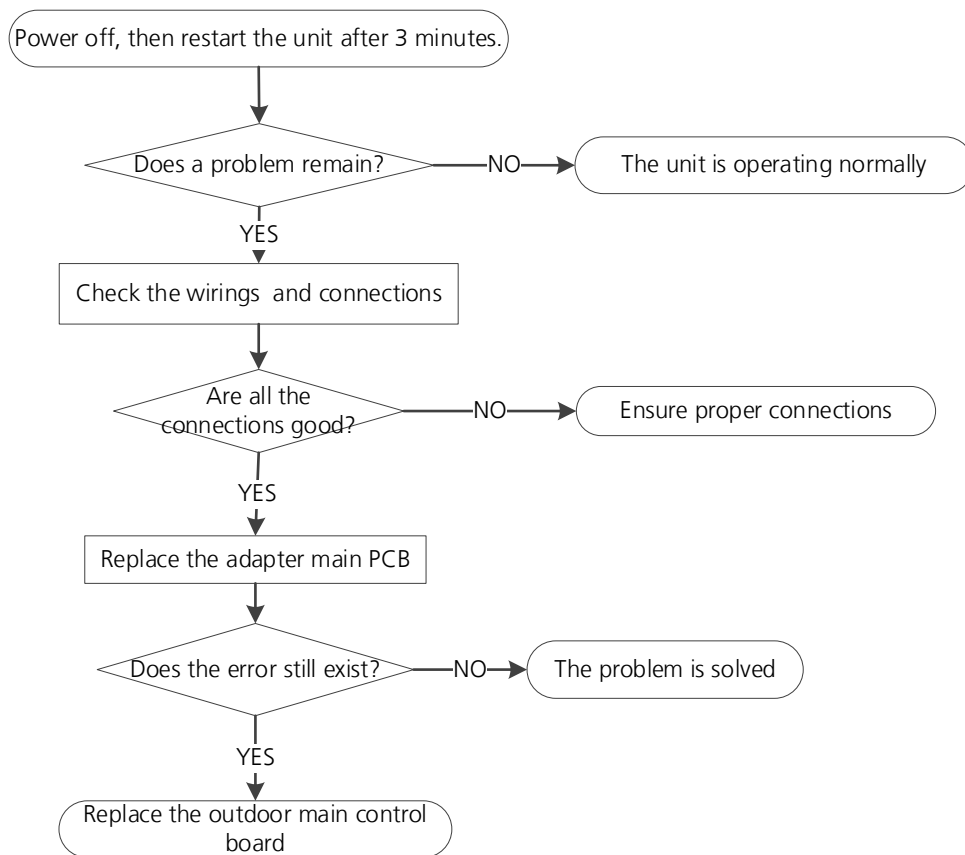
TS41: Communication malfunction between adapter board and outdoor main board diagnosis and solution

Description: The adapter PCB cannot detect the main control board.

Recommended parts to prepare:

- Connection wires
- Adapter board
- Outdoor main PCB

Troubleshooting and repair:



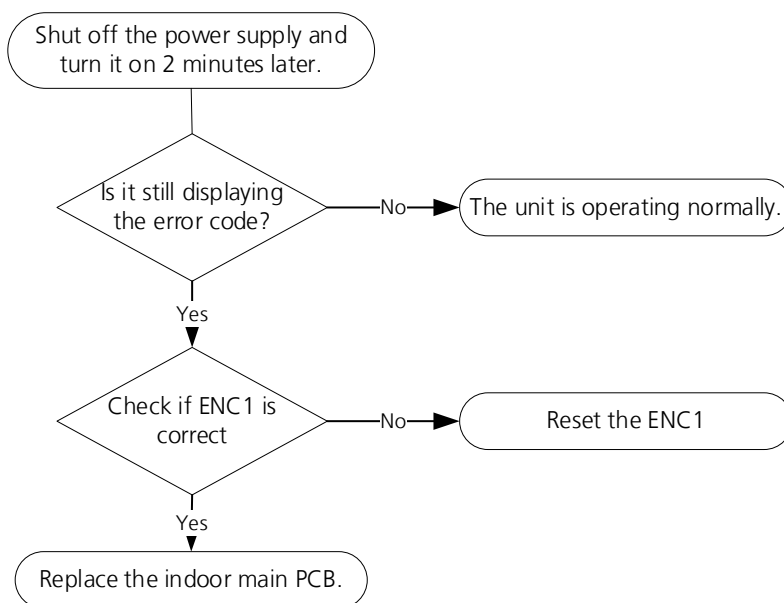
TS44: Communication malfunction between external fan module and indoor unit or External fan DC bus voltage is too low protection or External fan DC bus voltage is too high fault diagnosis and solution

Description: Indoor unit does not receive the feedback from external fan module during 150 seconds.
or Indoor unit receives abnormal increases or decreases in voltage from external fan module.

Recommended parts to prepare:

- Indoor main PCB

Troubleshooting and repair:



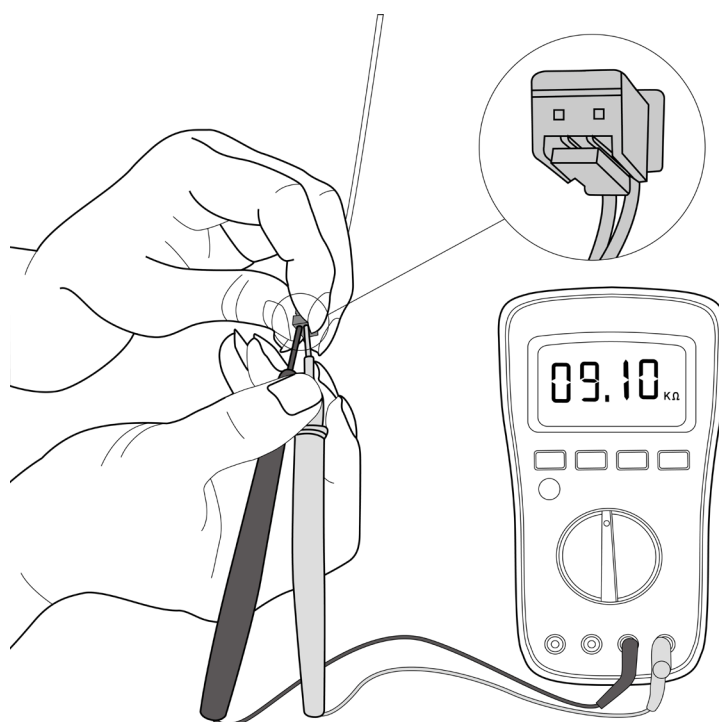
6. Check Procedures

6.1 Temperature Sensor Check

WARNING

**Be sure to turn off all power supplies or disconnect all wires to avoid electric shock.
Operate after compressor and coil have returned to normal temperature in case of injury.**

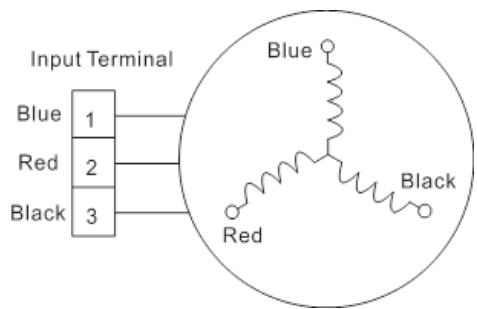
1. Disconnect the temperature sensor from PCB (Refer to Chapter 5&6. Indoor&Outdoor Unit Disassembly).
2. Measure the resistance value of the sensor using a multi-meter.
3. Check corresponding temperature sensor resistance value table (Refer to Chapter 8. Appendix).



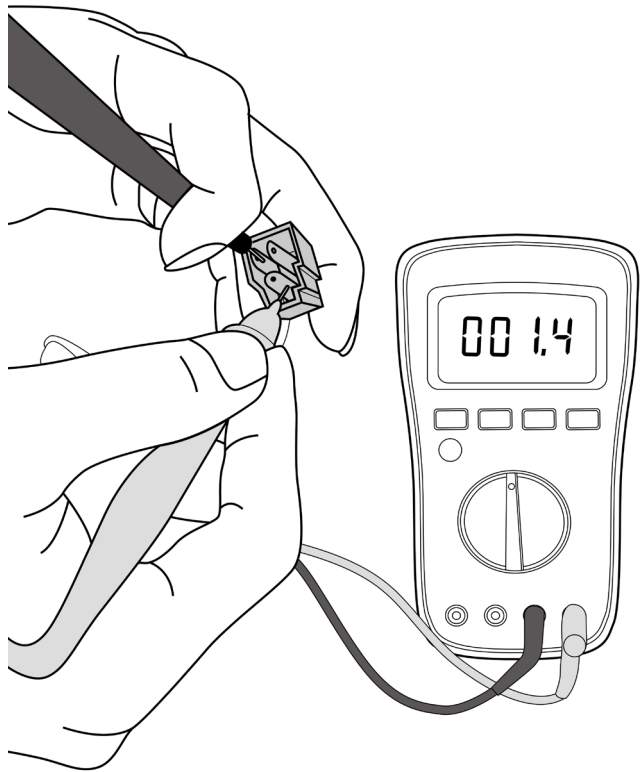
Note: The picture and the value are only for reference, actual condition and specific value may vary.

9.2 Compressor Check

1. Disconnect the compressor power cord from outdoor PCB (Refer to Chapter 6. Outdoor Unit Disassembly)).
2. Measure the resistance value of each winding using a multi-meter.
3. Check the resistance value of each winding in the following table.



Resistance Value	KTN150D30UFZA	KTM240D43UKT	KTF310D43UMT	ATQ360D1UMU KTQ420D1UMU EAPQ420D1UMUA
Blue-Red	1.02Ω	1.03Ω	0.65Ω	0.37 Ω
Blue-Black				
Red-Black				



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

9.3 IPM Continuity Check

WARNING

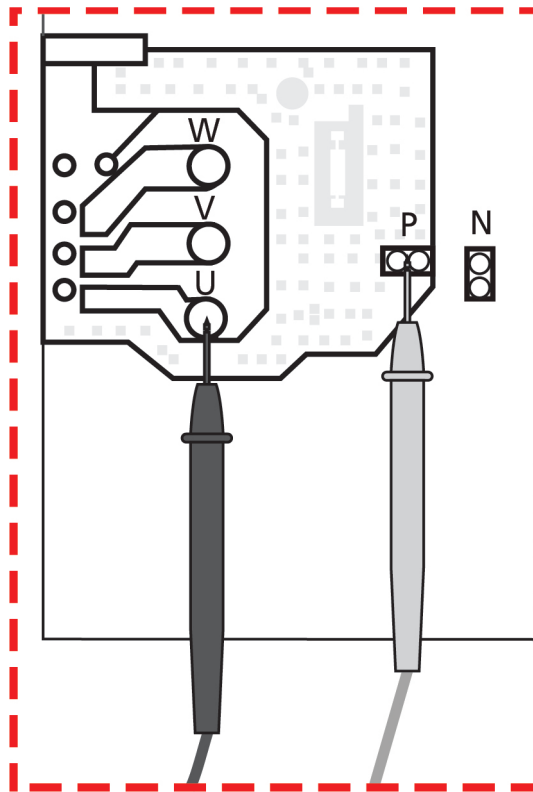
**Electricity remains in capacitors even when the power supply is off.
Ensure the capacitors are fully discharged before troubleshooting.**

1. Turn off outdoor unit and disconnect power supply.
2. Discharge electrolytic capacitors and ensure all energy-storage unit has been discharged.
3. Disassemble outdoor PCB or disassemble IPM board.
4. Measure the resistance value between P and U(V, W, N); U(V, W) and N.

Digital tester		Resistance value	Digital tester		Resistance value
(+)Red	(-)Black	∞ (Several MΩ)	(+)Red	(-)Black	∞ (Several MΩ)
P	N		U	N	
	U		V		
	V		W		
	W		-		

Or test the conductivity of IPM with diode mode.

Needle-type Tester		Normal Value	Needle-type Tester		Normal Value
Red	Black		Red	Black	
P	U	Open-circuit	N	U	0.3-0.5V
	V			V	
	W			W	
Needle-type Tester		Normal Value	Needle-type Tester		Normal Value
Black	Red		Black	Red	
P	U	0.3-0.5V	N	U	Open-circuit
	V			V	
	W			W	

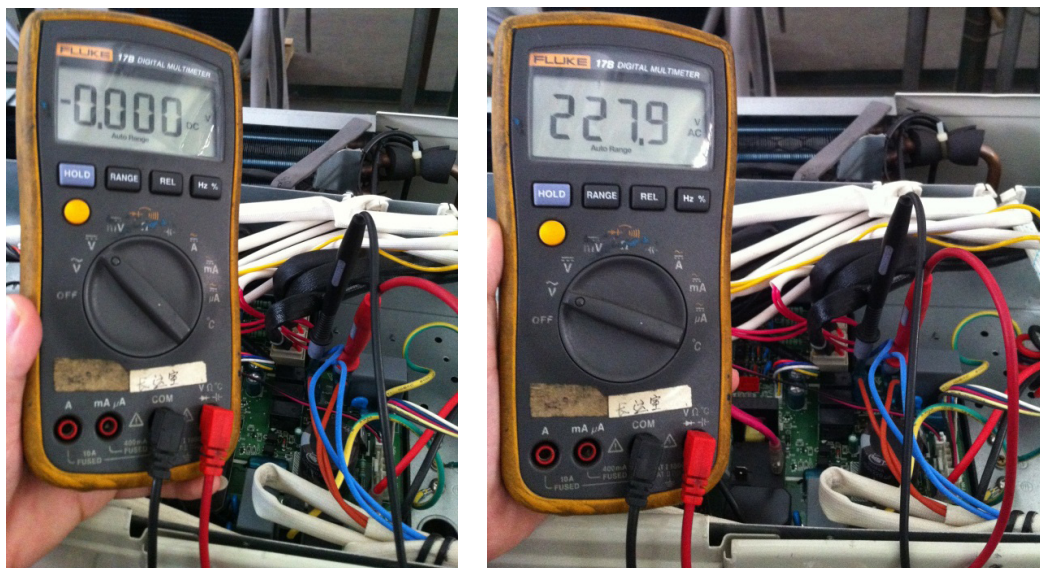


Note: The picture and the value are only for reference, actual condition and specific value may vary.

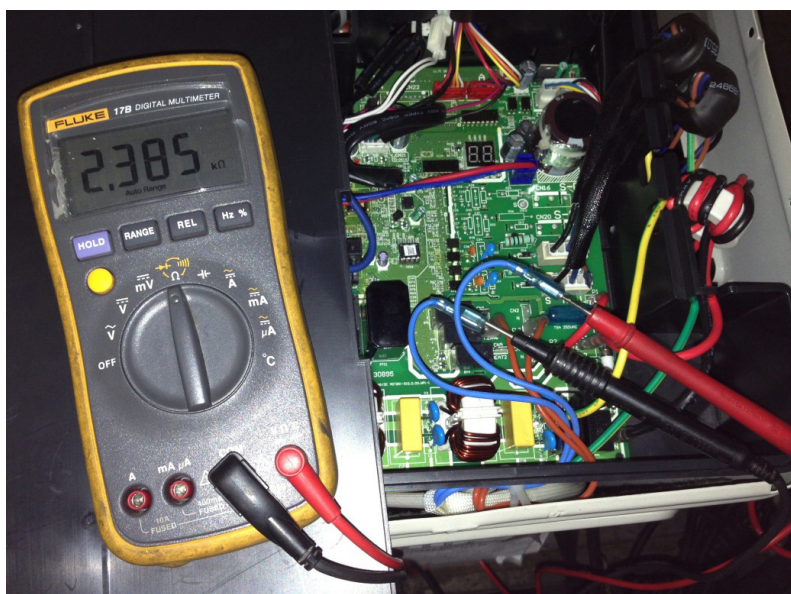
8.5 4-way Valve Check

1. Power on, use a digital tester to measure the voltage, when the unit operates in cooling, it is 0V. When the unit operates in heating, it is about 230VAC.

If the value of the voltage is not in the range, the PCB must have problems and need to be replaced.



2 Turn off the power, use a digital tester to measure the resistance. The value should be 1.8~2.5 K Ω .

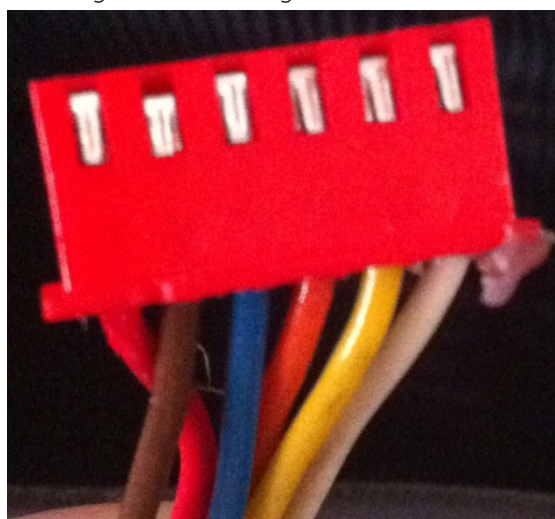


8.6 EEV Check

WARNING

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

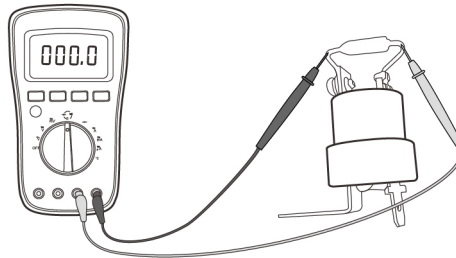
1. Disconnect the connector from outdoor PCB.
2. Measure the resistance value of each winding using a multi-meter.
3. Check the resistance value of each winding in the following table.



Color of lead winding	Normal Value
Red- Blue	About 50Ω
Red - Yellow	
Brown-Orange	
Brown-White	

8.7 Fuse of Electric Auxiliary Heat Module Check(Optional)

1. Disassemble the fuse from electric auxiliary heat module.
2. Use the multimeter signal gear to check whether there is a signal, if not, fuse is broken.





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