DELLA®

Motto (JA) Series
Umbra (JPB) Series

Inverter-Driven
Air Conditioning Units

Service and Repair Manual
Error Code · Trouble Shooting · Diagnostic Procedure

v.20240920

Maintenance

Troubleshooting Guide

Many error codes many appears on this air conditionor, and this troubleshooting guide is prepared for the maintenance personnel to detect the error position and the parts to be replaced during the troubleshooting process. In this Guide, the Troubleshooting Method is guided by the Error Name, and the Reference Code under the General Index is the error code of the Indoor Unit of the mainstream model supplied by the Company.

Example: "Indoor Unit coil sensor error" is coded as E3 in the error code of the Indoor Unit, but appears as flash-out via the trouble light of the Outdoor Unit machine. However, their troubleshooting method is the same, and use the same table as well.

General index: fix speed air conditioners only involve E1, E2, E3 and E4

Code	Error Name	Remark
E0	Overcurrent Protection of Indoor Unit	Voltage anomaly?
E1	Indoor Unit temperature sensor error	IDU sensor and PCB.
E2	Outdoor Unit coil sensor error	ODU coil sensor and ODU PCB.
E3	Indoor Unit coil sensor error	IDU sensor and PCB.
E4	Indoor Unit motor error of **wall mounted air conditioner**（PG motor）	Fan motor, fan blade and PCB.
E4	Indoor Unit motor error of **wall mounted air conditioner**（DC motor）	Fan motor, fan blade and PCB.
E5(5E)	Indoor Unit and Outdoor Unit communication error	The IDU & ODU wiring connection correct?
Eb	Indoor EE Failure	IDU PCB broken?
F0	Outdoor Unit DC motor error (3-core terminal motor)	Fan motor, ODU PCB.
F1	Module protection error	Please check the troubleshooting for detail.
F2	PFC protection error	ODU PCB
F3	Compressor startup error	Compressor
F4	Discharge sensor error	discharge sensor and ODU PCB.
F5	Pressing top head sensor error	Pressing top head sensor and ODU PCB.
F6	Outdoor Unit temperature sensor error	ODU sensor and ODU PCB.
F7	OVP or UVP error	ODU PCB broken?
F8	Outdoor Unit main PCB and module panel communication error	ODU PCB
F9	Outdoor EE error	ODU PCB
FA	Recirculated sensor error（four-way valve switch error）	Recirculated sensor, four-way valve, ODU PCB.
P2	High-pressure protection(only floor standing)	/

P3	Liquid Deficiency Protection	Gas leakage? 2-way or 3-way valve blocked etc.
P4	Refrigeration Overload Protection	Please check the troubleshooting for detail.
P5	Discharge Protection	Please check the troubleshooting for detail.
P6	Indoor High Temperature Protection	Please check the troubleshooting for detail.
P7	Anti-freezing Protection in Refrigeration Room	Please check the troubleshooting for detail.
P8	Overcurrent Protection	ODU PCB broken?
L0	DC Over/Under-voltage Failure	Please check the troubleshooting for detail.
L1	Overcurrent Protection on Phase Current of Compressor	Please check the troubleshooting for detail.
L2	Out-of Step Failure of Compressor	Please check the troubleshooting for detail.
L3	Phase Failure of Compressor	Please check the troubleshooting for detail.
L4	Driver Module IPM Failure of Compressor	Please check the troubleshooting for detail.
L5	PFC Overcurrent Hardware Protection	Please check the troubleshooting for detail.
L6	PFC Overcurrent Software Protection	Please check the troubleshooting for detail.
L7	AD Abnormal Protection in Current Detection	Please check the troubleshooting for detail.
LC	AD Abnormal Protection in PFC Current Detection	Please check the troubleshooting for detail.
Ld	Dc fan motor detection AD abnormal protection	Please check the troubleshooting for detail.
L8	Shunt Resistance Imbalance Failure	Please check the troubleshooting for detail.
L9	IPM Temperature Sensor Failure	Please check the troubleshooting for detail.
LA	Compressor Startup Failure	Please check the troubleshooting for detail.
LE	DC fan motor phase error	Please check the troubleshooting for detail.
LF	DC fan motor lost step protection	Please check the troubleshooting for detail.
LH	DC fan motor IPM protection	Please check the troubleshooting for detail.

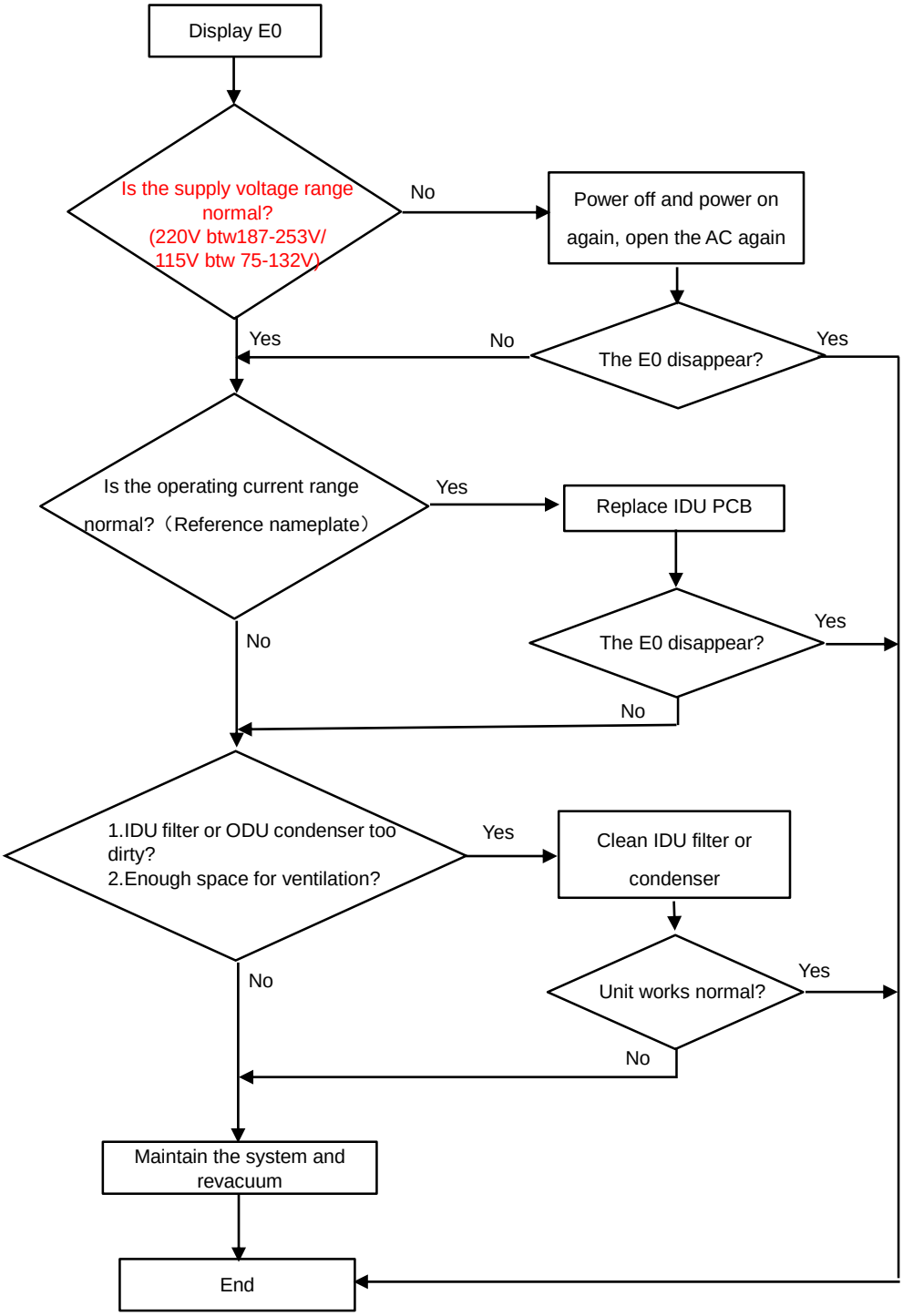
Example:

Explanation of error	**Cause:** explain the principle of the specific error. **Inspection path:** The basic order of troubleshooting. Related key position
Tools required for inspection	Tools that should be carried for such troubleshooting, and replacing parts that may be necessary for such error.
Common faulty components	Any possibly broken part related to the error may be the parts that need to be replaced.
Inspection procedure and key points	All the troubleshooting procedures for the reference of maintenance staff are prepared from simple to complex, from surface to Indoor Unit, and from test to replacement. Although these key points do not cover all the error, and difficult or special problems are not included as well, but they can cover most of the common error.
Special attention	Here are some often-overlooked problems for the reference of the maintenance personnel.

The problems in the market are always more than we think, so it is necessary for the maintenance personnel to understand the principle of air conditioning operation, and to make a flexible judgment of the fault in combination with the actual conditions. We we qlcome the maintenance personnel to constantly put forward new problems in the actual work, record the solutions and enrich our troubleshooting guide list.

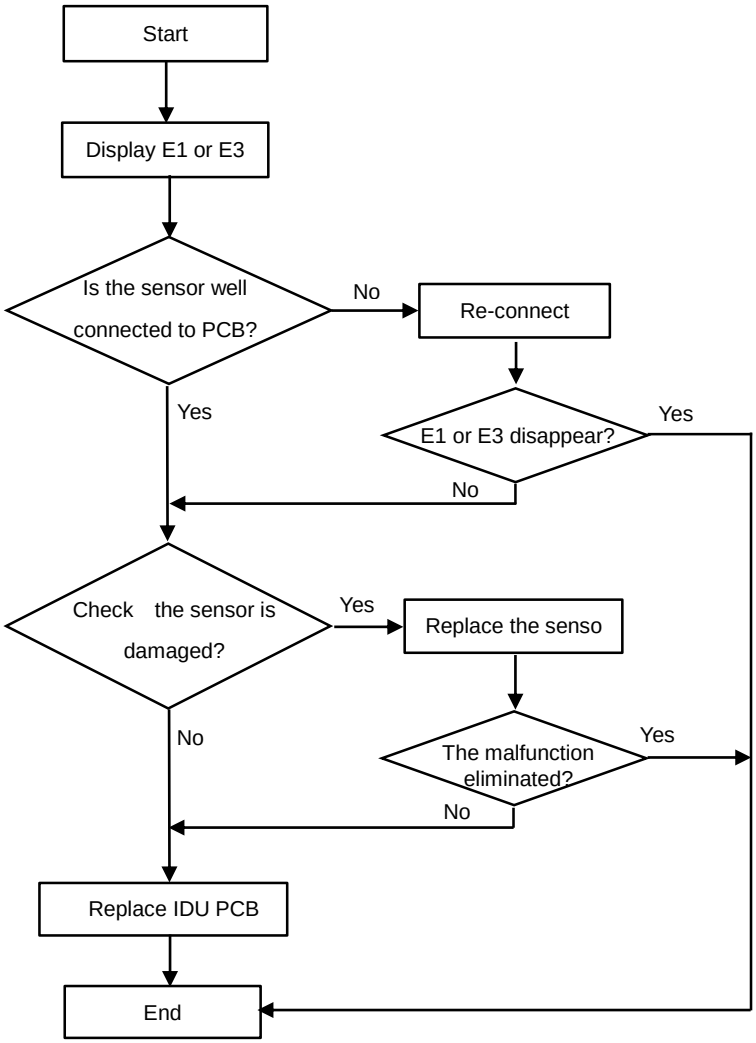
（1） E0- Overcurrent Protection of Indoor Unit

The main PCB detects that the working current of the system exceeds the upper limit of protection, and will indicate "indoor unit overcurrent protectin:. The air conditioner stopps running for protection and displays the failure code E0.



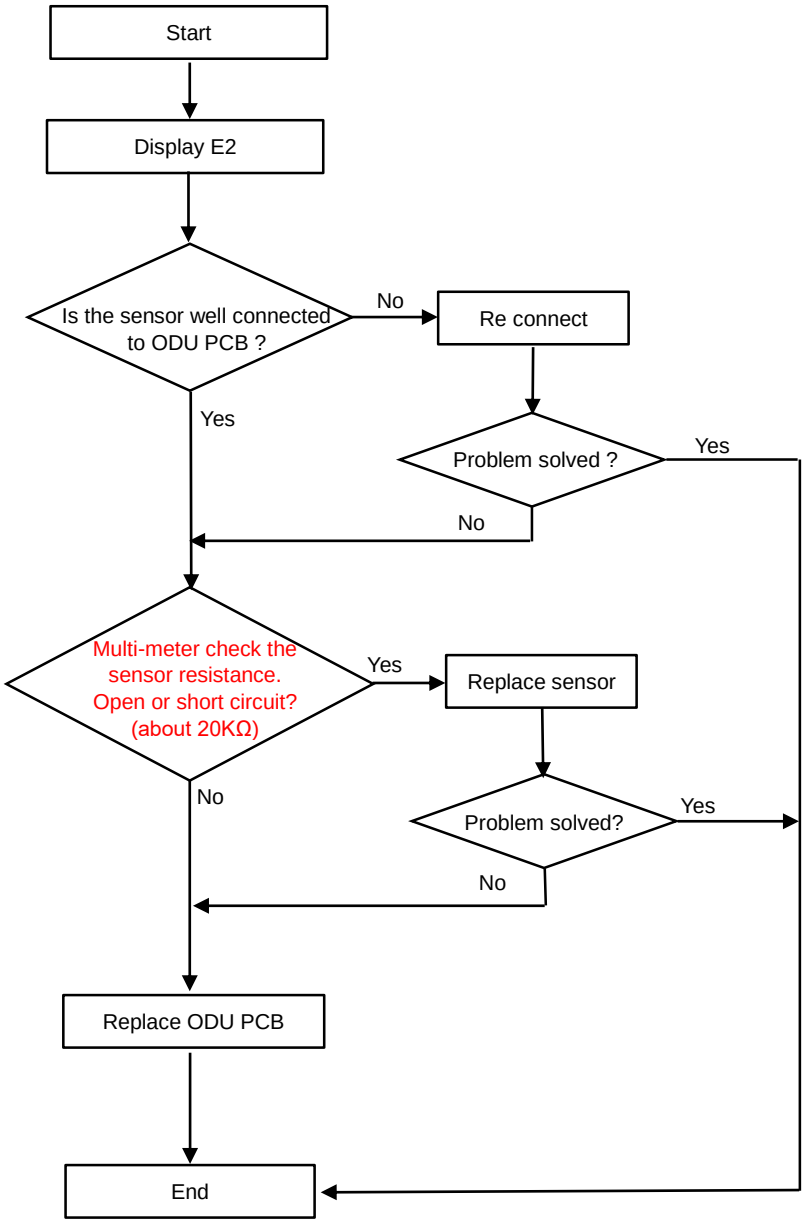
（2） E1- Indoor Unit temperature sensor error
E3 -Indoor Unit coil sensor error

The detection of short circuit or open circuit of Indoor Unit temperature sensor or Indoor Unit coil sensor during the inspection of main PCB in the Indoor Unit machine.



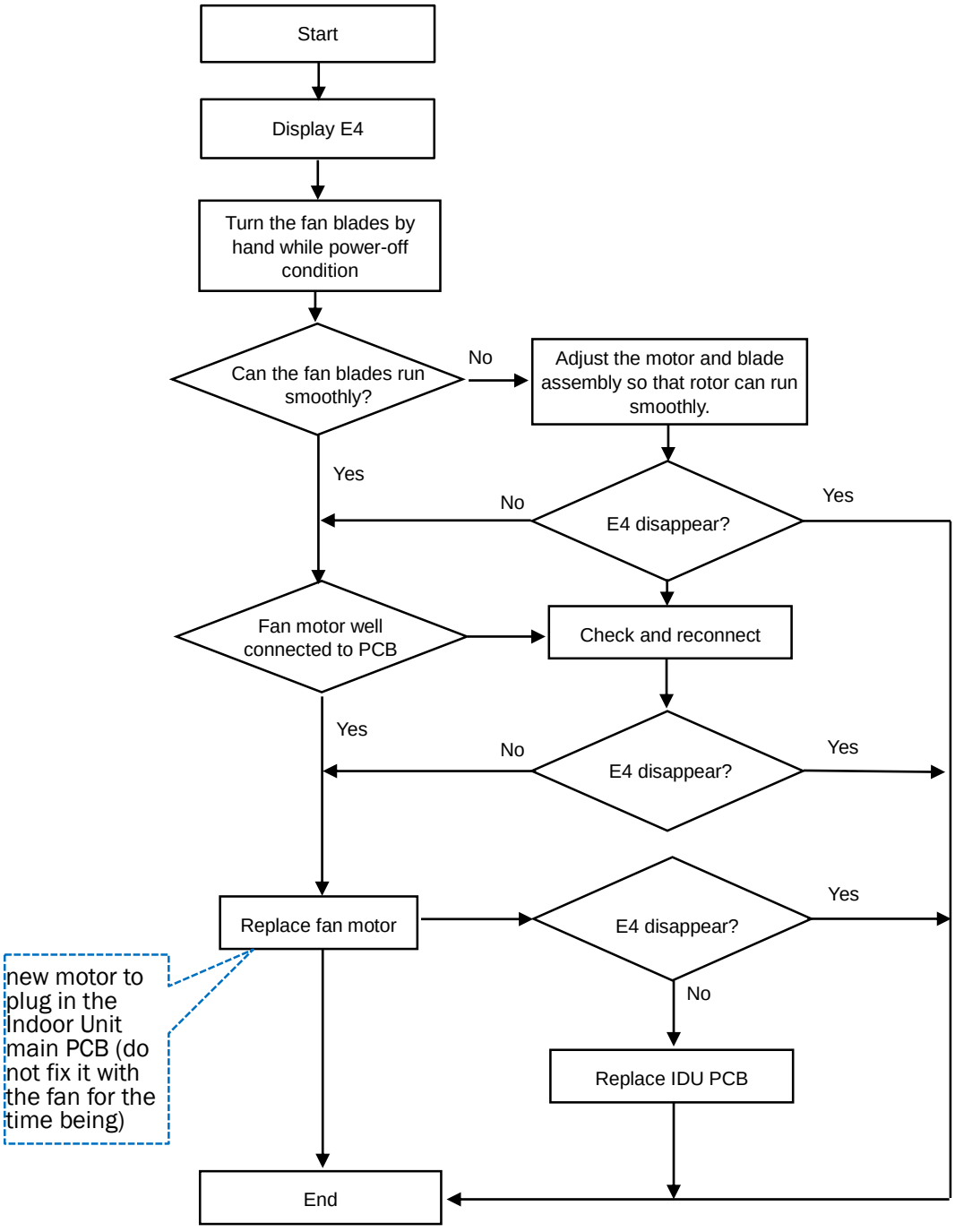
（3）E2 -Outdoor Unit coil sensor error

The detection of short circuit or open circuit of Outdoor Unit coil sensor during the inspection of Outdoor Unit main PCB.

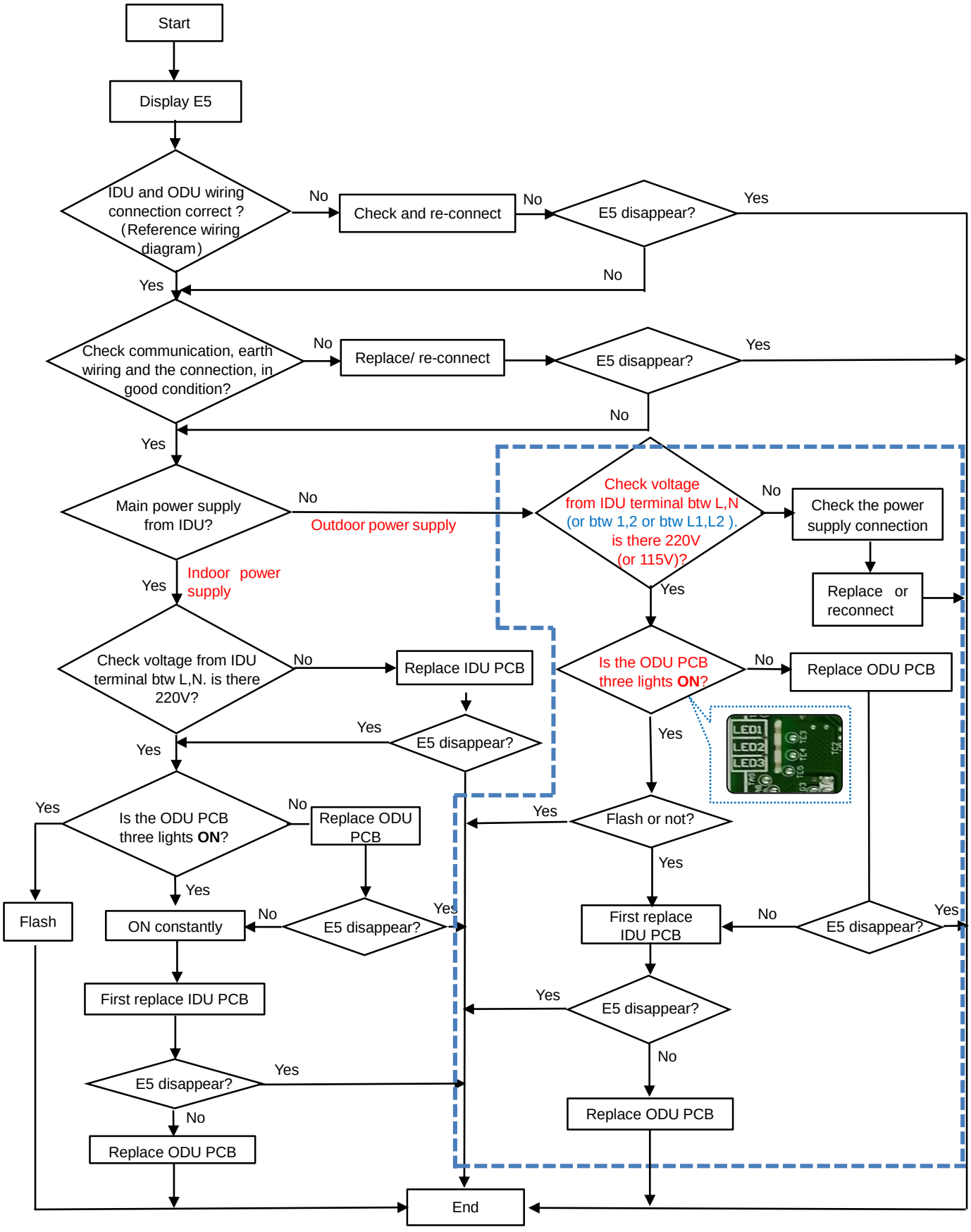


（4）E4 -Indoor Unit motor error of wall mounted air conditioner（PG motor/DC motor）

When the feedback signal of speed is not received by the Indoor Unit main PCB, it has no way to recognize the rotating speed of motor.

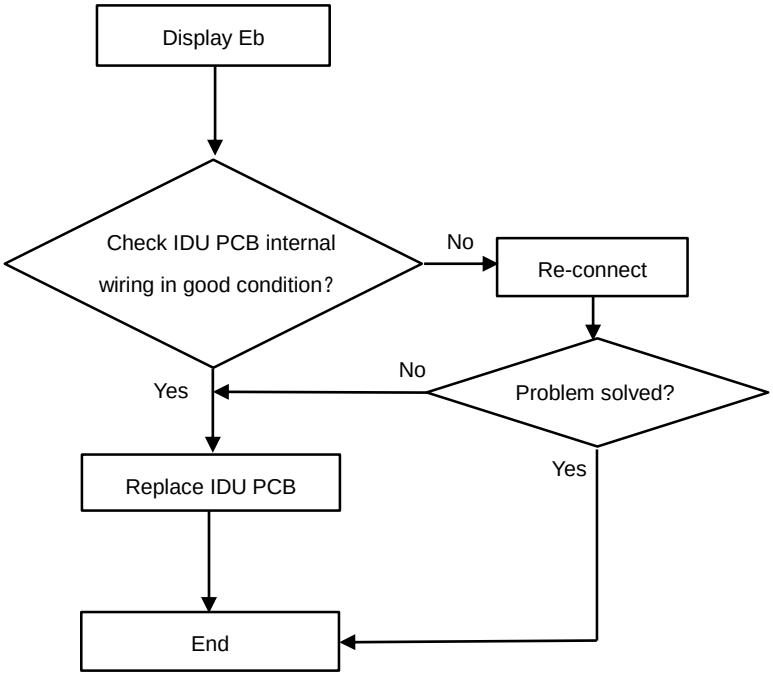


(5) E5(5E) -Indoor Unit and Outdoor Unit communication error



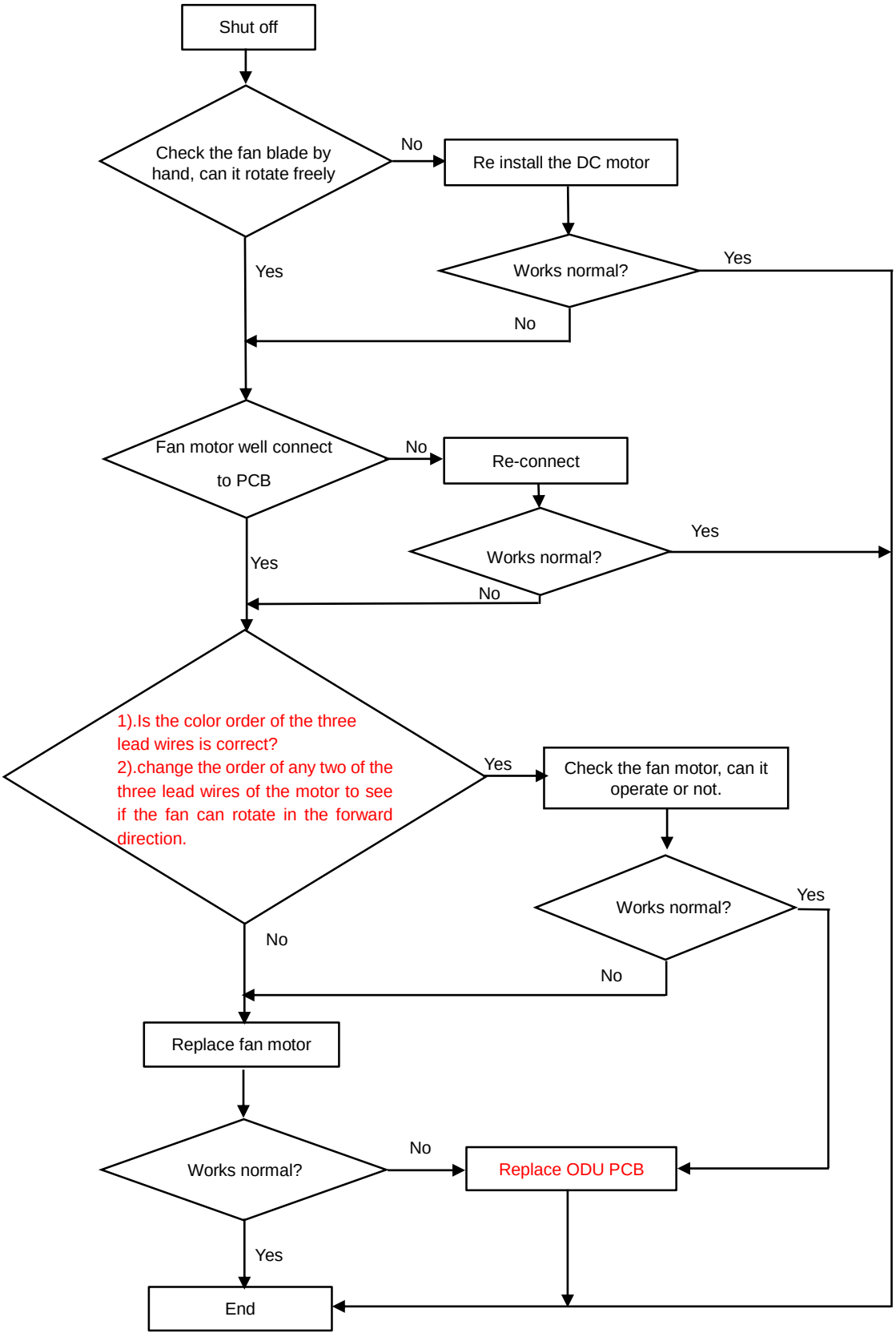
(6) Eb –Indoor EE Failure

which The motor on the Indoor Unit main PCB can only work after reading the data stored in EE and if not read, the failure code "indoor EE Failure" will be indicated and raised in the indoor unit.



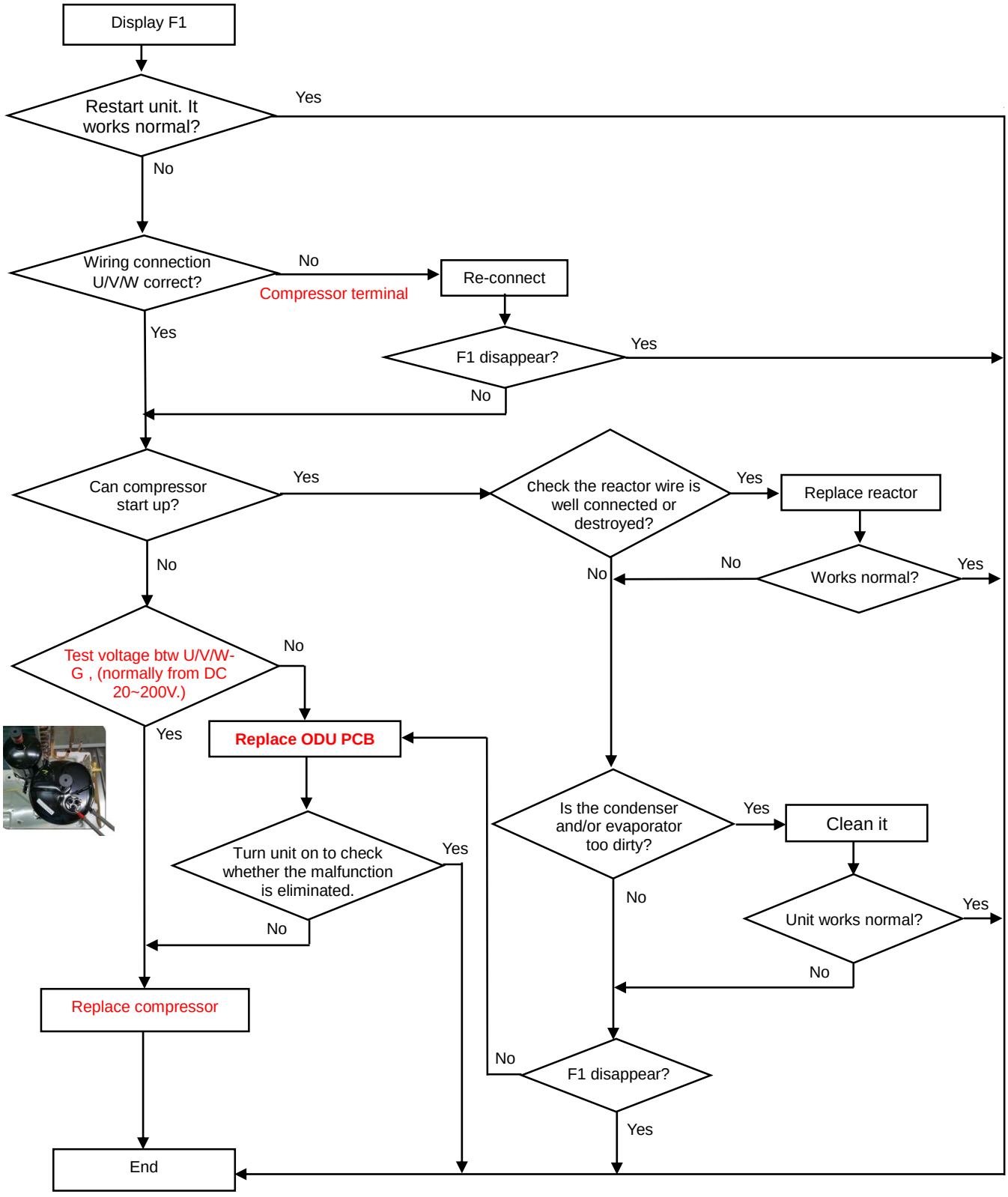
(7) F0- Outdoor Unit DC motor error (3-core terminal motor)

The main PCB will indicate “Outdoor Unit DC motor error” when it detects imbalanced current on the three lead wires of the driving motor.



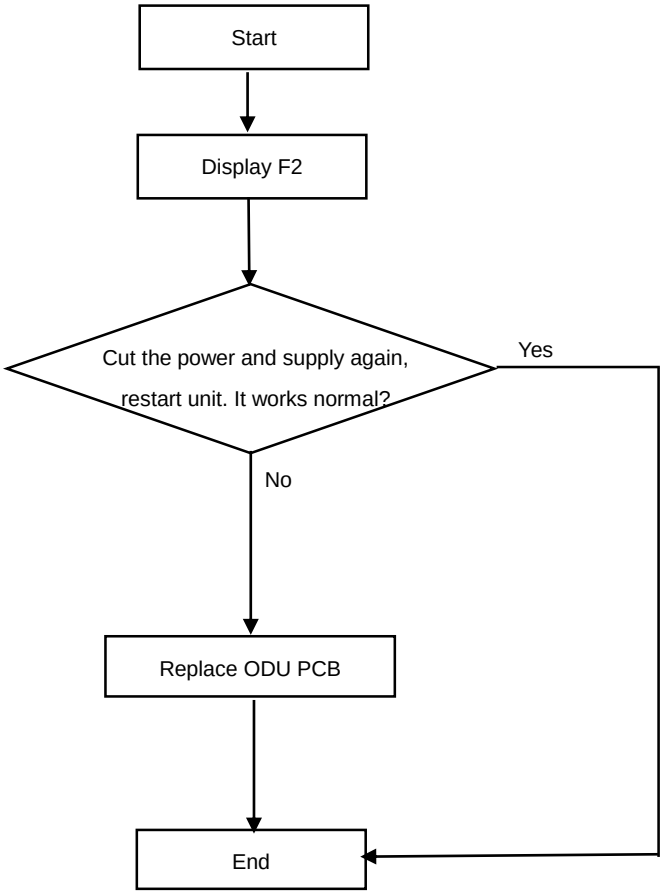
(8) F1 -Module protection error

The power module is the part to directly drive the compressor to work. It can protect the machine in time when overcurrent, overvoltage or overheat occurs and stops the compressor from working.



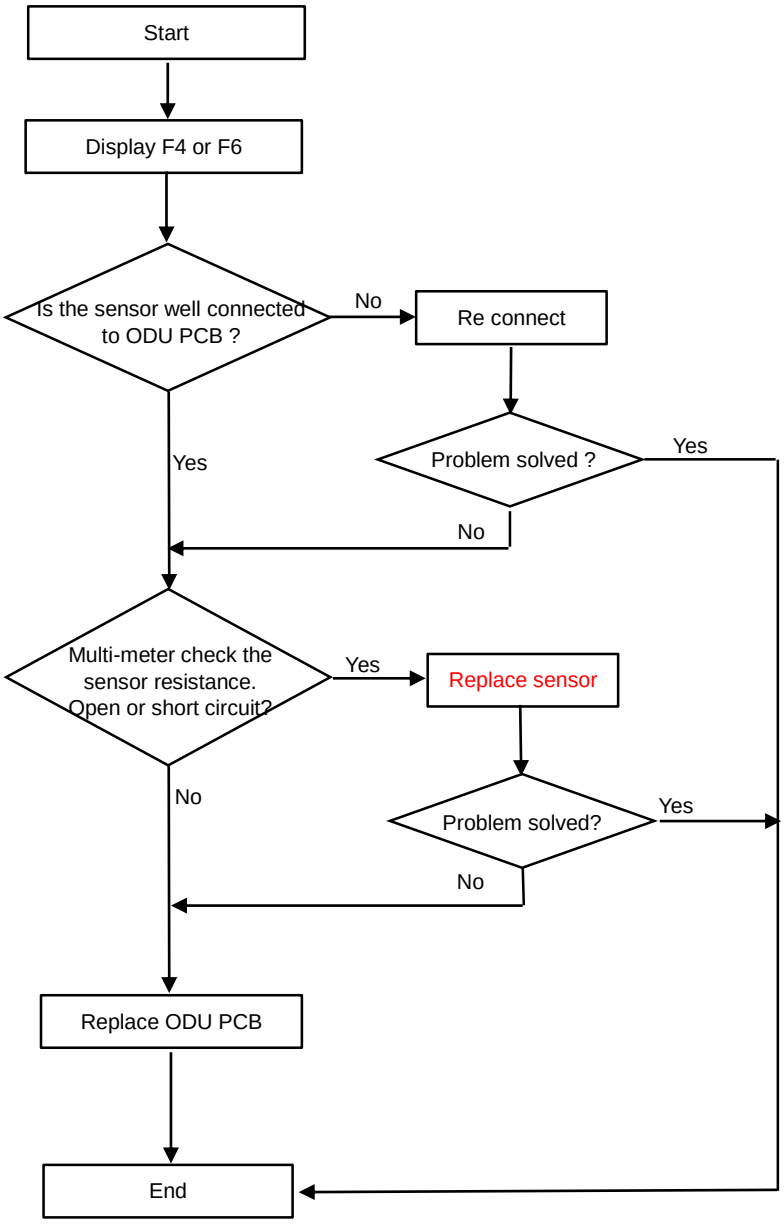
(9) F2- PFC protection error

PFC board is a component of the inverter air conditioner for power factor correction and voltage boosting. When the PFC board cannot perform power calibration as normal because of overcurrent and overvoltage, it will indicate “PFC protection error” and its function may also be integrated with the module panel or main PCB.



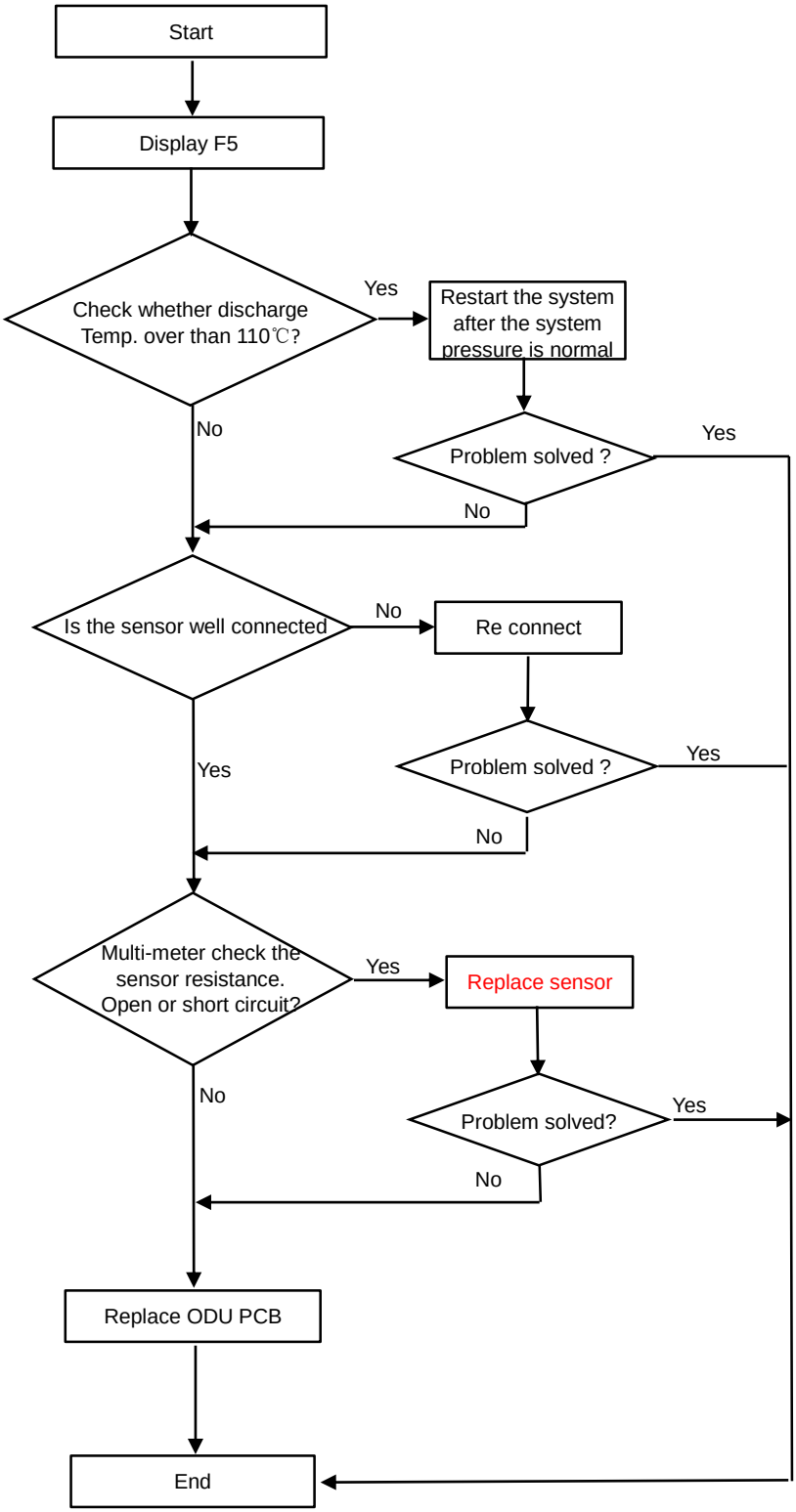
(10) F4- Discharge sensor error
F6- Outdoor Unit temperature sensor error

The detection of short circuit or open circuit of Outdoor Unit termperature sensor or “discharge sensor error”during the inspection of Outdoor Unit main PCB.



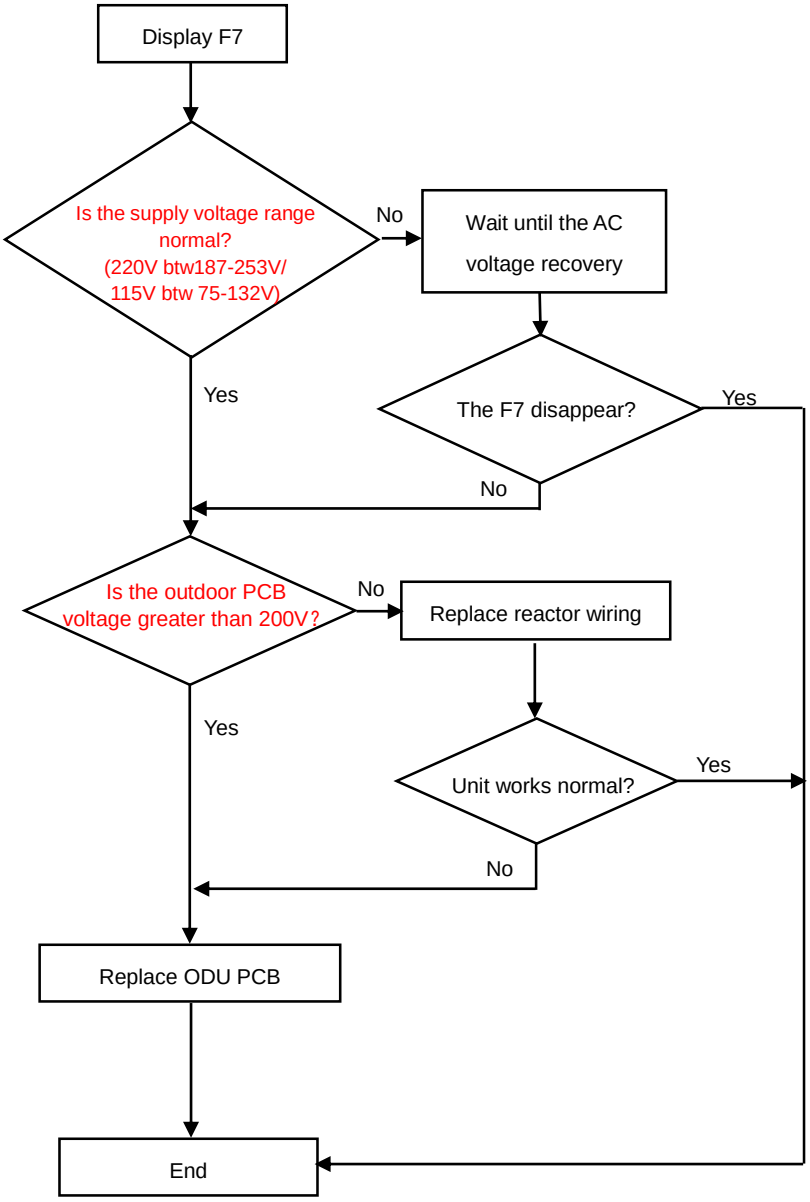
(11) F5 -Compressor top head sensor error

The compressor top head sensor is a compressor top head temperature protection switch most of the time. It keeps closed (short circuit) when the compressor temperature is normal and switches off (open circuit) when the temperature is too high.



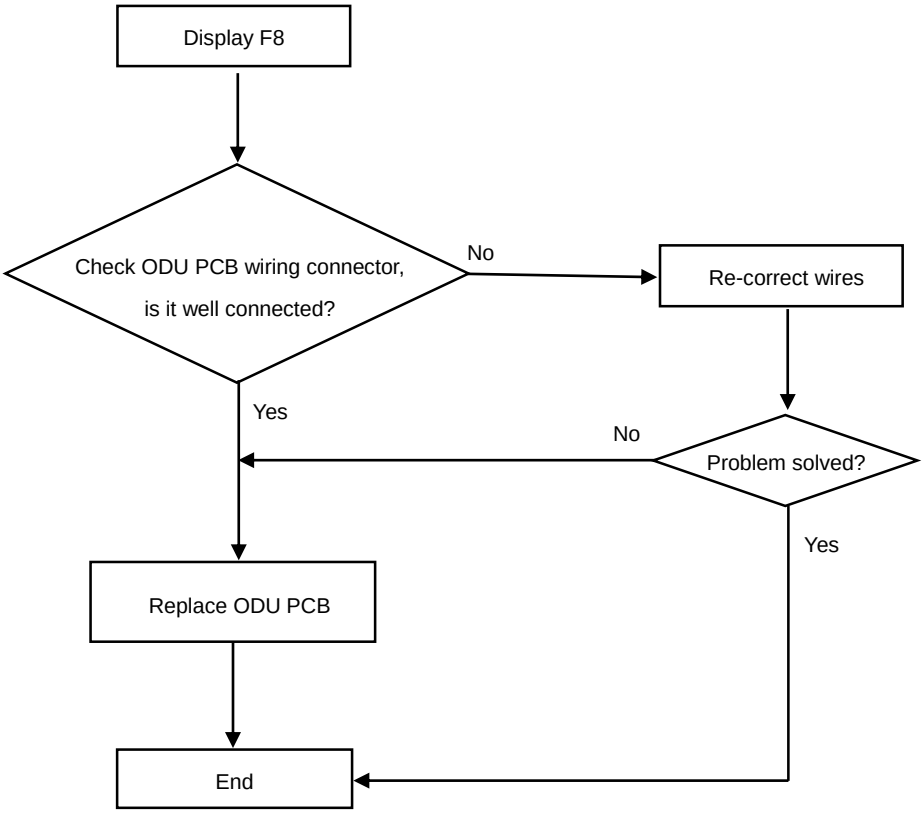
（12）F7-OVP or UVP error

When the supply voltage is lower than 135V or higher than 275V, the inspectio circuit would detect over or under voltage protection signal and send it to the Outdoor Unit main PCB and the Outdoor Unit main PCB would raise the alarm "OVP or UVP error" and indicate it through the Indoor Unit motor.



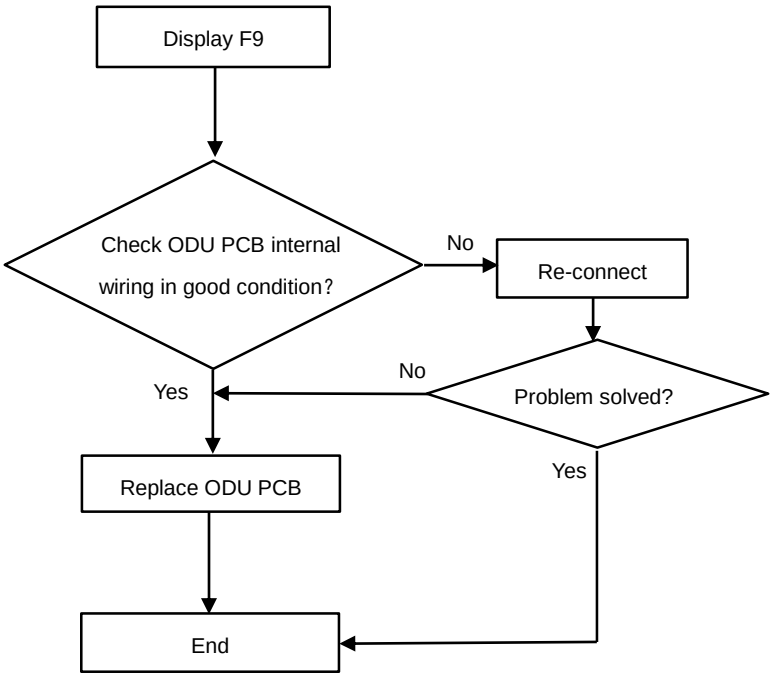
13）F8-Outdoor Unit main PCB and module panel communication error （exclusive of Outdoor Unit machine of single panel）

When the machine is running normally, the module panel and the Outdoor Unit main PCB would coordinate with each other on the communication to work and when the communication is off, the Outdoor Unit main PCB would raise the alarm of "main PCB and module panel communication error".



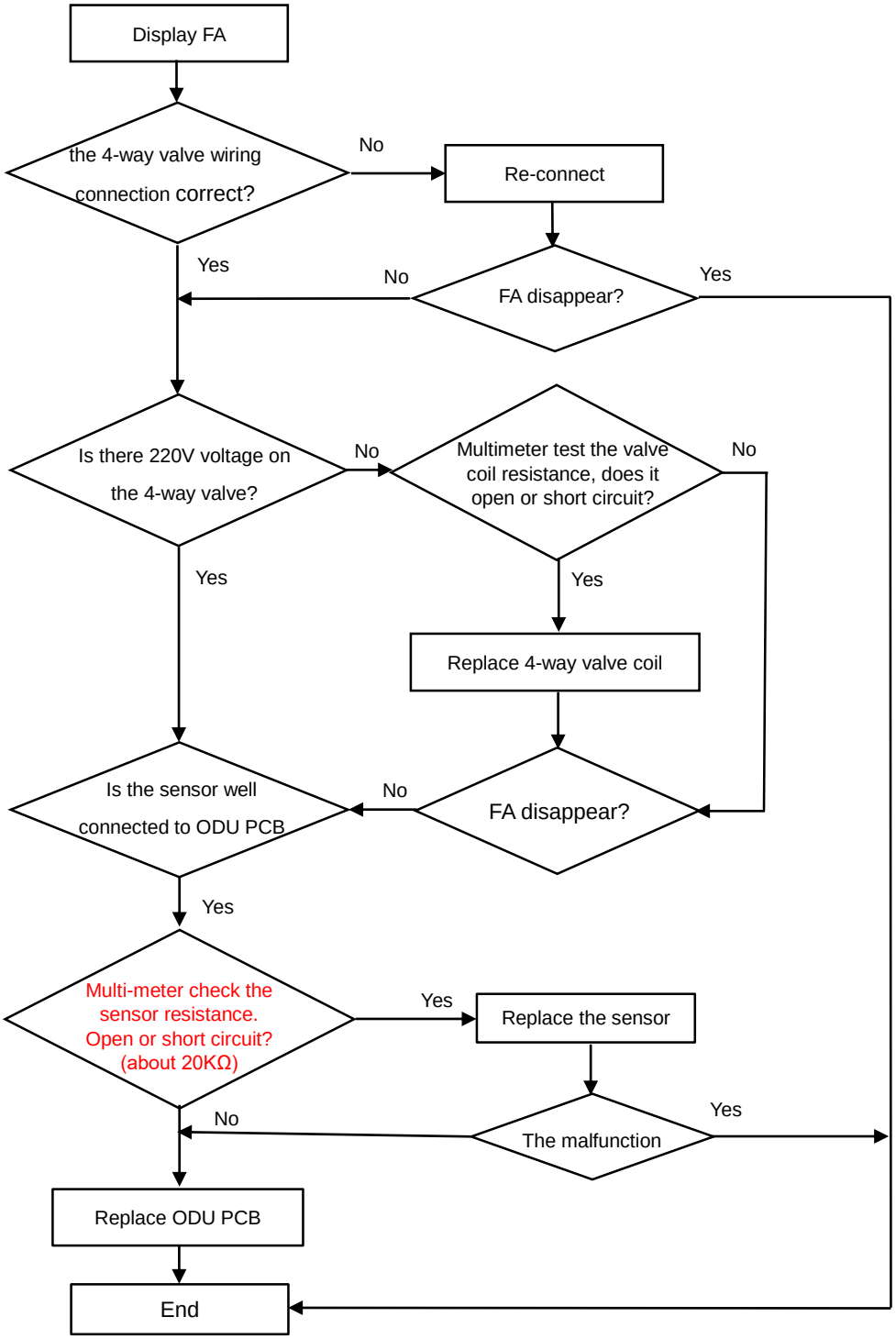
（14）F9- outdoor EE error

The motor on the Outdoor Unit main PCB can only work after reading the data stored in EE and if not read, the alarm "outdoor EE error" would be reported and raised in the Indoor Unit machine.



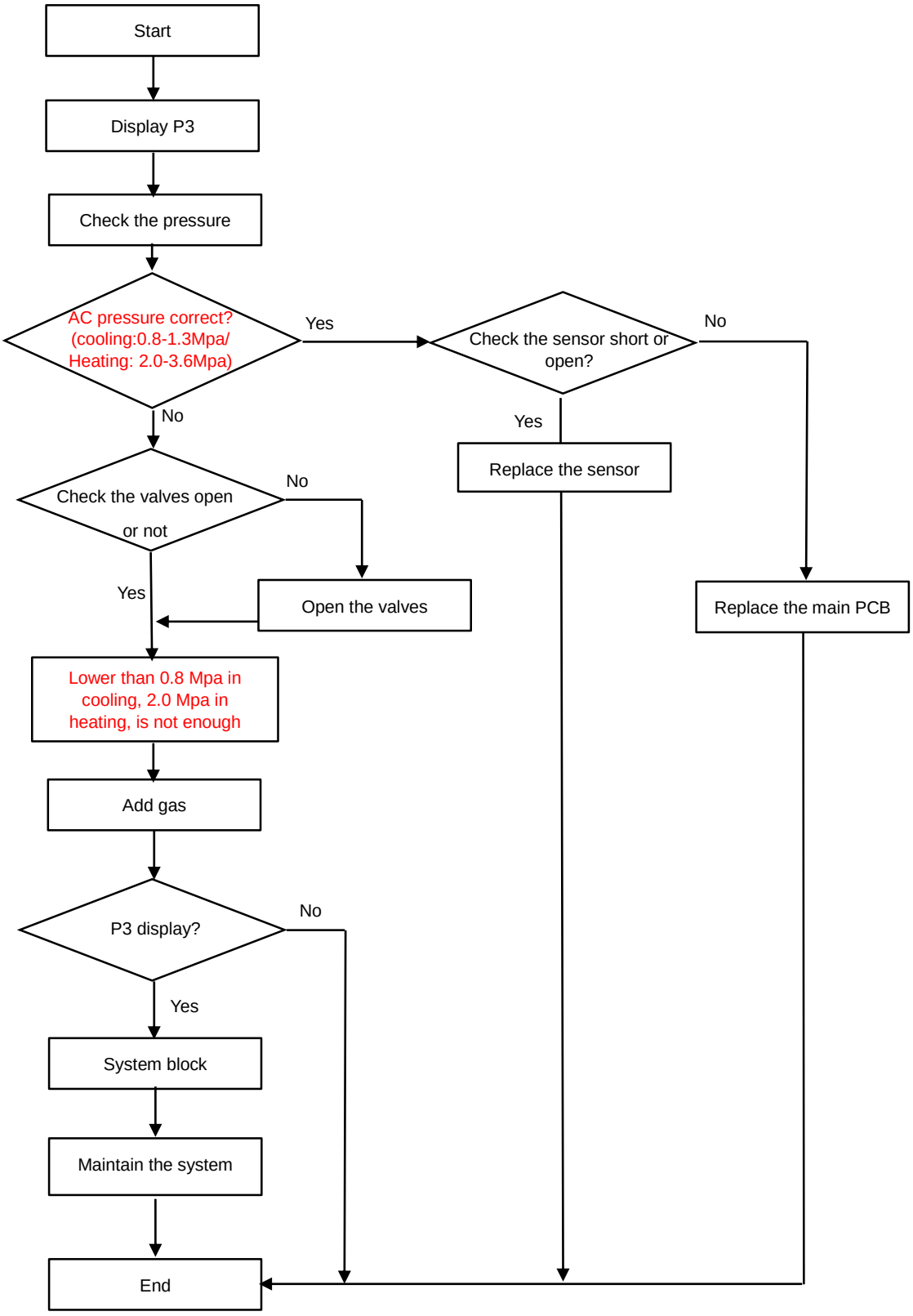
（15）FA- recirculated sensor error (only models of electronic expansion valves are involved)

The recirculated sensors are only used on machine models of electronic expanssion valves and the back temperature value is considered as the basis for adjustment of the electronic expanssion valve and determination if the four-way valve changes the position normally during heating.When the main PCB detects open circuit or short circuit of the recirculated sensor, it would raise an alarm of "recirculated sensor error" .



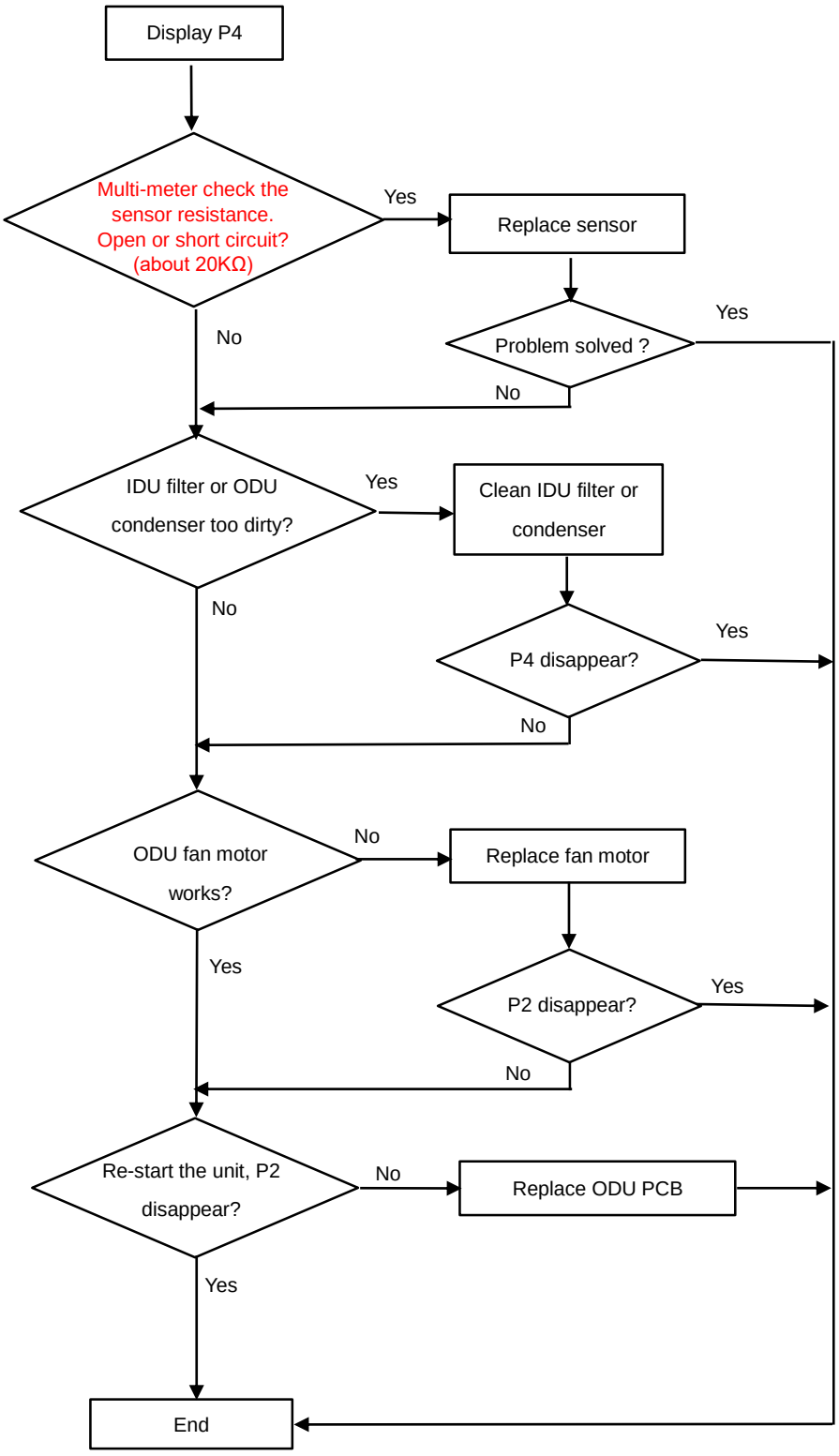
(16) P3 –Liquid Leakage Protection

The liquid volume of the system is less than 30%, which leads to non-refrigeration and liquid shortage protection.

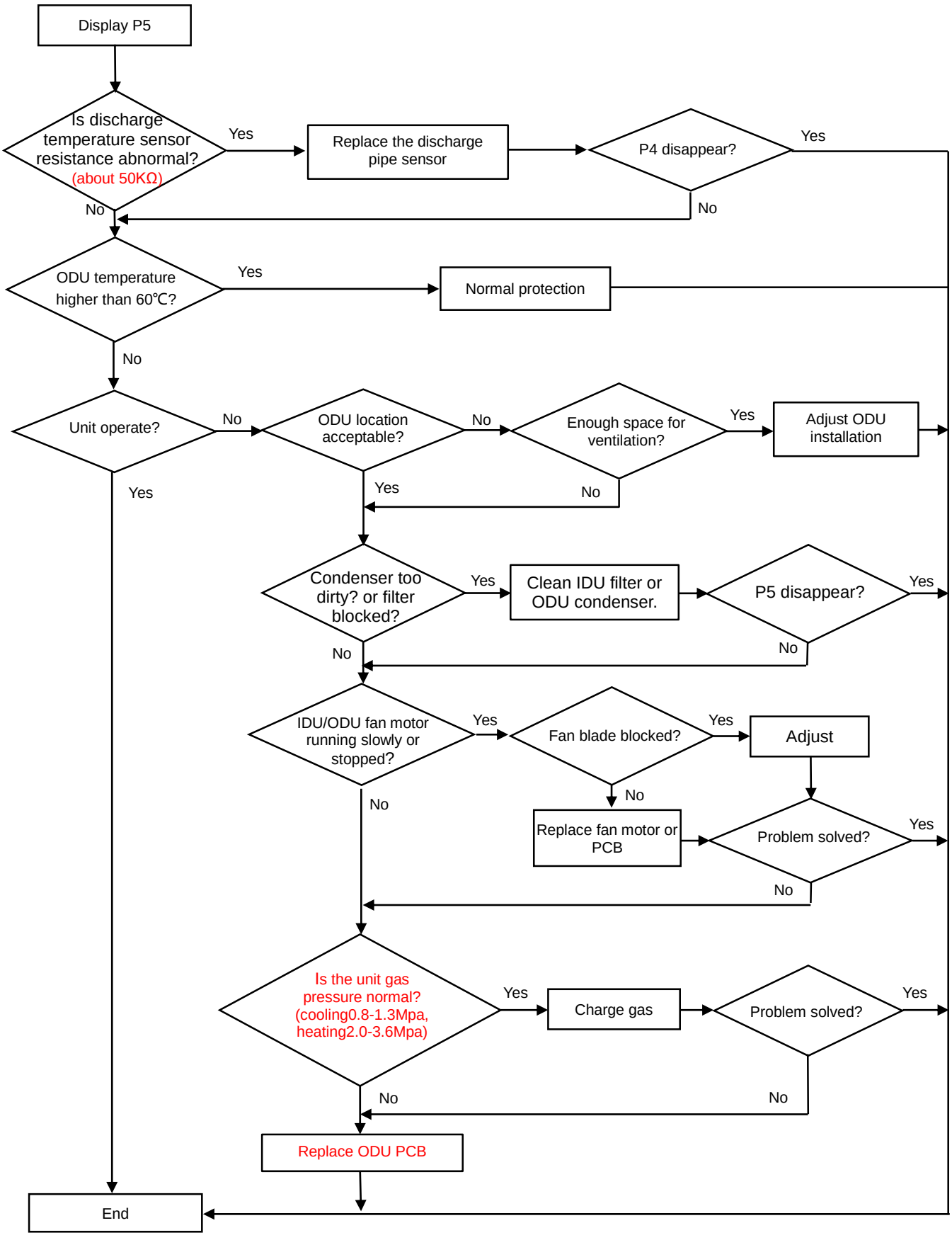


(17) P4 –Refrigeration Overload Protection

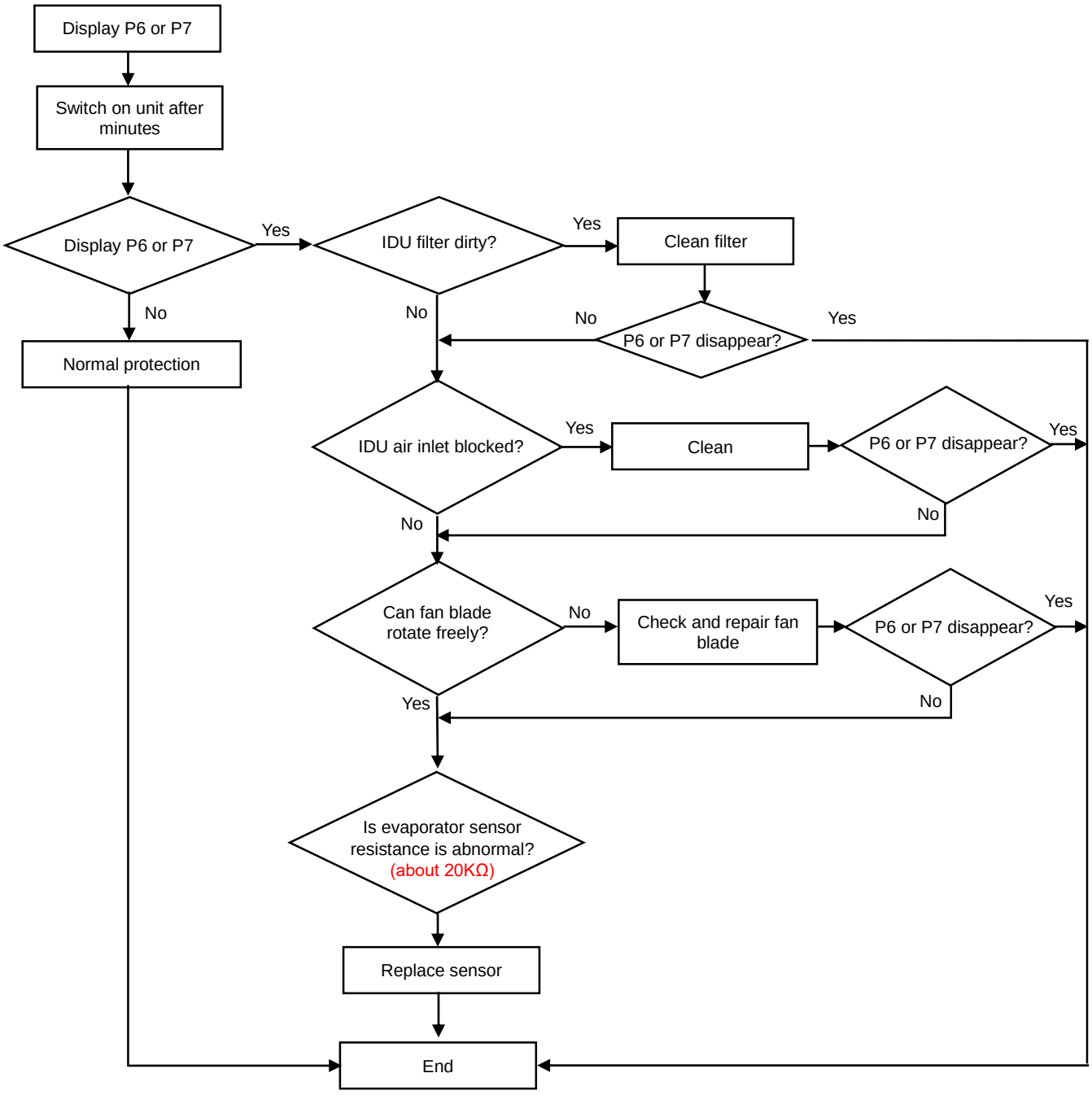
Outdoor coil sensor senses excessive temperature, prevents compressor from overloading, and reduces frequency.



(18) P5–Discharge Protection

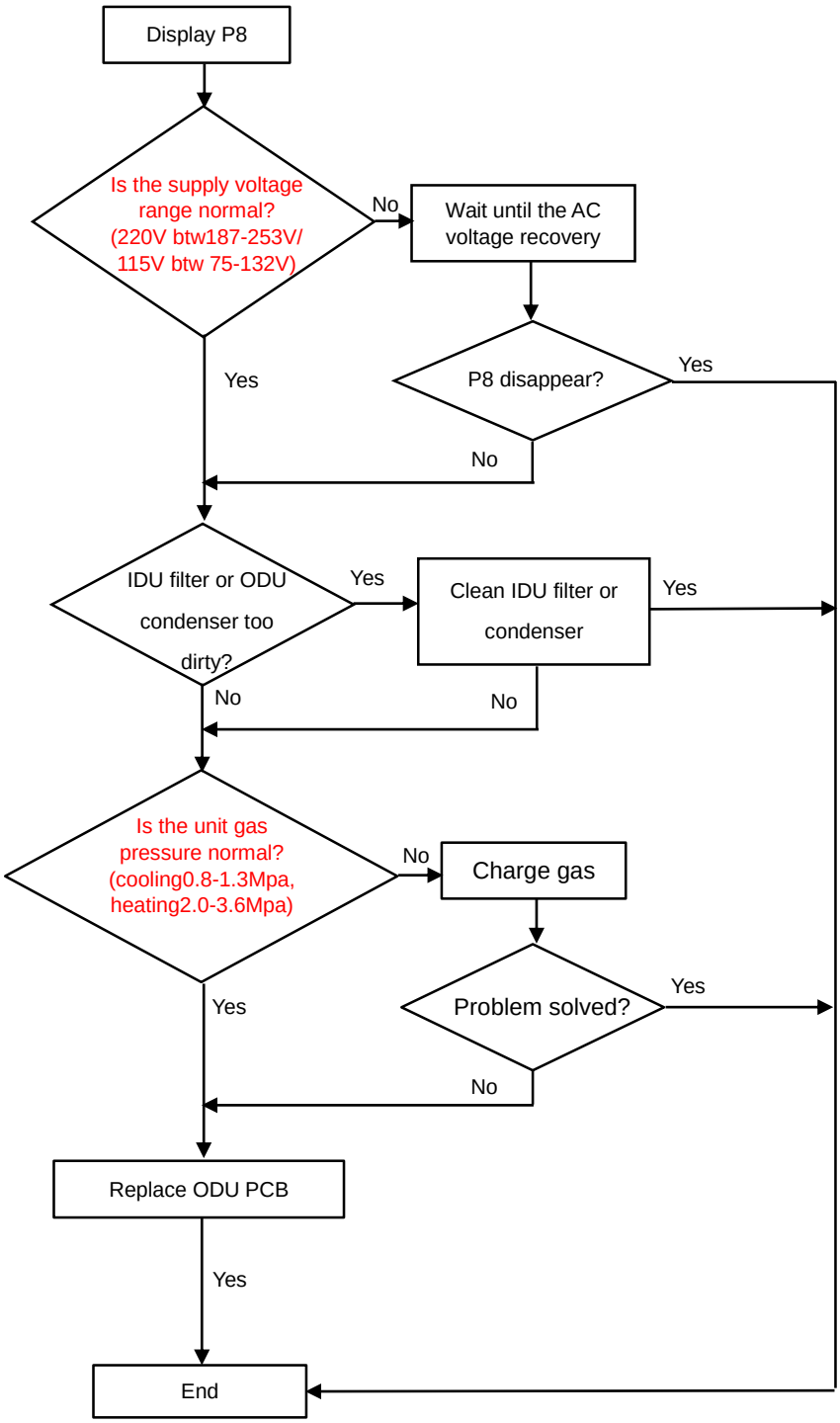


(19) P6–Indoor High Temperature Protection
P7–Anti-freezing Protection in Refrigeration Room



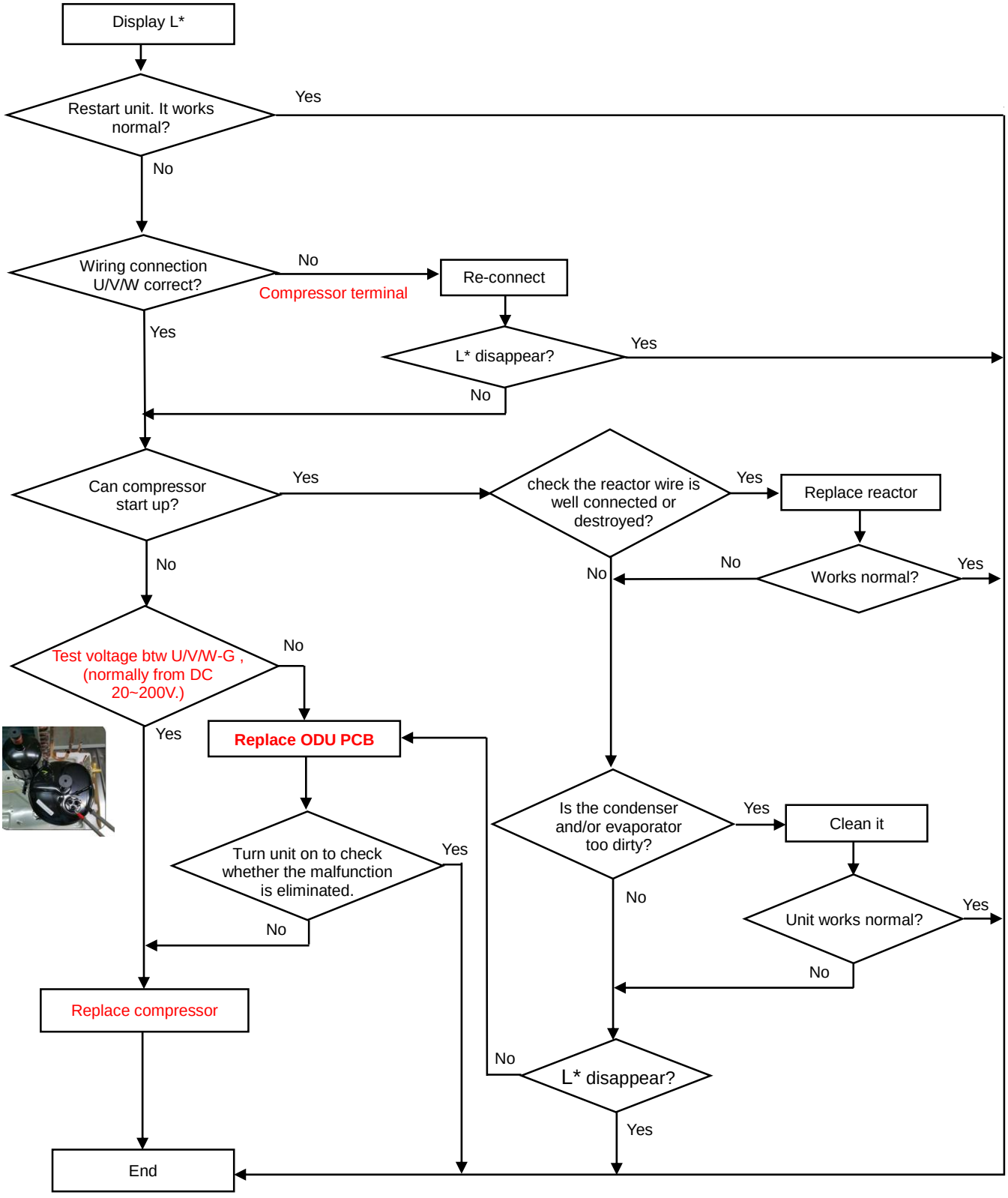
(20) P8–Overcurrent Protection

Controller detects AC bus current exceeding the set protection value, then limits and reduces the frequency.



Class L Troubleshooting guide:

Code	Reason	Remark
L0	DC Over/Under-voltage Failure	1. ODU PCB broken? 2.pls check as the guidence of Error cod“L*”.
L1	Overcurrent Protection on Phase Current of Compressor	1. ODU PCB broken? 2.pls check as the guidence of Error cod“L*”
L2	Out-of Step Failure of Compressor	1. ODU PCB broken? 2.pls check as the guidence of Error cod“L*”
L3	Phase Failure of Compressor	1. ODU PCB broken? 2.Checking Compressor wire
L4	Driver Module IPM Failure of Compressor	1. ODU PCB broken? 2.pls check as the guidence of Error cod“L*”.
L5	PFC Overcurrent Hardware Protection	1. ODU PCB broken? 2.pls check as the guidence of Error cod“L*”
L6	PFC Overcurrent Software Protection	1. ODU PCB broken? 2.pls check as the guidence of Error cod“L*”
L7	AD Abnormal Protection in Current Detection	1. ODU PCB broken? 2.pls check as the guidence of Error cod“L*”
L8	Shunt Resistance Imbalance Failure	1. ODU PCB broken? 2.pls check as the guidence of Error cod“L*”
L9	IPM Temperature Sensor Failure	1. ODU PCB broken? 2.speed of ODU fan is abnormal? 3.pls check as the guidence of Error cod“L*”.
LA	Compressor Startup Failure	1. ODU PCB broken? 2.pls check as the guidence of Error cod“L*”.
LC	AD Abnormal Protection in PFC Current Detection	1. ODU PCB broken? 2.pls check as the guidence of Error cod“L*”
Ld	Dc fan motor detection AD abnormal protection	1. ODU PCB broken? 2.pls check as the guidence of Error cod“L*”
LE	DC fan motor phase error	1. ODU PCB broken? 2.pls check as the guidence of Error cod“L*”
LF	DC fan motor lost step protection	1. ODU PCB broken? 2.pls check as the guidence of Error cod“L*”
LH	DC fan motor IPM protection	1. ODU PCB broken? 2.pls check as the guidence of Error cod“L*”


Display L*
Restart unit. It works normal?
Yes
No
Wiring connection U/V/W correct?
No
Compressor terminal
Re-connect
Yes
L* disappear?
Yes
No
Can compressor start up?
Yes
check the reactor wire is well connected or destroyed?
Yes
Replace reactor
No
No
Works normal?
Yes
Test voltage btw U/V/W-G , (normally from DC 20~200V.)
No
Yes
Replace ODU PCB
Turn unit on to check whether the malfunction is eliminated.
Yes
No
Is the condenser and/or evaporator too dirty?
Yes
Clean it
No
Unit works normal?
Yes
No
Replace compressor
No
L* disappear?
Yes
End

Note: If these tips appear when the air conditioner is used, it does not mean that the air conditioner is faulty, but only a reminder of the function operation.

Code	Code correspondence mode	Mode cancellation
H1 or H2 or H3 or H4 or H5	Special locking mode	This mode can be released by pressing the remote control button, (as described below).
CL	The constant light of 'CL' indicates that the air conditioner is in self-cleaning mode	1. After self-cleaning is completed, the air conditioner will automatically turn off. 2. This mode can also be interrupted by turning on and off the air conditioner through the remote control. 3. After pressing the 【ICLEIN】 button on the remote control, the code disappears.
CL	The flashing 'CL' indicates a reminder for air conditioning cleaning	1. After flashing for 5 seconds, the air conditioner can work normally. 2. There will be a total of 5 reminders, and turning off and turning on the air conditioner 5 times can restore normal operation. 3. Pressing the up and down arrow keys on the remote control 6 times can restore the air conditioner to normal.
C1	Special mode	Exclusive mode for devices in the Middle East region, the exclusive remote control can exit this mode by pressing a button.
C2	Special mode	Exclusive mode for devices in the Middle East region, the exclusive remote control can exit this mode by pressing a button.
C3	Special mode	Exclusive mode for devices in the Middle East region, the exclusive remote control can exit this mode by pressing a button.
LL	Test mode	Restarting the air conditioner (turning it off and then on) can restore normal operation.
CC	Query mode	Restarting the air conditioner (turning it off and then on) can restore normal operation.
Set temperature cycle flashing	Defrost mode	1. After the defrosting process is completed, normal operation can be restored. 2. Restarting the air conditioner (turning it off and then on) can restore normal operation.
Digital faults (such as 88/77, etc.)	1.Accidentally entering special mode 2. Component damage	Please refer to the following description for specific troubleshooting.

9-2 Display error code of outdoor unit's indicator lights

Display by the 3 LED indicator lights on the PCB of the outdoor unit:
○ for off; ● for on; ★ for flashing.

No.	LED1	LED2	LED3	Error Name	Probable Trouble Location
1	○	○	○	Normal (outdoor unit standby)	Normal, all three lights off for standby status.
2	★	★	★	Normal (compressor running)	Normal, all three lights flash while compressor running.
3	●	●	●	Forced service (test mode)	Normal
4	★	★	●	Module protection error	Power voltage, compressor cable, reactor, module panel, Outdoor Unit main PCB, compressor.
5	★	★	○	PFC protection error	Power voltage, reactor, module panel, Outdoor Unit main PCB.
6	★	●	★	Compressor out-of-step error	Power voltage, compressor cable, module panel, Outdoor Unit main PCB, compressor.
7	★	○	★	Discharge air sensor error	System pressure, discharge air sensor, Outdoor Unit main PCB.
8	●	★	★	Outdoor Unit coil sensor error	Outdoor Unit coil sensor, Outdoor Unit main PCB.
9	○	★	★	Outdoor Unit room temperature sensor error	Outdoor Unit room temperature sensor, Outdoor Unit main PCB.
10	★	●	●	Indoor and outdoor unit communication error	Connection wire, Indoor Unit main PCB, Outdoor Unit main PCB, EE reverse connection, module panel.
11	★	●	○	Outdoor Unit main PCB and module panel communication error	Connection wire of module and main control data, module panel, Outdoor Unit main PCB
12	★	○	●	Outdoor EE error	Outdoor Unit main PCB
13	★	○	○	Outdoor DC motor error	Mechanical jam of Outdoor Unit motor, Outdoor Unit DC motor, Outdoor Unit main PCB.
14	●	★	●	Indoor Unit room temperature	Indoor Unit room temperature sensor, Indoor Unit main PCB.

				sensor error	
15	●	★	○	Indoor Unit coil sensor error	Indoor Unit coil sensor, Indoor Unit main PCB.
16	○	★	●	Indoor motor error	Mechanical jam of motor, Indoor Unit motor, Indoor Unit main PCB.
17	○	★	○	Refer to tooling display for other errors	Entire set of Outdoor Unit controller.
18	●	●	★	Compressor cap sensor error	System pressure, compressor cap sensor (protection switch), Outdoor Unit main PCB.
19	●	○	★	Recirculated sensor error	Recirculated sensor, four-way valve switch error, Outdoor Unit main PCB.
20	○	●	★	※ Compressor overpower protection	Power voltage, module panel, Outdoor Unit main PCB.
21	○	○	★	※ Over current protection	Power voltage, system pressure, module panel, Outdoor Unit main PCB.
22	●	●	○	Discharge sensor error	System pressure, discharge sensor, Outdoor Unit main PCB.
23	●	○	●	※ Cooling overload protection	Condenser, Outdoor Unit motor, capillary, Outdoor Unit coil sensor, Outdoor Unit main PCB.
24	○	●	●	※ Indoor high temperature heating protection	Evaporator, Indoor Unit motor, thin unit connection pipe, Indoor Unit coil sensor, Indoor Unit main PCB.
25	●	○	○	※ Indoor cooling freezing protection	Evaporator, Indoor Unit motor, capillary, Indoor Unit coil sensor, Indoor Unit main PCB.
26	○	●	○	Compressor shell temperature protection	Same as "18 Compressor cap sensor error".
27	○	○	●	※ OVP or UPV error	Power voltage, reactor, module panel, Outdoor Unit main PCB.