

## Mini VRF SYSTEM



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TRUST AIR CONDITIONING EQUIPMENT CO.  
Prepared By: Engineering & R & D Department.

# Troubleshooting

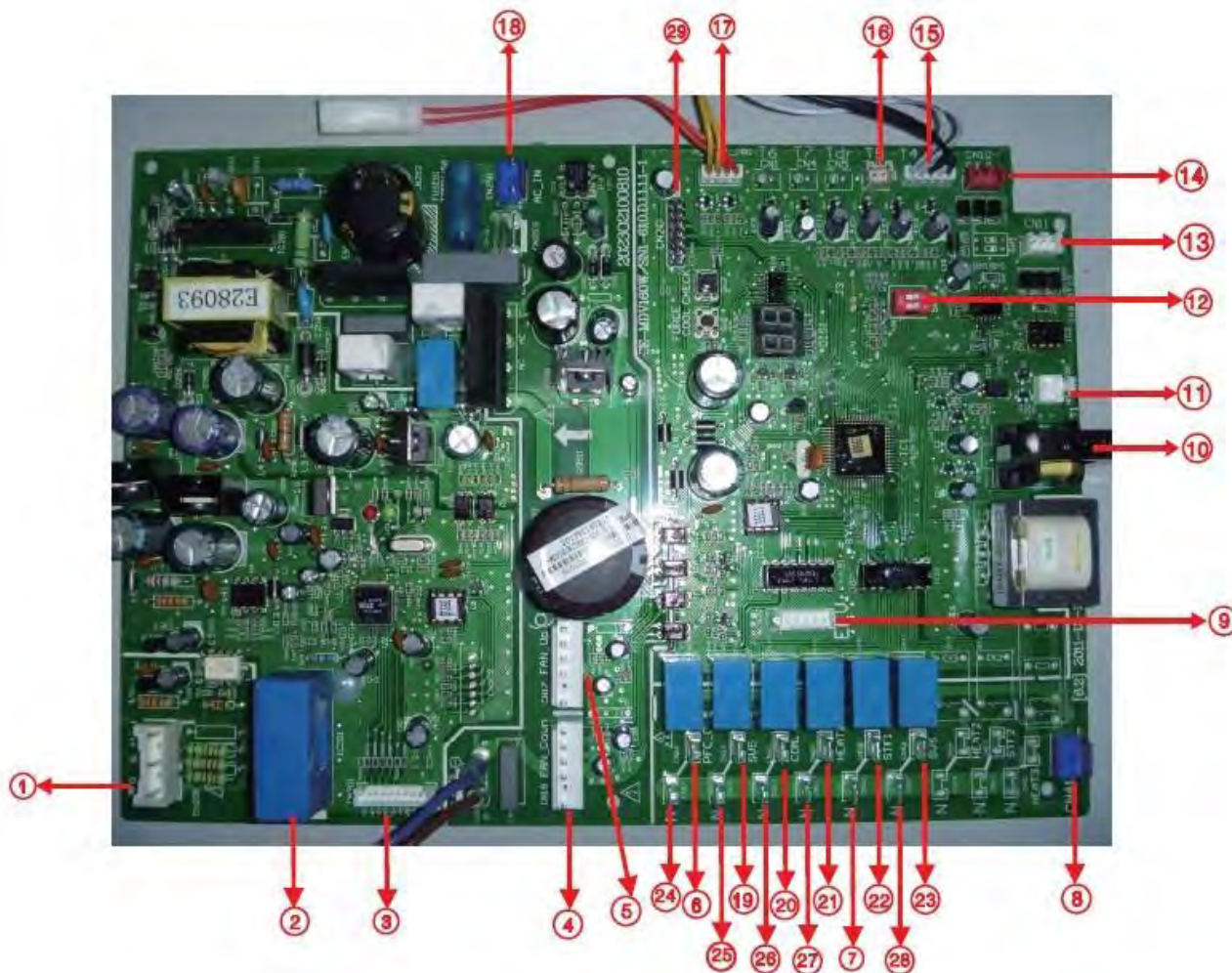
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توجه:

شرکت تراست حق تغییر مشخصات دستگاه ها را در جهت بهبود و ارتقای کیفیت برای خود محفوظ می دارد.

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# 1. PCB ports instructions

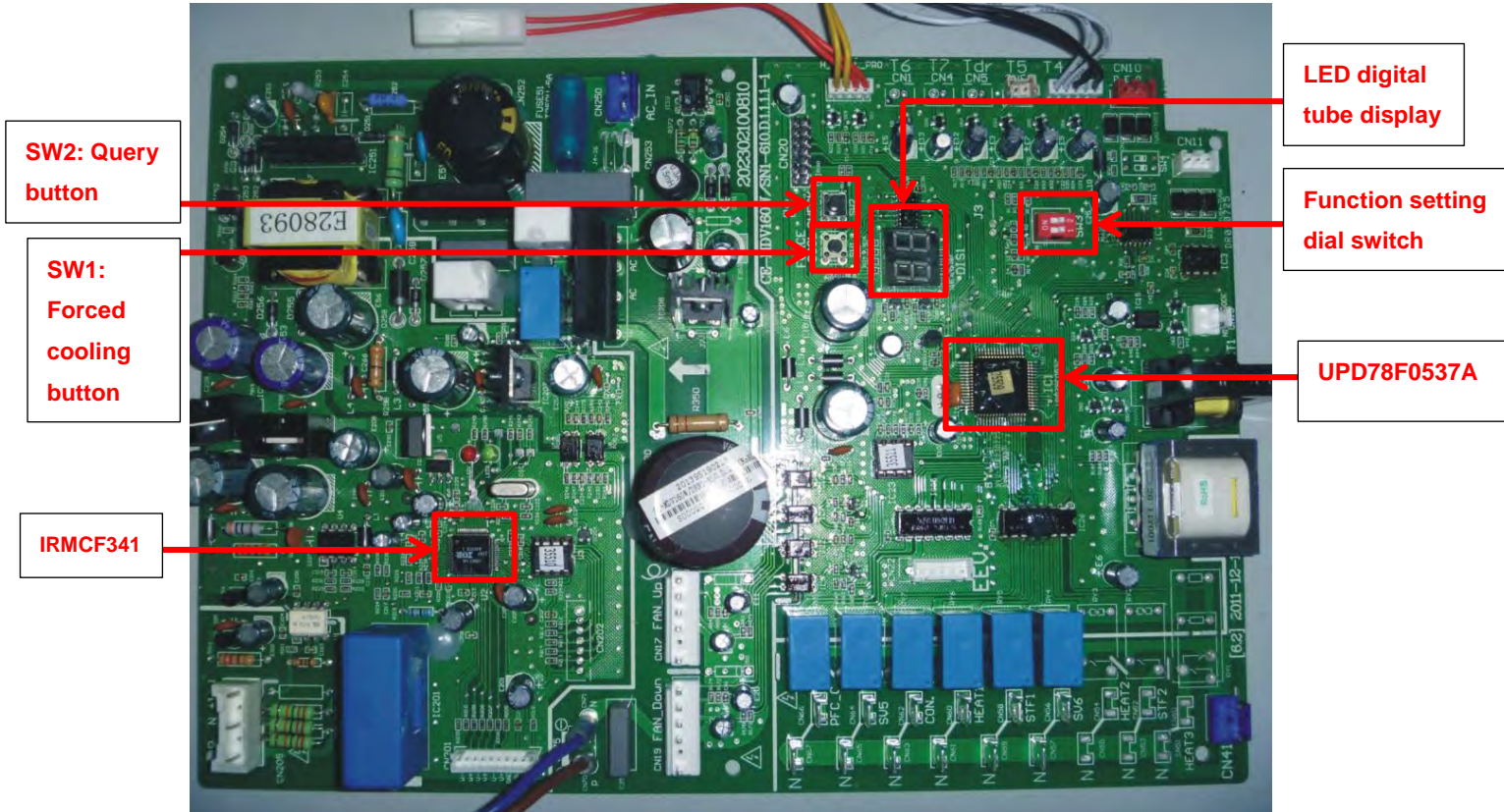


PCB ports instruction

No.	Content	Port voltage
1	Inspection port for inverter module voltage	DC 540V,DC 15V
2	Mutual inductor for compressor DC current	In dynamic change
3CN201	Activation port of inverter module	The left the first pin:DC
4CN19	Port of DC fan 1	The left the first pin:DC
5CN17	Port of DC fan 2	The left the first pin:DC
6CN66	Reserved	---
7CN59	Loading output terminal(4-way valve control)	AC 220V
8CN41	Power supply for relay	AC 220V
9CN22	EXV activation port	The left the first pin:DC
10	Input current of the mutual inductor at the inverter compressor	In dynamic change
11CN15	Reserve	---
12	SW3 net address code automatically	---
13CN11	Internet group control of indoor units	DC 2.5-2.7V
14CN10	Communication between indoor and outdoor units	DC 2.5-2.7V
15CN9	Inspection port for outdoor ambient temp. and condenser coil temp.	DC 0-5V
16CN8	Air discharge temp. sensed port at the compressor	DC 0-5V
17CN6	Input port for system pressure inspection	DC 0-5V
18CN250	Input port for power supply of the main control board	AC 220V
19CN64	Loading output terminal(16-18kw:solenoid valve SV5 control; Reserved for 12-14kw)	AC 220V
20CN62	Loading output terminal (Delay control of DC power)	AC 220V
21CN60	Loading output terminal(crankcase heating control)	AC 220V
22CN58	Loading output terminal(4-way valve control)	AC 220V
23CN56	Loading output terminal(solenoid valve SV6 control)	AC 220V
24CN67	Reserved	----
25CN65	Loading output terminal(16-18kw:solenoid valve SV5 control; Reserved for 12-14kw)	AC 220V

26CN63	Loading output terminal (Delay control of DC power)	AC 220V
27CN61	Loading output terminal(crankcase heating control)	AC 220V
28CN57	Loading output terminal(solenoid valve SV6 control)	AC 220V
29CN20	Program terminal connected to the computer	---

## 2. PCB parts instructions



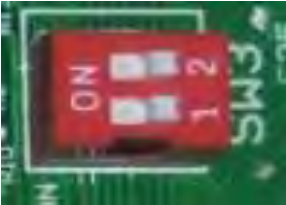
### 2.1 SW2 query instructions

No.	Content	Note
1	Normal display	----
2	Running mode	0-Standby;2-Cooling;3-Heating;4-Forced Cooling
3	Fan speed	0-OFF
4	Capacity requirement of indoor unit	----
5	Capacity requirement of revised outdoor unit	----
6	T3 pipe temperature	Actual value
7	T4 environment temperature	Actual value
8	T5 discharge temperature	If more than one hundred, only display hundred s' and tens digits.
9	Reserved	----
10	Opening degree of EXV	Actual value=Display value×8
11	Actual current value	Actual value
12	AD actual value of voltage	Actual value
13	T2 average temperature	Actual value
14	Quantity of indoor units	Actual value
15	Running quantity of indoor units	Actual value
16	<b>12~16kW</b> : the last fault or protection code (if there is no fault or protection code it will be display "nn") <b>18kW</b> : <b>18</b>	----
17	<b>12~16kW</b> : "-" displays <b>18kW</b> : Priority mode(Reserved)	Query for 12~16kW ends. "0" displays on 18kW..
18	<b>18kW</b> :Version of the program	Only for 18kW
19	<b>18kW</b> :The last fault or protection code (if there is no fault or protection code it will be display "nn")	Only for 18kW
20	<b>18kW</b> :Display "--"	Only for 18kW

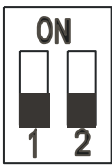
Remark:

- 1) Normal display: Display frequency of compressor when capacity needing.
- 2) Running mode: 0—Standby; 2—COOLING; 3—HEATING; 4—FORCED COOLING.
- 3) Fan speed: 0—OFF; 1~7—Speed increasing in turn.
- 4) SW1: Forced cooling button.  
SW2: Query button.

## 2.2 Function setting dial switches instructions



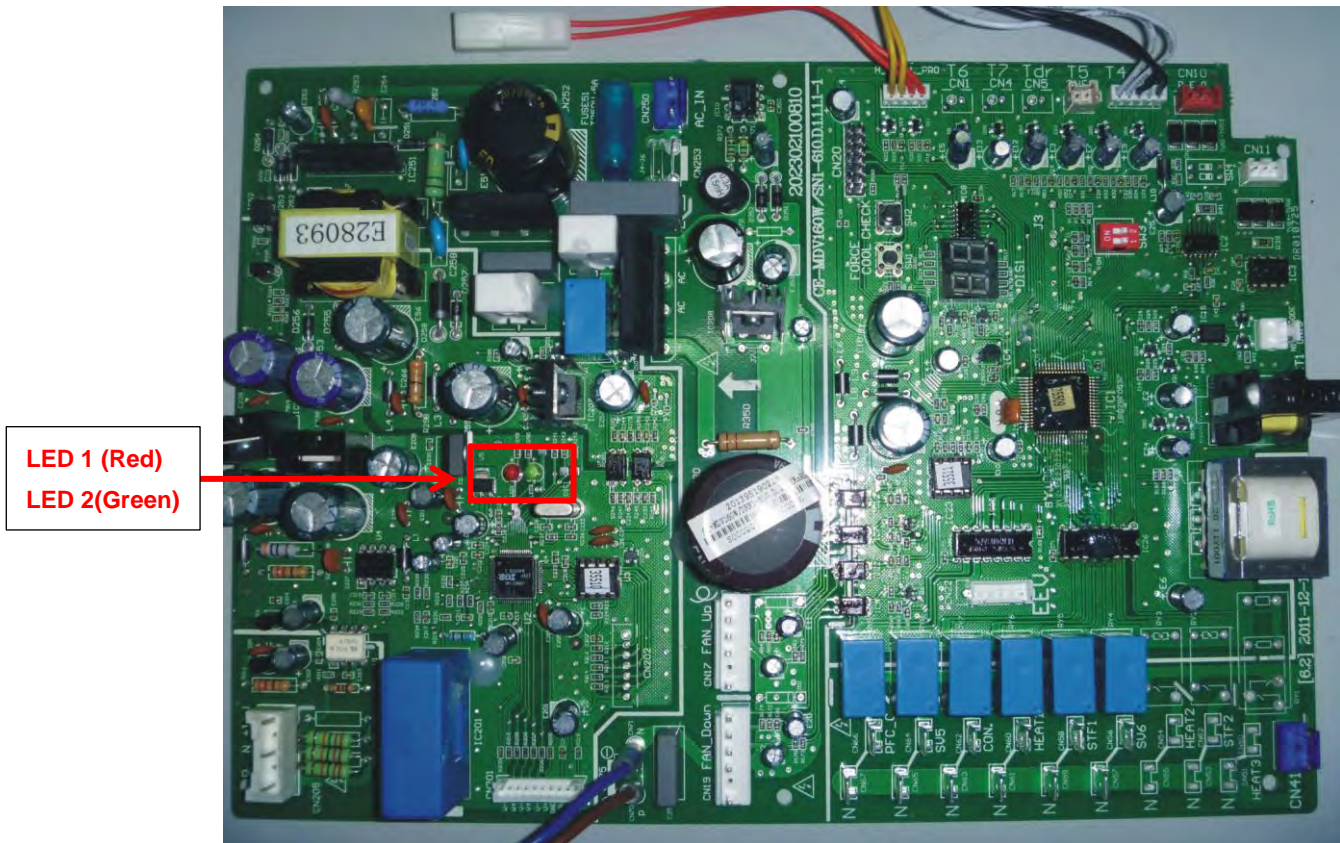
### SW3 definition: Auto Addressing Dial



**SW3**

SW3		
1	ON	Obtain network address automatically
	OFF	Obtain network address manually
2	ON	Revocation indoor unit network address
	OFF	/

## 2.3 LED on PCB instructions



LED 1 (Red)  
LED 2 (Green)

**LED1:** Malfunction indicator lamp of inverter module. The lamp will be off if the system running is normal. And it will be on if the inverter module is faulty and the error code will display on digital tube.

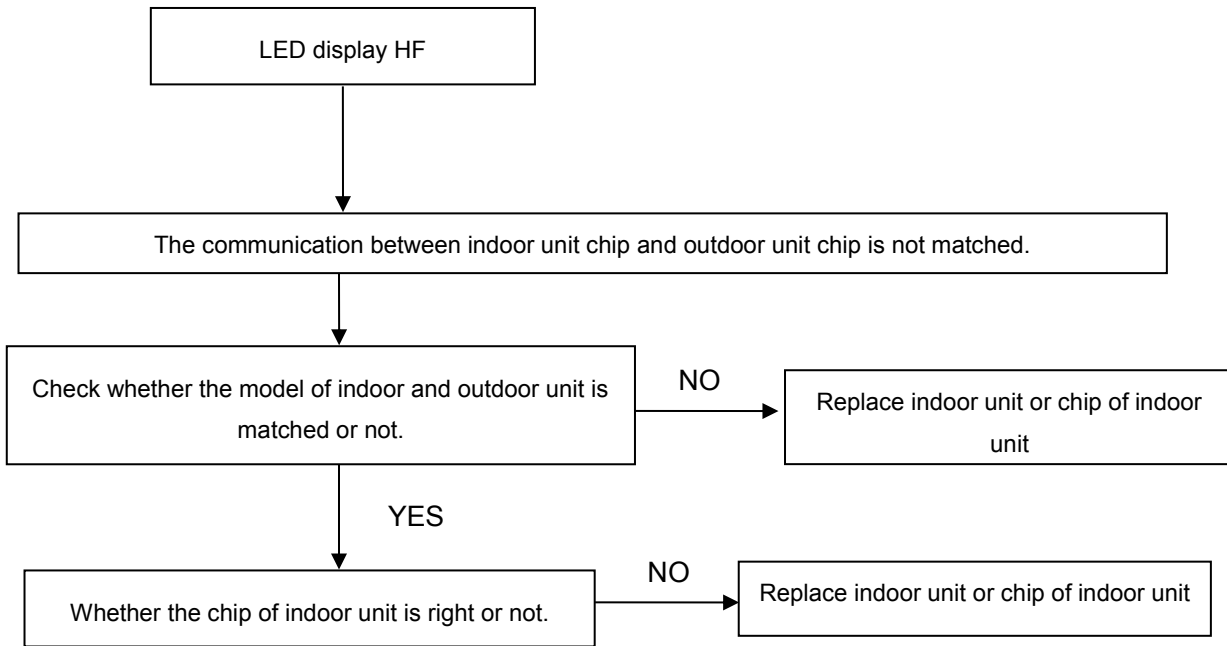
**LED2:** Running indicator lamp of inverter module. The lamp will be on if the system running is normal.

### 3. Error code table

Error code	Content	Note
HF	Not matched with M_HOME indoor unit	Only display on 18kW
E0	EEPROM malfunction	For 12~16kW model
E9		For 18kW model
E2	Communication malfunction between indoor/outdoor units	All the unit
E3	Communication malfunction in outdoor PCB	For 12~16kW model
H0		For 18kW model
E4	T3&T4 temperature sensor malfunction	All the unit
E5	Outdoor unit voltage protection	All the unit
E6	DC fan error	All the unit
E7	Discharge Sensor Malfunction	For 12~16kW model
EA		For 18kW model
E8	There are two times E6 fault in 10 minutes (recovery after power off)	For 12~16kW model
Eb		For 18kW model
P0	Reserved	-----
P1	High pressure protection	All the unit
P2	Low pressure protection	All the unit
P3	Compressor current protection	All the unit
P4	Compressor discharge temperature protection	All the unit
P5	Condenser high temperature protection	All the unit
P6	IPM modules protection	All the unit
P7	Evaporator high temperature protection	For 12~16kW model
PE		For 18kW model
P8	Typhoon protection	All the unit
L0	Module malfunction	For 18kW model
L1	DC generatrix low voltage protection	For 18kW model
L2	DC generatrix high voltage protection	For 18kW model
L3	Reserved	For 18kW model
L4	MCE malfunction/simultaneously/cycle loop	For 18kW model
L5	Zero speed protection	For 18kW model
L6	Reserved	----
L7	Wrong phase protection	For 18kW model
L8	Speed difference>15Hz protection between the front and the back clock	For 18kW model
L9	Speed difference>15Hz protection between the real and the setting speed	For 18kW model

## 4. Troubleshooting

### 4.1 HF: not matched with M\_Home indoor unit. (Only display on 18kW model)

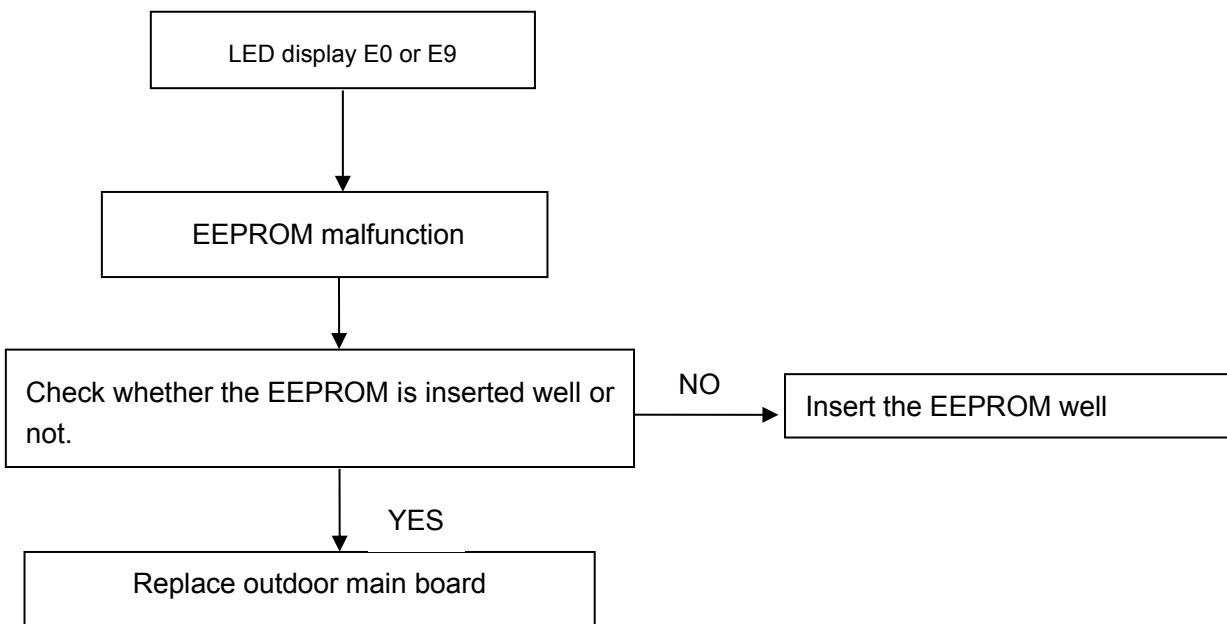


\*Outdoor unit chip refers to 0537 chip.

### 4.2 E0/E9: EEPROM malfunction (E0 display on 12~16kW model;E9 display on 18kW model)

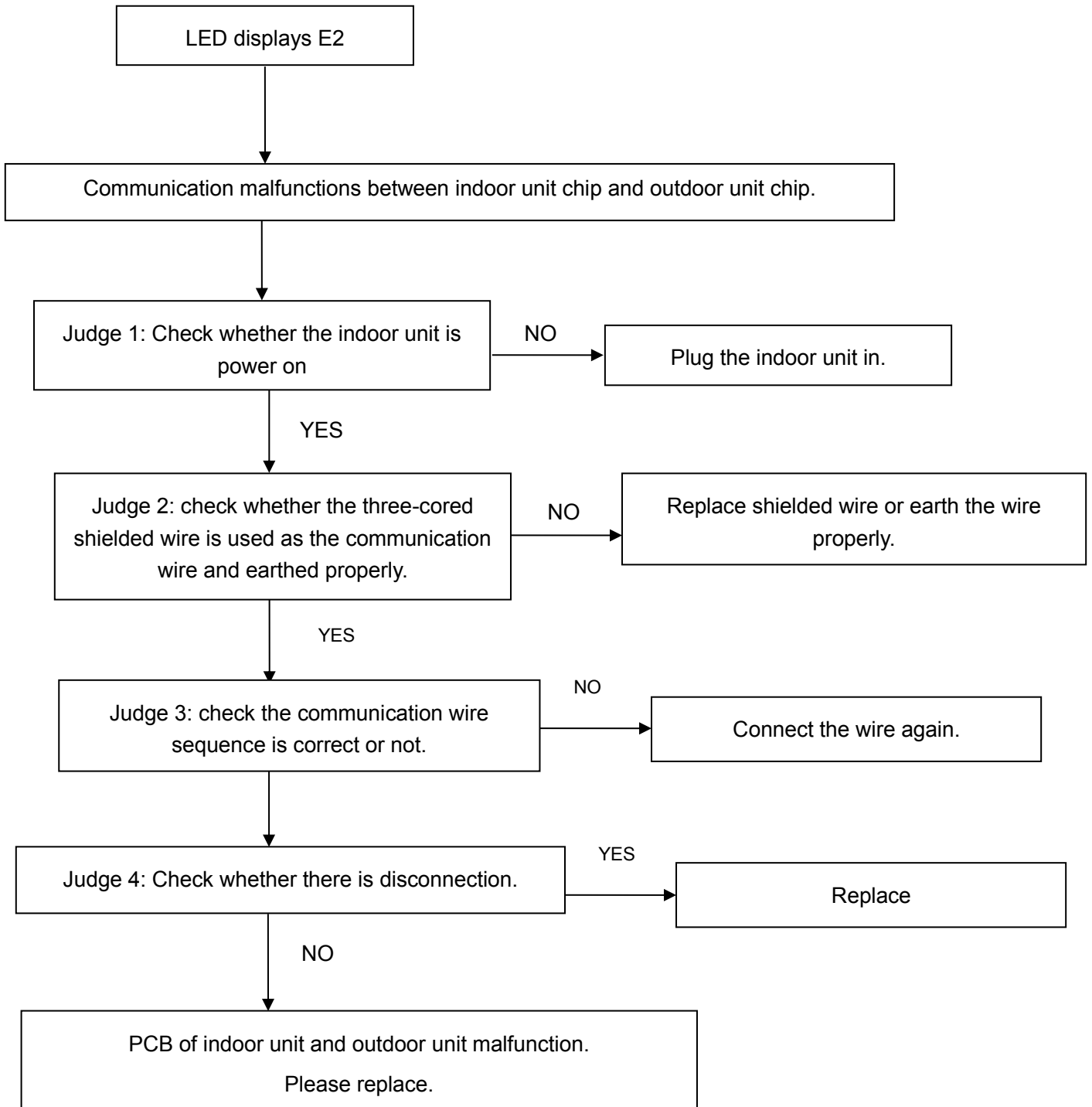
The malfunction may be caused by two reasons:

1) The EEPROM is not inserted well;2) Outdoor main board is broken.



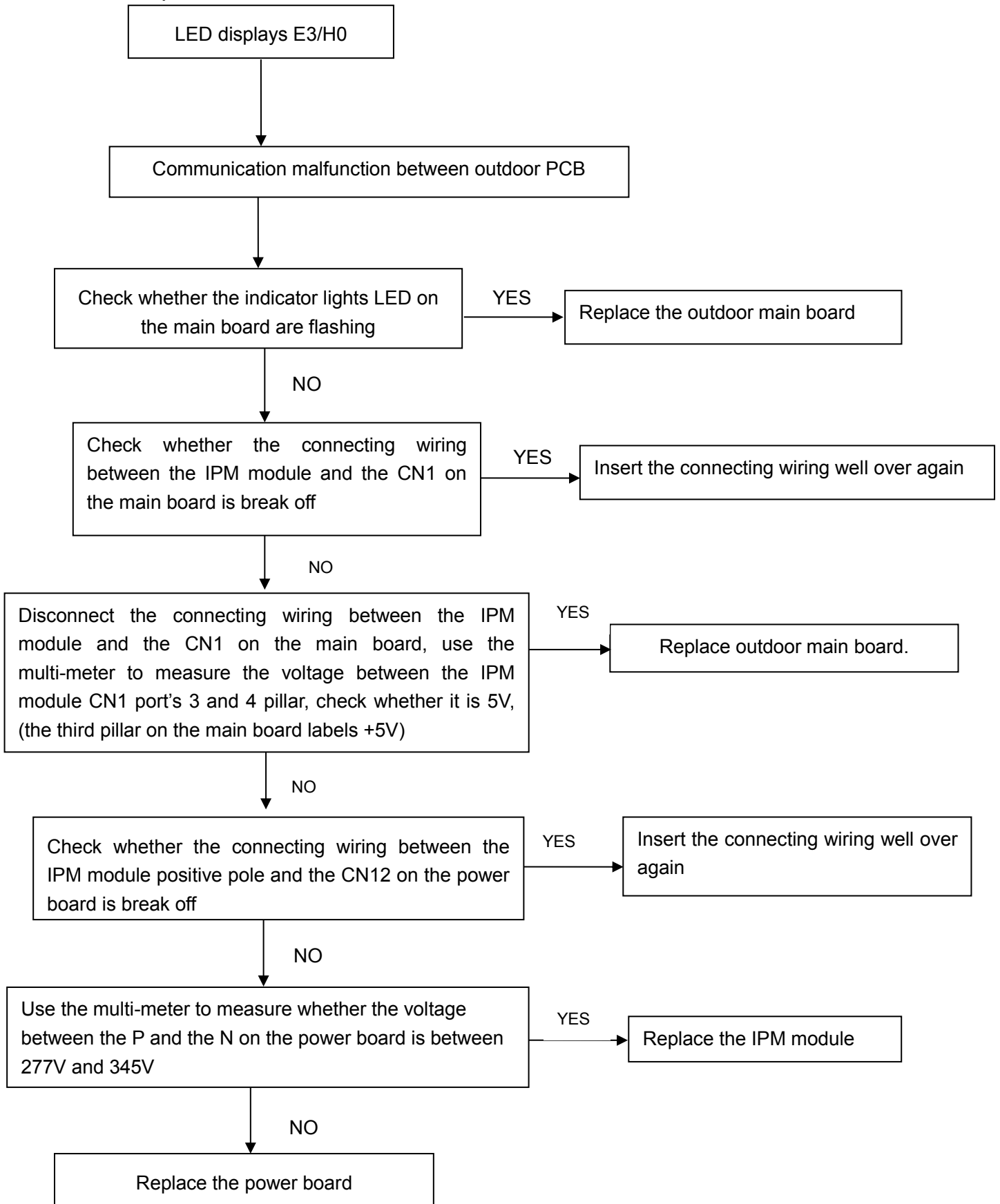


**4.3 E2: Communication malfunctions between indoor unit chip and outdoor unit chip.**

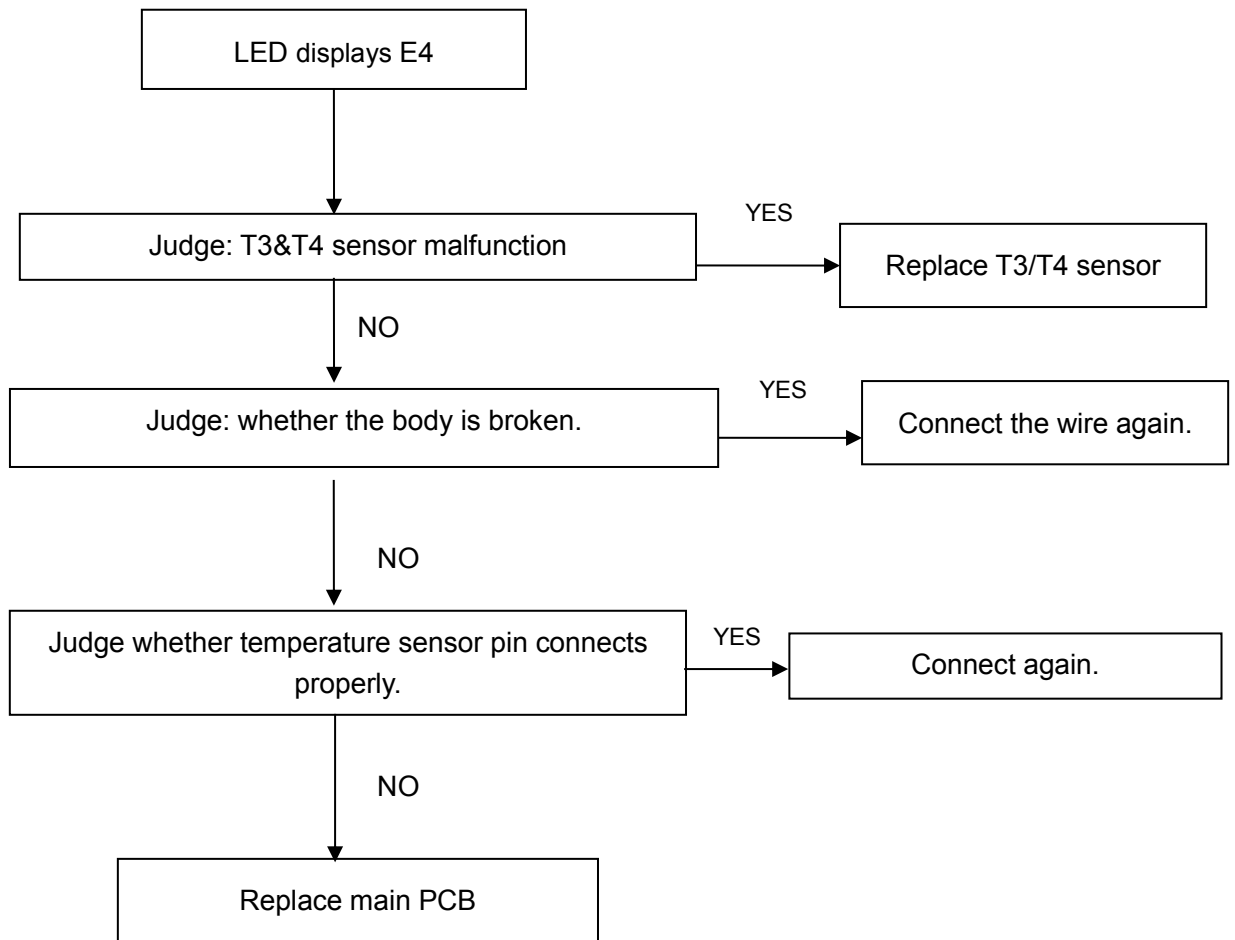


\*Outdoor unit chip refers to 0537 chip.

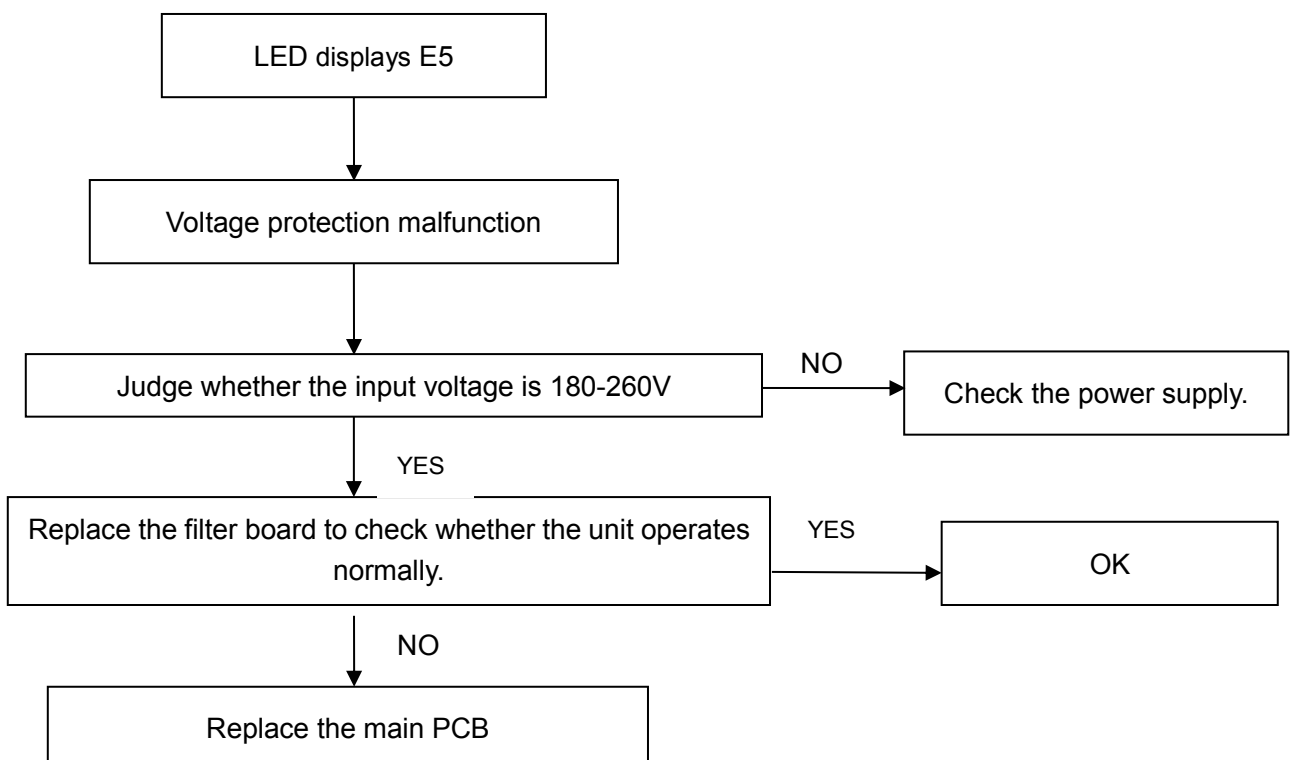
**4.4 E3/H0: Communication malfunction in outdoor PCB (E3 display on 12~16kW; H0 display on 18kW)**



**4.5 E4: T3&T4 sensor malfunction**



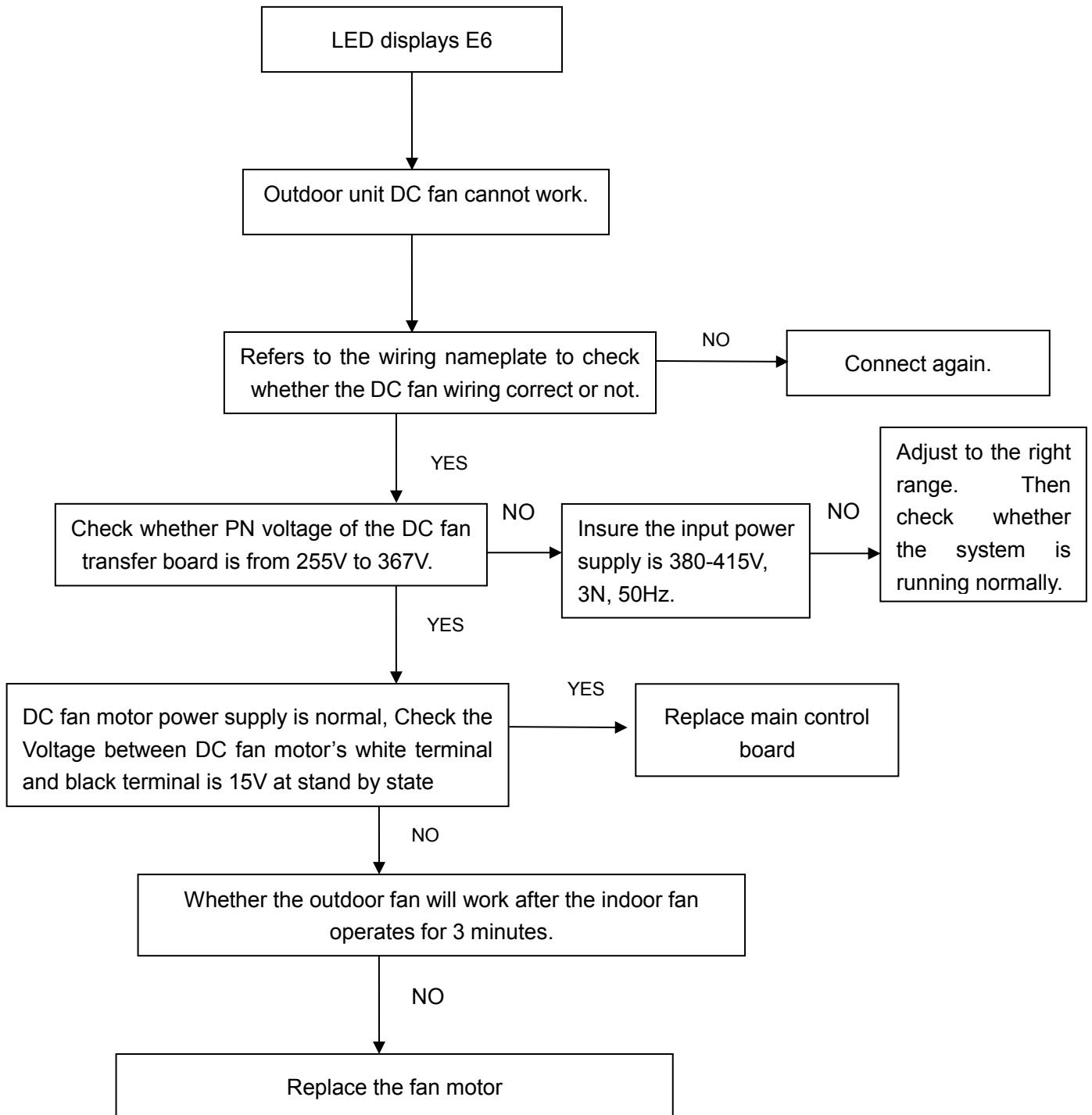
**4.6 E5: Voltage protection malfunction**



#### 4.7 E6:DC Fan Error

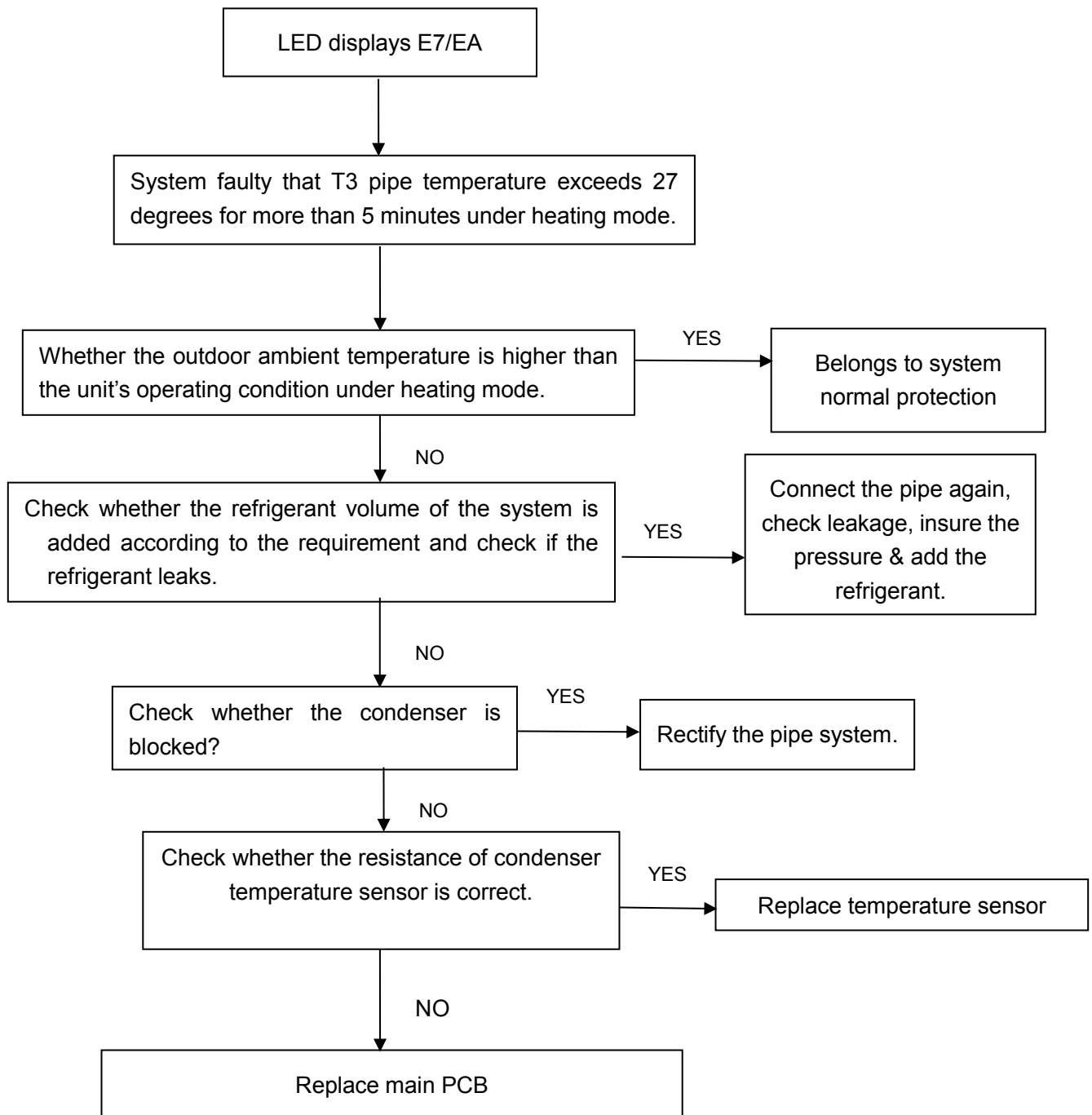
The error may be caused by two reasons:

- 1). The wiring connection is wrong; 2). Power supply voltage is not normal.



**4.8 E7/EA: Discharge Sensor Malfunction (E7 display on 12~16kW; EA display on 18kW)**

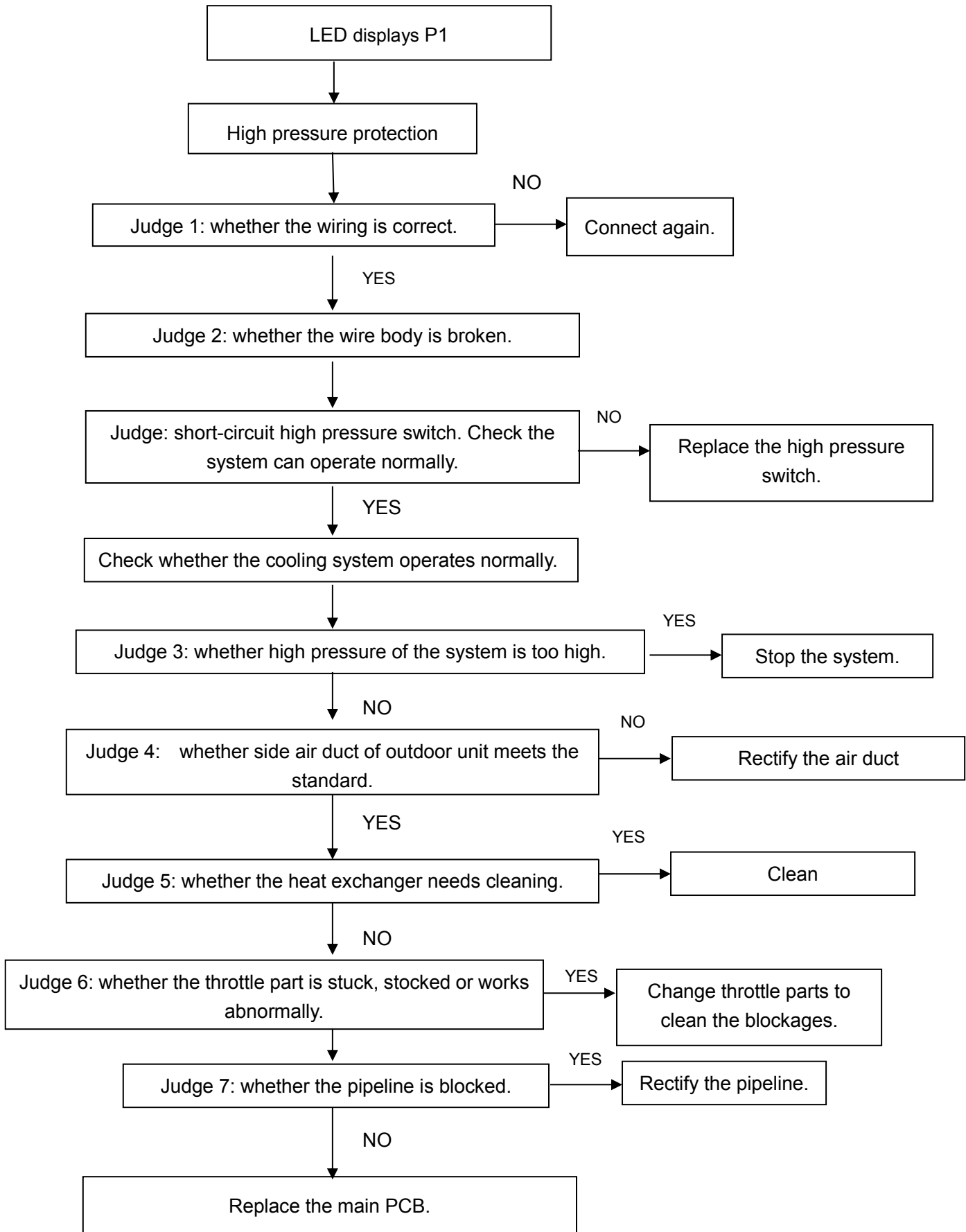
T3 pipe temperature exceeds 27 degrees for more than 5 minutes under heating mode.



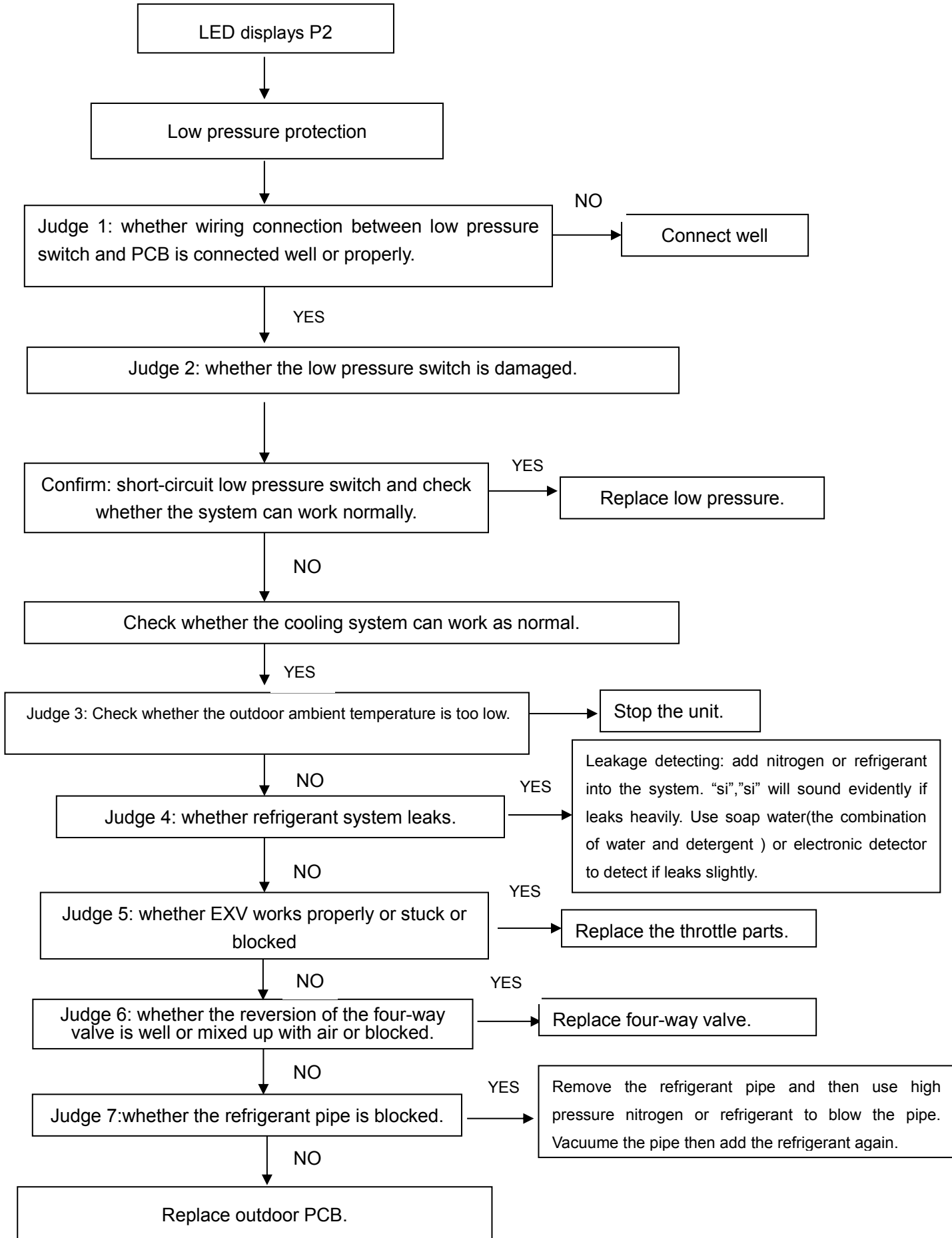
**4.9 E8/Eb malfunction (E8 display on 12~16kW; Eb display on 18kW)**

E8/Eb will display if E6 faulty happens twice in 10 minutes continuously. Malfunction checking method is the same as E7/EA (refers to the above).

**4.10 P1 malfunction: High pressure protection**

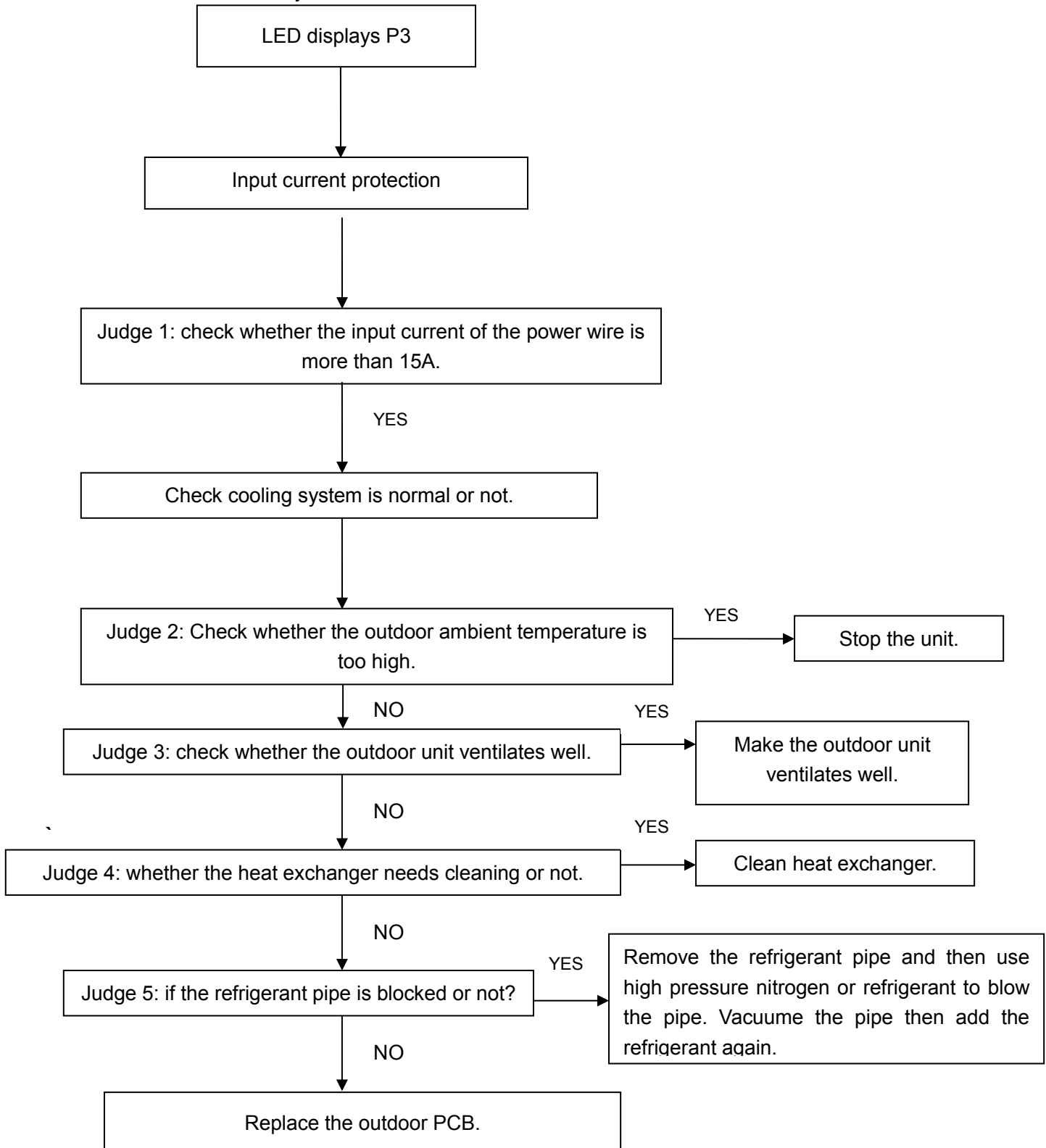


**4.12 P2: Low pressure protection**



#### 4.13 P3: Compressor current protection

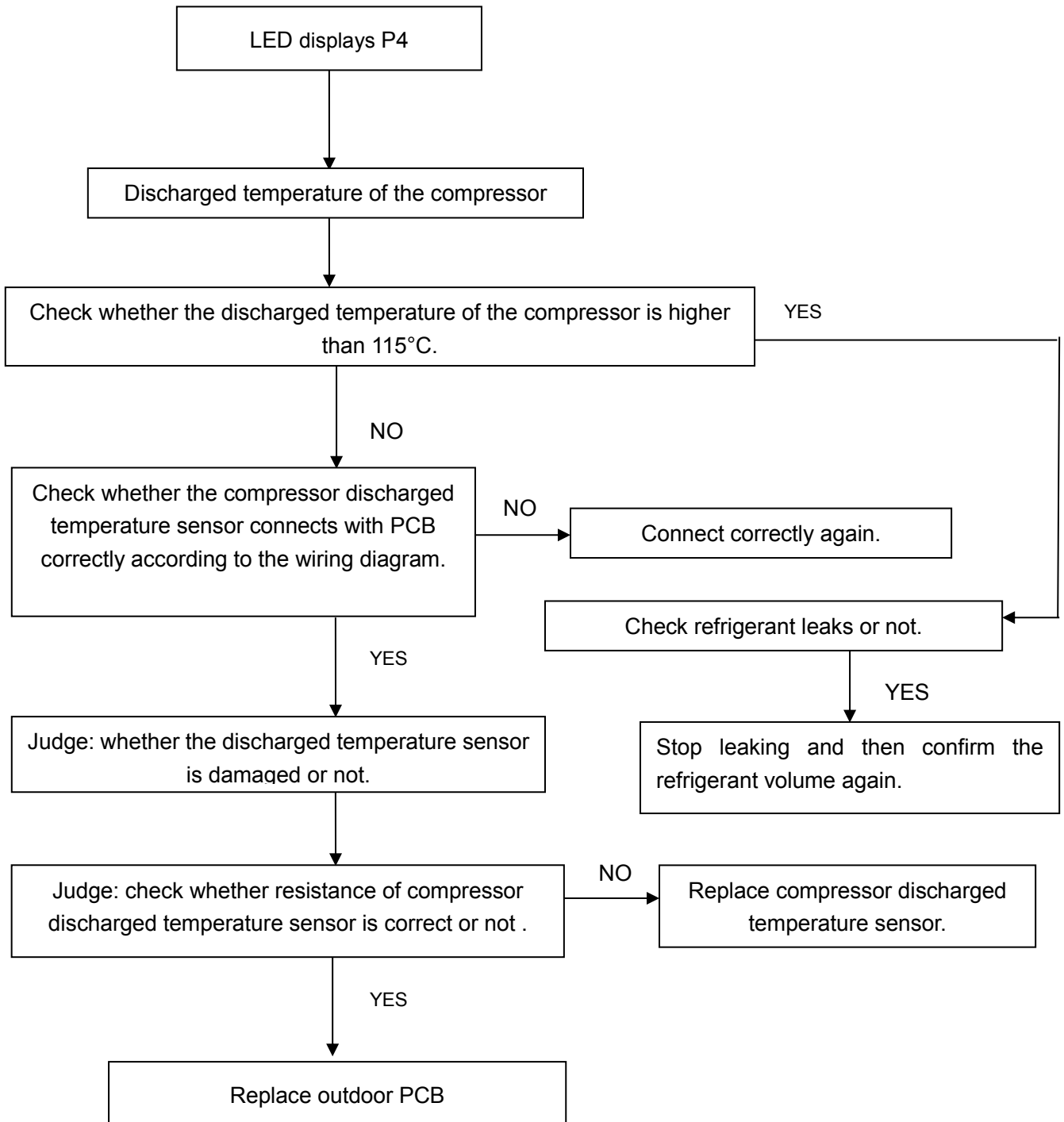
It will protect when input current is more than 15A. It will recover when input current is less than 15A.  
It will recover automatically.





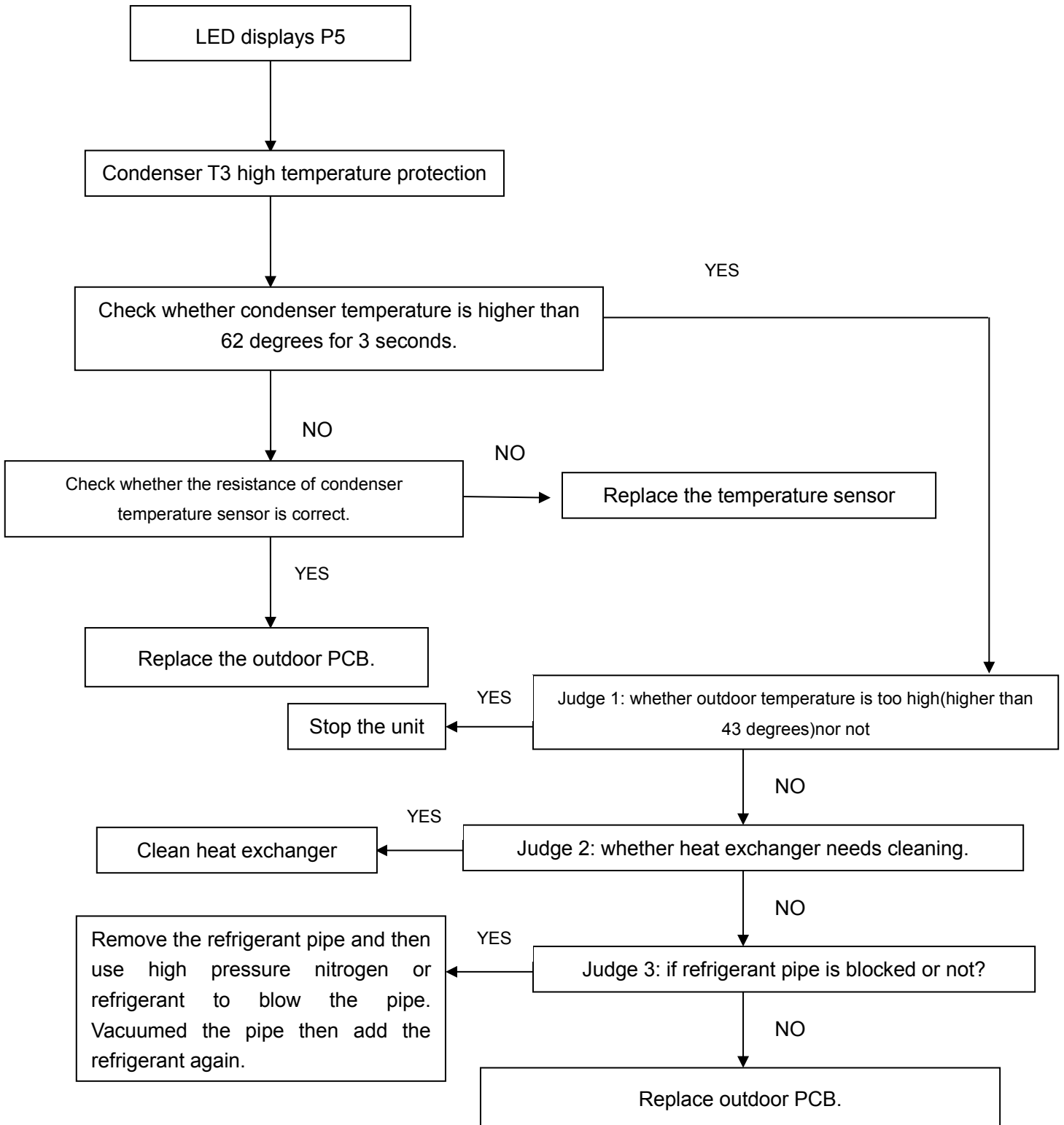
**4.14 P4: Compressor discharged temperature protection**

When the discharged temperature of the compressor is higher than 115°C, the unit will stop running. When the discharged temperature of the compressor is lower than 90°C, the unit resumes normal operation automatically.



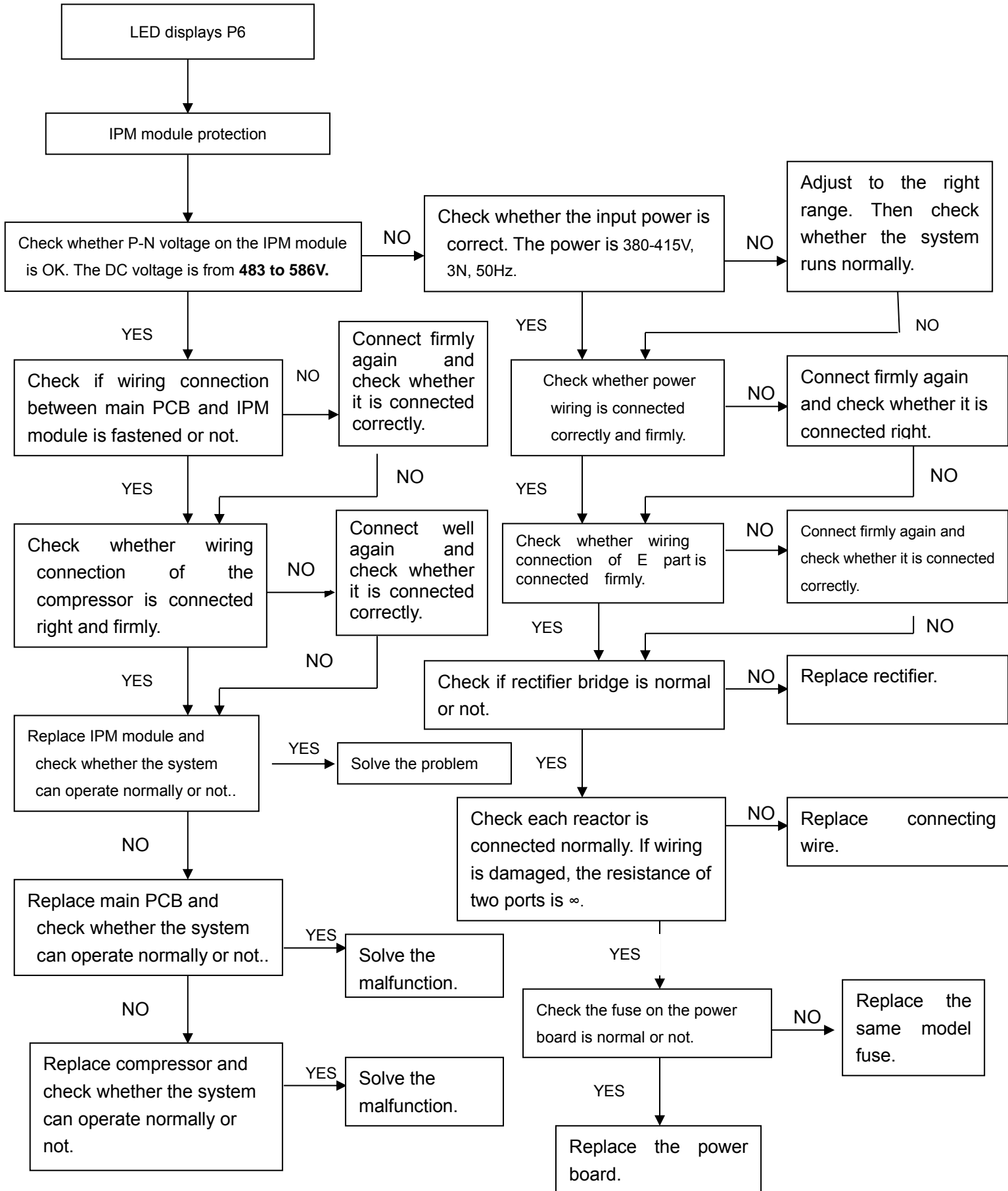
**4.15 P5: Condenser high temperature protection**

When condenser temperature is higher than 62 degrees for 3 seconds, the unit will stop operating. When pipe temperature outside is lower than 52 degrees, the unit will resume operate.

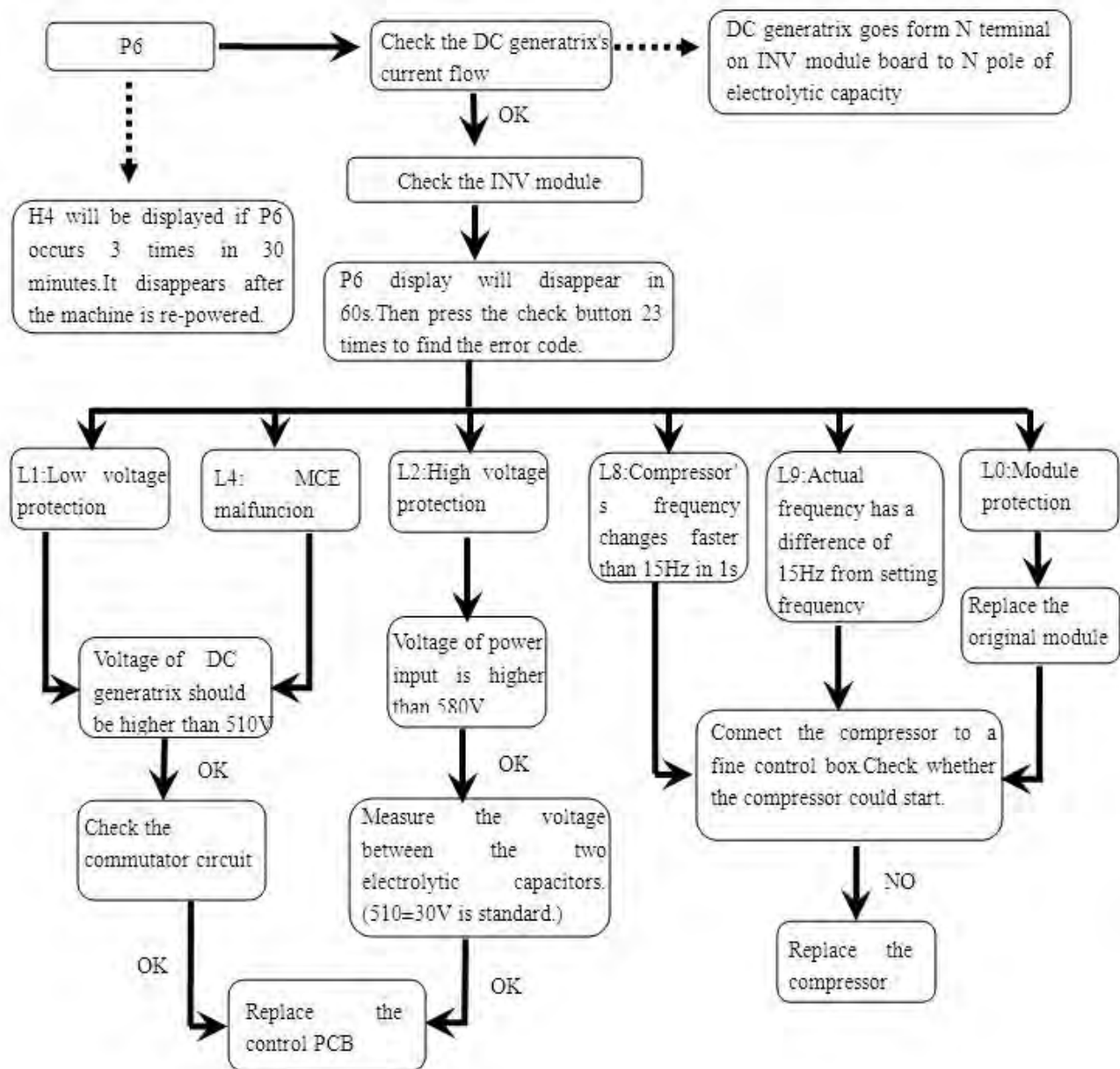


**4.16 P6: IPM Module protection**

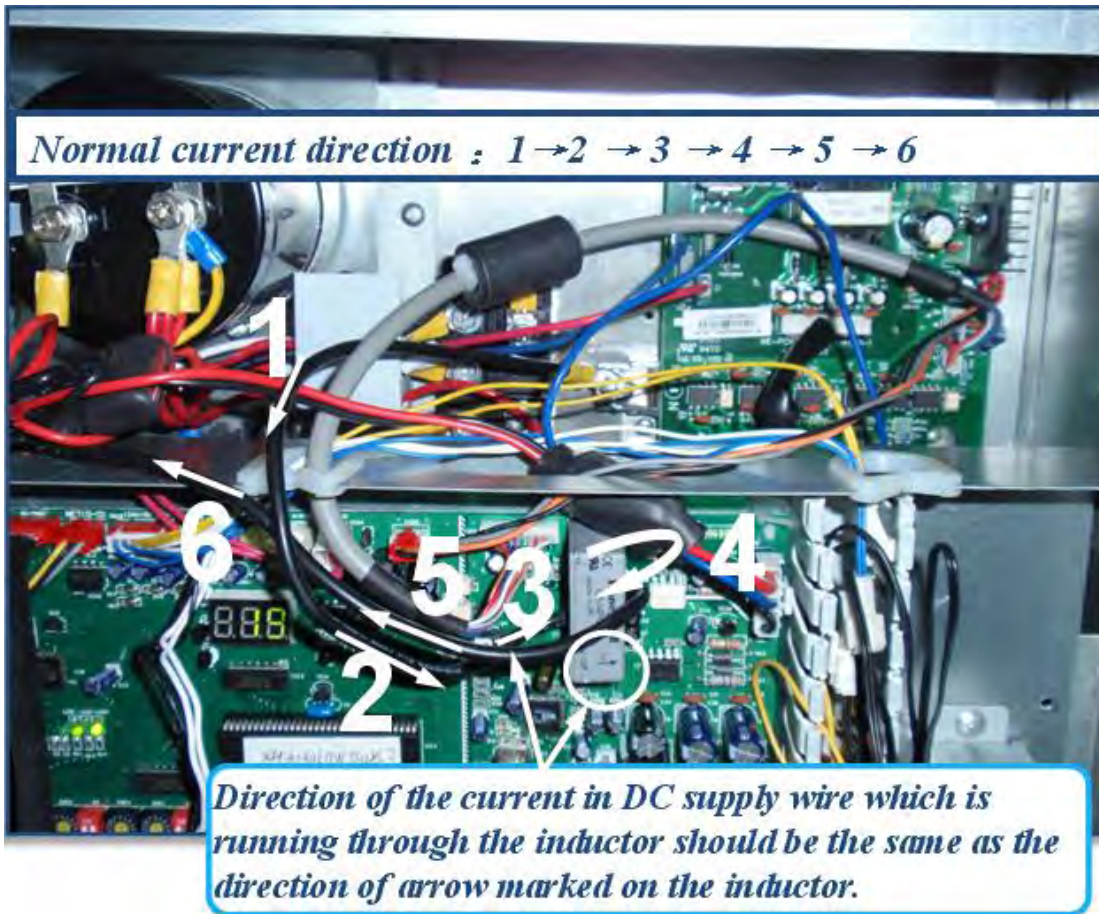
The following explanation is for 12~16kw.



The following explanation is for 18kW



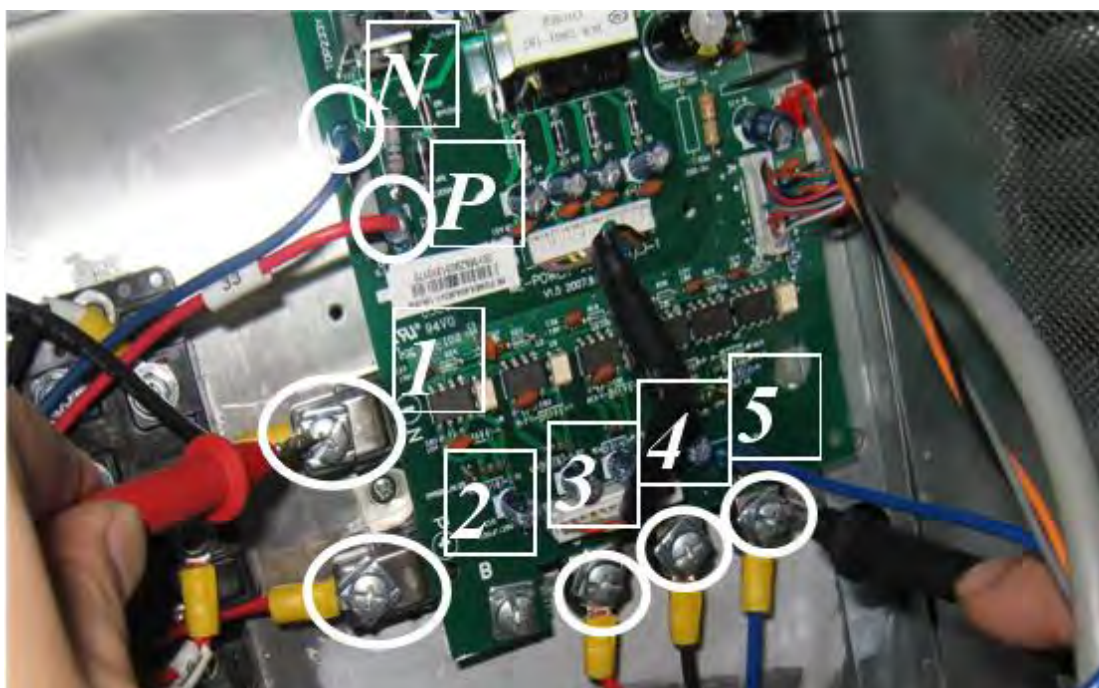
1.1 DC generatrix detection



1.2 Voltage check of DC generatrix

- 1.2.1 Check the voltage of DC generatrix, which is normal between 510V and 580V. If less , go to next step.
- 1.2.2 Check the rectification circuit. Find out any loose in the circuit. Moreover check the filter board, rectifier stacks. Mind DC and AC switch on the meter while doing this.
- 1.2.3 If none of the above works, replace the main control board.

2 Voltage check of module



- 2.1 The voltage between N and P should be 1.41times to local power supply.
- 2.2 The voltage between 1 and 2 should range from 510V to 580V

2.3 The resistance between 1, 2,3,4,5 should be infinite. If any of them is about 0, which means the module has already been broken down; we need to replace the module.

### 3 Compressor's characteristics

3.1 Measure the resistance among the compressor's U, V, W respectively. The resistance should range from 0.9 to 5 Ohms and be the same.

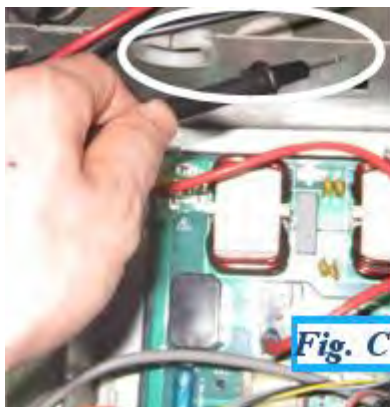


**Fig. A**



**Fig. B**

3.2 Measure the resistance between the compressor's U,V,W and GND respectively. The resistance should be more or less mega-Ohms.



**Fig. C**



**Fig. D**

3.3 Measure the current of the compressor's U, V, W terminal respectively, which should be more or less the same, by e.g. current flow table clamp. They should be 4A at the frequency of 35 Hertz.

### 4 P6 appears after the compressor turns on with difficulties

4.1 Check the module according to step 3 first.

4.2 If the module works, make the machine standby for 4 hours with power supply, which can help heating the refrigerant and oil adequately.

4.3 Start the fixed frequency compressor only for 3S to 5S. The great startup pressure could wash the impurity away in the tube.

4.4 If the compressor's frequency climbs to 37 Hertz or above in 2S after turning on, then there's something wrong with the compressor. Check the compressor.

4.5 If the compressor's current is normal, the malfunction appears on the control board. Please replace it.

5 The machine is powered on and "0" will appear for few seconds, then quantities of indoor units that have been connected will appear if the machine is normal.



In normal situation:

LED 1: Flash in 1Hz (slowly flash) when standby

LED 1: On when running

LED 2: Off

Phenomenon A

LED 2 red ON

LED 1 green Flashes 8 times and stops for 1S, then repeat.

Error: Inverter module failure

Phenomenon B

LED 2 red ON

LED 1 green Flashes 9 times and stops for 1S, then repeat.

Error: Low voltage protection

Here are 3 circumstances:

- a) The voltage between the two electrolytic capacitors is less than 450V. The AC contactor should be picked up. If not, there's something wrong with the main control board or the PTC resistors, which need to be replaced correspondingly.
- b) Somewhere is loose in the circuit.
- c) The voltage between P and N of CN12 on the main control board should range from 450V to 570V. If the voltage between N terminal and middle terminal of CN12 is 15V while error displays, it means that the main control board fails. Please replace the main control board.

Phenomenon C

LED 2 Red ON

LED1 Green Flashes 10 times and stops for 1S, then repeat.

Error: High voltage protection

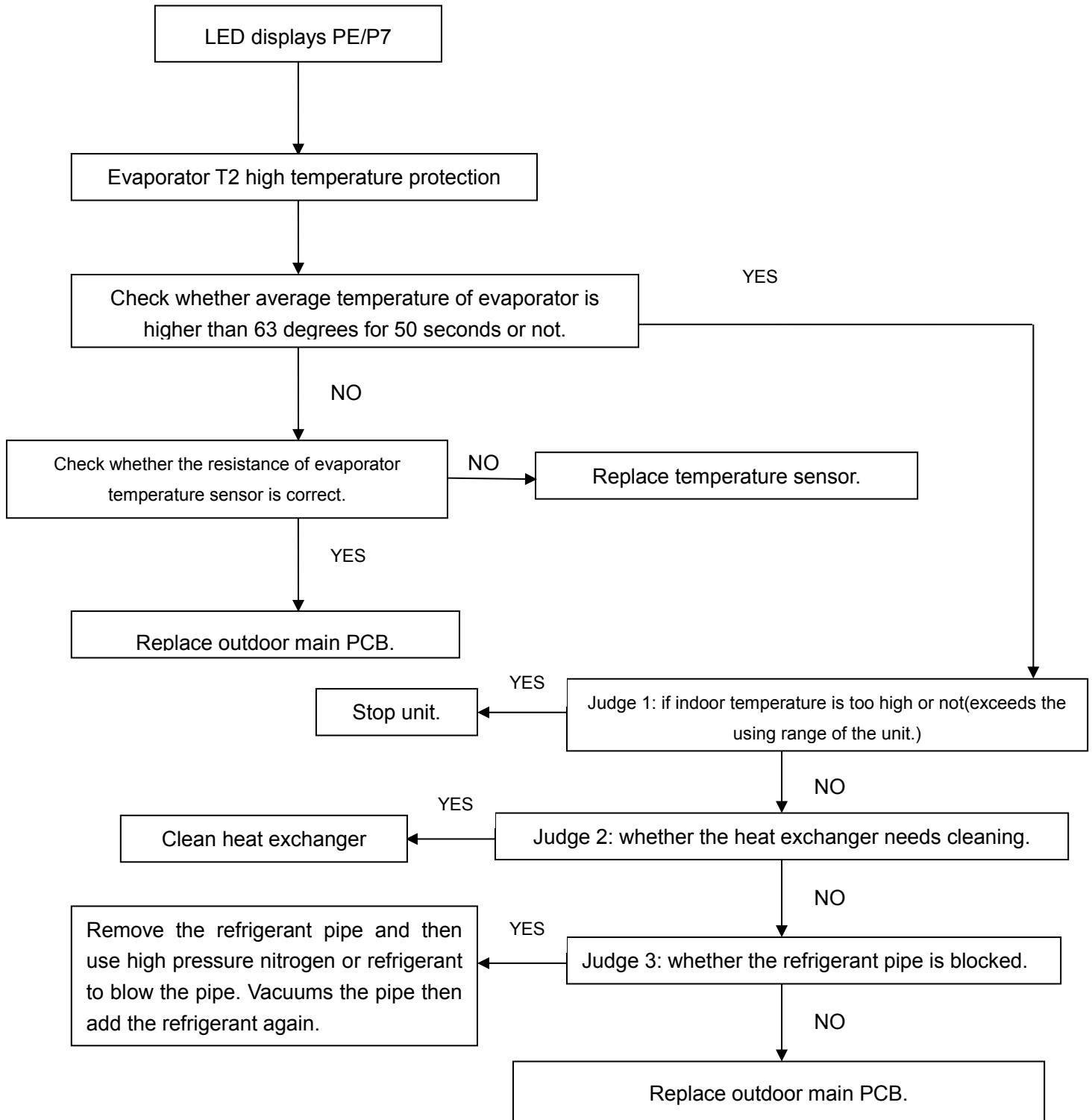
Here are 2 circumstances:

1. Three-phase power supply 's voltage is more than 440V
2. Main control board fails. Please replace it.

**4.17 PE/P7 malfunction: Evaporator T2 high temperature protection**

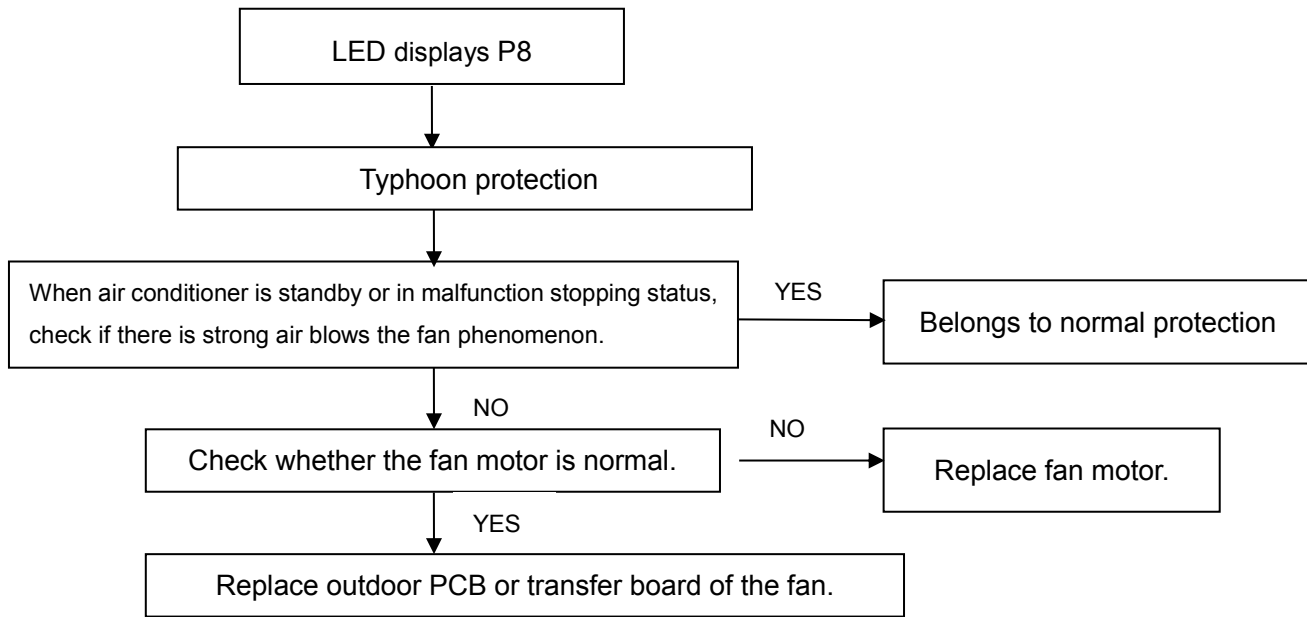
**(PE display on 12~16kW, P7 display on 18kW)**

When the middle average temperature of the evaporator is higher than 63 degrees for 50 seconds, the unit will stop operating. When pipe temperature is lower than 50 degrees, the unit will resume running.





### 4.18 P8: Typhoon protection





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