3DC Freematch
Multi Units

Technical Support Department

January 23

Part IV Troubleshooting

Indoor Error display For Console

Malfunction	Timer Lamp	Operation Lamp (flashes)
Indoor EEPROM malfunction	X	1
Communication malfunction between indoor and outdoor units	X	2
Indoor fan speed has been out of control	X	4
Open or short circuit of T1 temperature sensor	X	5
Open or short circuit of T2 temperature sensor	X	6
Overcurrent protection (For some units)	O	1
Open or short circuit of T4 temperature sensor	O	2
Open or short circuit of T3 temperature sensor	O	3
Open or short circuit of T5 temperature sensor	O	4
Outdoor EEPROM malfunction (For some units)	O	5
Outdoor fan speed is out of control	O	6
Open or short circuit of T2B temperature sensor (For free-match indoor units)	O	7
IPM module malfunction	☆	1
Over voltage or over low voltage protection	☆	2
Too low ambient temperature protection	☆	4
Inverter compressor drive protection	☆	5
Mode conflict	☆	6
Low pressure protection of compressor	☆	7
O (on) X(off) ☆(flash at 2Hz)		

Indoor Error display

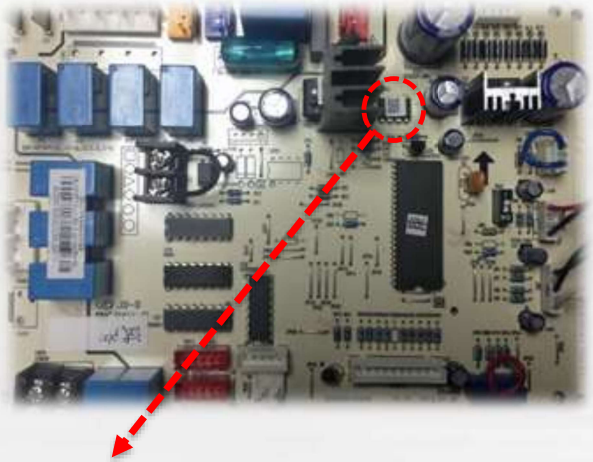
Operation lamp	Timer lamp	Display	Malfunction	ODU Error
★ 1 time	X	**E0**	Indoor unit EEPROM parameter error	——
★ 2 times	X	**E1**	Communication malfunction between indoor and outdoor units	**E2**
★ 4 times	X	**E3**	Indoor fan speed malfunction	——
★ 5 times	X	**E4**	Indoor room temperature sensor (T1) malfunction	——
★ 6 times	X	**E5**	Evaporator coil temperature sensor (T2) malfunction	——
★ 8 times	X	**EE**	Water-level alarm malfunction	
★ 1 times	●	**F0**	Current overload protection	**P3**
★ 2 times	●	**F1**	Outdoor ambient temperature sensor (T4) malfunction	**E4**
★ 3 times	●	**F2**	Condenser coil temperature sensor (T3) malfunction	**E4**
★ 4 times	●	**F3**	Compressor discharge temperature sensor (T5) malfunction	**E4**
★ 5 times	●	**F4**	Outdoor unit EEPROM parameter error	**E0**
★ 6 times	●	**F5**	Outdoor fan speed malfunction	**E8**
★ 7 times	●	**F6**	Indoor coil outlet pipe sensor (Located on outdoor unit low pressure valve)	——
★ 1 times	★	**P0**	Inverter module (IPM) malfunction	**P6**
★ 2 times	★	**P1**	Over-voltage or under-voltage protection	**E5**
★ 3 times	★	**P2**	High temperature protection of compressor top(OLP)/ High temperature protection of IPM board	**P0**
★ 5 times	★	**P4**	Compressor drive malfunction	**P6**
★ 6 times	★	**P5 (——)**	Indoor units mode conflict	——
★ 7 times	★	**P6**	Low pressure protection	**P2**

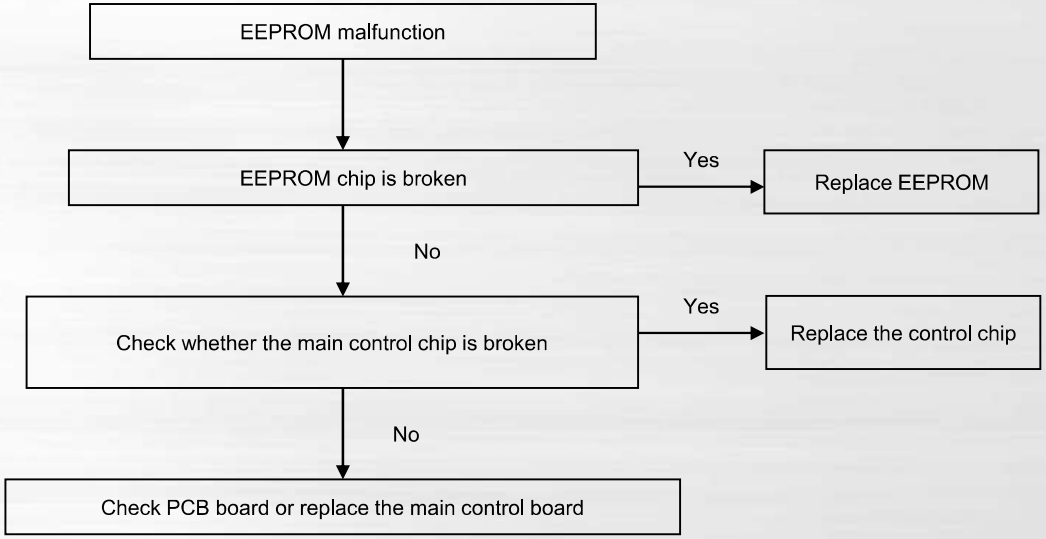
- *Outdoor Error display*

Display	Malfunction	Indoor Error
E0	Outdoor unit EEPROM parameter error	F4
E2	Communication malfunction between indoor and outdoor units	E1
E3	Communication malfunction between IPM board and outdoor main control board	——
E4	Outdoor temperature sensor (coil sensor T3,ambient sensor T4, Compressor discharge sensor T5、indoor coil outlet pipe sensor T2B) malfunction	F2/F1/F3/F6
E5	Over-voltage or under-voltage protection	P1
E6	PFC module protection	——
E8	Outdoor fan speed malfunction	F5
F1	No. A Indoor unit coil outlet temp. sensor malfunction	——
F2	No. B Indoor unit coil outlet temp. sensor malfunction	——
F3	No. C Indoor unit coil outlet temp. sensor malfunction	——
F4	No. D Indoor unit coil outlet temp. sensor malfunction	——
F5	No. E Indoor unit coil outlet temp. sensor malfunction	——
F6	No. F Indoor unit coil outlet temp. sensor malfunction	——
P0	High temperature protection of compressor top	P2
P1	High pressure protection	P6
P2	Low pressure protection	P6
P3	Over current protection	F0
P4	Temperature protection of compressor discharge	——
P5	Condenser high temperature protection	——
P6	Inverter module (IPM) malfunction	P0/P4

EPPROM Malfunction

Error Code	E0/F4/E0
Malfunction decision conditions	Indoor or outdoor PCB main chip does not receive feedback from EEPROM chip.
Possible causes	• Installation mistake • Faulty PCB



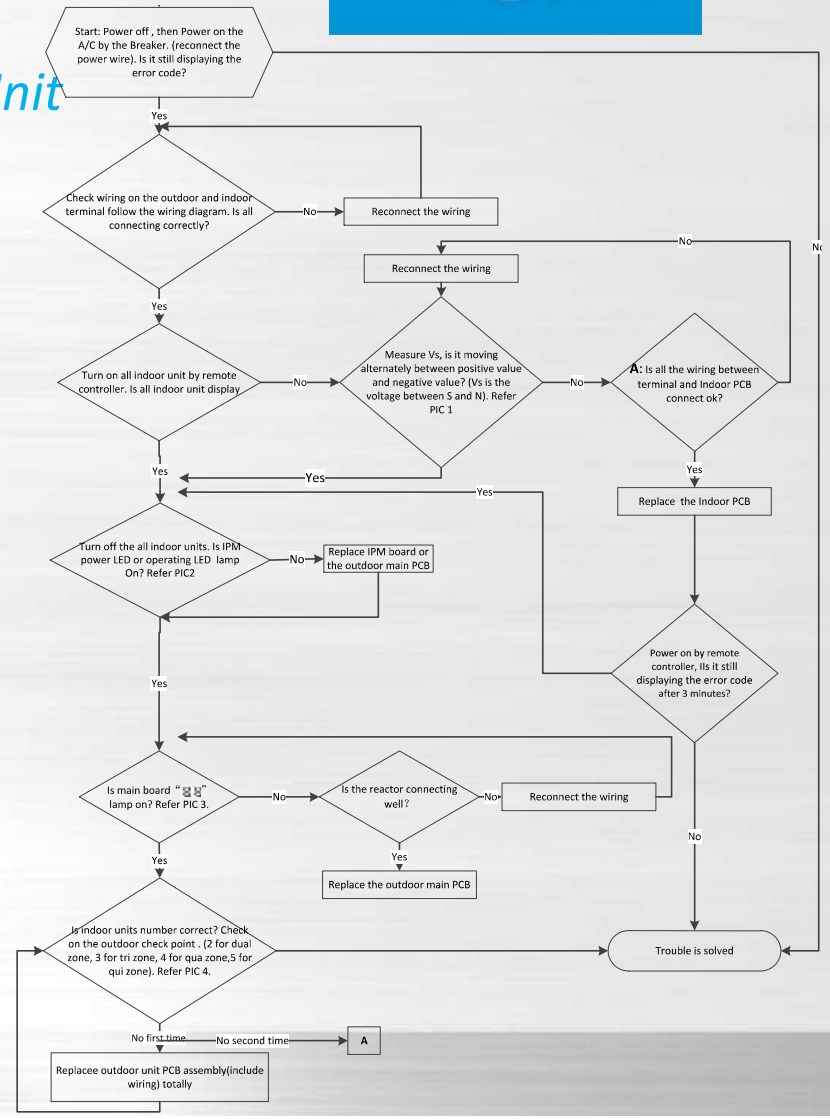


EEPROM: An electrically erasable programmable read-only memory whose contents can be erased and reprogrammed using a pulsed voltage.

- *Communication Error between Indoor and Outdoor Unit*

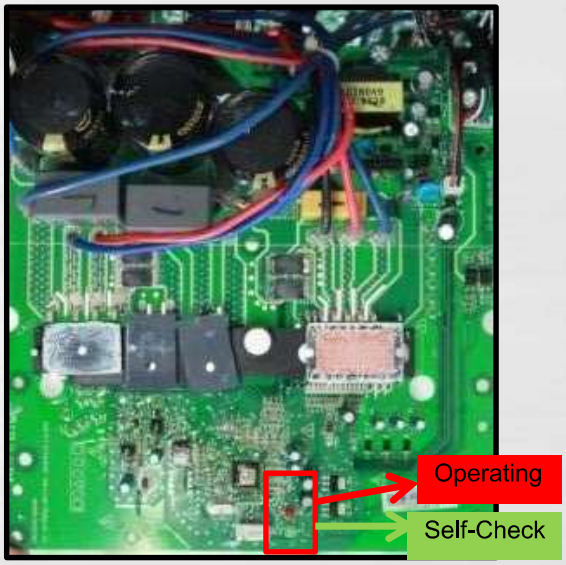
S communication

Error Code	E1/E2
Malfunction decision conditions	Indoor unit does not receive the feedback from outdoor unit during 110 seconds and this condition happens 4 times continuously.
Possible causes	• Wiring mistake • Indoor or outdoor PCB faulty



Communication Error between Indoor and Outdoor Unit

Pic 1: check the voltage of N to S (Vs), is it moving alternately between positive value and negative value?



Pic 2: IPM or outdoor main PCB

Communication Error between Indoor and Outdoor Unit

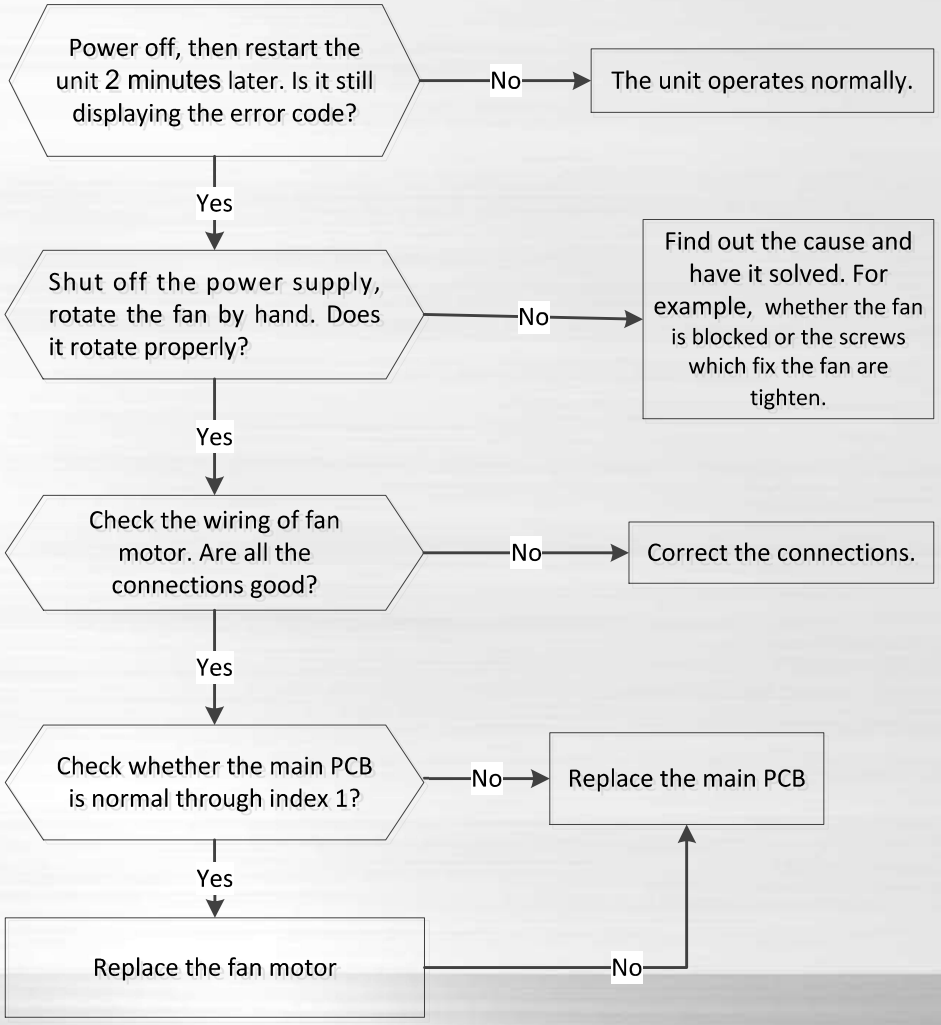
Pic 3: Main board LED when power on and unit standby.

Pic 4: check point button,

Press once for check how many indoor units are connected

Fan speed malfunction

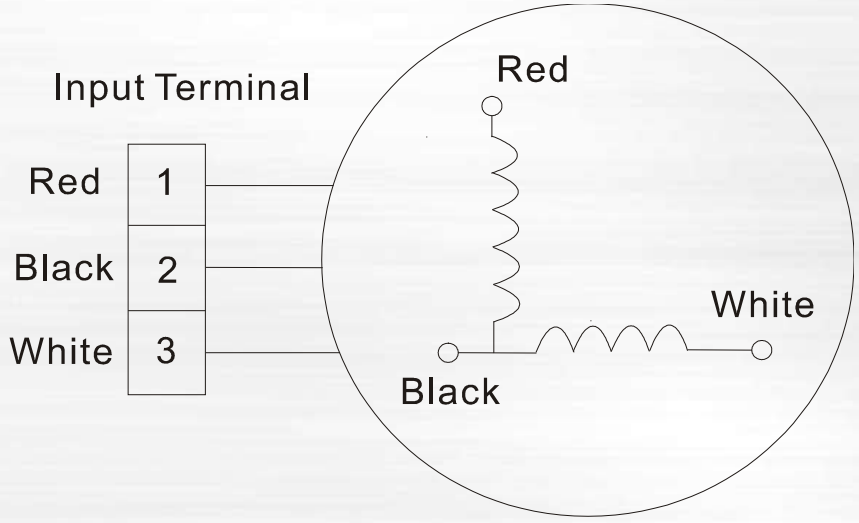
Error Code	E3/F5/E8
Malfunction decision conditions	The indoor DC fan speed is lower than 300 RPM for 30s
Possible causes	• Faulty fan motor • Faulty wiring of fan motor • Faulty DC motor drive PCB • Faulty PCB



- *Indoor fan speed malfunction*

Indoor fan motor Check (AC motor)

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



Indoor fan speed malfunction

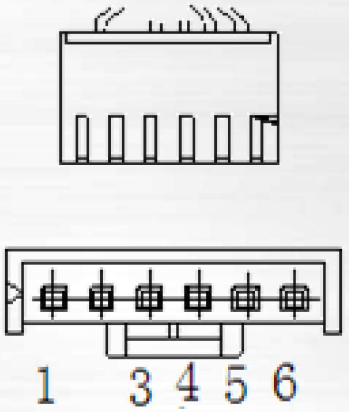
Indoor fan motor Check (DC motor)

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

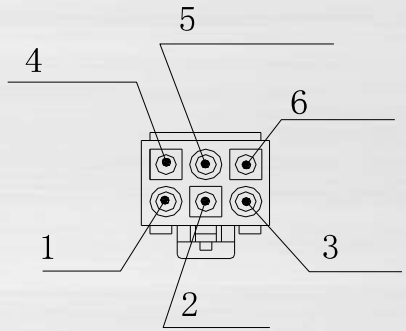
DC motor voltage input and output:

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

DC Fan Connector



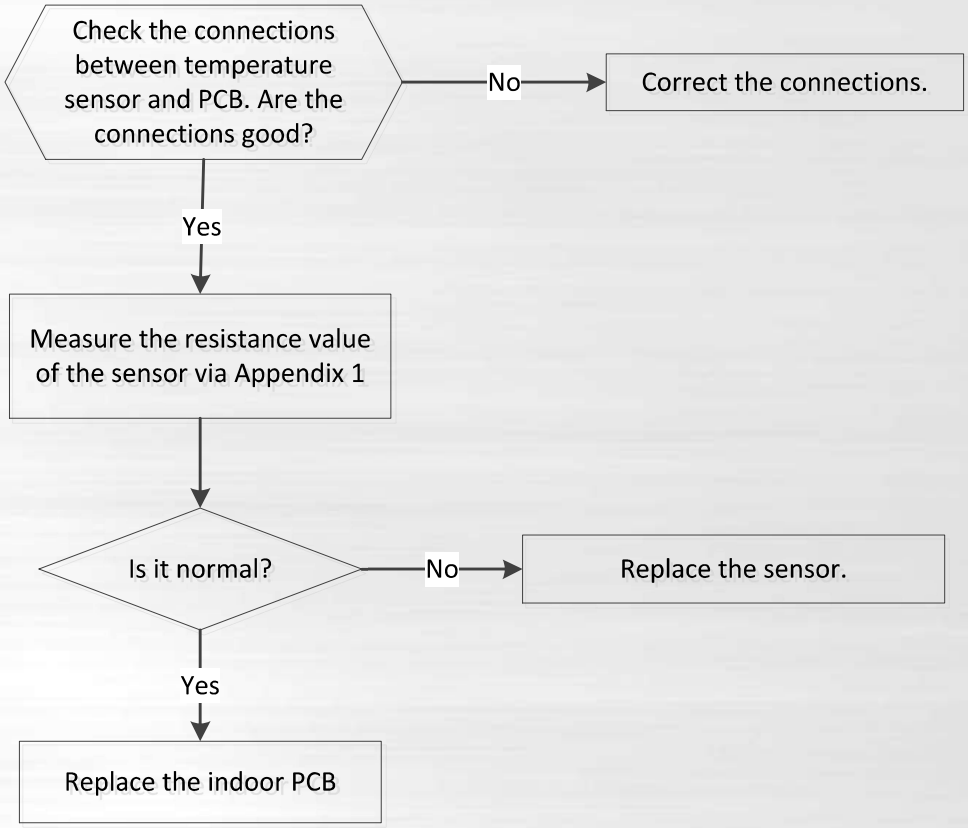
Other Units



Console

Temperature Sensor Error

Error Code	**E4/E5/F1/F2/F3/F6/E4**
Malfunction decision conditions	**If the sampling voltage is lower than 0.06V or higher than 4.94V, the LED will display the failure.**
Possible causes	• **Wiring mistake** • **Faulty Sensor** • **Faulty PCB**



Temperature Sensor Error

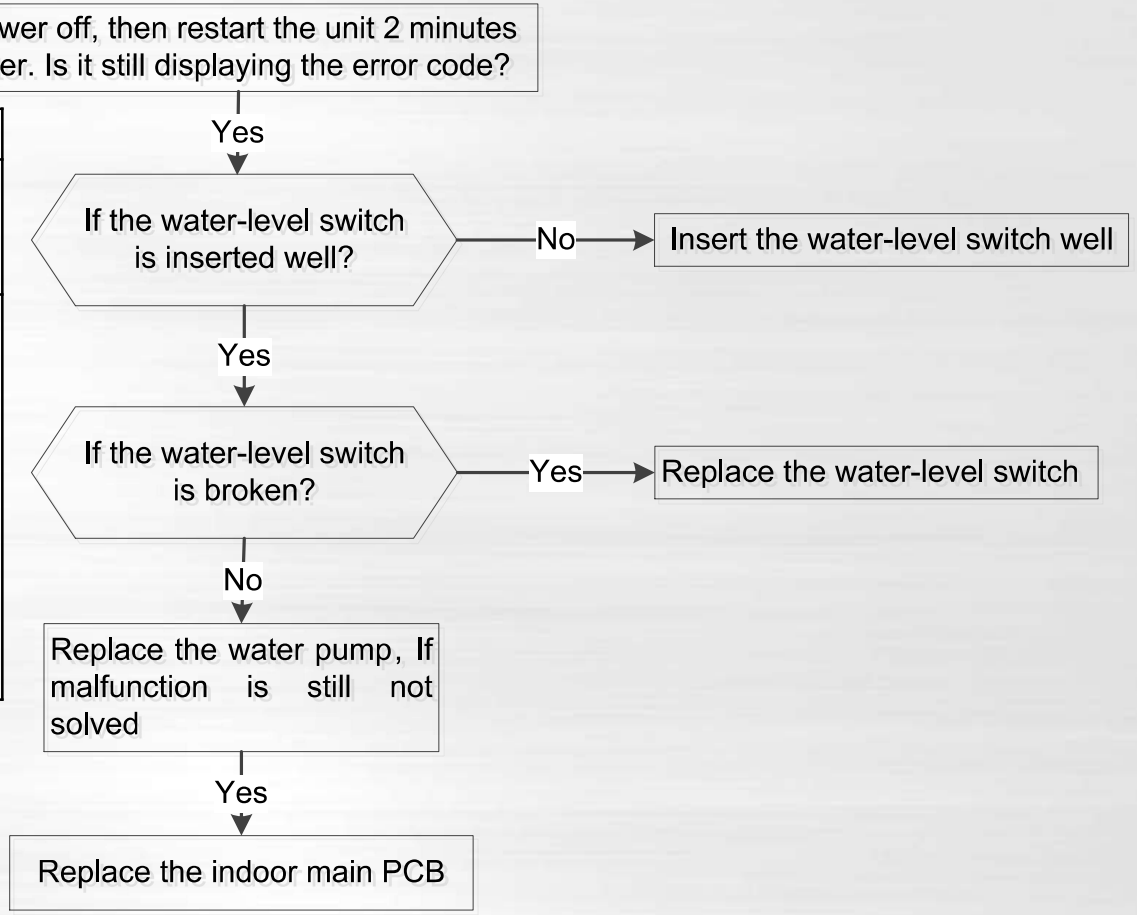
Some frequently-used R-T data for T1,T2,T3 sensor:

resistance

Temperature (℃)	5	10	15	20	25	30	40	50	60
Resistance Value (KΩ)	26.9	20.7	16.1	12.6	10	8	5.2	3.5	2.4

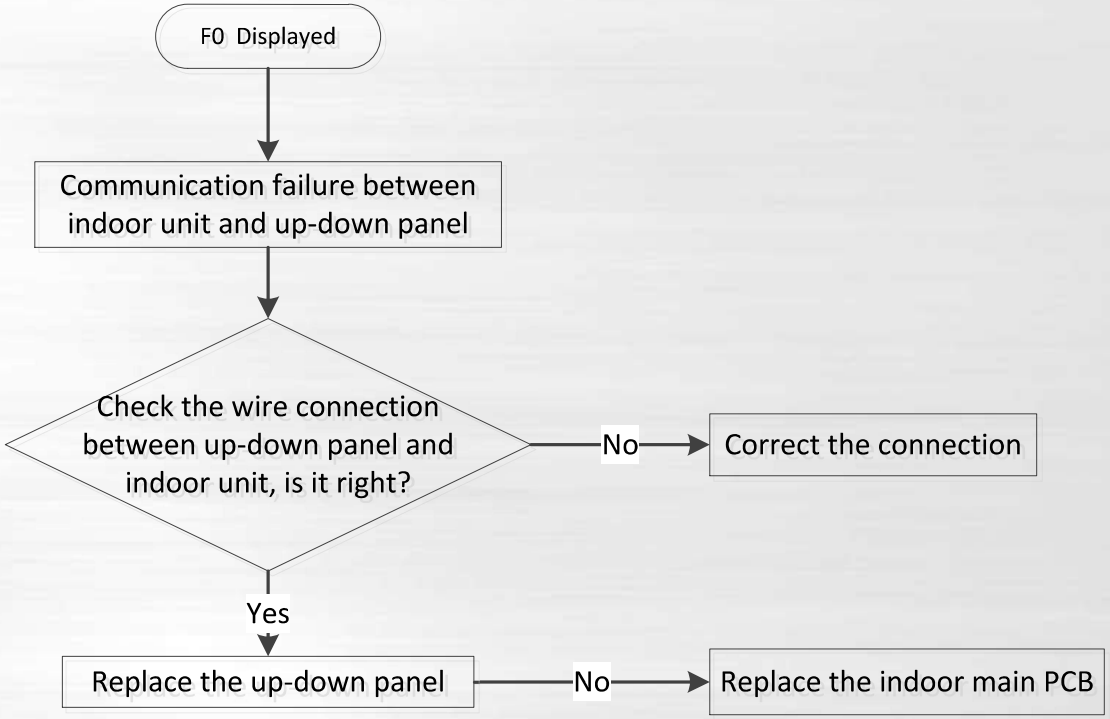
Water Level Alarm

Error Code	EE
Malfunction decision conditions	The water level switch is at the max. position to shut down the unit.
Possible causes	• Faulty drain pump (for units with drain pump) • Installation mistake of water level switch (for units with drain pump) • Short-circuit jumper is missing or broken (for units without drain pump) • Faulty PCB



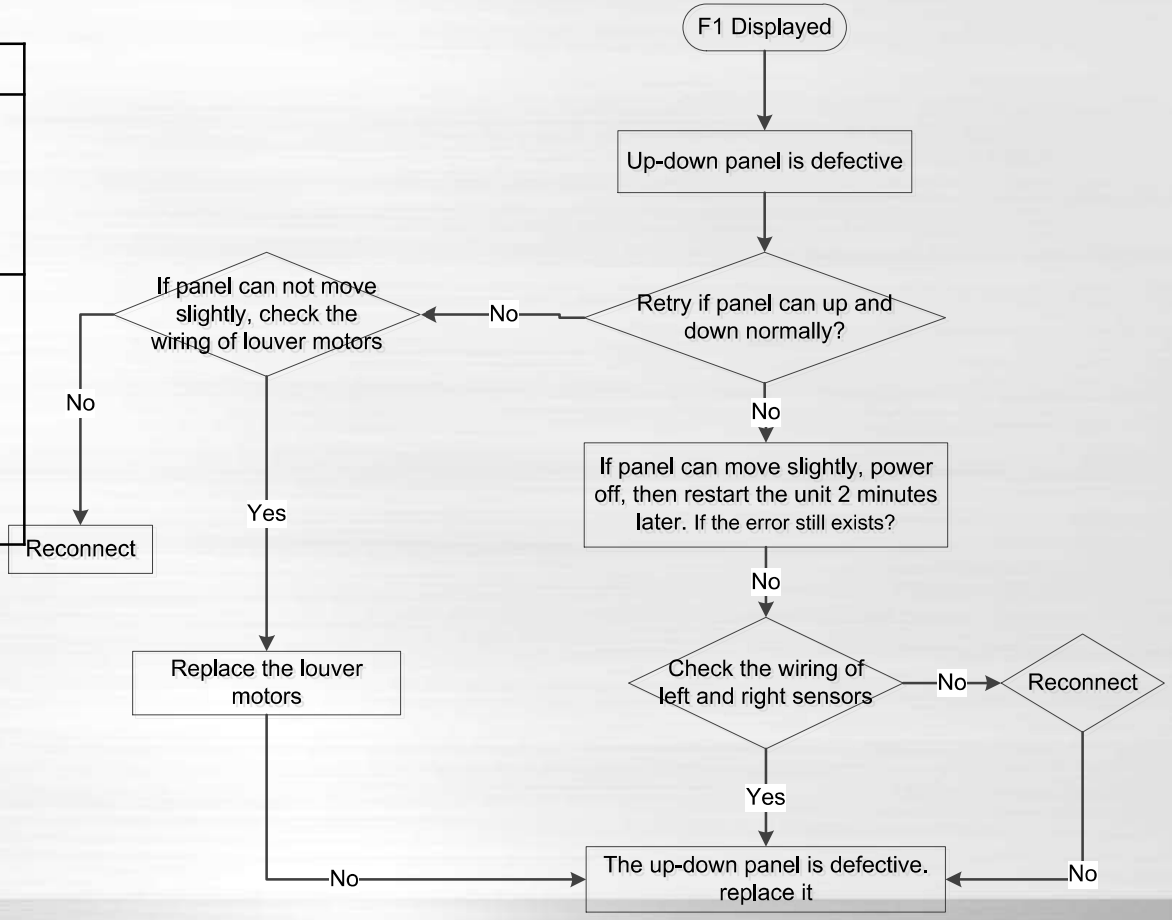
Communication Error between Auto-lifting Panel and Slim Cassette

Error Code	F7
Malfunction decision conditions	Indoor PCB does not get the feedback from the PCB of auto lifting-panel
Possible causes	• Wiring mistake between indoor PCB and auto-lifting panel • Faulty PCB of auto-lifting panel • Faulty indoor PCB



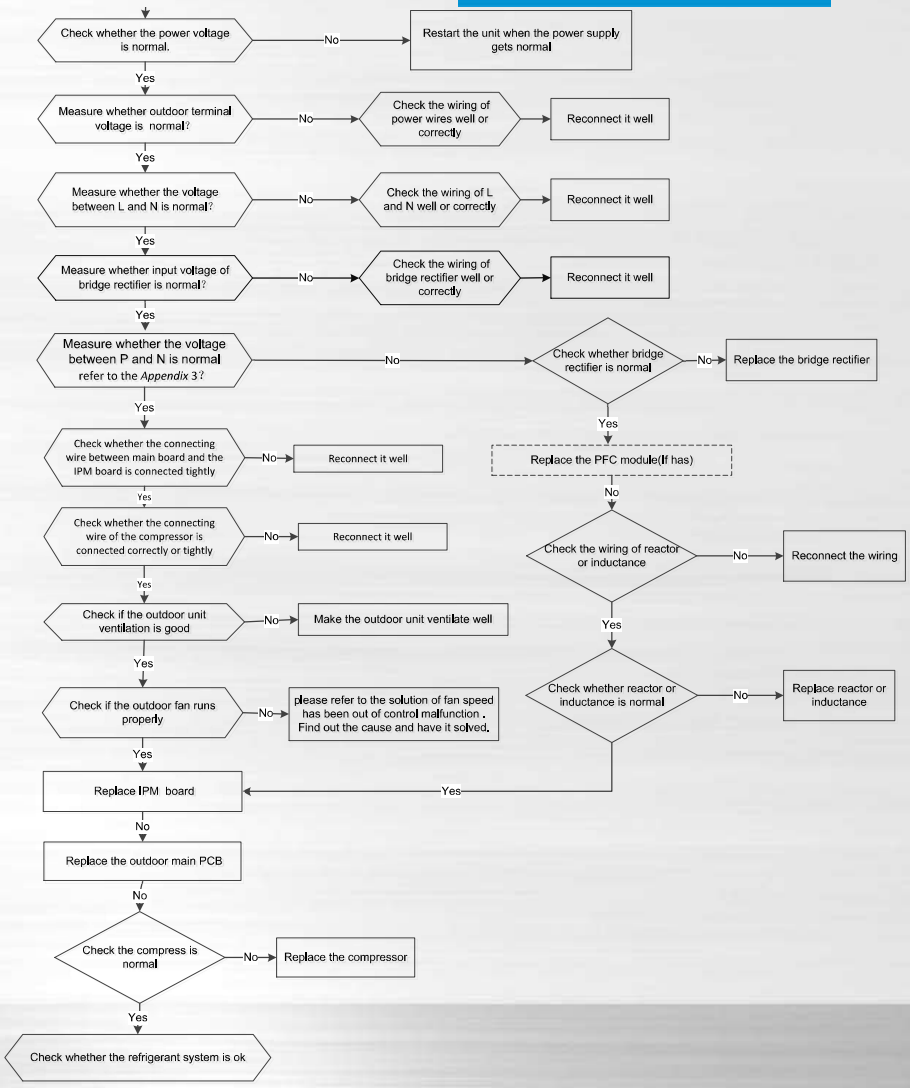
Auto-lifting Panel Malfunction

Error Code	F8
Malfunction decision conditions	Indoor PCB does not get the right close position from the PCB of auto lifting-panel when the panel motor stops
Possible causes	• Wiring mistake between indoor PCB and auto-lifting panel • Faulty PCB of auto-lifting panel • Faulty indoor PCB



- *IPM protection*

Error Code	P0/P6
Malfunction decision conditions	Outdoor PCB detects IPM signal is low voltage
Possible causes	• Wiring mistake • Power supply problem • Faulty high-voltage components • Bad ventilation of outdoor coil • Faulty PFC circuit or broken reactor • Faulty IPM board • Faulty outdoor fan • Faulty outdoor PCB • Faulty compressor



- *IPM protection*

DC voltage test between P and N

Normal voltage of P and N			
208-240V (1-phase, 3-phase)			380-420V(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**

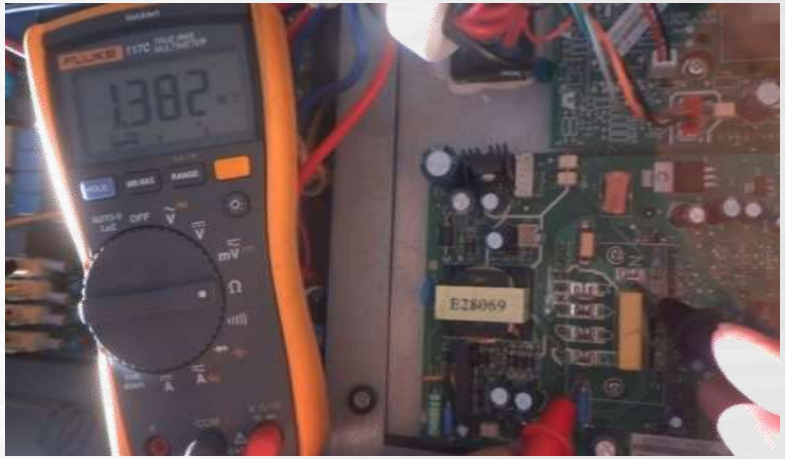
- *IPM protection*

IPM check

Turn off the power, let the large capacity electrolytic capacitors discharge completely, and dismount the IPM.

Needle-type tester		Normal resistance value
(-)	(+)	
P	N	∞ (several MΩ)
	U	
	V	
	W	

Values in ( ) are for digital tester.



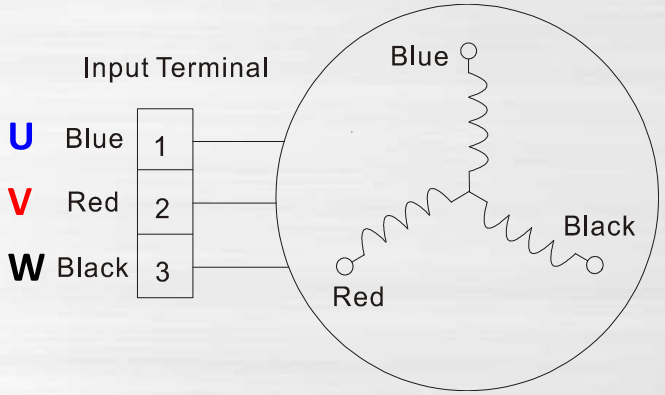
Needle-type tester		Normal resistance value
(-)	(+)	
U	N	∞ (several MΩ)
V		
W		

Values in ( ) are for digital tester.

- *IPM protection*

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.

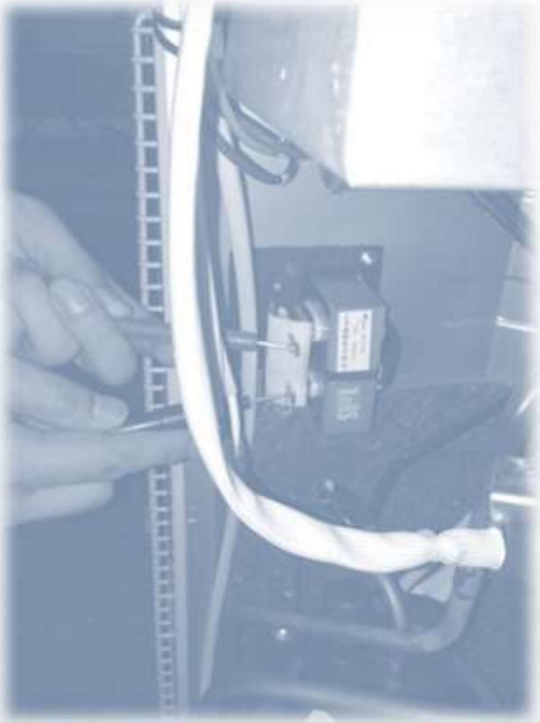


- *IPM protection*

Reactor check

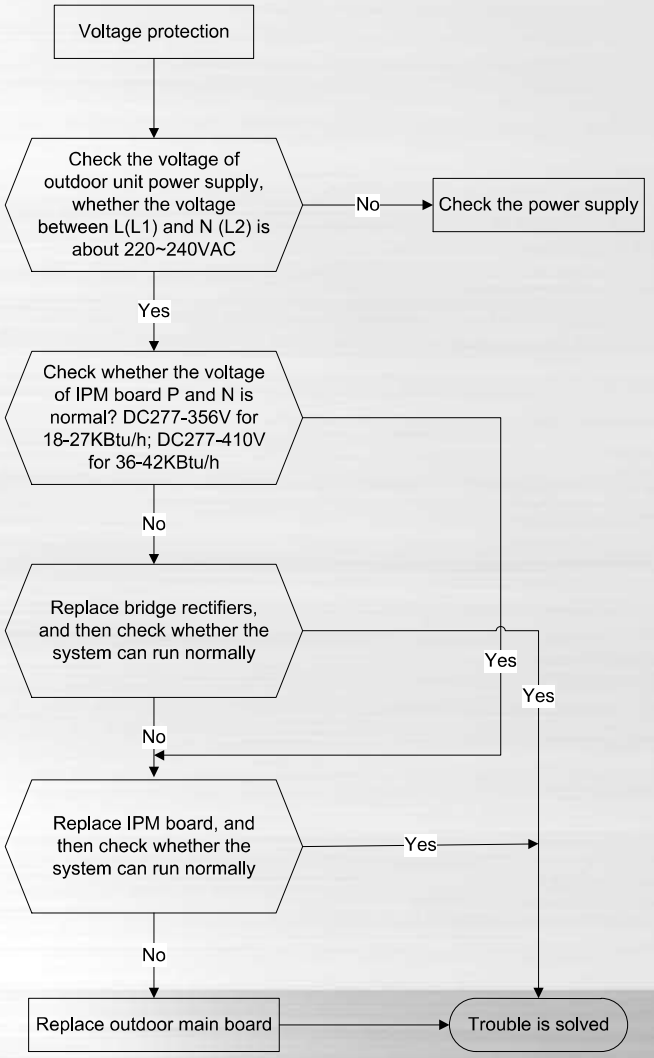
Measure the resistance and voltage (to ground) of the reactor.

The normal resistance should be **around 0-1Ω.**



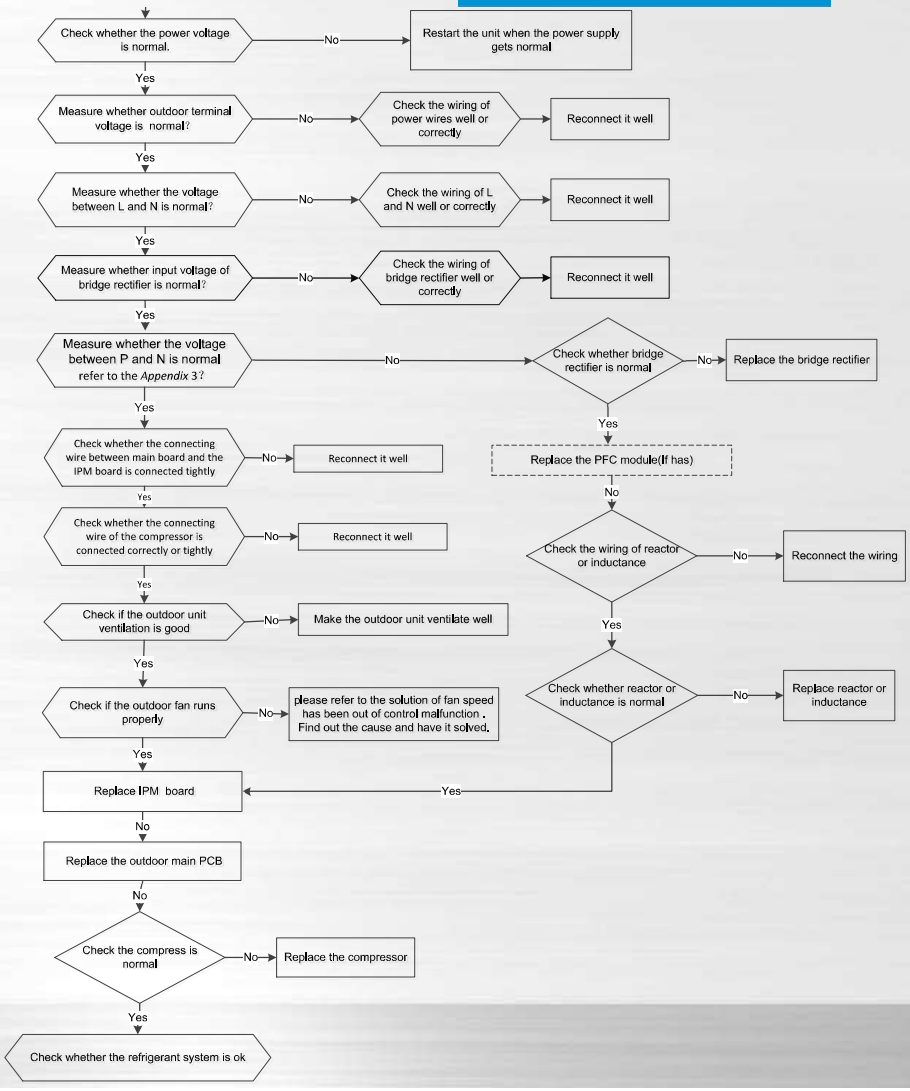
DC voltage is too high or too low

Error Code	P1/E5
Malfunction decision conditions	Outdoor PCB detects the DC voltage is out of range
Possible causes	• Power supply problem • Faulty rectifier • Faulty PFC circuit or broken reactor • Faulty IPM • Faulty outdoor PCB



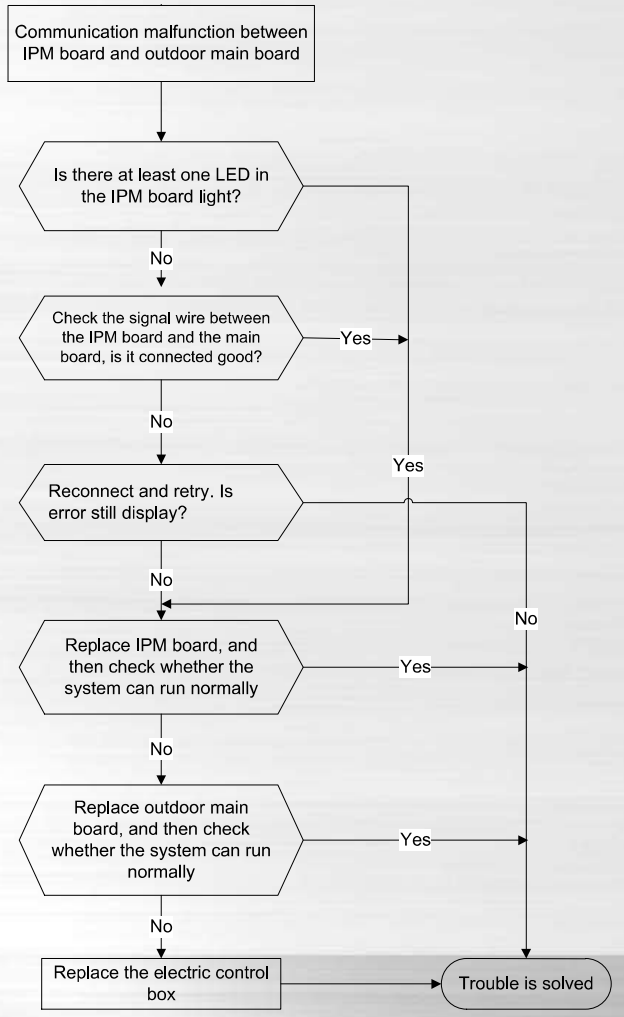
Compressor rotor position protection

Error Code	P4/P6
Malfunction decision conditions	The driven chip cannot detect the right rotor position of compressor
Possible causes	• Wiring mistake • Power supply problem • Faulty high-voltage components • Bad ventilation of outdoor coil • Faulty PFC circuit or broken reactor • Faulty IPM board • Faulty outdoor PCB • Faulty compressor



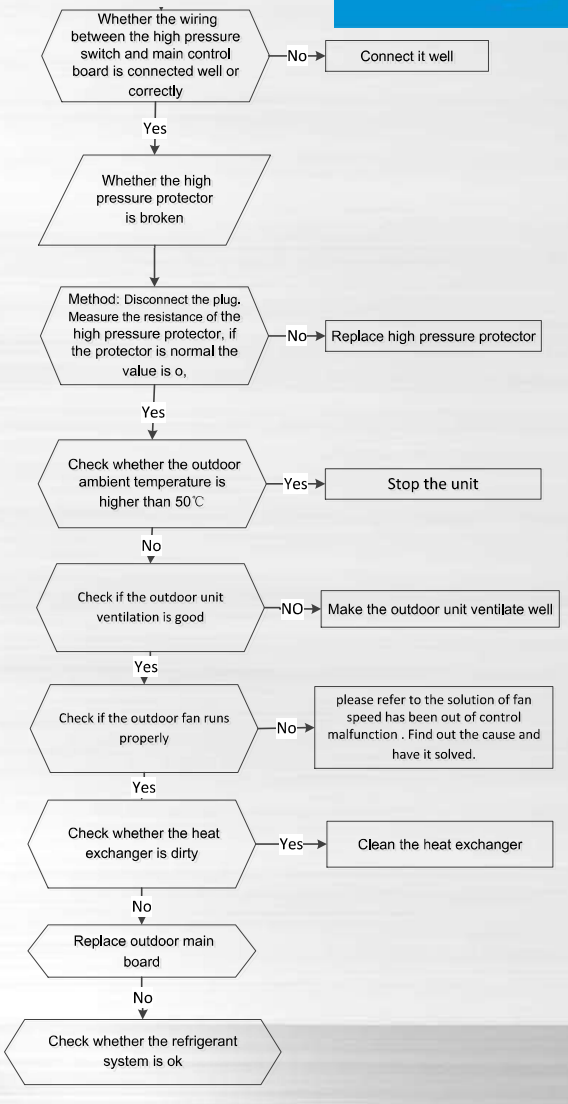
Communication error between IPM and main PCB

Error Code	E3
Malfunction decision conditions	The main PCB cannot detect the IPM board
Possible causes	• Wiring mistake • IPM malfunction • Faulty outdoor PCB



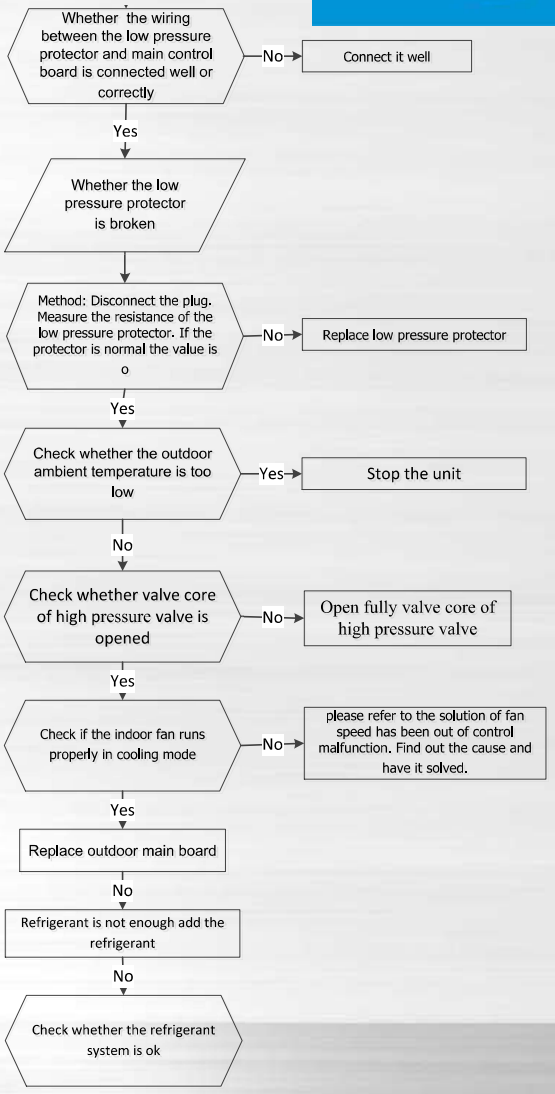
High pressure protection

Error Code	P1
Malfunction decision conditions	Outdoor pressure switch cut off the system because high pressure is higher than 4.4 MPa
Possible causes	• Wiring problem of pressure switch • Blocked refrigeration piping system • Bad ventilation of outdoor coil • Faulty pressure switch • Faulty outdoor fan • Faulty outdoor PCB



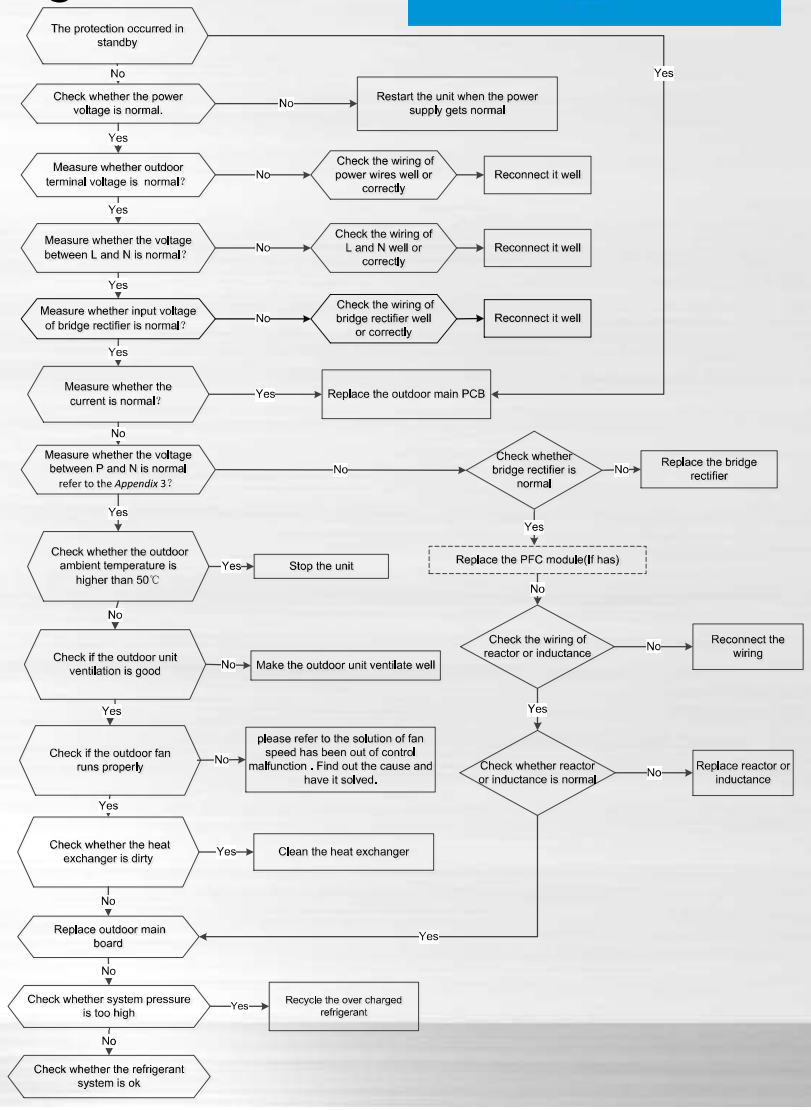
Low pressure protection

Error Code	P2
Malfunction decision conditions	Outdoor pressure switch cut off the system because low pressure is lower than 0.13 MPa
Possible causes	• Wiring problem of pressure switch • Faulty pressure switch • Ambient temperature is too low in heating • Liquid valve or EXV is closed in cooling • Lack of refrigerant • Blocked refrigeration piping system • Faulty outdoor PCB



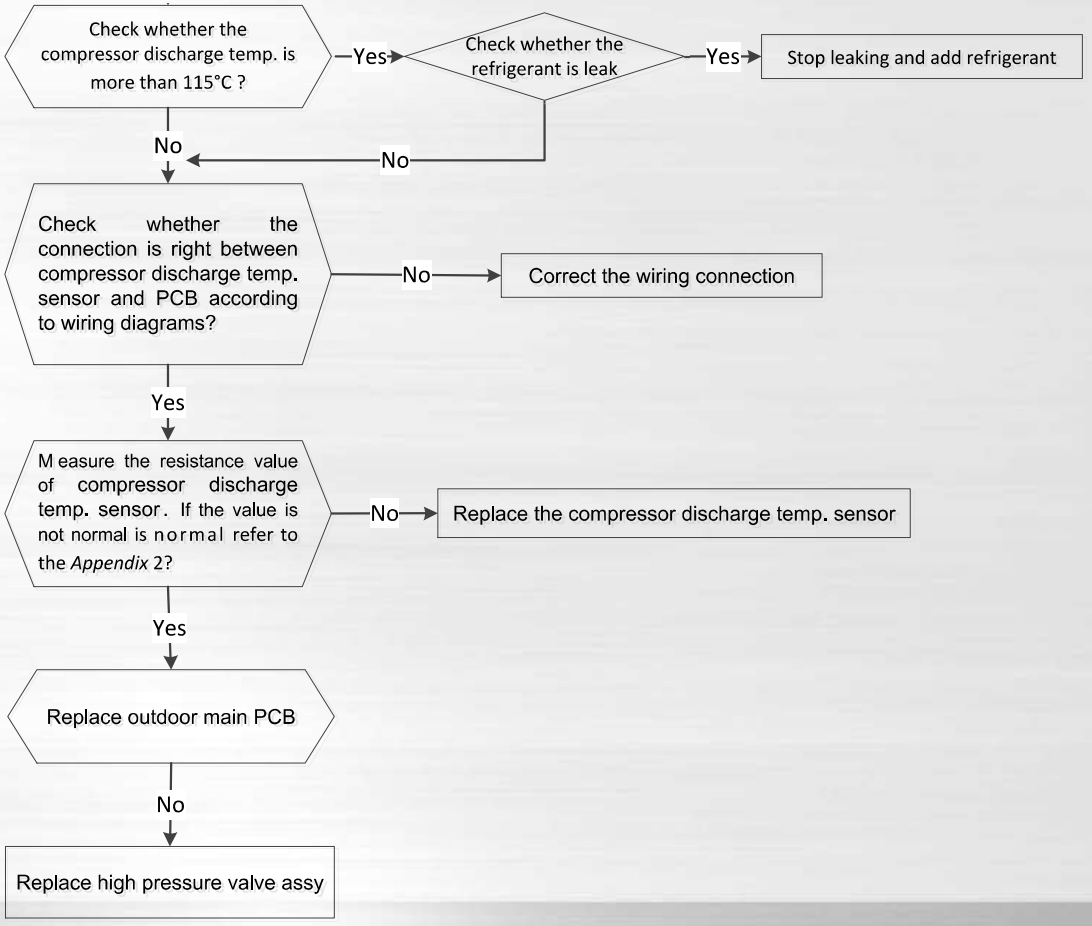
Over-current protection of compressor

Error Code	P3
Malfunction decision conditions	The system finds the current of compressor is too high
Possible causes	• Power supply problem • Faulty rectifier • Faulty PFC circuit or broken reactor • Blocked refrigeration piping system • Bad ventilation of outdoor coil • Faulty pressure switch • Faulty outdoor fan • Faulty IPM • Faulty outdoor PCB



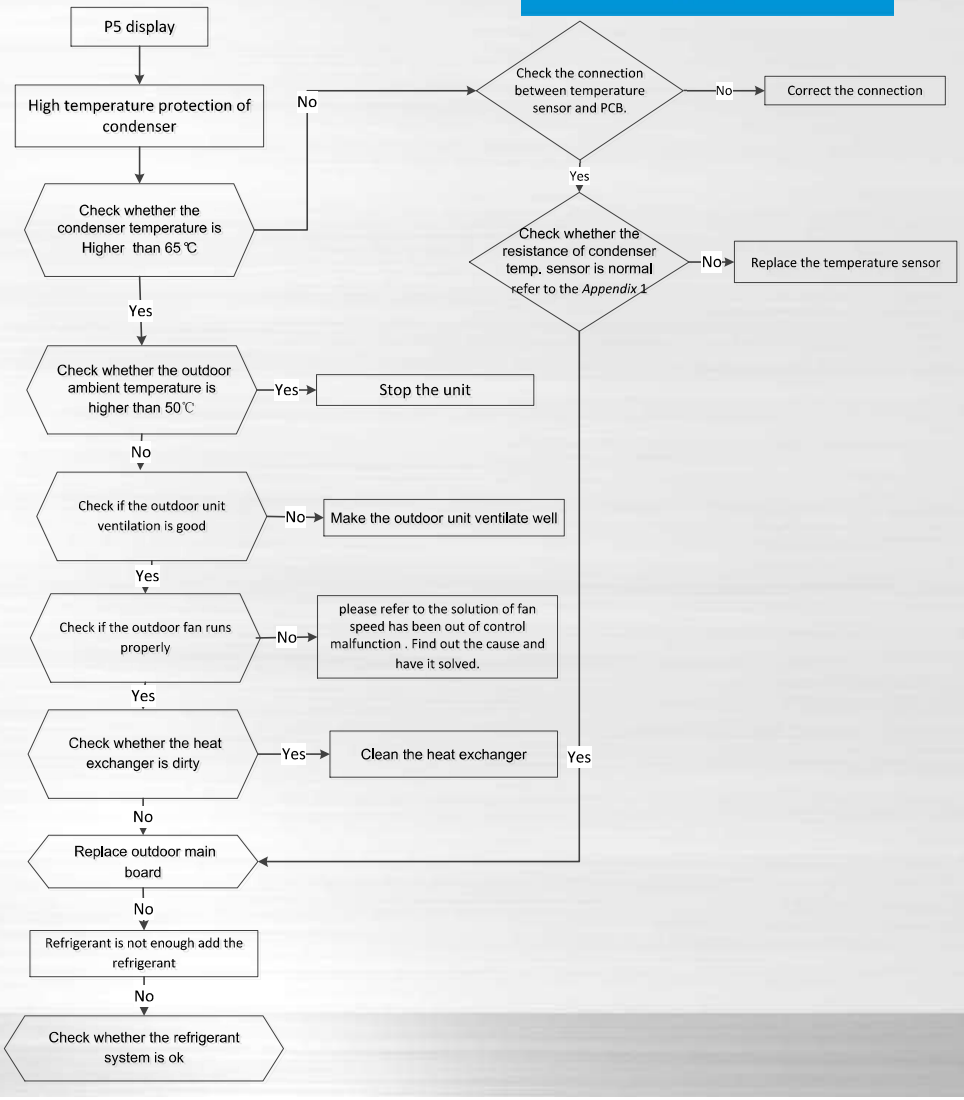
High discharge temperature protection of compressor

Error Code	P4
Malfunction decision conditions	The unit will stop when discharge temperature is higher than 115° C and runs again when it is lower than 90° C
Possible causes	• Lack of referigerant • Wiring problem • Faulty discharge temperature sensor Td/T5 • Faulty outdoor PCB



High temperature protection of outdoor coil

Error Code	P5
Malfunction decision conditions	The unit will stop when condenser temperature is higher than 65° C, and runs again when it is less than 52° C
Possible causes	• Faulty condenser pipe temperature sensor T3 • Blocked refrigeration piping system • Bad ventilation of outdoor coil • Lack of refrigerant • Faulty outdoor fan • Faulty outdoor PCB



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