HIGH WALL SYSTEM ERROR CODES & FAULT DIAGNOSIS

Contents

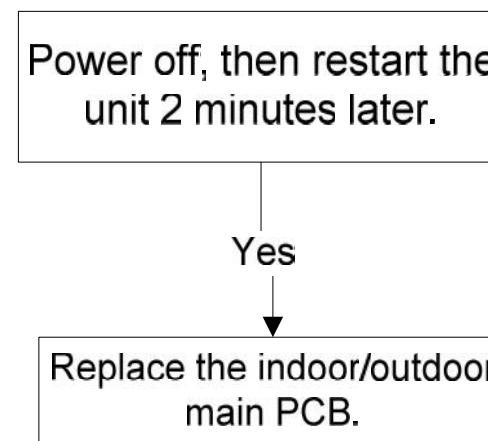Text in RED highlights that the method for the check is shown in this document

E0/F4 – EEPROM Parameter Error

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

The E0/F4 fault can be caused by electrical interference during start up so a hard restart is recommended

If this doesn't rectify it, the likelihood is the main pcb has been damaged so this will need to be replaced
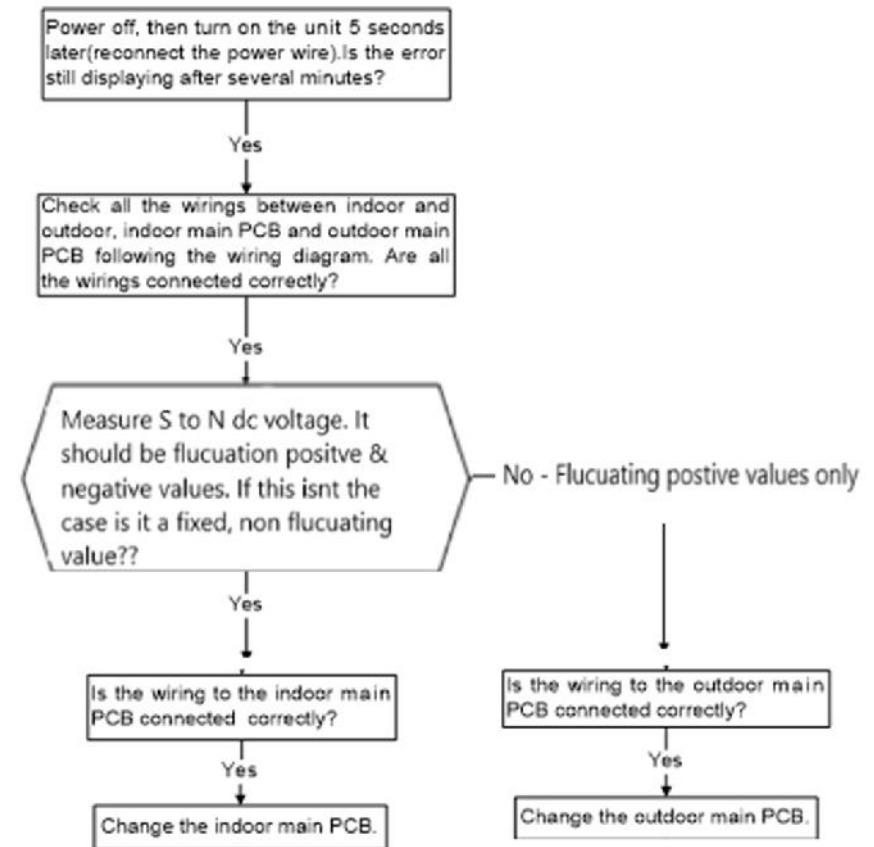
E0 – Indoor PCB
F4 – Outdoor PCB

Power off, then restart the unit 2 minutes later.

Yes

Replace the indoor/outdoor main PCB.

E1 – Communication between indoor and outdoor

Error Code	E1
Malfunction decision conditions	Indoor unit does not receive the feedback from outdoor unit during 110 seconds and this condition happens four times
Possible causes	• Wiring mistake • Faulty indoor or outdoor PCB

- Check all your connections are good

- Check cable for continuity

- If using 4 Core interconnecting method make sure the W spade connection has been moved to 1(L) on the condensing unit

Power off, then turn on the unit 5 seconds later(reconnect the power wire).Is the error still displaying after several minutes?

Yes

Check all the wirings between indoor and outdoor, indoor main PCB and outdoor main PCB following the wiring diagram. Are all the wirings connected correctly?

Yes

Measure S to N dc voltage. It should be flucuation positve & negative values. If this isnt the case is it a fixed, non flucuating value??

— No - Flucuating postive values only

Yes

Is the wiring to the indoor main PCB connected correctly?

Is the wiring to the outdoor main PCB connected correctly?

Yes

Yes

Change the indoor main PCB.

Change the outdoor main PCB.

E1 – Communication between indoor and outdoor

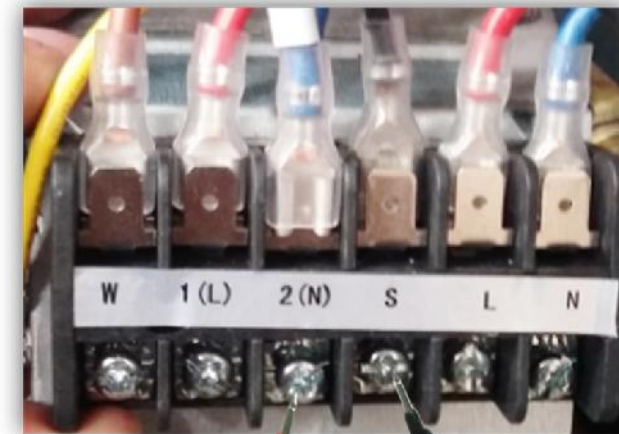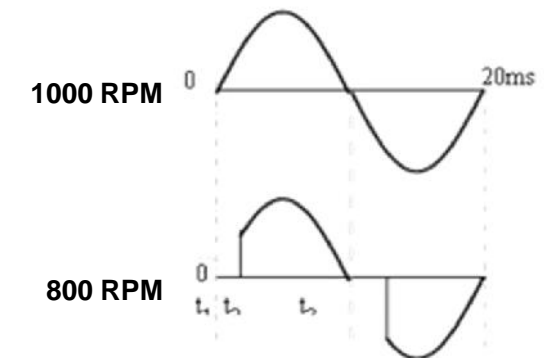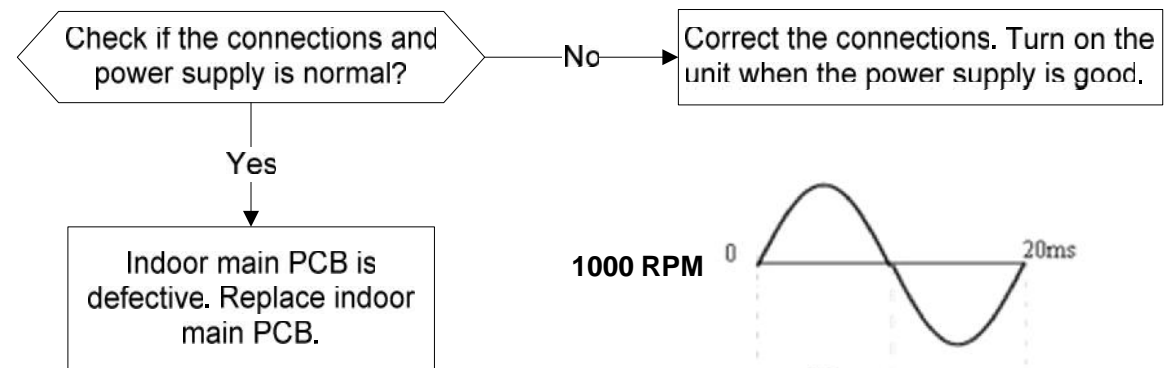| Error Code	**E1**
Malfunction decision conditions	**Indoor unit does not receive the feedback from outdoor unit during 110 seconds and this condition happens four times**
Possible causes	• **Wiring mistake** • **Faulty indoor or outdoor PCB**

If all is ok with field cabling and wiring

- Use your multimeter to measure the dc voltage between terminals S & N (black tester S / red tester N)
- If the voltage is fixed it is the indoor board at fault
- If the voltage fluctuates but only with positive values it is the outdoor board at fault
- Check spade connections onto boards. If all is good, condemn the applicable PCB

E2 – Zero Crossing signal detection error

Error Code	E2
Malfunction decision conditions	The system cannot detect correct zero crossing signal time interval.
Possible causes	• Bad connection of power cables • Faulty power supply • Faulty PCB

Check if the connections and power supply is normal? → No → Correct the connections. Turn on the unit when the power supply is good.

Yes ↓

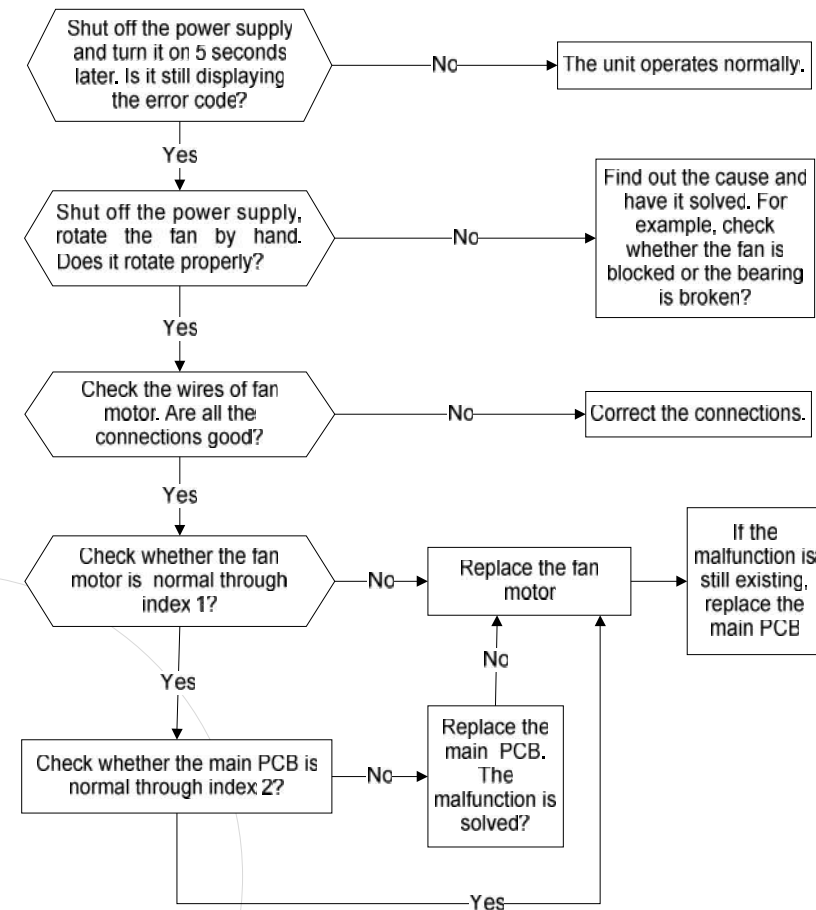Indoor main PCB is defective. Replace indoor main PCB.

1000 RPM

800 RPM

The PCB is unable to control the zero crossing time interval and is therefore unable to control the AC fan motor speed correctly

- Check the power supply voltage and connections, both installation cables and pcb cables
- If these are both good, try restarting the system
- If this fails condemn the indoor PCB

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E3/F5 – Fan speed is abnormal

Error Code	E3/F5(DP) E3/E7(DB)
Malfunction decision conditions	When fan speed keeps too low (300RPM) for certain time, the unit will stop and the LED will display the failure.
Possible causes	• Wiring mistake • Faulty fan wheel (fan blade) • Faulty fan motor • Faulty PCB • Surge

- Does the fan blade spin by hand? If not, clear the obstruction and restart the system
- Are all the connections and wiring between the fan motor and pcb ok? If not, remedy and restart the system
- If both of these are good we need to check the fan motor and the PCB

Shut off the power supply and turn it on 5 seconds later. Is it still displaying the error code? — No → The unit operates normally.

Yes ↓

Shut off the power supply, rotate the fan by hand. Does it rotate properly? — No → Find out the cause and have it solved. For example, check whether the fan is blocked or the bearing is broken?

Yes ↓

Check the wires of fan motor. Are all the connections good? — No → Correct the connections.

Yes ↓

Check whether the fan motor is normal through index 1? — No → Replace the fan motor → If the malfunction is still existing, replace the main PCB

Yes ↓

Check whether the main PCB is normal through index 2? — No → Replace the main PCB. The malfunction is solved? — No ↑
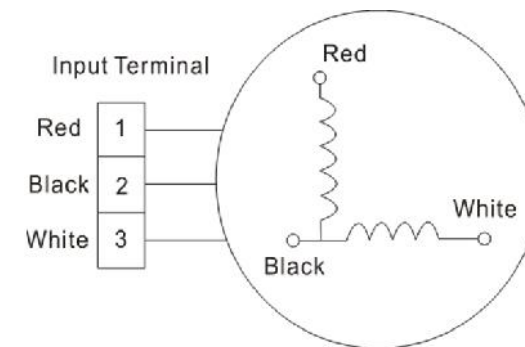
Yes

E3/F5 – Fan speed is abnormal

Indoor fan motor problem (AC motor)

Measure the resistance value of each winding by using the multi-meter.

Position	Resistance Value		
	YKFG-20-4-5-11	YKFG-28-4-3-7	YKFG-45-4-22
Black - Red	400 ±8% (20℃)	414 ±8% (20℃)	172 ±8% (20℃)
White - Black	383 ±8% (20℃)	231 ±8% (20℃)	138 ±8% (20℃)

Input Terminal

Red	1
Black	2
White	3

Red
White
Black

Indoor PCB problem

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 (Red-Black). If the value of the voltage is less than 100V (208~240V power supply) or 50V (115V power supply), the PCB must has problems and need to be replaced.

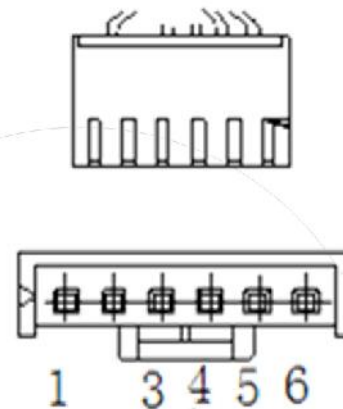**Windings Check**

Voltage Check

E3/F5 – Fan speed is abnormal

Fan motor problem (DC motor that control chip inside the 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

shown in below table, the PCB is at fault and need to be replaced.

DC motor voltage input and output:

NO.	Color	Signal	Voltage
1	Red	Vs/Vm	280V~380V
2	---	---	---
3	Black	GND	0V
4	White	Vcc	14-17.5V
5	Yellow	Vsp	0~5.6V
6	Blue	FG	14-17.5V

E3/F5 – Fan speed is abnormal

Outdoor fan motor problem (DC motor that control chip on the PCB)

1) 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 as it fault and needs to be replaced. Otherwise, go to step 2.

2) Power on and when the unit is in standby, measure the voltage of pin 4-5 in the feedback signal connector. If the value is not 5V, change the PCB. Otherwise, go to step 3.

3) Rotate the fan by hand, measure the voltage of pin1-5, pin 2-5 and pin 3-5 in feedback signal connector. If any voltage is not positive voltage fluctuation, the fan motor is faulty and needs to be replaced.

NO.	1	2	3	4	5
Color	Orange	Grey	White	Pink	Black
Signal	Hu	Hv	Hw	Vcc	GND

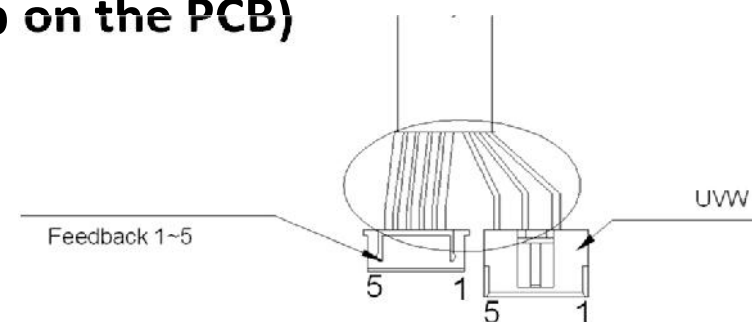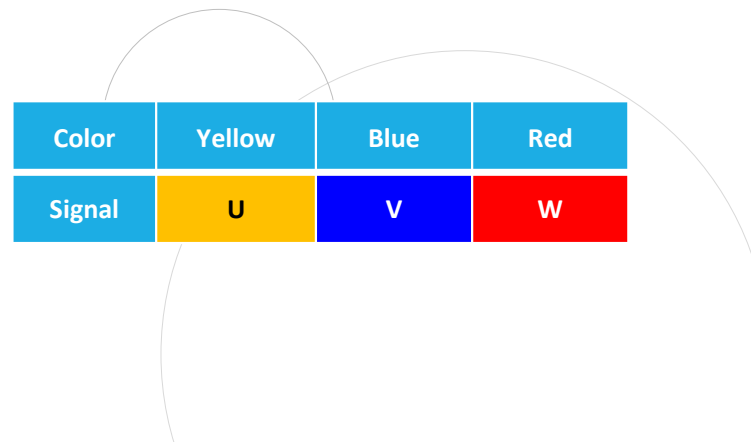| Color	Red	Blue	Yellow
Signal	W	V	U

E3/F5 – Fan speed is abnormal

Outdoor fan motor problem (DC motor that control chip on the 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 is faulty and
needs to be replaced

Color	Yellow	Blue	Red
Signal	U	V	W

E4/E5/F1/F2/F3 – Temperature sensor failure

Error Code	E4/E5/F1/F2/F3
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

Check the connections of the sensor, the placement of the sensor and also the cable condition. If all is good, measure the resistance of the sensor using the Resistance curve table. Also check the values using Info Enquiry Mode

E4 – T1 Fault – Indoor Ambient
E5 – T2 Fault – Indoor Coil
F1 – T4 Fault – Outdoor ambient
F2 – T3 Fault – Outdoor coil
F3 – T5 Fault – Compressor Discharge

Check the connections between temperature sensor and main PCB. Are the connections good? —No→ Correct the connections.

Yes ↓

Check the resistance value of the sensor via table1 and table 2, is it normal? —Yes→ Replace indoor or outdoor main PCB.

No ↓

Replace the sensor and check if the problem happen again?

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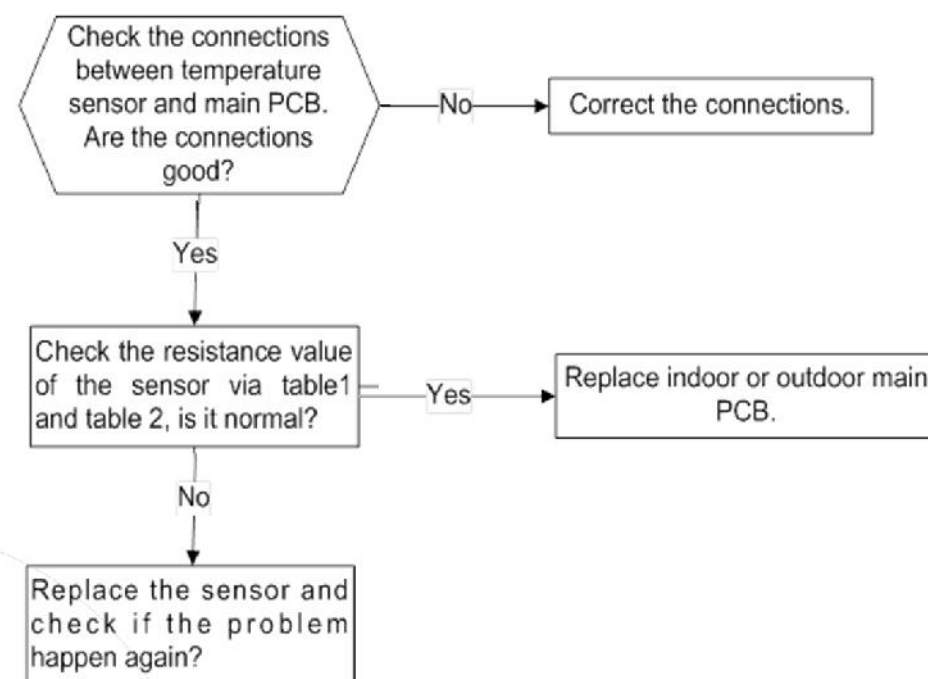
E4/E5/F1/F2/F3 – Temperature sensor failure
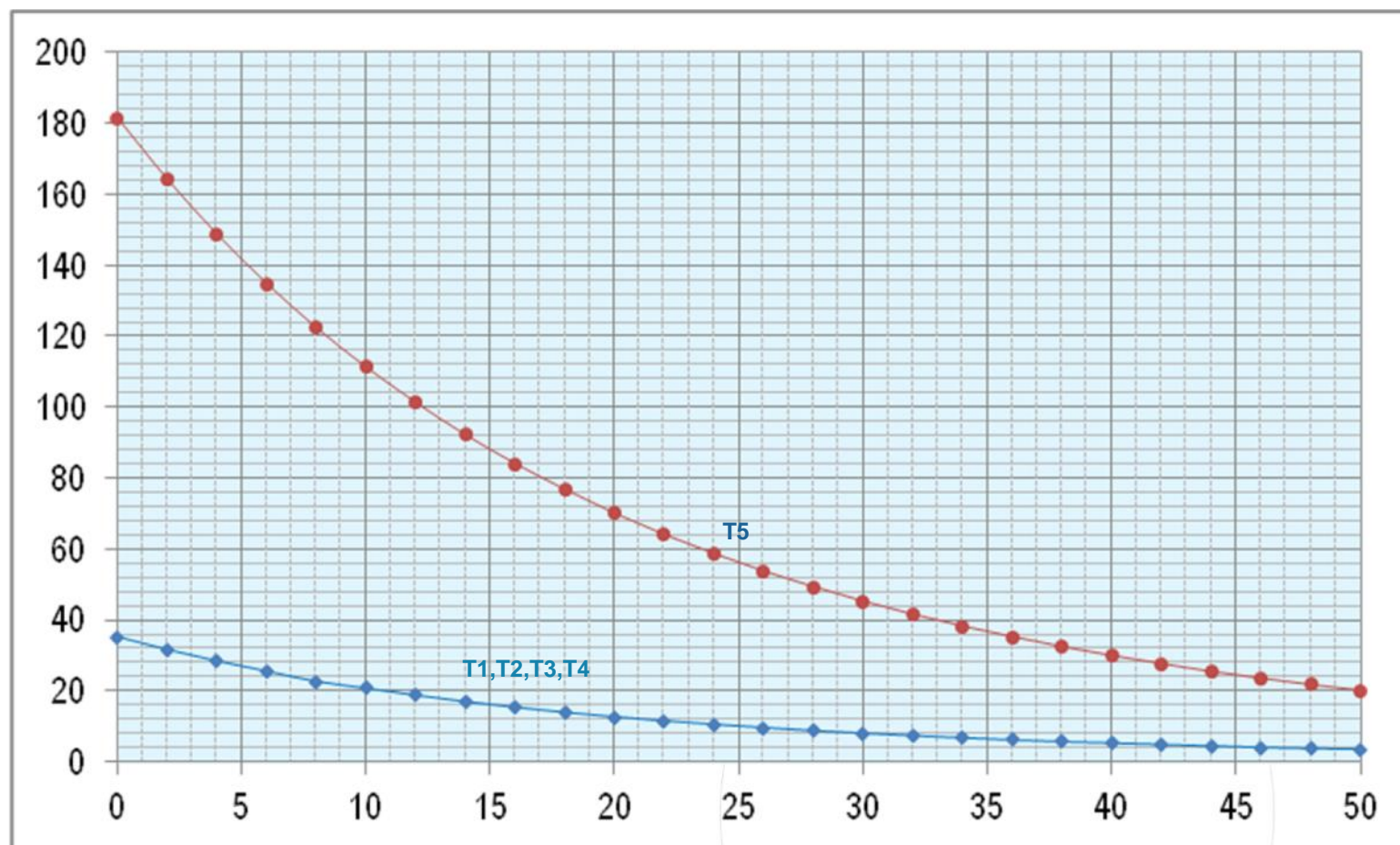
Actual tables can be found in the full service manual. For the graph:

X axis – Temperature

Y axis - Resistance

EC – Refrigerant Leak Detection

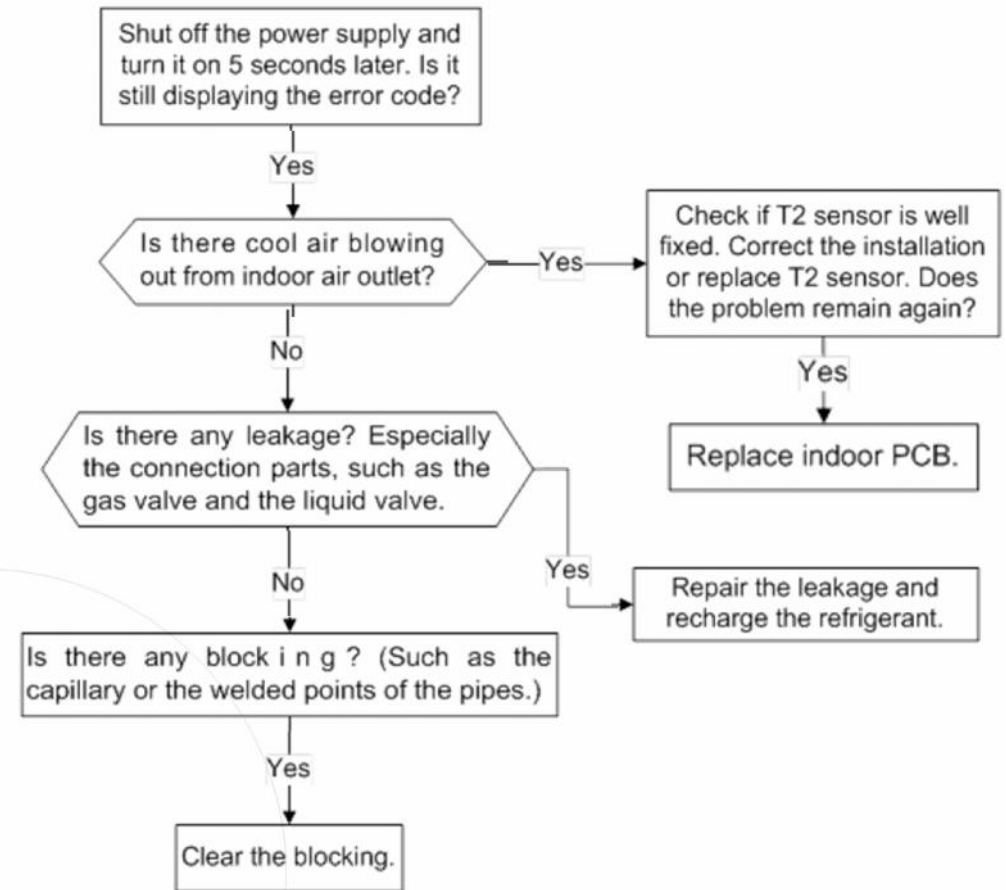| Error Code	EC(DP)
Malfunction decision conditions	Define initial evaporator coil temperature T2 when the compressor just starts running as T_{cool}. In the first 8 minutes after the compressor starts up, if $T2 < T_{cool} - 2$ does not keep continuous 4 seconds, and this situation happens 3 times, the display area will show "EC" and AC will turn off.
Possible causes	• Faulty T2 sensor • Faulty indoor PCB • System problems, such as leakage or blocking.

Most likely a refrigerant leak. Restart the system and check the operating pressure. If all is good its most likely the indoor coil sensor has been misplaced and is unable to sense the change in temperature. If its in the correct position check the resistance

Shut off the power supply and turn it on 5 seconds later. Is it still displaying the error code?

Yes

Is there cool air blowing out from indoor air outlet? — Yes → Check if T2 sensor is well fixed. Correct the installation or replace T2 sensor. Does the problem remain again?

Yes → Replace indoor PCB.

No

Is there any leakage? Especially the connection parts, such as the gas valve and the liquid valve.

No

Yes → Repair the leakage and recharge the refrigerant.

Is there any blocking? (Such as the capillary or the welded points of the pipes.)
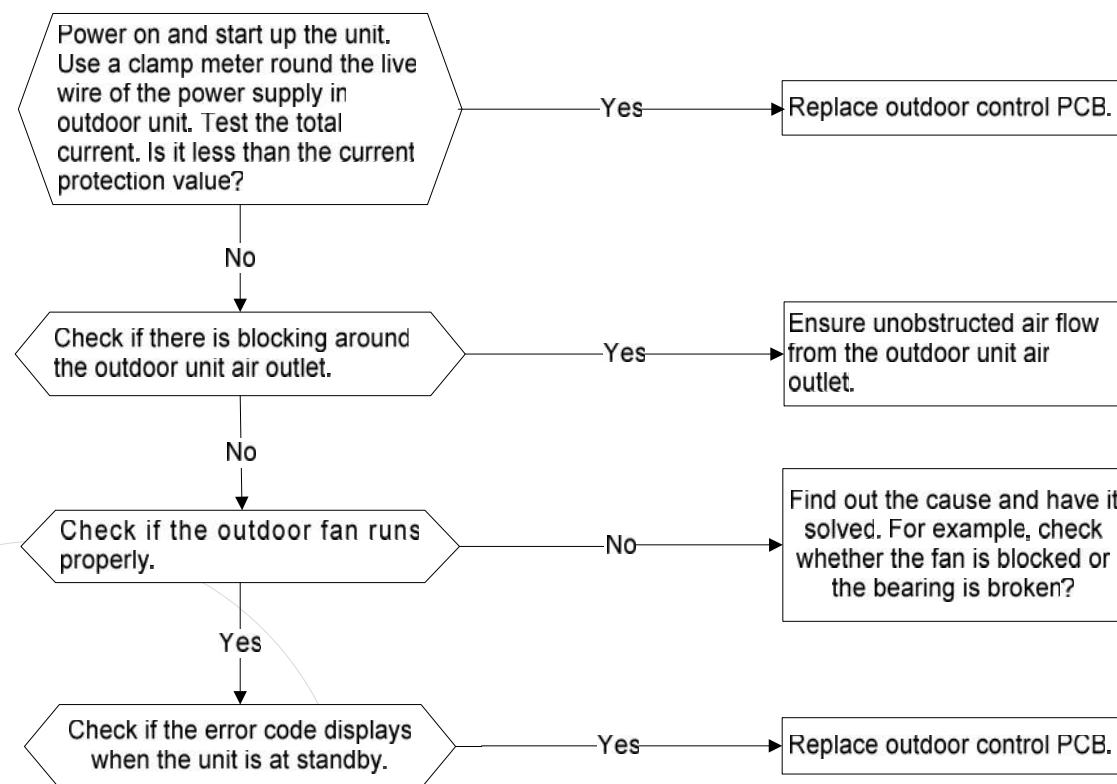
Yes

Clear the blocking.

F0 – Overcurrent Protection

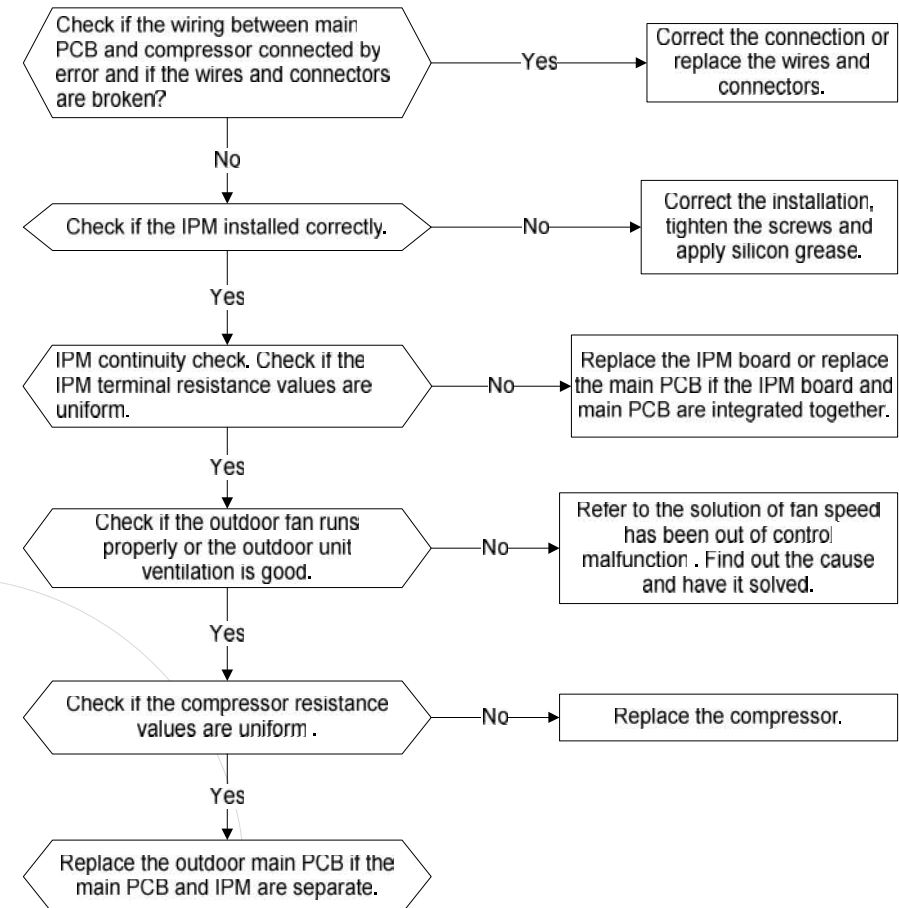| Error Code	F0
Malfunction decision conditions	An abnormal current rise is detected by checking the specified current detection circuit.
Possible causes	• Power supply problems. • System blockage • Faulty PCB • Wiring mistake • Compressor malfunction

Test the actual current the unit is pulling. If the current is fine and the error remains the outdoor pcb is at fault. If the current is actually high check both the outdoor coil for blockages and restricted airflow. Check the fan rotation by hand. If the problem is displayed straight after power up on standy mode replace the outdoor pcb

Power on and start up the unit. Use a clamp meter round the live wire of the power supply in outdoor unit. Test the total current. Is it less than the current protection value? — Yes → Replace outdoor control PCB.

No

Check if there is blocking around the outdoor unit air outlet. — Yes → Ensure unobstructed air flow from the outdoor unit air outlet.

No

Check if the outdoor fan runs properly. — No → Find out the cause and have it solved. For example, check whether the fan is blocked or the bearing is broken?

Yes

Check if the error code displays when the unit is at standby. — Yes → Replace outdoor control PCB.

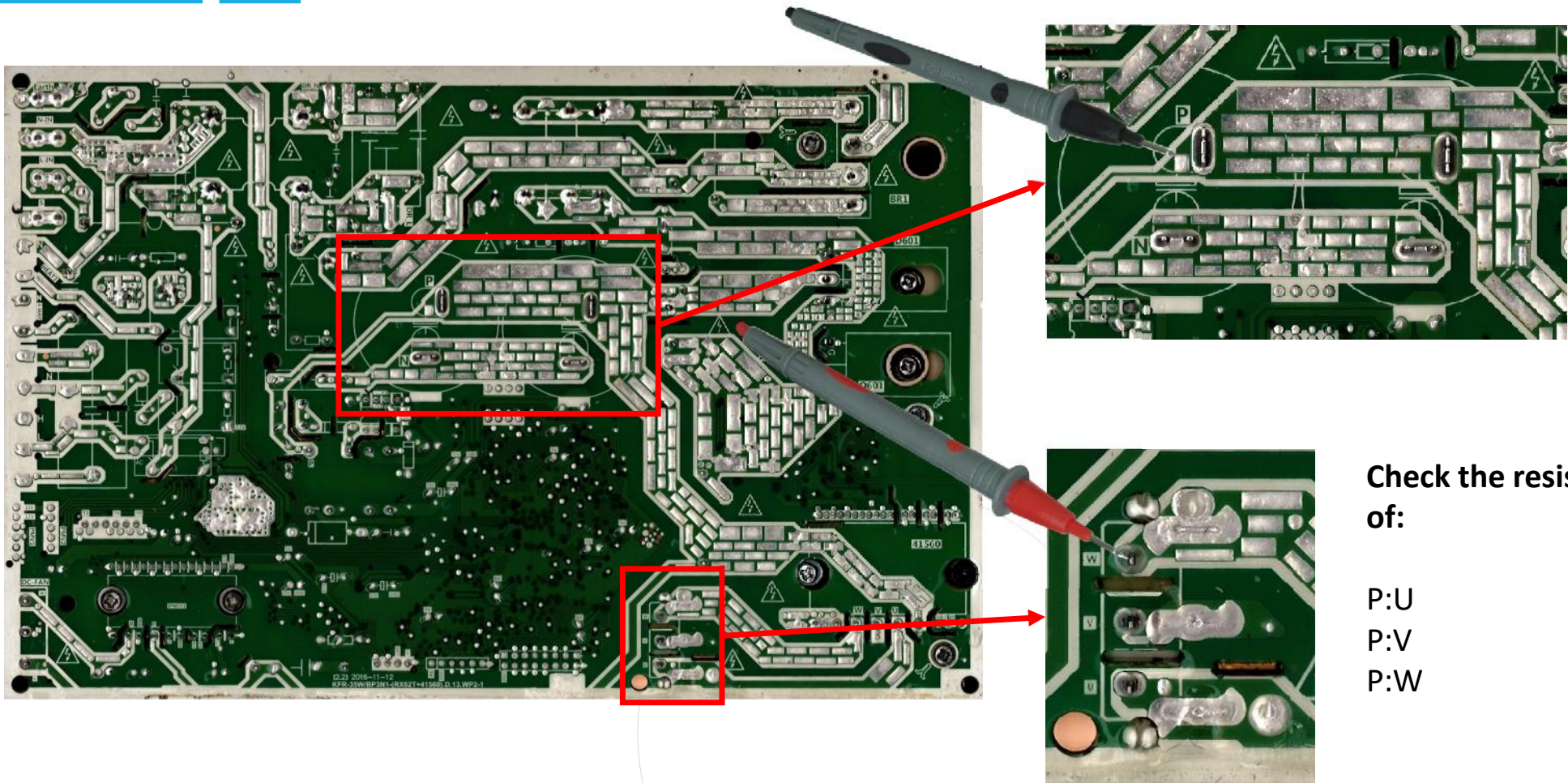| Error Code	**P0(DP) P0(DB)**
Malfunction decision conditions	**When the voltage signal that IPM send to compressor drive chip is abnormal, the display LED will show "P0" and AC will turn off.**
Possible causes	• **Wiring mistake** • **IPM malfunction** • **Faulty outdoor fan motor** • **Compressor malfunction** • **Faulty outdoor PCB** • **Surge**

Check all wiring connections, especially where the jack plug connections meet. Check IPM Continuity. Replace main pcb if it is faulty. Check fan motor using E3 error method. Make sure airflow and ventilation of the outdoor coil is good. Check Compressor resistances. If all is good, change the main pcb. Check the Reactor

Check if the wiring between main PCB and compressor connected by error and if the wires and connectors are broken? — Yes → Correct the connection or replace the wires and connectors.

No ↓

Check if the IPM installed correctly. — No → Correct the installation, tighten the screws and apply silicon grease.

Yes ↓

IPM continuity check. Check if the IPM terminal resistance values are uniform. — No → Replace the IPM board or replace the main PCB if the IPM board and main PCB are integrated together.

Yes ↓

Check if the outdoor fan runs properly or the outdoor unit ventilation is good. — No → Refer to the solution of fan speed has been out of control malfunction . Find out the cause and have it solved.

Yes ↓

Check if the compressor resistance values are uniform . — No → Replace the compressor.

Yes ↓

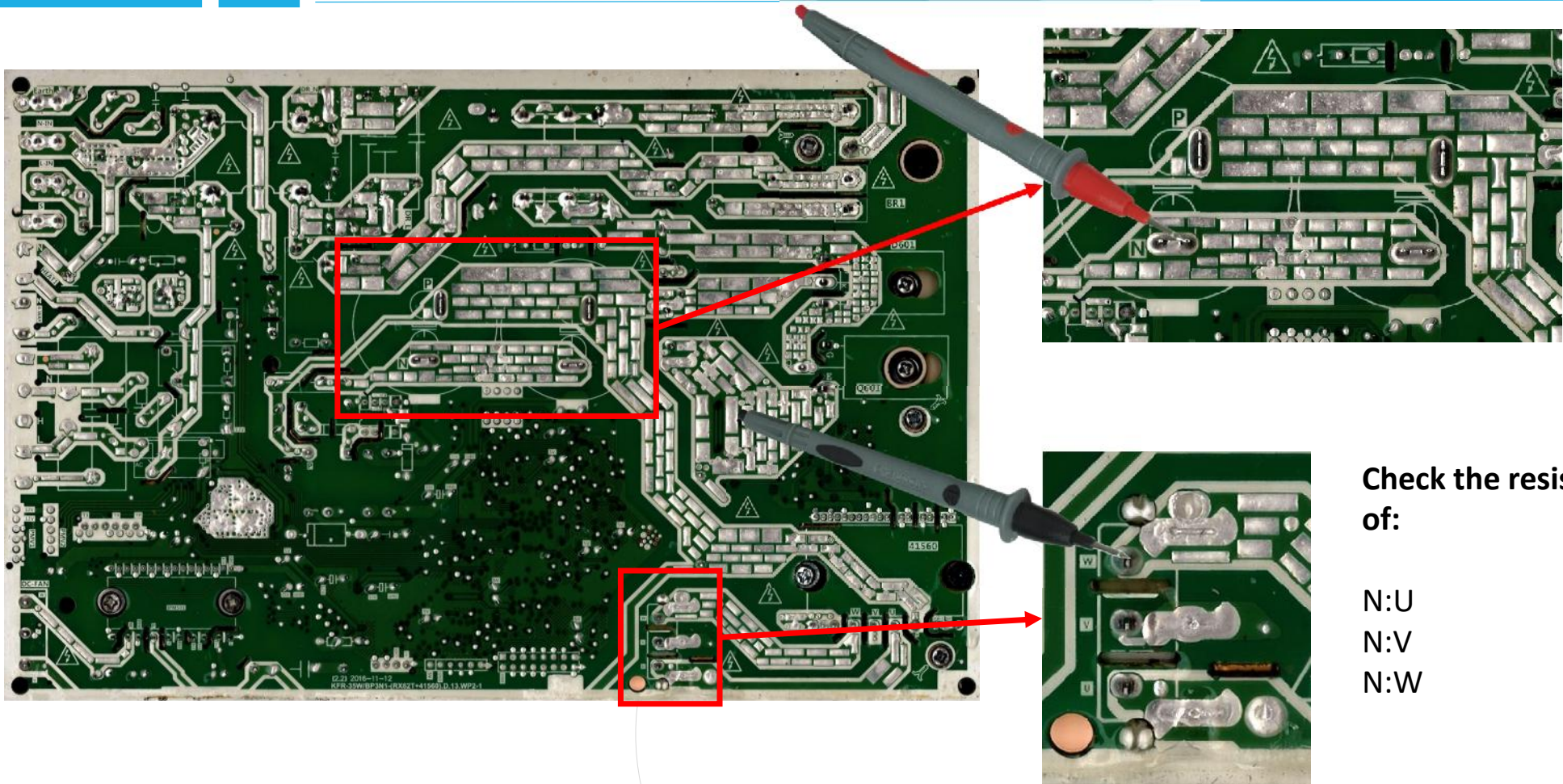Replace the outdoor main PCB if the main PCB and IPM are separate.

IPM Continuity Check

Check the resistances of:

P:U
P:V
P:W

IPM Continuity Check
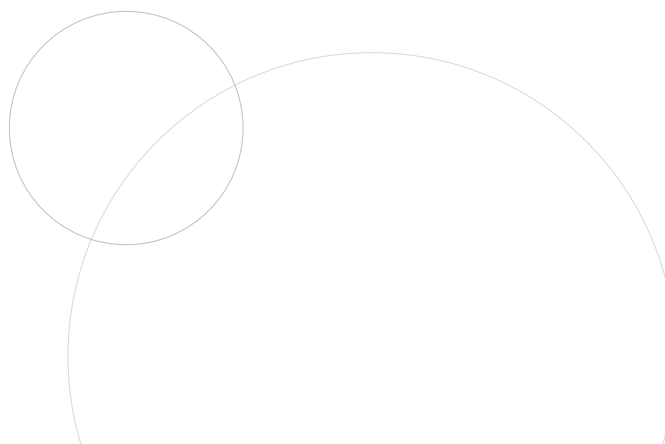

Check the resistances of:

N:U
N:V
N:W

IPM Continuity Check – Continuity Ranges

Continuity Ranges using the ohm measurement of your multi meter

Needle-type Tester		Normal Resistance Value
Black	Red	
P	N	∞ (Several MΩ)
	U	
	V	
	W	

Needle-type Tester		Normal Resistance Value
Red	Black	
N	U	∞ (Several MΩ)
	V	
	W	

IPM Continuity Check – Continuity Ranges

You can also test the IPM using diode mode of your multi meter

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

Needle-type Tester		Normal Value
Red	Black	
N	U	300-500
	V	
	W	

Needle-type Tester		Normal Value
Black	Red	
P	U	300-500
	V	
	W	

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

Compressor Check

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. Also check each winding to ground to make sure it hasn't been earthed. Any reading will indicate the compressor is faulty
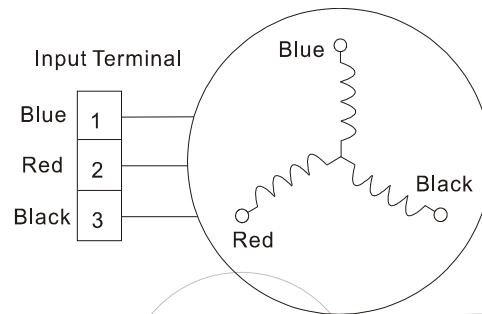
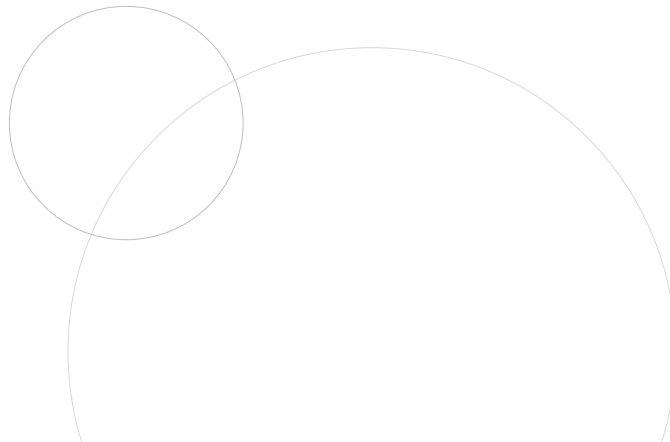| Resistance Value Reference								
Compressor model	ASN98D22U EZ	DA130M1C-31FZ	DA200S2C-10MT	ATM115D1 UFZ	DA108X1C-23EZ	DA130S1C-20FZ	DA150S1C-20FZ	DA250S2C-30MT
U - V	1.57Ω (20℃)	1.77Ω (20℃)	0.57Ω (20℃)	1.89Ω (20℃)	1.1Ω (20℃)	0.95Ω (20℃)	0.95Ω (20℃)	0.55Ω (20℃)
V - W								
U - W								

Reactor Check

Reactor check

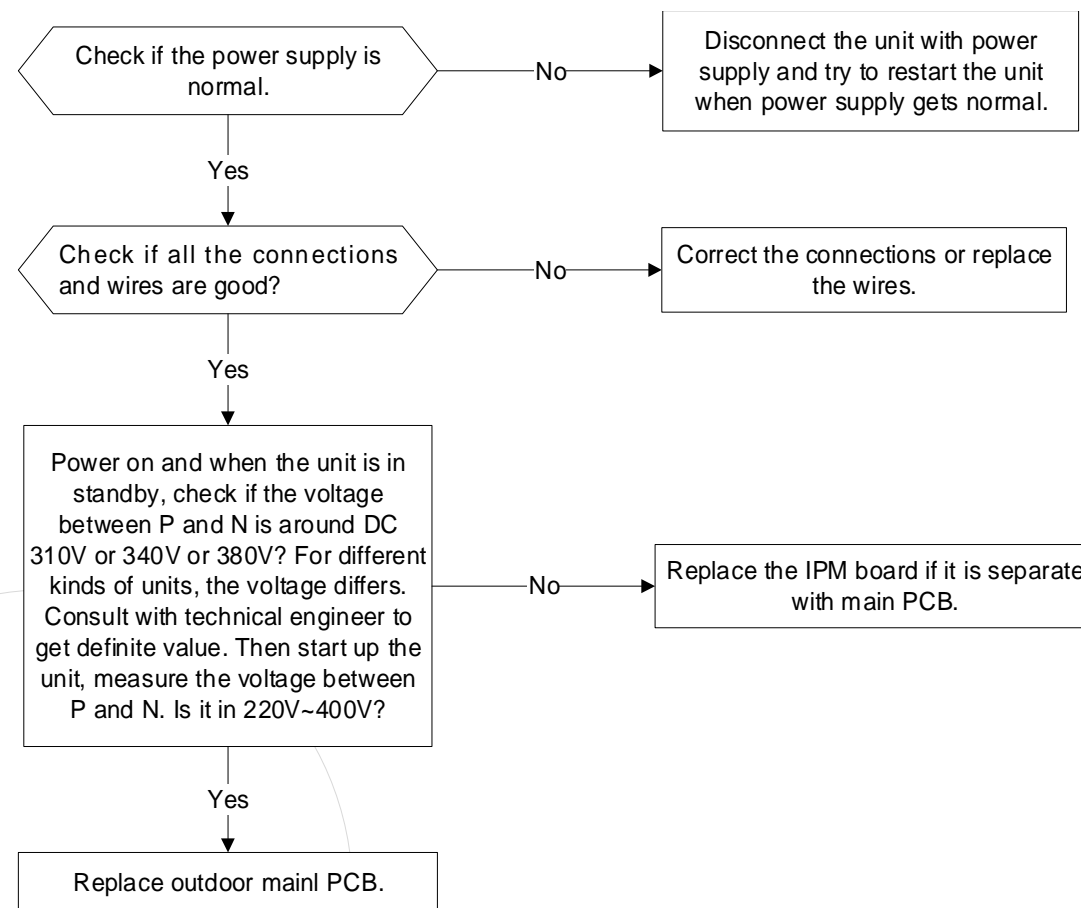Measure the resistance and voltage (to ground) of the reactor.

The normal resistance should be **around 0~1Ω.**
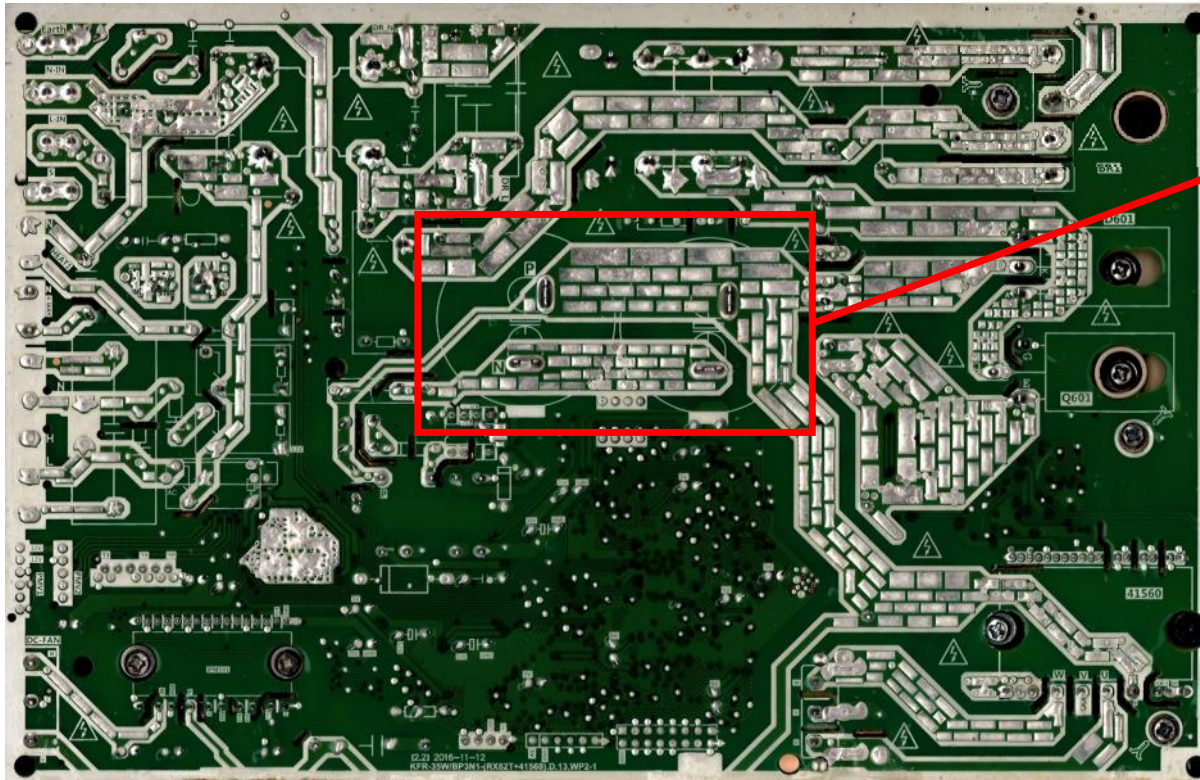
P1 – DC Voltage abnormal

Error Code	P1(DP) P10/P11(DB)
Malfunction decision conditions	An abnormal voltage rise or drop is detected by checking the specified voltage detection circuit.
Possible causes	• **Power supply problems.** • **Faulty rectifier** • **PCB faulty**

The most likely cause is a drop in the supply voltage so this is first thing to check. Check all mains power connections. Check the DC voltage between P and N. If the voltage is incorrect the main pcb needs to be changed
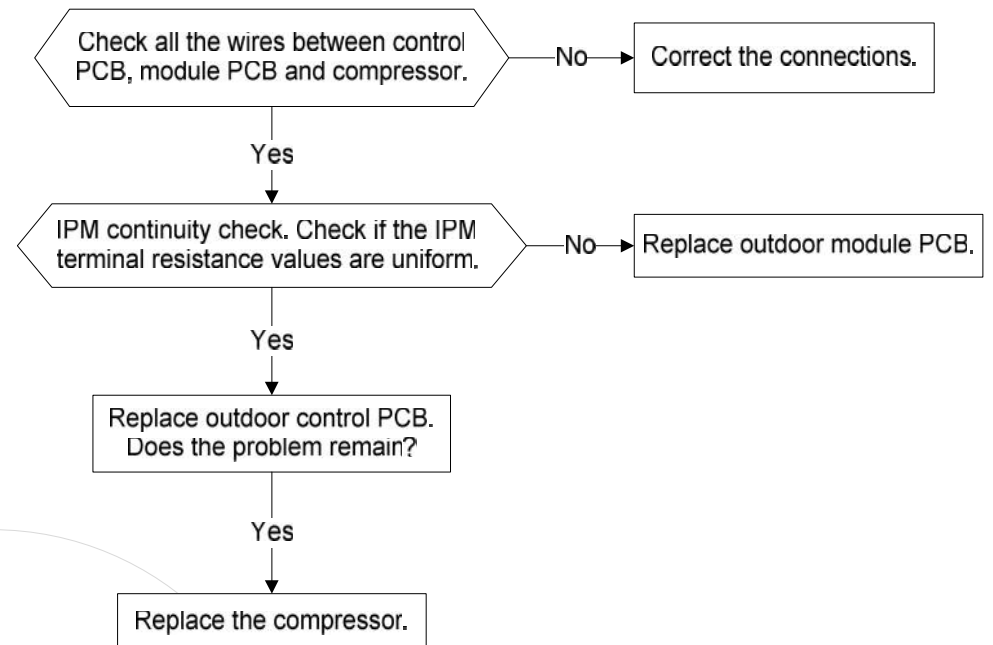
Check if the power supply is normal. —No→ Disconnect the unit with power supply and try to restart the unit when power supply gets normal.

Yes

Check if all the connections and wires are good? —No→ Correct the connections or replace the wires.

Yes

Power on and when the unit is in standby, check if the voltage between P and N is around DC 310V or 340V or 380V? For different kinds of units, the voltage differs. Consult with technical engineer to get definite value. Then start up the unit, measure the voltage between P and N. Is it in 220V~400V? —No→ Replace the IPM board if it is separate with main PCB.

Yes

Replace outdoor mainl PCB.

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P1 – Voltage check

DC Voltage should be
310V/340V/380V in standby mode

P4 – Inverter Drive Error

Error Code	P4
Malfunction decision conditions	An abnormal inverter compressor drive signal is calculated by the detection circuit.
Possible causes	• Wiring mistake • IPM malfunction • Faulty outdoor fan motor • Compressor malfunction • Faulty outdoor PCB • Surge

Check the wiring between the compressor and the PCB.
Check the IPM Continuity. Check the airflow and Fan motor and also Check Compressor.

P4 errors can also error on badly commissioned systems.
A lack of vacuum drying can cause a P4

Check all the wires between control PCB, module PCB and compressor. —No→ Correct the connections.

Yes

IPM continuity check. Check if the IPM terminal resistance values are uniform. —No→ Replace outdoor module PCB.

Yes

Replace outdoor control PCB. Does the problem remain?

Yes

Replace the compressor.

Information Enquiry – How to enter

LED BUTTON   **SWING**

Switch the unit on, press the LED button 3 times in quick succession, now press the swing button 3 times (even when the display is off)

After 3 seconds the unit will enter Info Equiry mode

We can access the system running parameters using this method

Information Enquiry – Data available

| Abbreviation	Element
T1	Indoor room temperature
T2	Coil temperature of evaporator
T3	Coil temperature of condenser
T4	Outdoor ambient temperature
TS	Set temperature
TP	Compressor discharge temperature
Tsc	Adjusted setting temperature

Using the LED and swing buttons you can cycle through the items in the table on the right to help with commissioning data and/or fault diagnosis

Displayed code	Explanation	Additional Notes
T1	Ti	T1 temperature
T2	T2	T2 temperature
T3	T3	T3 temperature
T4	T4	T4 temperature
TP	TP	TP temperature
Targeted frequency	FT	Targeted Frequency
Actual frequency	TR	Actual Frequency
Compressor current	DL	N/A
Outdoor AC voltage	UO	N/A
Indoor capacity test	SR	N/A
Reserve	--	Running mode
Outdoor fan speed	PR	Outdoor fan speed
EXV opening angle	LR	EXV opening angle
Indoor fan speed	IR	Indoor fan speed
Indoor humidity	HU	N/A
Adjusted setting temperature	TT	N/A
Indoor dust concentrations	DT	N/A
WIFI signal strength	IF	N/A
GA algorithm frequency	OT	N/A

Troubleshooting Type A (230VAC)

1. Check AC input
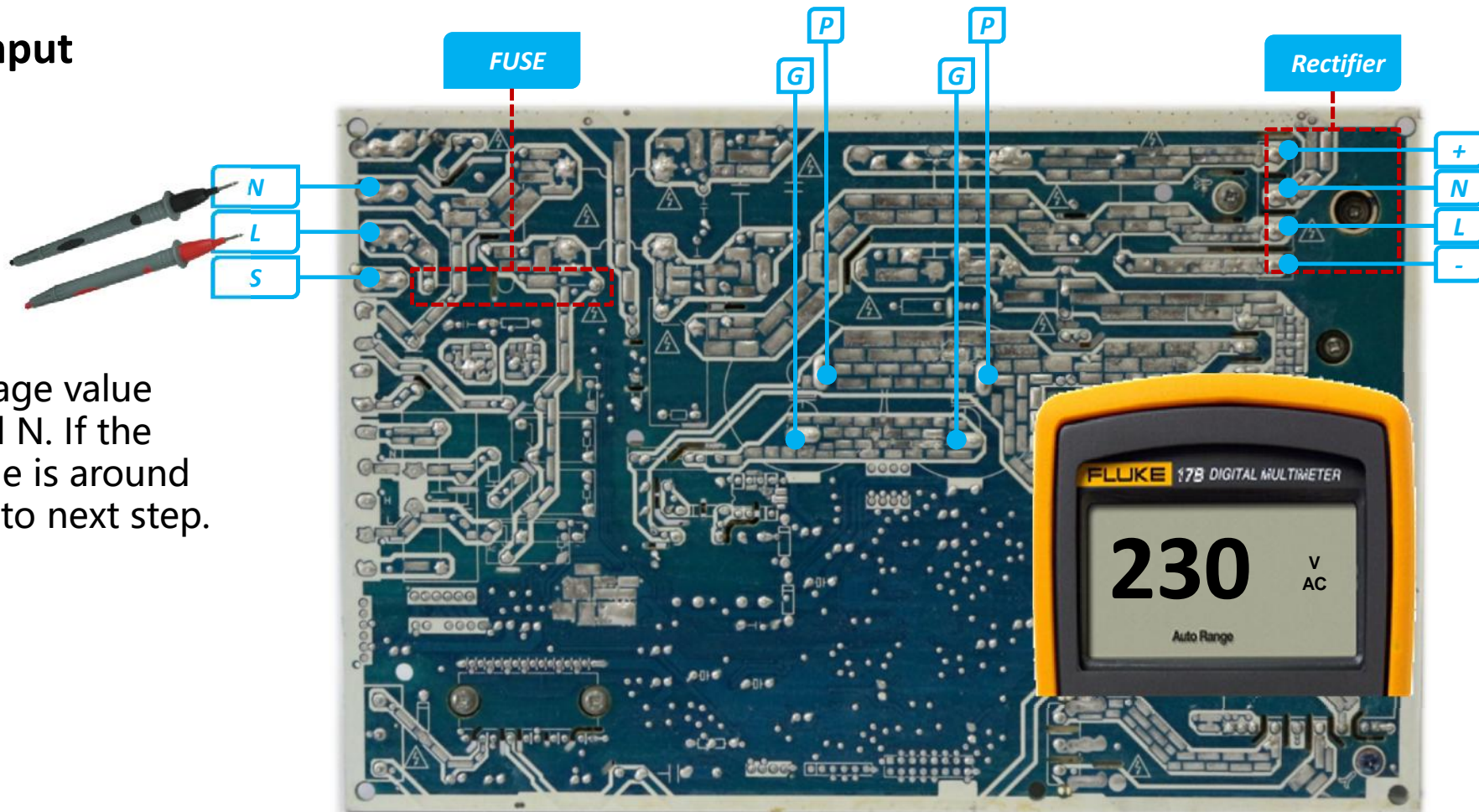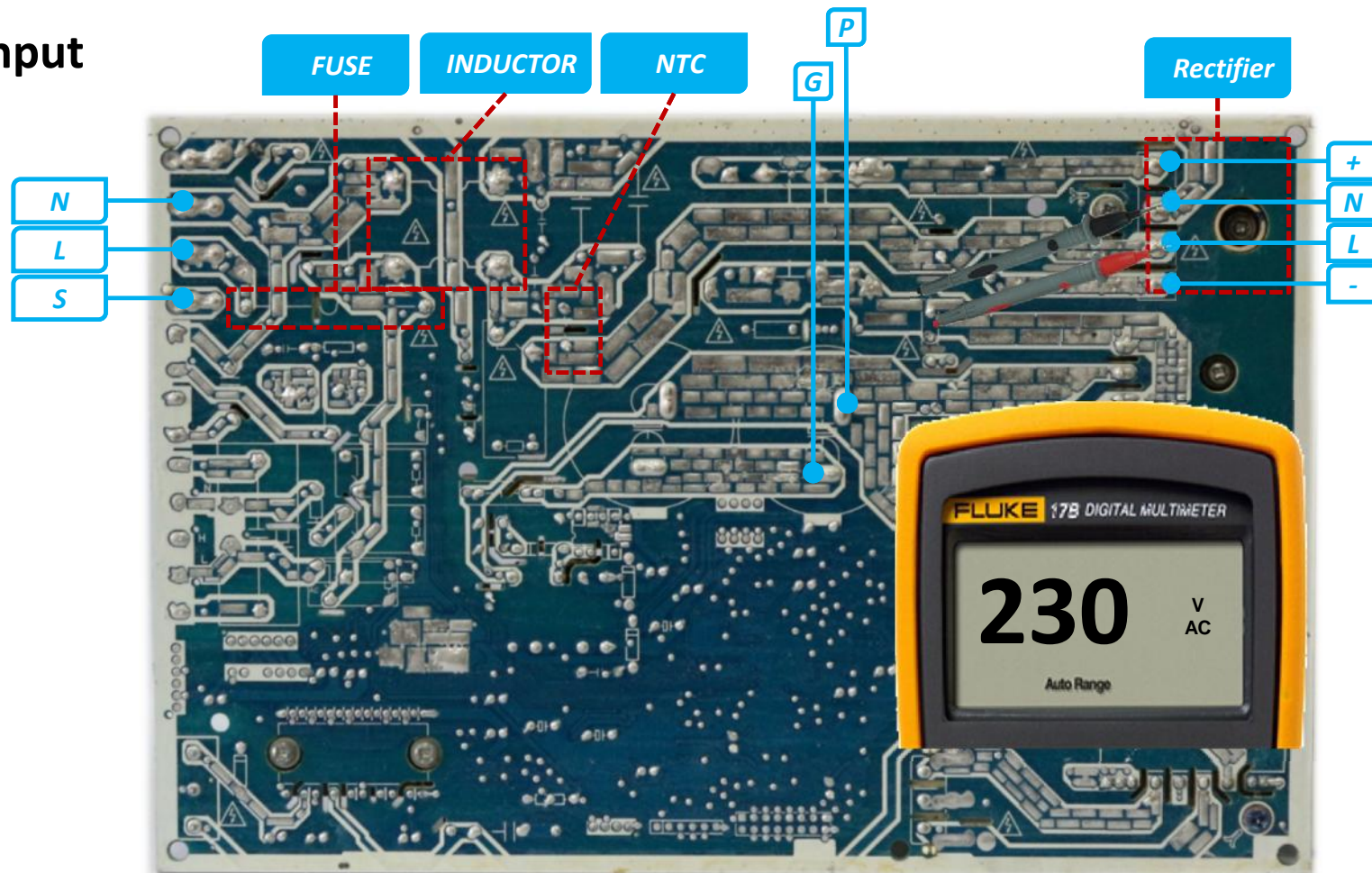
Check AC voltage value between L and N. If the measured value is around 230V, then go to next step.

FUSE

P
G
P
G

Rectifier

N
L
S

+
N
L
-

FLUKE 17B DIGITAL MULTIMETER

230 V AC

Auto Range

Troubleshooting Type A (230VAC)

2. Check Rectifier's AC input

FUSE   INDUCTOR   NTC   P   G   Rectifier

N
L
S

+
N
L
-

Check Rectifier's AC input voltage value between L and N. If the measured value is around 230V, it means the fuse , the inductor and the ntc are ok, then go to next step.
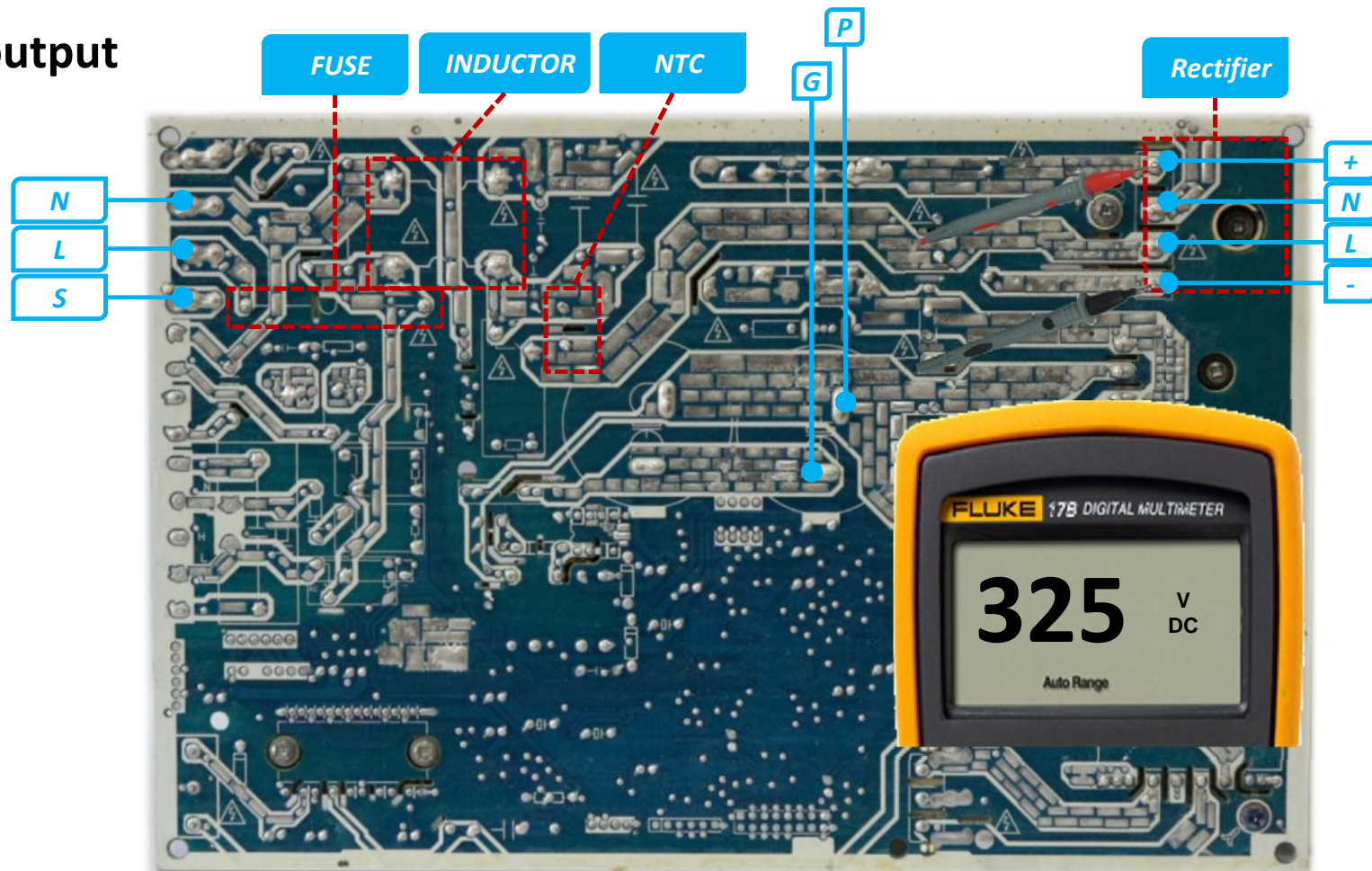
FLUKE 17B DIGITAL MULTIMETER

230 V AC

Auto Range

Midea

Troubleshooting Type A (230VAC)

3. Check Rectifier's DC output

Check Rectifier's DC output voltage value between + and -. If the measured value is around 325V, it means the rectifier is ok, then go to next step.
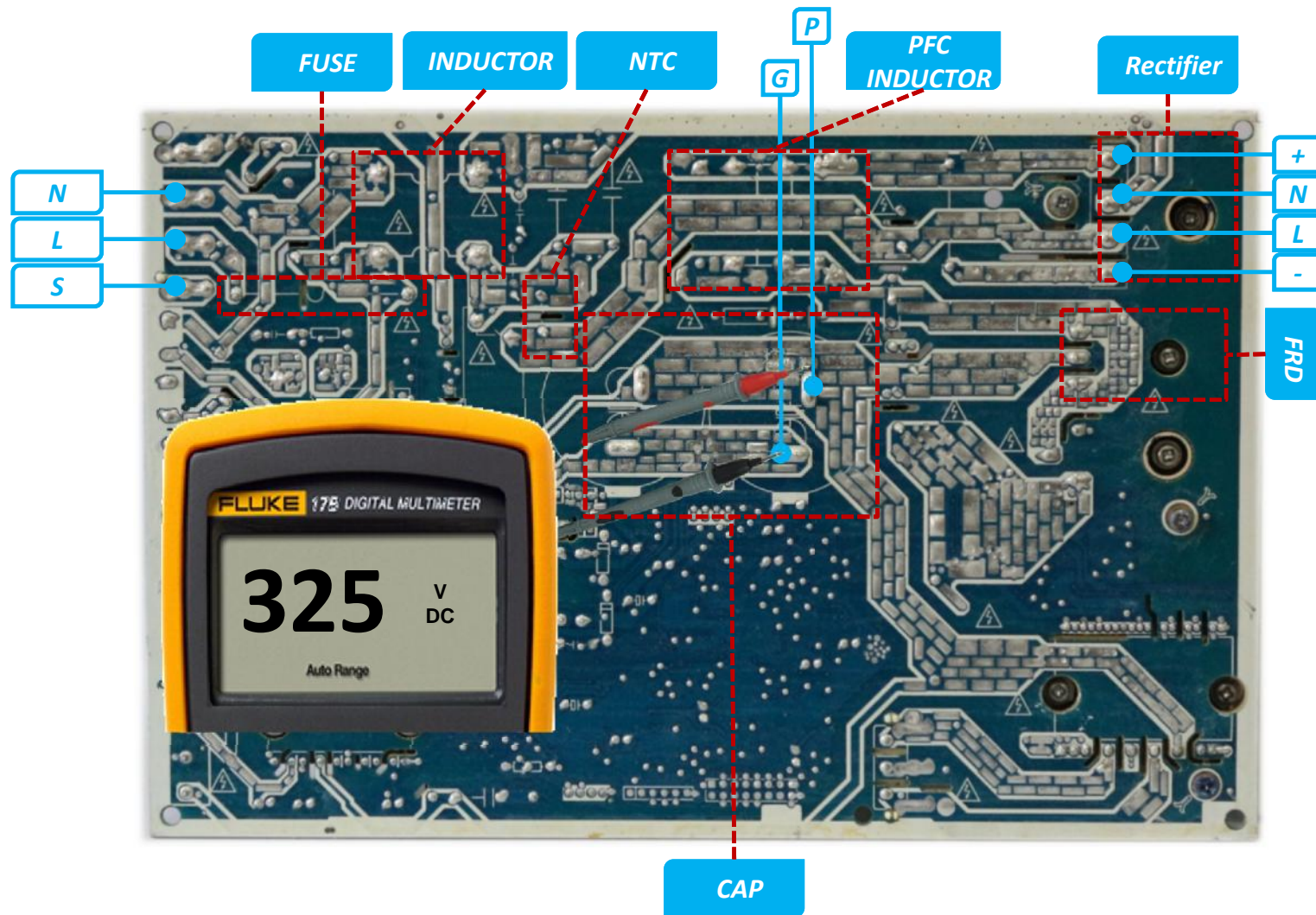
Troubleshooting Type A (230VAC)

Midea

4. Check PG Voltage

Check PG's DC voltage and it should higher than 300V, it means the cap, the pfc inductor and the frd are ok, then go to next step.

FUSE | INDUCTOR | NTC | P | G | PFC INDUCTOR | Rectifier

N | L | S

+ | N | L | -

FRD

FLUKE 175 DIGITAL MULTIMETER

325 V DC

Auto Range

CAP

Troubleshooting Type A (230VAC)

Midea

5. Check SMPS Voltage

Check SMPS DC voltage and it supply 15VDC, 12VDC and 5VDC. If 3 voltage is correct, it means the SMPS is ok, then may be the MCU failure.

FLUKE 17B DIGITAL MULTIMETER

15 V DC

Auto Range

FUSE INDUCTOR NTC P G PFC INDUCTOR Rectifier

N L S

+ N L -

FRD

15VDC 12VDC CAP 5VDC