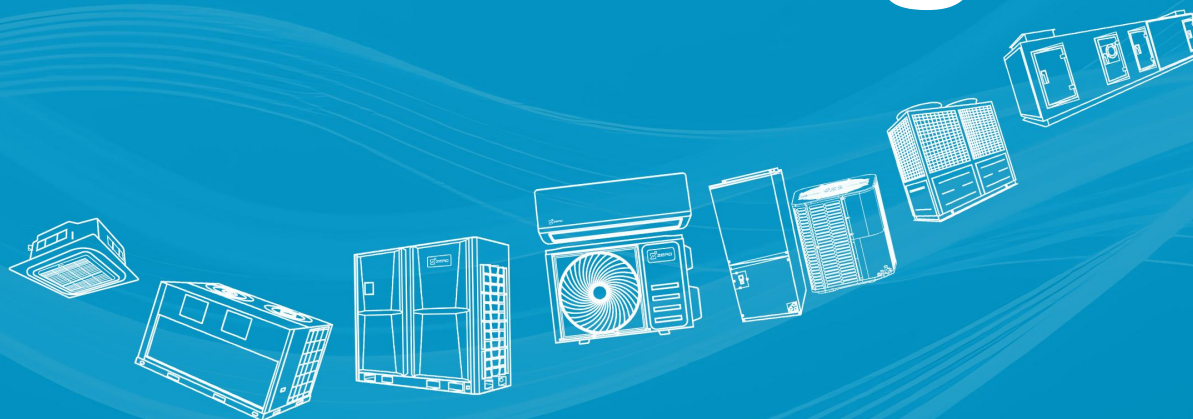
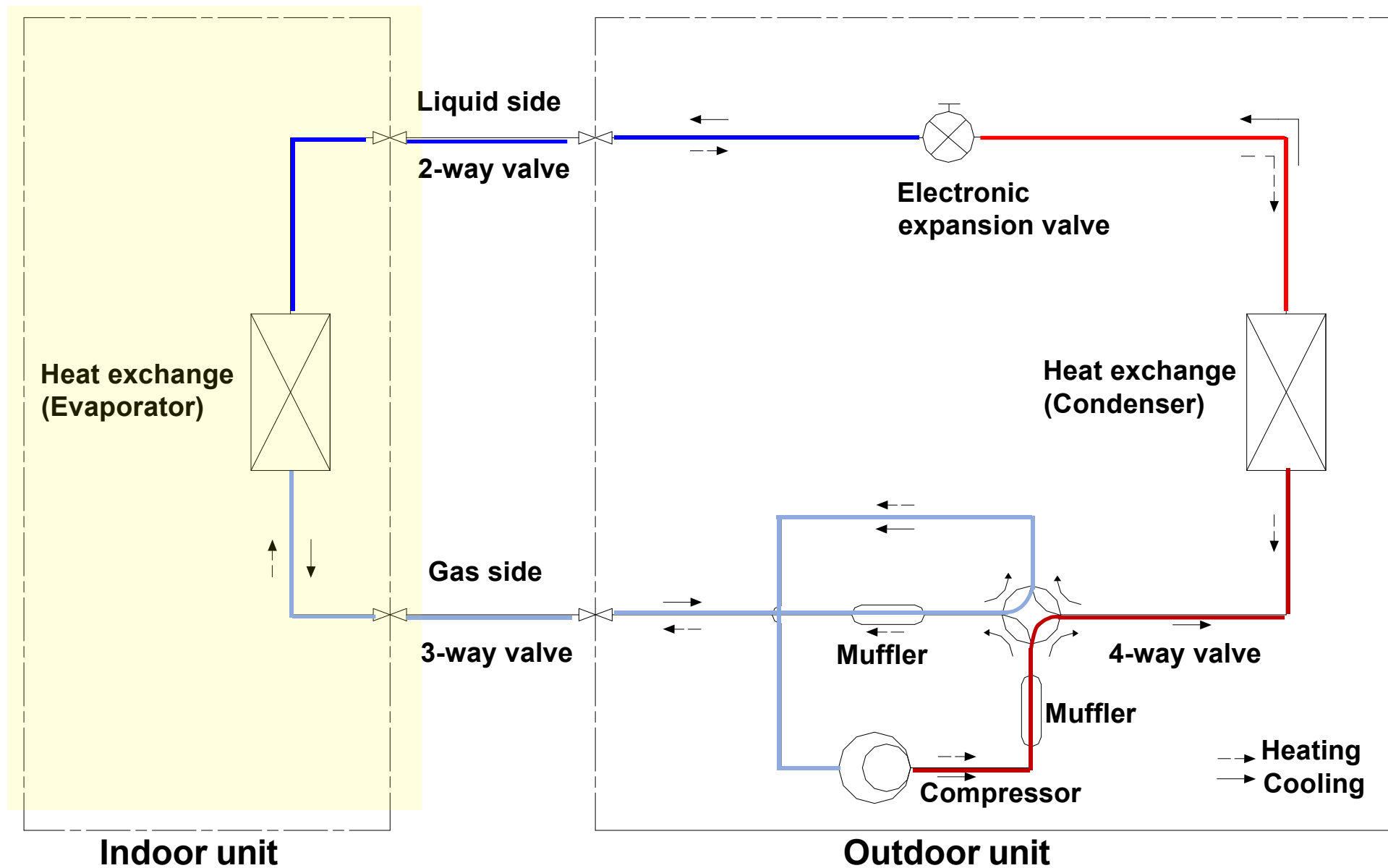


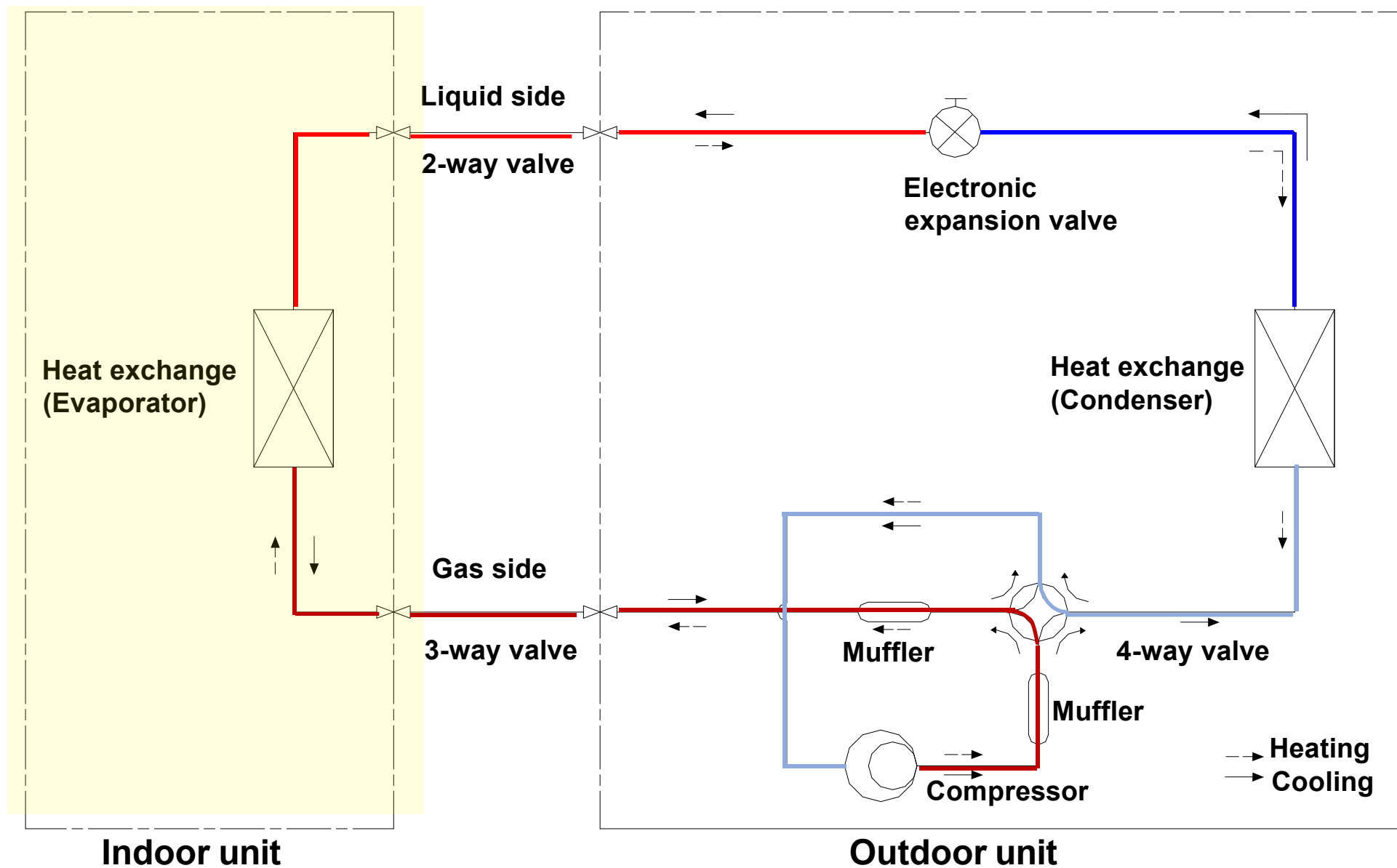
Inverter Air conditioner Troubleshooting



Refrigeration System---Heat Pump Cooling Mode



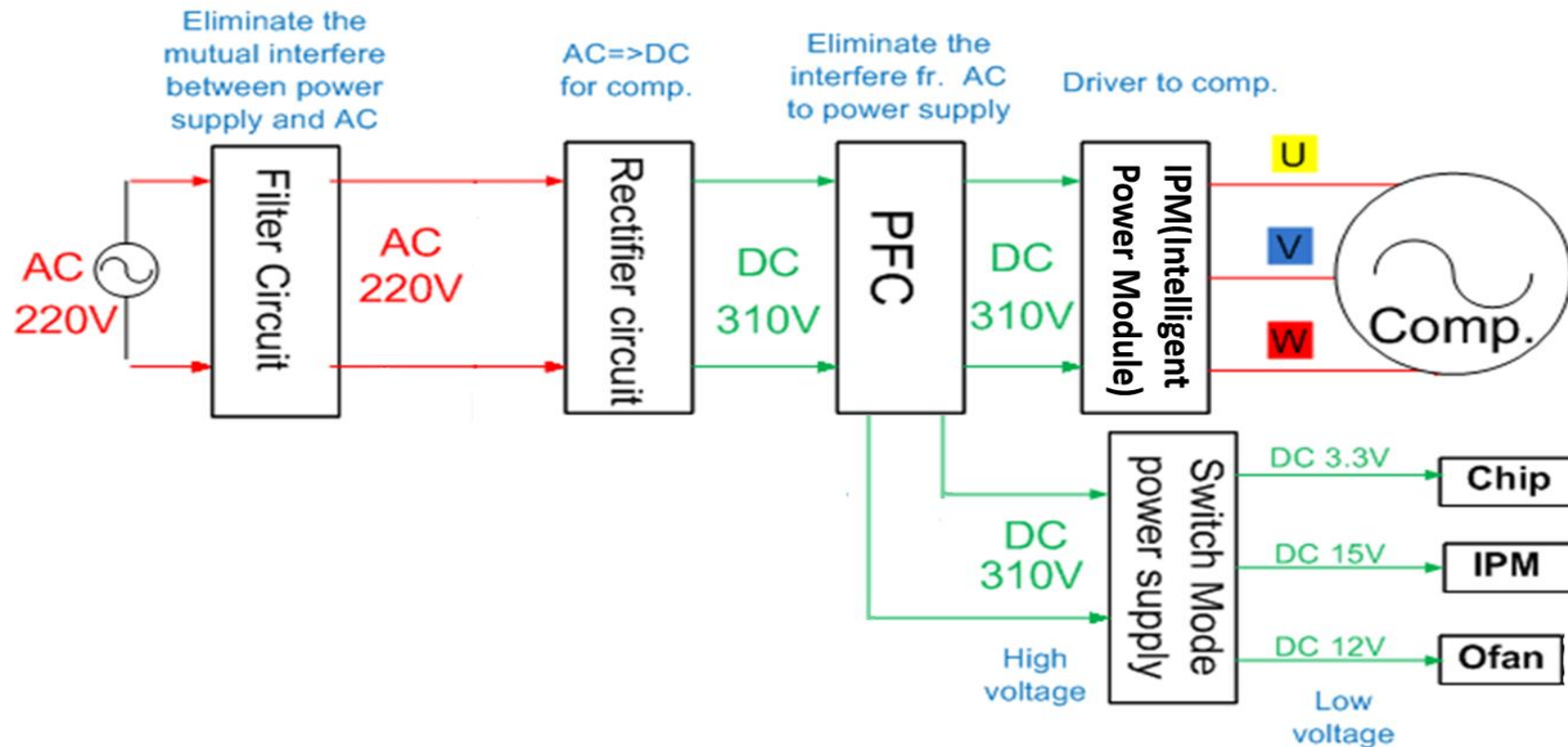
Refrigeration System---Heat Pump Heating Mode



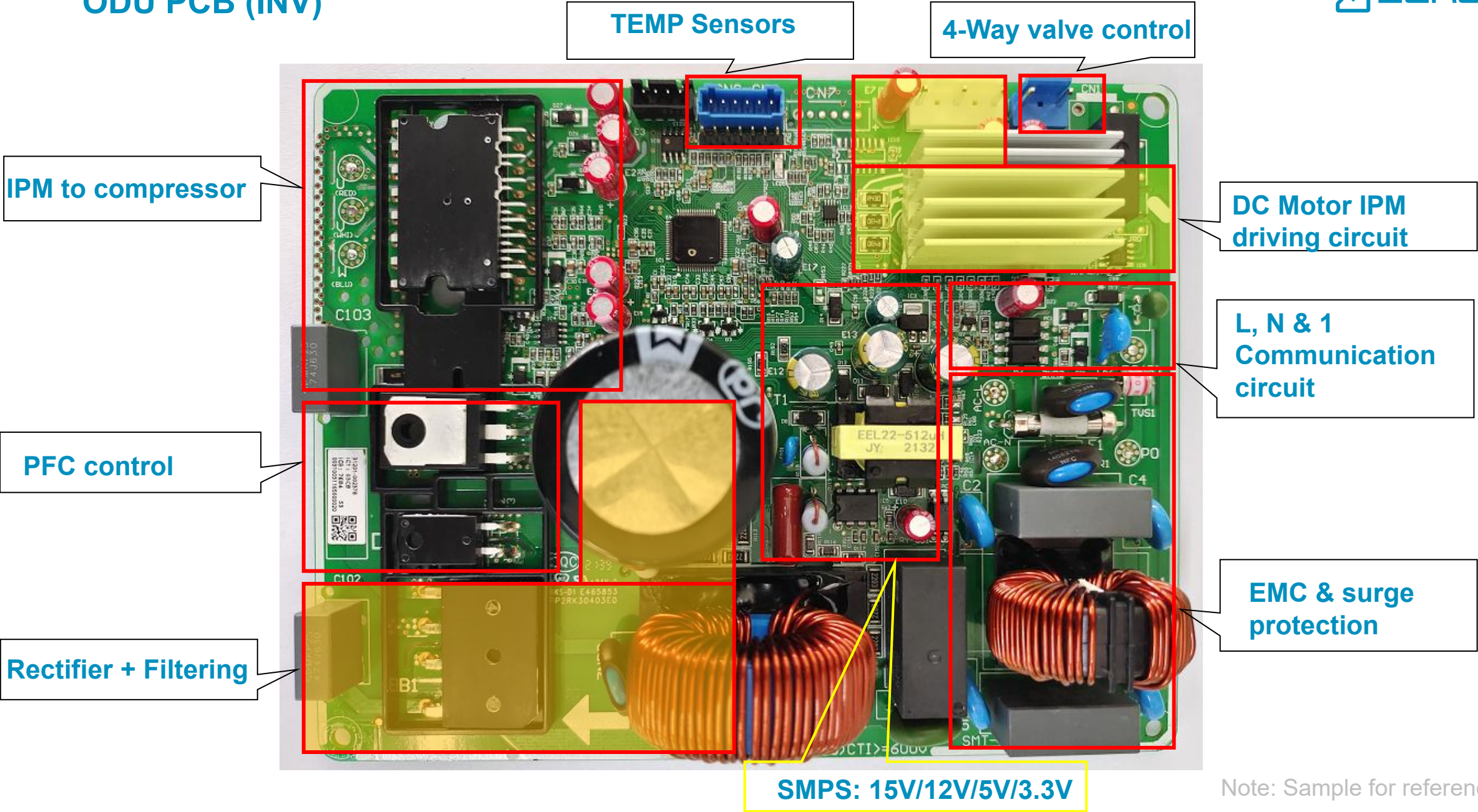
Inverter AC ODU PCB control logic.



1. Power supply 220 V to be rectified and filtered → PFC adjustment.
2. PFC outputs busbar voltage: DC+310V~350V
3. DC +310V → Compressor IPM → Driving compressor works.
4. DC +310V → SMPS → Provides DC voltage: +15V,+12V,+5V,+3.3V.
5. DC +310V → DC Motor IPM. → Driving DC Motor.



ODU PCB (INV)

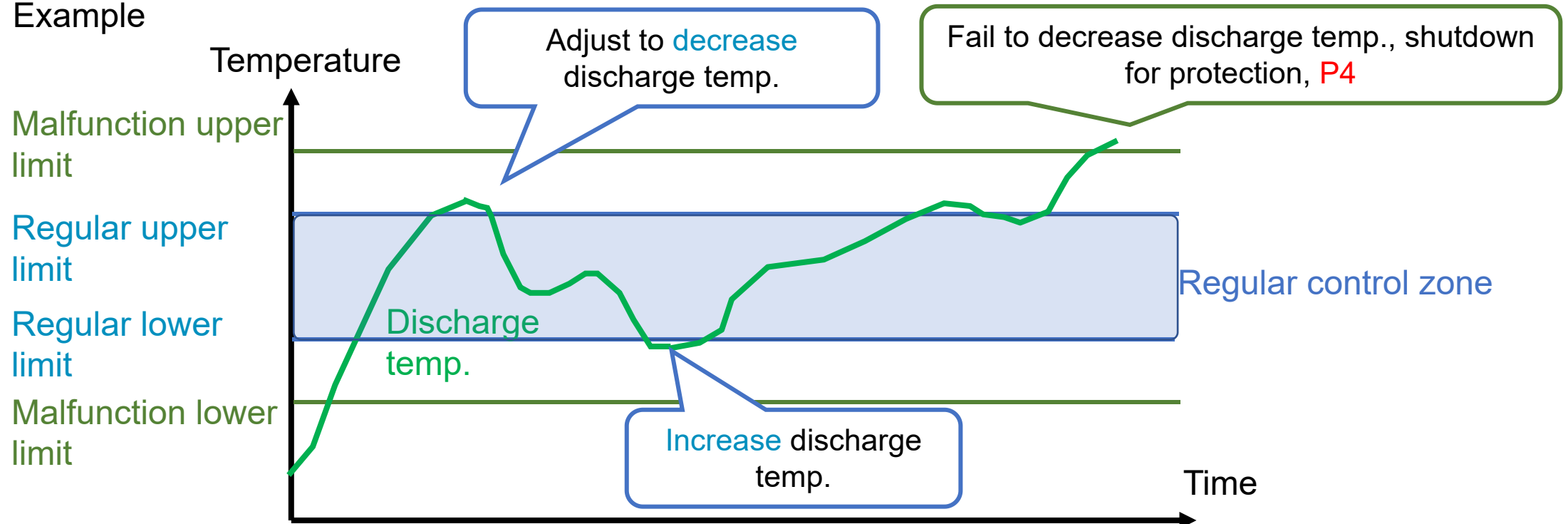


Note: Sample for reference

What is ERROR

- The system keep monitor every important parameter(e.g. discharge temp. OD temp.) during operation
- Adjust components setting(e.g. compressor & fan rpm) to keep above parameter within design range
- **Malfunction:** Something wrong with the system or parameter exceeds design range , e.g. system shutdown, parts damage, abnormal vibration or noise

Example



Maintenance tools



Multimeter



Clip-style ammeter



Ref. leakage detector



Pressure gauge



Spanner



Screw driver



Insulation tester

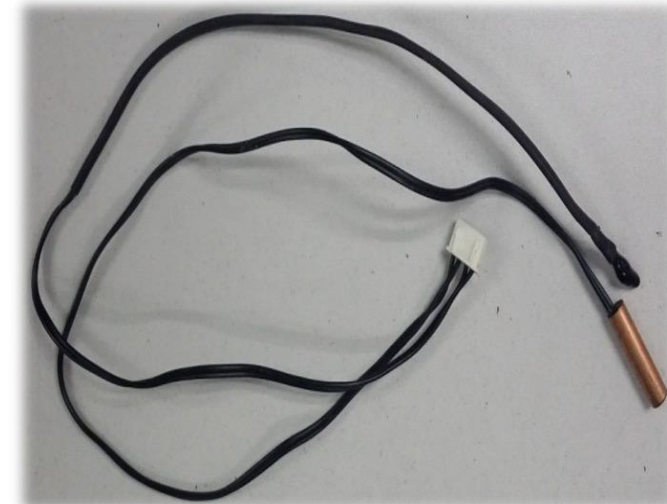
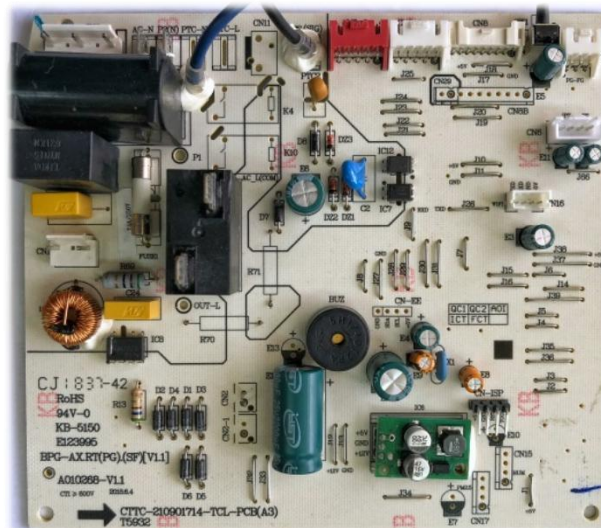
Temperature Sensor(Thermistor)

- Display E1 or E2

Reason: Room temp sensor(RT) , Indoor coil temp sensor(IPT) fault.

Analysis:

- Connection of sensor?
- Sensor resistance OPEN? SHORT? Of DRIFT (changed)?
- PCB broken?



The Pictures for reference.

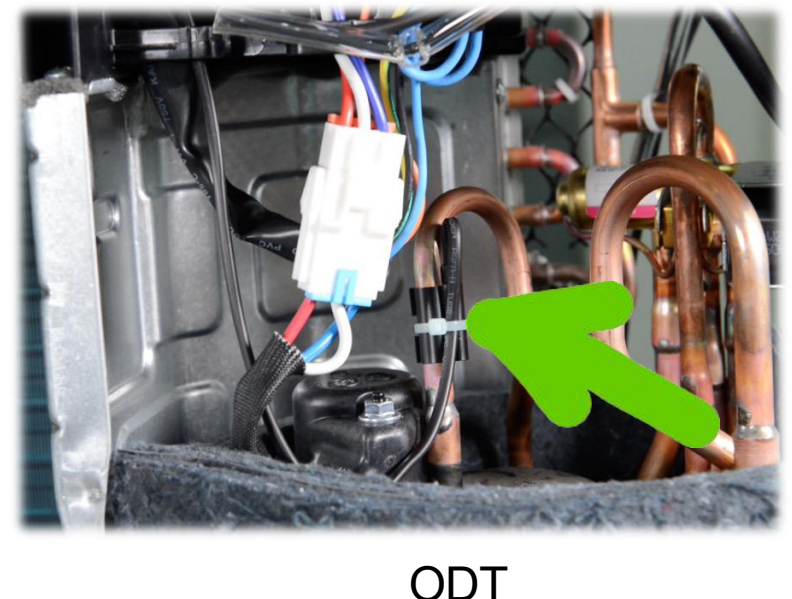
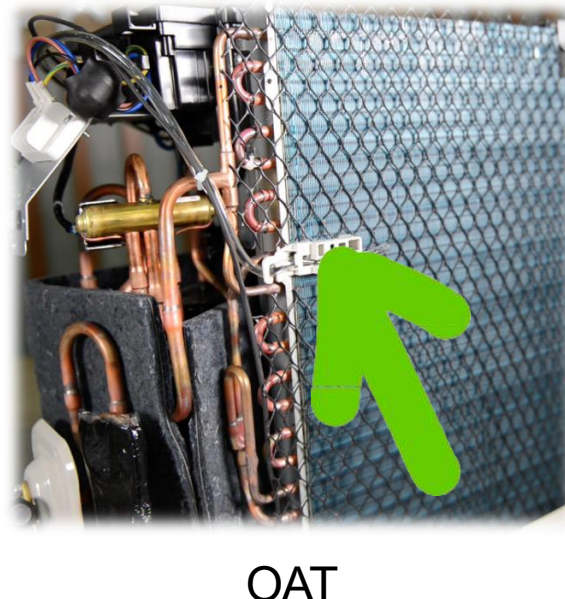
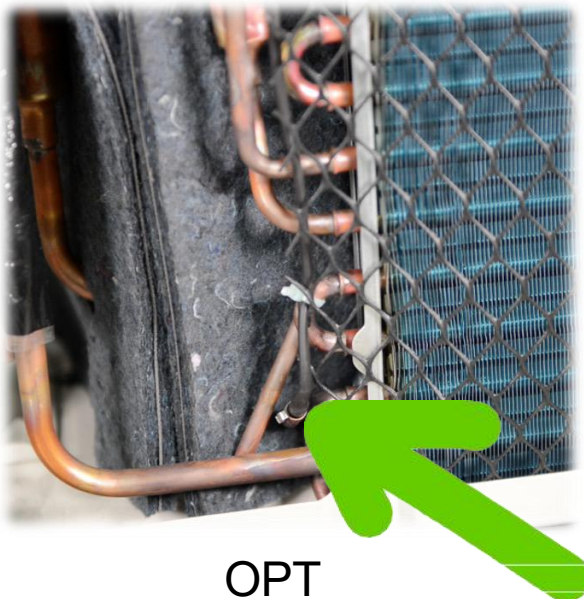
Temperature Sensor(Thermistor)

- Display E3、E7 or E8

Reason: Outdoor pipe temp sensor, outdoor temp sensor & exhaust temp sensor fault.

Analysis:

- Connection of CN1/CN2.
- Sensor resistance OPEN? SHORT? or DRIFT?
- PCB itself?



Temperature Sensor(Thermistor)

Troubleshooting

Reconnect the sensor with the main board



Test the resistance of the sensor



Recommend to compare the value with a good one

Replace the main board



Gas Leakage Protection

- **Display E4 / Fy**

Description

- After compressor works in high frequency for 9 min, if the temperature on IDU evaporator & ODU condenser has only a little variation comparing previous, but, the compressor discharge temperature on high level, then the unit will show E4 failure code.

Inspection

- (1). Check the pipes connector, any place gas leakage? If yes, fix it.
- (2). Any other place gas leakage? Check and fix it.

Fan Motor Failure

- Display E6

Reason: Indoor PG/DC fan motor or it concerned circuit.

---When The IDU PCB detects that the fan speed is abnormal for one minute, it shows E6.

Analysis:

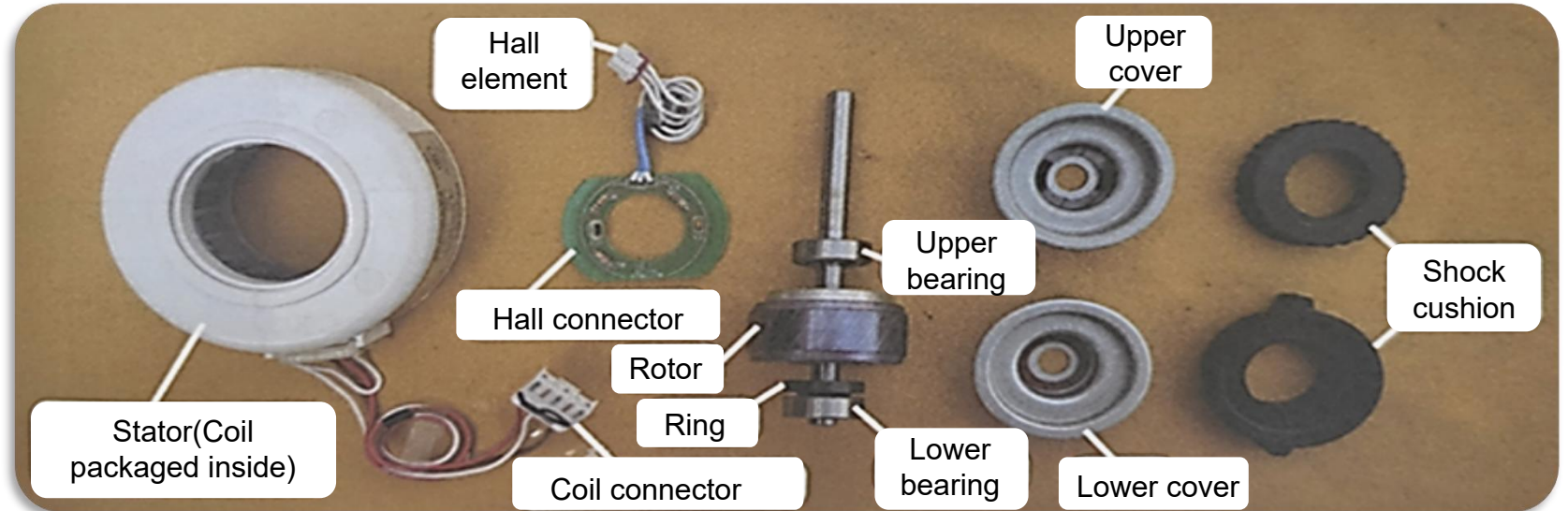
- Connector of fan motor to PCB?
- PCB itself broken?
- Fan motor coil broken or short circuit? Hall Feedback defective?



The Pictures for reference.

Fan Motor Failure

PG motor
Drive board integrated



Reconnect the fan connector

Change fan motor

Change the mainboard

HOW TO
CHECK ?

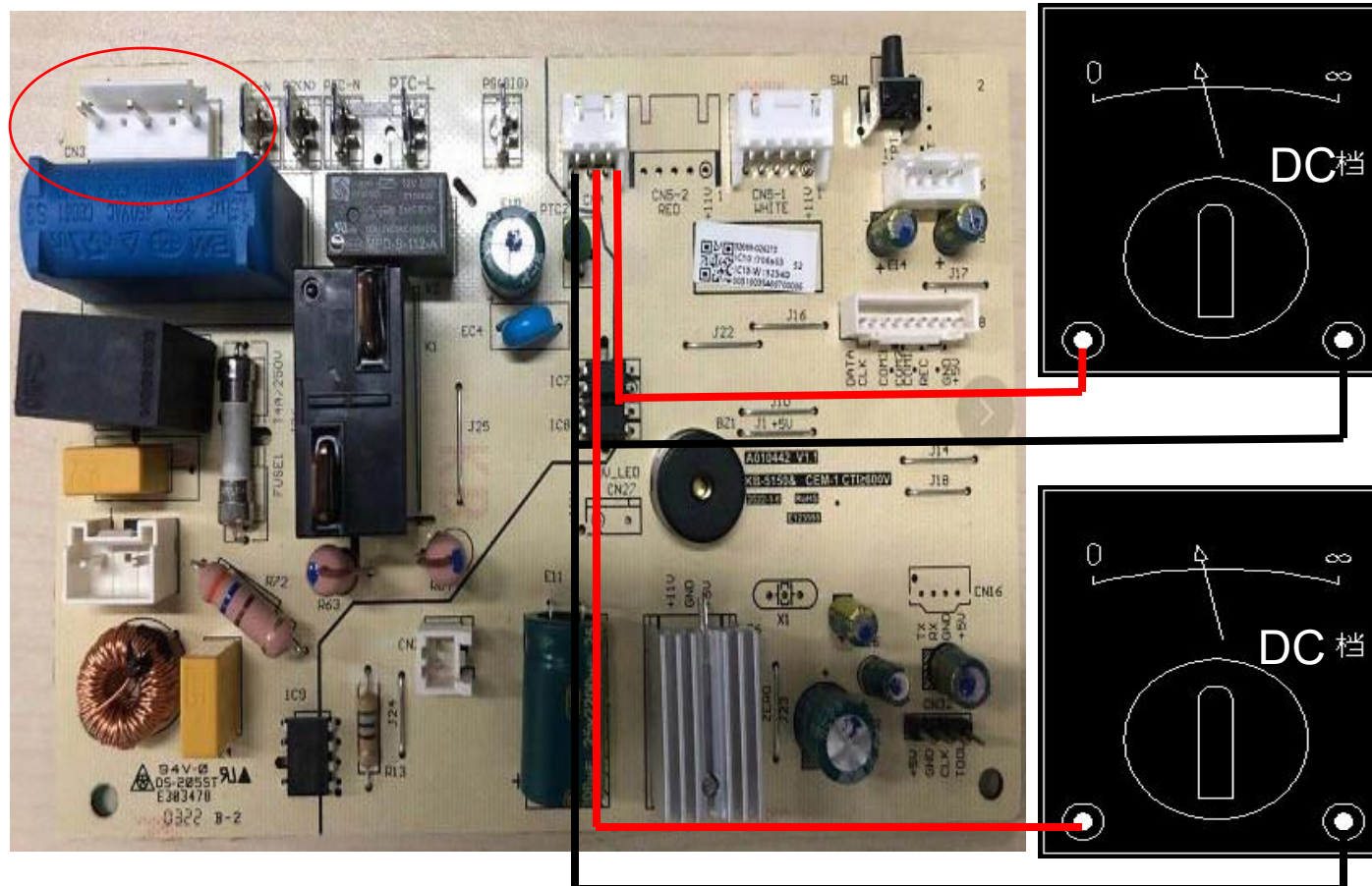


Fan Motor Failure

PG motor

Drive board integrated

HOW TO
CHECK ?



Power supply for
feedback circuit
DC5V

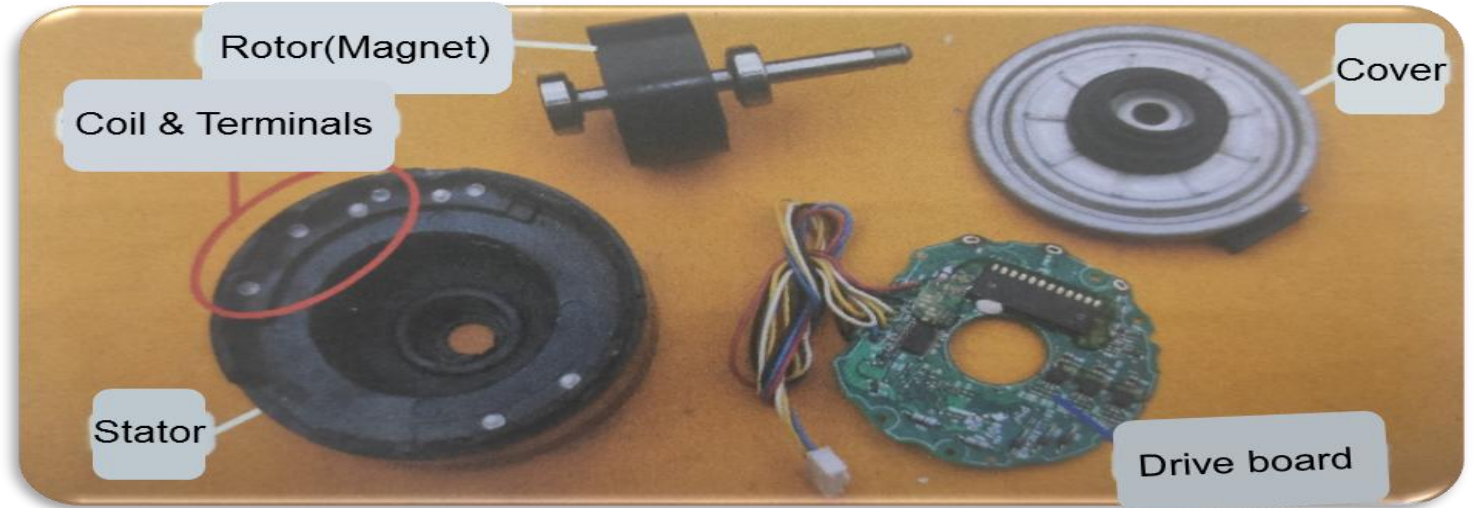
Voltage of
feedback signal
DC 2.5V

Connect the PG motor

Fan Motor Failure

5-wire DC motor

Drive board integrated



*HOW TO
CHECK ?*

Reconnect the fan
connector



Change fan motor



Change the mainboard



Fan Motor Failure

5-wire DC motor

Problem: DC fan motor can't work. TEST:



1. Check motor [axle](#), can it rotate by hand smoothly?

Fan Motor Failure

5-wire DC motor

For the inner control motor, the detailed function of the connector (CN4):

1) —**V_m** (**Red line**), motor power voltage, **DC310V**.

2) —*Empty (null)*

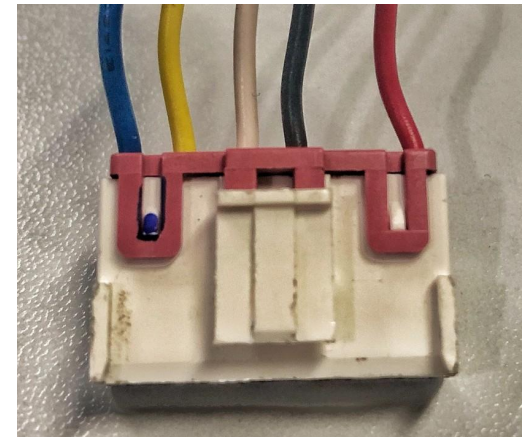
3) —**GND** (**Black line**), **GND**.

4) —**V_{cc}** (**White line**), power voltage, **DC15V**.

5) —**V_{sp}** (**Yellow line**), speed control voltage input, **DC 0~6.5V**. 6) —**FG**

(**Blue line**), Hall feedback, revolution pulse output.

~	0~6.5V	15V	0	310V
FG	v _{sp}	V _{cc}	GND	V _m



Fan Motor Failure

5-wiring DC motor

2. Check the motor voltages as table.

No	Test condition	Item		Test value (DC)	Remark
1	normal	Vm		310V	
2	normal	Vcc		15V	
3	normal	Vsp	LOW	2.7V	
			MID	2.8V	
			HIGH	2.9V	
			AUTO	2.9V	
4	The motor FG no connection to PCB	FG	Rotate motor shaft by Hand	0~3.7V	<i>The test voltage depend on the shaft rotating speed</i>

Sample: Rechi DC motor. The Value above for reference only.

Test FG voltage, normally it has a variable value while rotate the motor shaft. If no voltage while rotate the shaft by hand, it means the Hall test circuit fault.

Fan Motor Failure

- **Display EF**

Reason: ODU DC fan motor or it concerned circuit.

---If The ODU fan motor protection stops working for six consecutive times, it will show EF.

Analysis:

- a. Fan motor blocked to running?
- b. The connecter of fan motor to PCB abnormal?
- c. Fan motor coil broken or short circuit?
- d. ODU PCB motor driving module IPM defective? (over heating? Over current? Phase protection? etc.)

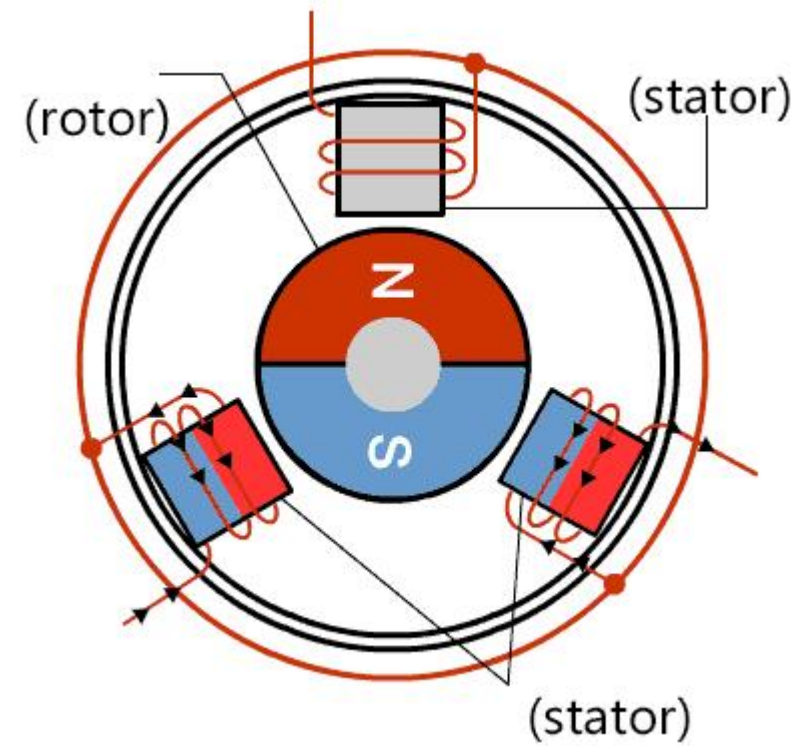
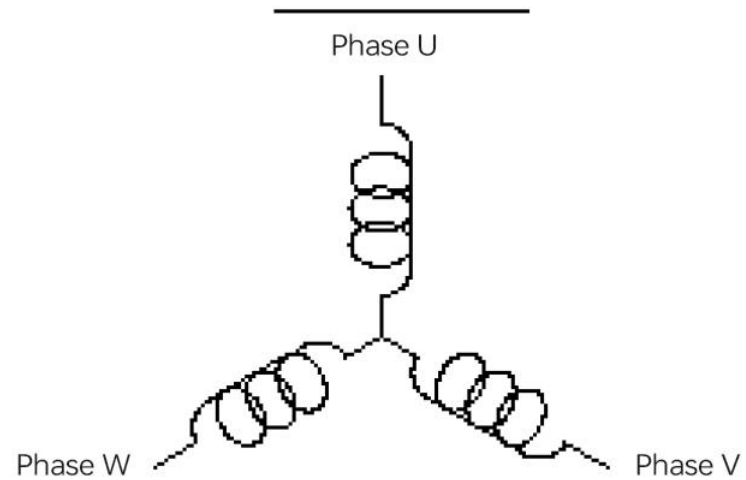
Fan Motor Failure

3-wire DC motor

Wiring diagram

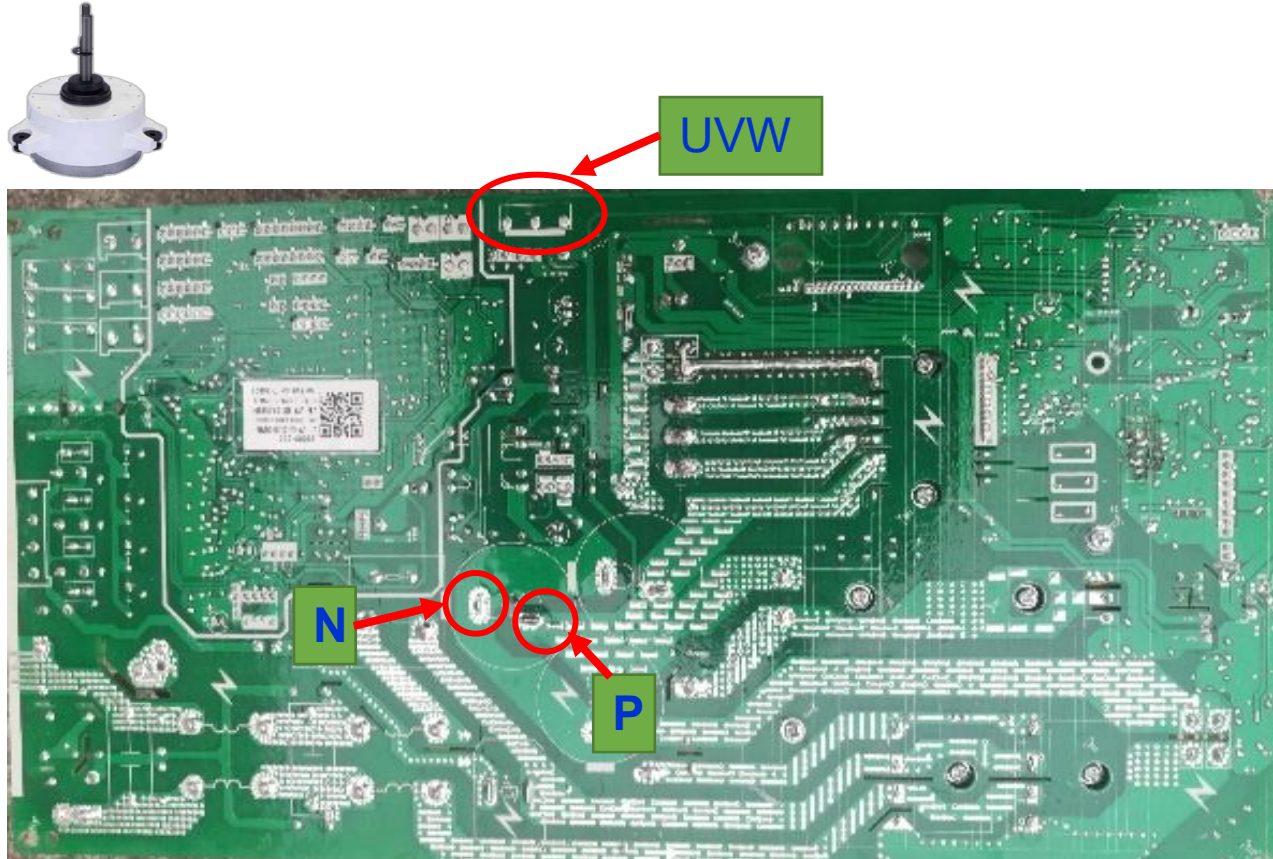


Winding connection diagram



Fan Motor Failure

3-wire DC motor



- Disconnect the power supply **5 minutes later**, remove the wires of the fan motor
- Switch the multimeter to **diode mode**
 - ❑ Put the **black test probe** to pad **P** (on the left of U) and the **red test probe** to pad **U, V, W**
 - ❑ Put the **red test probe** to pad **N** (on the left of U) and the **black test probe** to pad **U, V, W**
 - ❑ Above 6 value should be **0.3~0.7 V**. If the value is “0” or infinitely great, indicates the IPM module is malfunction

Test Circuit Failure



Code	Reason	Remark
EA	ODU Current Test circuit failure	1. Try to re-power the AC unit. 2. ODU PCB broken?
EE	ODU EEPROM failure.	
EU	ODU Voltage test circuit abnormal.	
F9	The module temperature test circuit failure.	
FA	The compressor Phase-current test circuit failure.	

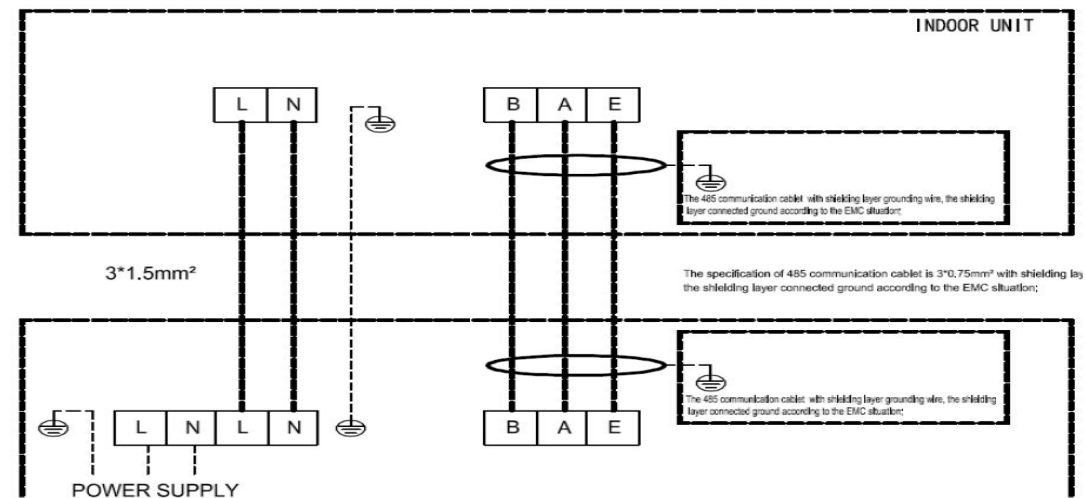
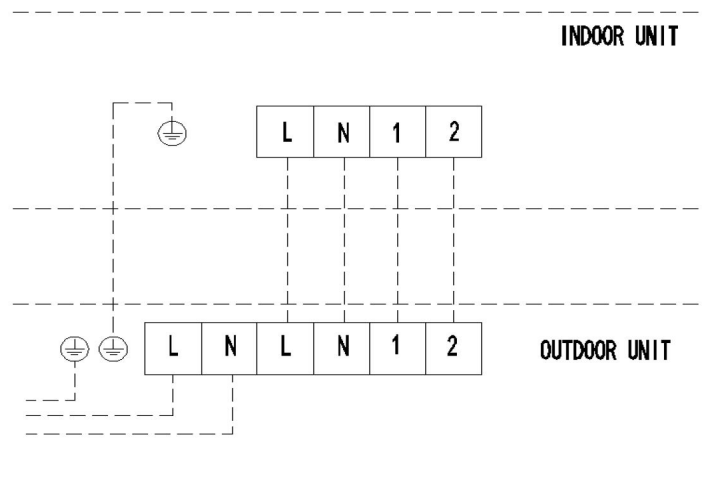
Communication Error

- E0--Indoor/outdoor communication fault.

---If the IDU PCB detects that there is abnormal communication between IDU and ODU exceeds 120s, or ODU PCB detects abnormal communication btw IDU and ODU exceeds 120s.

Analysis:

1. Poor or wrong wiring connection of indoor and/or outdoor unit.
2. Indoor PCB or outdoor PCB malfunction.
3. Communication wiring between IDU and ODU broken or defective.



IPM / Compressor Driving Failure

- Display E9 P0 or P9

Judgement

1. Overcurrent
2. Low voltage
3. IPM overheat

POSSIBLE REASON

For a **new** system

- ☐ Power supply is too high
- ☐ Poor ventilation
- ☐ Ambient temp. out of operating range
- ☐ System is abnormal, e.g. blockage



Silicon grease

For an **repaired** system

- ☐ Poor contact of compressor UVW wire
→ Higher current → Higher heat release
- ☐ Connection sequence of compressor UVW wire is incorrect
- ☐ IPM poor contact with heat sink
- ☐ Compressor malfunction
- ☐ Compressor drive board IPM malfunction

IPM / Compressor Driving Failure

E9 Trouble shooting

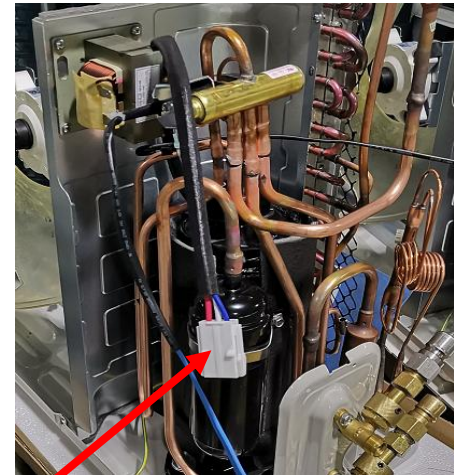
Before E9 trouble shooting , below precondition must be confirmed:

- 1, The power supply should comply with the unit rated voltage;
- 2, Good ventilation for the unit. Bad ventilation, dirty condenser, evaporator and air filter can cause
P9 or E9;
- 3, Normal system pressure: around 116 PSI (in cooling), around 465 PSI (in heating)

IPM / Compressor Driving Failure

E9 Trouble shooting steps

Step 1. Please check the compressor wires connector as below is connected tightly and firmly or not, if you suspect they are not, try to replace the wires or cut the connectors and connect directly



IPM / Compressor Driving Failure

E9 Trouble shooting steps

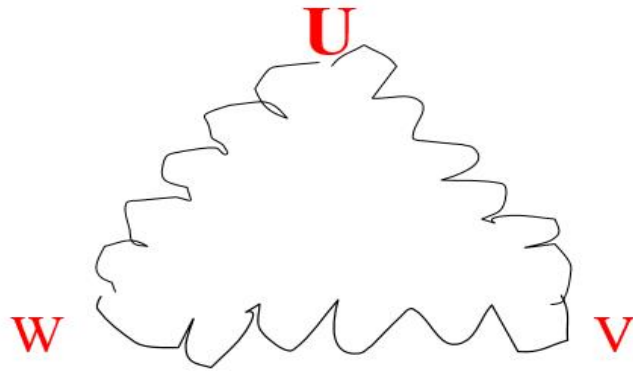
Step 2. Please check the compressor terminal wires as U, V, W are connected correctly, accordingly, and tightly or not, they should match with PCB, if you suspect they are not, try to correct them according to the PCB wires color please.



IPM / Compressor Driving Failure

E9 Trouble shooting steps

Step 3. Please check whether the compressor terminal resistance value is the same and should be around 1.2-2.5 Ω or not, if any one of them is short or opened, the compressor should be replaced. At the time, the mechanical problem should be considered.



Resistance value:
 $UV = VW = WU$

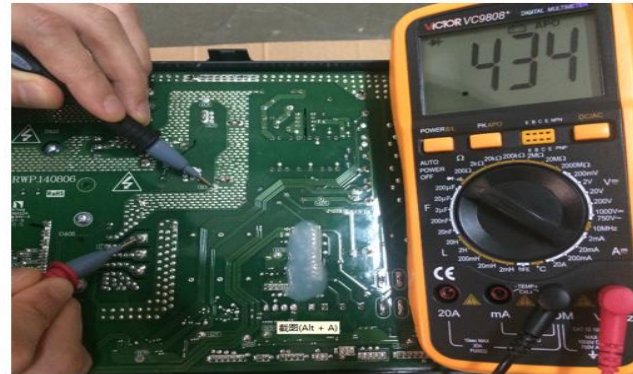


IPM / Compressor Driving Failure

E9 Trouble shooting steps

Step 4. If above steps have been done and there is no any problem, then the outdoor PCB should be replaced, below IPM value for your reference.

**The resistance value
of each group IPM**



High / Low voltage protection

- Display P1

Description and Solution:

- (1). It is normal protection if voltage fluctuation too much.
- (2). Check whether the voltage: **$145V \leq V \leq 260V$** .
 - if **$V < 145V$** , or **$V > 260V$** , P1 is the normal protection.
- (3). Test the ODU PCB DC bus voltage (*it can be tested between the large electrolytic capacitor*), normally it should be: **$150V \leq V \leq 420V$** , otherwise unit will be protected and show P1 code.
- (4). If both the power supply and DC bus voltage normal, please check the voltage sampling circuit. or replace the ODU PCB.

High Discharge Temp. Protection

- Display P4

Error judgment condition and method:

The temperature value from compressor discharge temp. sensor is higher than the preset value.

Possible reason:

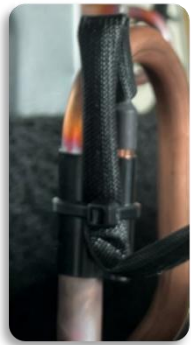
- Compressor discharge temp. sensor is malfunction or poor contact with tube
- Heat exchange not enough
 1. HEX
 2. Fan
 3. Ventilation
- Refrigerant leakage



High Discharge Temp. Protection

- Display P4

Discharge temp. sensor is malfunction or poor connection



→ Compare the value to standard for discharge temp. sensor



→ Check the wiring

- Refrigerant leakage



→ Check the leakage with

1. Ref. leakage detector
2. Soap water
3. Oil stain



Freeze Protection

- Display P5

Error judgment condition and method:

When IDU pipe temperature is too low, freeze protection is activated to prevent freezing damage of evaporator.

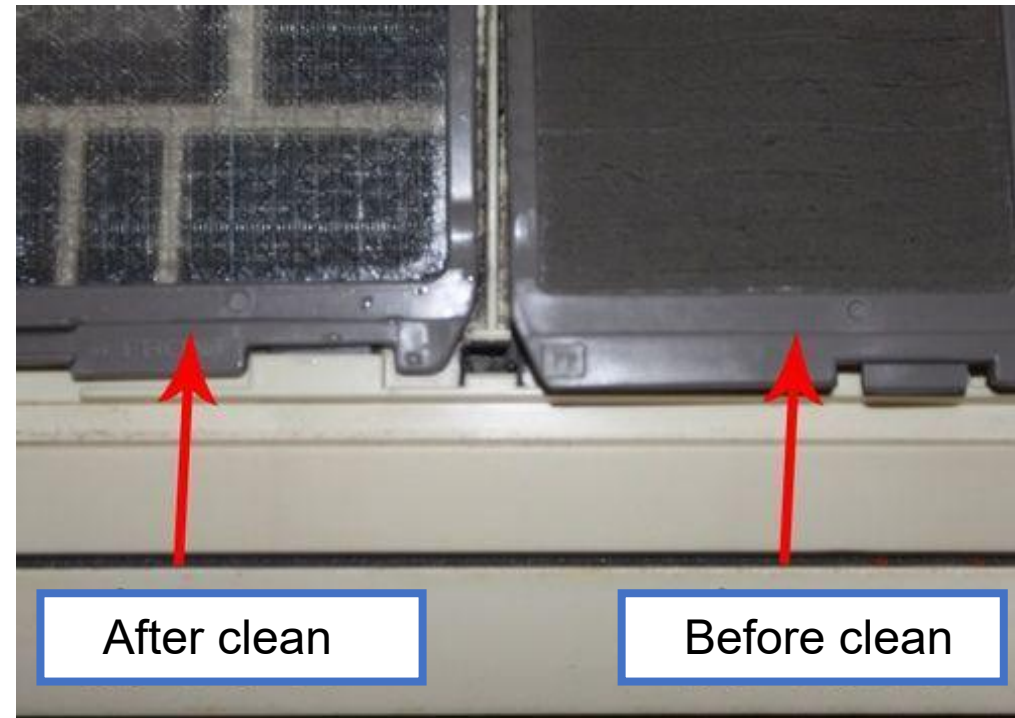
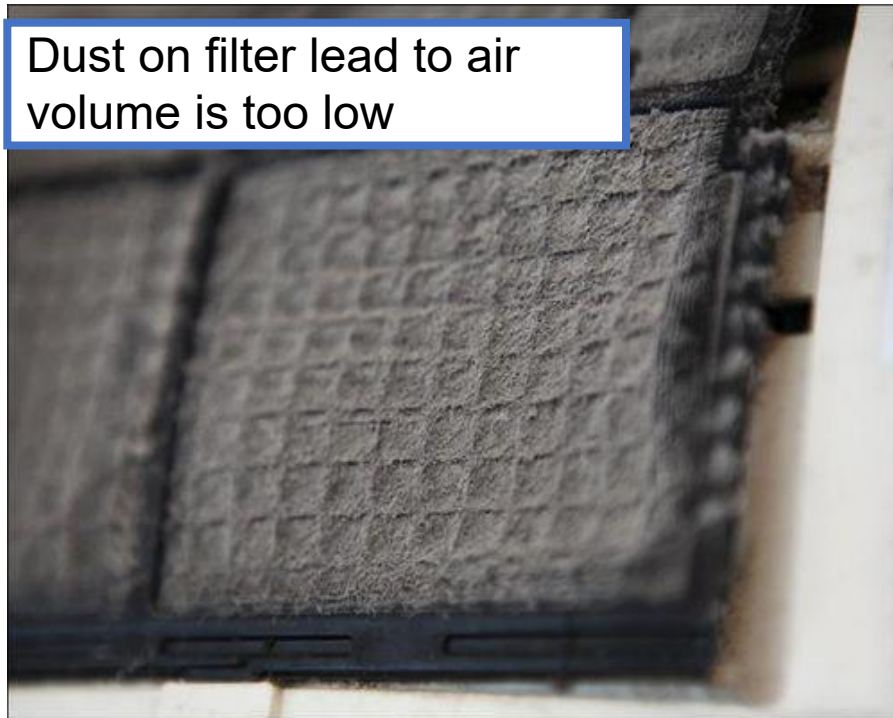
Possible reason:

- IDU filter and evaporator are dirty
- IDU motor is blocked
- Refrigerant amount is insufficient
- Ambient temperature of IDU and ODU is too low

Freeze Protection

- Display P5

1. Too much dust on the filter and evaporator?



2. Check IDU fan & fan motor is normal
3. Check indoor and outdoor ambient temperature

Overheating Protection

- **Display P6/P7**

Error judgment condition and method:

On Cooling and Dry mode, when ODU condenser coil temperature $OPT \geq 62^{\circ}\text{C}$, MCU will switch off outdoor unit and show P6 failure code.

On heating mode, when IDU evaporator coil temperature $IPT \geq 62^{\circ}\text{C}$, ODU PCB will switch off outdoor unit and show P7 failure code.

Possible reason:

- ODU condenser is dirty; IDU filter and evaporator are dirty
- ODU or IDU motor is blocked or low speed
- OPT or IPT sensor is malfunction or poor connection

Outdoor Over temperature/Under temperature protection.

- **Display P8**

Error judgment condition and method:

When environment temperature as below condition, the compressor will stop working, after 200s delay, the IDU will show P8 failure code.

- (1). On Cooling or Dry mode: ODU ambient temperature: $OAT < -20^{\circ}\text{C}$ or $OAT > 63^{\circ}\text{C}$;
- (2). On Heating mode: a. $OAT \geq 40^{\circ}\text{C}$
b. $30^{\circ}\text{C} < OAT \leq 40^{\circ}\text{C}$ and $RT > 35^{\circ}\text{C}$

Possible reason:

- Ambient temperature exceeds operating range
- ODU ventilation is not good
- OAT sensor is malfunction or poor connection

Compressor Lack of phase / Anti-phase Protection

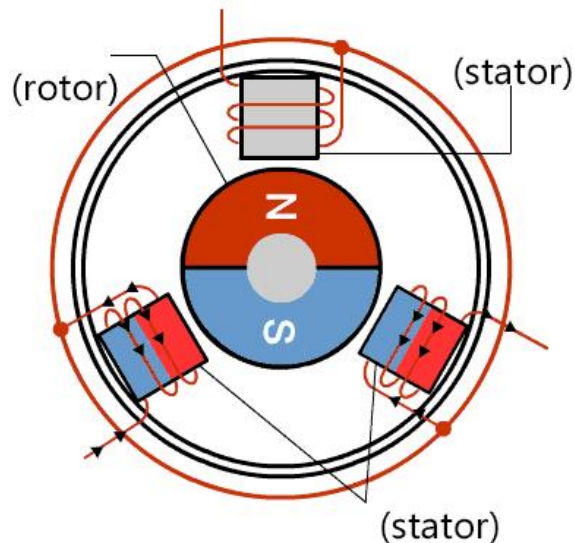
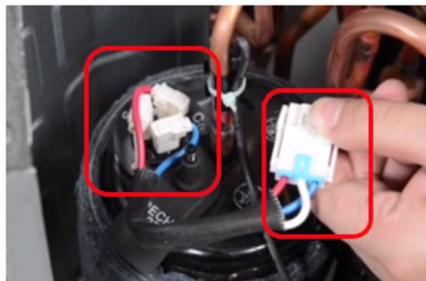
- Display F6

Error judgment condition and method:

If ODU PCB can't test one, two or even three phases of compressor current, it will show F6 protection.

Possible reason:

- Poor contact or incorrect sequence of compressor UVW wire (Drive aboard and compressor wirings)
- Compressor abnormal
- Compressor drive abnormal



IPM Module Temperature Protection

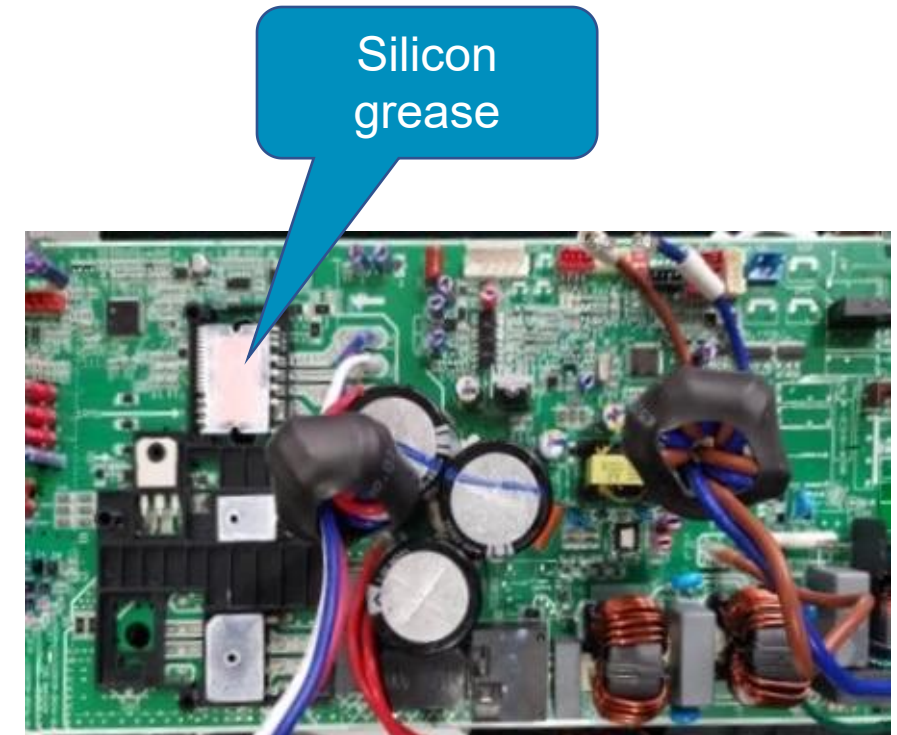
- **Display F7**

Error judgment condition and method:

IPM over-temperature protection, **when IPM temperature more than 95°C, it will show F7.**

Possible reason:

- Ambient temp. out of operating range
- Lower voltage
 - Higher current
 - Higher heat release
- Poor or mismatching of compressor wiring
 - Higher current
 - Higher heat release
- IPM NOT good contact with heat sink
- System abnormal, e.g. blockage
- Compressor abnormal
- Compressor drive abnormal

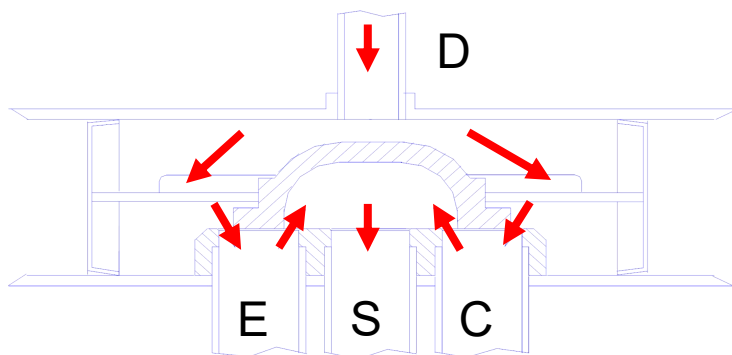


4-Way Value reversing abnormal

● Display F8 (Heat pump only)

On heating mode, if IDU Coil temperature tested lower than Room temperature 5°C or even more after compressor works for 8min, unit will show F8.

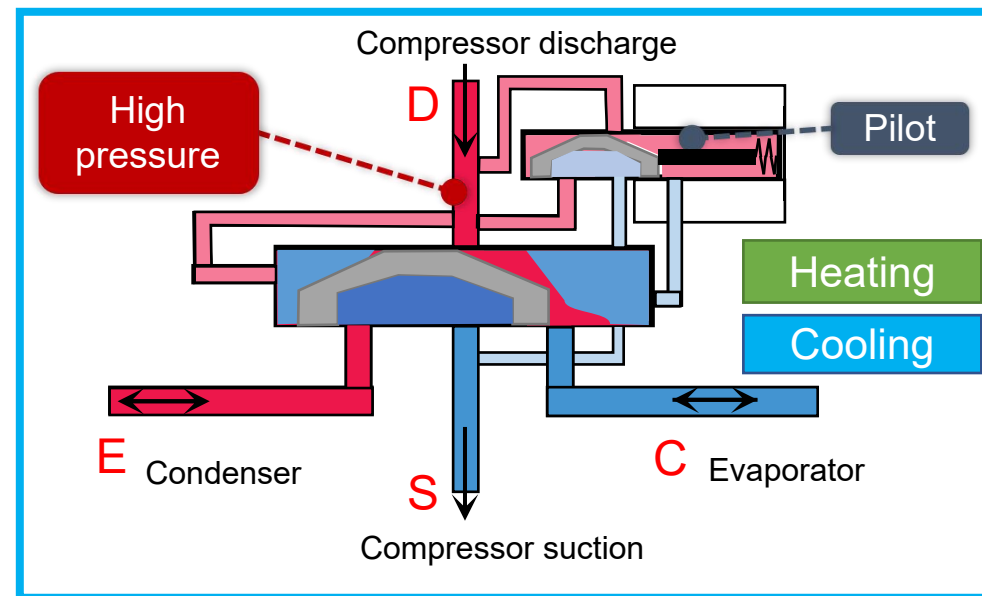
- Gas-missing for a repaired unit: The slider is in the middle position, E/S/C port is connected with each other. Gas from D port can flow to E/S/C port



● Checking method

1. Touch the pipe
2. The compressor suction temp. $\geq$ environment temp. Judgement?

Confirm gas-missing



- Change direction requirement:
 1. Power supply of solenoid valve
 2. Smooth movement of slider
 3. Cleanness of 4 way valve

Remote Controller

Remote controller inspection

visual inspection

Plastic parts should be no deformation, no membrane loose phenomenon. The spring for battery should be in a good elasticity with no rust. liquid crystal display without bubbles, displays clear, correct, no ghosting and black.

Function test

Put the battery into remote controller, LCD display should clearly show the content (non-LCD display no check this). The receiver should be able to receive the signal from the controller accurately. [Activate your phone's selfie mode \(aim the remote's transmitter at the phone's camera lens\)](#). If no infrared light is detected, first replace the batteries.

Remote Control-Query Function



Query Function

- 1) After the remote control powers on for 3 minutes, while in the powered-on state, press and hold the "MODE" + "FAN SPEED" for 5 seconds (some remotes require holding MODE + FAN SPEED + UP/DOWN AIRFLOW for 5 seconds). The remote enters the query interface, displaying the code "00" (no commands are sent at this point).
- 2) Use the "+" and "-" buttons to adjust the code up or down (00~99, cycling). Press the "MODE" to confirm and send the infrared command. After the indoor unit receives the code, it executes according to the table below.

NOTE(exit)

- (1) If no operation occurs within 30 seconds on the query interface, the query function exits and resumes operation in the state set before entry.
- (2) Display mode content takes precedence over fault codes.

Remote Control-Query Function

Code	Action
00	Cancels display of "01-07"; displays set temperature (not available for fresh air units)
01	Display indoor ambient temperature
02	Display indoor coil temperature
03	Display outdoor ambient temperature
04	Display outdoor coil temperature
05	Display compressor discharge temperature
06	Display overall unit current
07	Display protection code (shows "--" when no fault exists) (Codes 00 and 10 are ineffective for this operation; automatically exits after 30 seconds)
10	Cancels display of "11-18"; displays set temperature (not available for fresh air units)
11	Query compressor frequency
12	Check indoor fan speed
13	Query outdoor fan speed
14	Check compressor current
15	Check Electronic Expansion Valve Opening Degree
16	Query AC Voltage
17	Query DC Voltage
18	Query CO2 concentration value (displays actual concentration divided by 10)
19	Check fresh air fan speed
20/21	Query SN
22	Query TVOC concentration value (display value amplified 100 times)
31	Enable refrigerant recovery function

* The parameters available for query vary by model

Common Faults-Bad cooling effect

The possible reasons of poor cooling/heating result

- The temperature set on remote controller is not correct;
- The room is not sealed well;
- The dirty air filter;
- The evaporator and condenser is too dirty;
- Both of the indoor /outdoor unit do not ventilate well;
- The capacity of the AC is lower the capacity of the room needed。
- The motors of both indoor/outdoor run slowly;
- The refrigerant is not efficient;
- The 4-way valve leaks inside (cooling and heating unit);
- Pipe is half block;
- The climate condition of the unit installed is not correct .

Common Faults-Bad cooling effect

Failures Not Caused by Errors

Cause	Corrective measure
The air inlet and outlet of indoor or outdoor unit been blocked.	Clear the obstacles and keep the indoor and outdoor units well ventilated.
Improper temperature presetting	Reset a proper temperature.
Indoor unit too low fan speed	Reset a proper fan speed.
Air flow direction is not reasonable.	Change the direction of air louvers
Doors or windows are opened	Close please.
Exposed under direct sunshine.	Suggest to put on curtains in front of the windows.
Too many heat sources in the room	Remove unnecessary heat sources.
Filter is blocked or too dirty.	Clean the filter.

Common Faults-Bad cooling effect

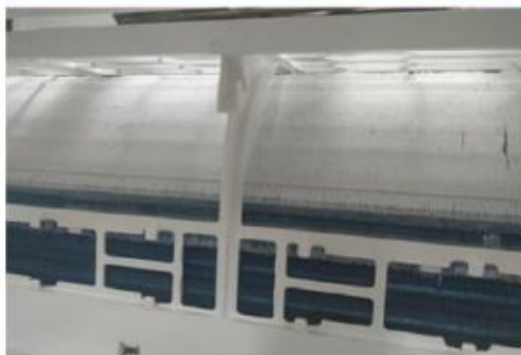
Filter too dirty, return air not smooth



The heat exchanger surface is dirty and blocked



Refrigerant leak



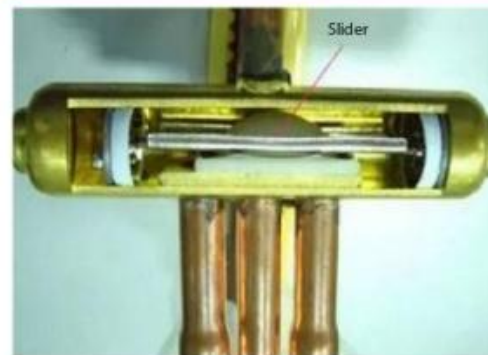
Phenomeno

1. Indoor unit air outlet is not cool, outdoor unit air outlet is not hot;
2. Small pipe frost, large pipe no condensation;
3. Indoor unit frost;

Solution:

1. Leak check; if there is a leak point, re-weld or replace components;
2. If no obvious leak point is found, release refrigerant and vacuum, then refill with new refrigerant.

Four-way valve failure



Phenomeno

1. Slider is in the middle position, system short circuit;

Solution:

1. Replace the four-way valve;

When the outer ring is 35°C and the inner ring is 27°C, the low-pressure corresponding to R32 refrigerant is approximately 0.95 MPa.

The system is dirty.



Phenomeno

1. Ice blockage, "block-unclog" cycle;
2. Dirty blockage, local frost formation;
3. Welded blockage, local frost formation;

Solution:

1. Recharge refrigerant;
2. Replace the capillary tube or filter;
3. Replace ~~the~~ structure

Common Faults-Water leakage

Water leakage

Troubleshooting Steps and Solutions:

- (1) **Inspect the drainage system:** This includes the drip pan, clogged or blocked drain pipes, and the insulation of connecting pipes;
- (2) **Inspect the air supply system:** This includes clogged filters and dust buildup on the evaporator;
- (3) **Other issues:** Damaged components, structural design flaws, refrigerant leaks, air leaks from manufacturing or assembly, and other causes require a technician to conduct a thorough inspection to identify the source of the water and address the issue accordingly.

1. Fan/Fan motor

Troubleshooting Steps and Solutions:

- (1) Remove the air deflector and use a flashlight to **visually inspect** the clearance at both ends;
- (2) **Gently wiggle the fan with your hand**, then place your ear close to the air outlet to listen for any rattling sounds in the air duct. If you hear any, remove any foreign objects.
- (3) Remove the motor cover and check the motor gasket for signs of melting; inspect the fan surface for **damage**;
- (4) Loosen the mounting screws on the axial fan, adjust the fan position (to center it), or reassemble the bearings.
- (5) Replace the fan.

Common Faults-Indoor noise

2. Uneven airflow, surging noise

Troubleshooting Steps and Solutions:

(1) **Dirty or clogged filter:** Remove the filter, clean it, and reinstall it;

Dirty evaporator: Run the evaporator's self-cleaning function or arrange for a professional to clean the evaporator.

(2) **Dust accumulation on the fan,** excessive mold: Arrange for a professional to clean it.

(3) Install a partition bracket on the intake grille, or relocate the air conditioner to **prevent curtains from obstructing airflow.**

(4) Disassemble the unit to **replace damaged parts** and reinstall any components that were not properly secured.

Common Faults-Indoor noise

3. Thermal Expansion (Popping Sounds)

Cause: Friction between **plastic parts** due to heat expansion/contraction.

Solution: Apply non-woven fabric tape to the **contact points** to reduce friction.

4. Liquid Flow Sound

Analysis: Loud flow sounds are normal for the first few minutes as pressure builds.

Action: **If it persists, check for bent pipes or blocked evaporator joints.**

5. Fan noise fluctuates between loud and soft or can not control

Analysis: Control board, cross-flow fan, and remote settings.

Action: The **motor** is damaged; replace the motor. If the user has set the fan to **Auto mode**, the air conditioner will automatically adjust the fan speed based on the set temperature and ambient temperature.

Common Faults-Outdoor noise

1. Vibration & Resonance

Compressor Noise: Check for loose sheet metal, tilted mounting bolts, or piping vibration.

Metal Resonance: Occurs when compressor or fan frequency matches the sheet metal frequency.

Piping Resonance: Often sounds like a low-frequency hum.

Solutions:

- Tighten loose screws and straighten tilted bolts.
- Add weight blocks or damping rubber to vibrating pipes.
- Add base pads or sound-insulating cotton to the compressor.

2. "Beat" Noise (Hum-Hum Sound)

Cause: **Two similar vibration frequencies** (fan and compressor) overlapping.

Troubleshooting:

- Adjust fan speed to separate the frequencies.
- Check for aged compressor rubber pads.
- Add weight blocks to the piping system.

Common Faults-Outdoor noise

3. Electrical & Valve Noise (different frequency)

Frequency-Switching Noise: Turn on the cooling or heating mode, switch from the high fan speed to the mute mode, and then from the mute mode back to the high fan speed. During this process, check for any abnormal noises associated with the frequency switching.

Fix: Consult the factory to adjust electronic control parameters.

4. Refrigerant & Flow Noise

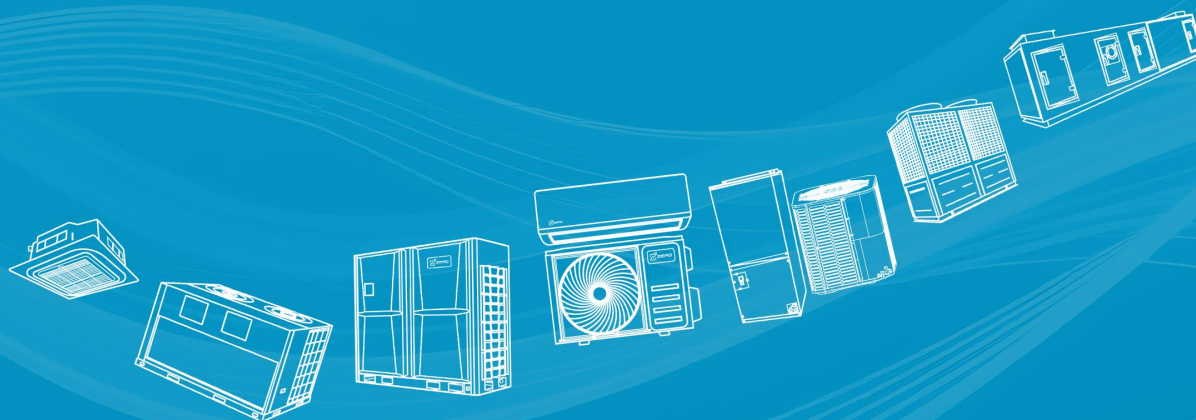
Liquid Slug (Liquid Hammer): Caused by too much refrigerant or frequent defrosting; can damage the compressor.

Defrosting Noise: Sound of refrigerant rushing during mode switching; this is normal.

Throttling Vibration: High-pitched or annoying noise from the expansion valve or capillary.

Fix: Check for partial clogs or flat spots in the capillary; replace the throttling device if needed.

Appendix



Appendix1. ODU Failure codes.

IDU display	Description	Remark
E0	IDU & ODU Communication failure	
E1	IDU Room temperature sensor failure	CN6
E2	IDU Coil temperature sensor failure	CN6
E3	ODU Coil temperature sensor failure	CN1
E4	AC Cooling system abnormal	gas leakage, 4-way valve, system blocked etc.
E6	IDU PG Fan motor / DC fan motor works abnormal	Inspect all concerned parts as fan motor, fan blade and PCB etc.
E7	ODU Ambient Temperature sensor failure	CN1
E8	ODU Discharge Temperature sensor failure.	CN2
E9	IPM / Compressor driving control abnormal.	IPM works abnormal
EA	The Current Test circuit failure	PFC sampling circuit
Eb	The Communication abnormal of <u>Main PCB and Display board</u>	<i>For Floor standing</i>
EC	The Communication abnormal of <u>ODU PCB modules</u>	
EE	ODU EEPROM failure.	
EF	ODU DC Fan Motor Failure	
EU	ODU Voltage Test circuit abnormal.	

Appendix1. ODU Failure codes.

IDU display	Description	Remark
P0	IPM module protection	
P1	Over / Under voltage protection	
P2	Over current protection	
P4	ODU Discharge pipe Overtemperature protection	
P5	Subcooling protection on Cooling mode	
P6	Overheating protection on Cooling mode	
P7	Overheating protection on Heating mode	
P8	Outdoor Overtemperature/Undertemperature protection	
P9	Compressor driving protection (Load abnormal)	
PA	Communication failure for TOP flow unit/ Preset mode coflict.	

Appendix1. ODU Failure codes.

IDU display	Description	Remark
F0	Infrared Customer Feeling test sensor failure	
F1	Electric Power test module failure	
F2	Discharge temperature sensor failure PROTECTION.	Check the sensor well assembled ?
F3	ODU coil temperature failure PROTECTION.	Check the sensor well assembled ?
F4	Cooling system Gas flow abnormal PROTECTION.	Check the 2-way and 3-way opened or not? Cooling system blocked?
F5	PFC PROTECTION	PFC Overcurrent
F6	The Compressor Lack of phase / Anti-phase PROTECTION	
F7	Module temperature PROTECTION	
F8	4-Way Value reversing abnormal.	
F9	The module temperature test circuit failure	
FA	The compressor Phase-current test circuit failure.	

Appendix1. ODU Failure codes.

IDU display	Description	Remark
Fb	Limiting/Reducing frequency for Over load protection on Cooling/Heating mode	Querying by press remote controller
FC	Limiting/Reducing frequency for High power consumption protection	Querying by press remote controller
FE	Limiting/Reducing frequency for Module current protection (phase current of compressor)	Querying by press remote controller
FF	Limiting/Reducing frequency for Module temperature protection	Querying by press remote controller
FH	Limiting/Reducing frequency for Compressor driving protection.	Querying by press remote controller
FP	Limiting/Reducing frequency for anti-condensation protection	Querying by press remote controller
FU	Limiting/Reducing frequency for anti-frost protection	Querying by press remote controller
Fj	Limiting/Reducing frequency for Discharge temperature protection.	Querying by press remote controller
Fn	Limiting/Reducing frequency for ODU AC Current protection.	Querying by press remote controller
H1	Cooling system High Pressure Switch abnormal.	Reserved
H2	Cooling system Low Pressure Switch abnormal.	Reserved
bj	Humidity sensor failure.	Reserved (Querying by press remote controller)

Appendix2. The sensor R-T parameter

1. IDU/ODU Ambient Temp. and Coil Temp. sensor AD value

R25 5KΩ B 25/50 3470 1%

T (°C)	R(KΩ)	TE°C)	R(KΩ)	T°C)	R(KΩ)
-10	22.671	7	10.431	24	5.198
-9	21.606	8	9.991	25	5.000
-8	20.598	9	9.573	26	4.811
-7	19.644	10	9.174	27	4.630
-6	18.732	11	8.795	28	4.457
-5	17.881	12	8.433	29	4.292
-4	17.068	13	8.089	30	4.133
-3	16.297	14	7.760	31	3.981
-2	15.565	15	7.447	32	3.836
-1	14.871	16	7.148	33	3.697
0	14.212	17	6.863	34	3.563
1	13.586	18	6.591	35	3.435
2	12.991	19	6.332	36	3.313
3	12.426	20	6.084	37	3.195
4	11.889	21	5.847	38	3.082
5	11.378	22	5.621	39	2.974
6	10.893	23	5.404	40	2.870

Appendix2. The sensor R-T parameter

2. ODU Discharge Temp. sensor AD value (INV AC)

$R_{85^{\circ}\text{C}}=2.113\text{K}\Omega \pm 3\%$ $B_{25^{\circ}\text{C}/85^{\circ}\text{C}}=4000\pm 2\%$

T (°C)	Rmin	R(KΩ)	Rmax	T (°C)	Rmin	R(KΩ)	Rmax	T (°C)	Rmin	R(KΩ)	Rmax
-10	95.24	106.2	118.2	7	41.42	45.4	49.71	24	19.36	20.89	22.52
-9	90.49	100.8	112.1	8	39.53	43.2	42.33	25	18.55	20	21.54
-8	85.99	95.68	106.3	9	37.74	41.29	45.12	26	17.77	19.14	20.6
-7	81.75	90.86	100.8	10	36.04	39.39	43.01	27	17.03	18.32	19.7
-6	77.74	86.31	95.74	11	34.42	37.59	41	28	16.32	17.55	18.85
-5	73.94	82.01	90.88	12	32.89	35.87	39.1	29	15.65	16.81	18.04
-4	70.35	77.95	86.29	13	31.43	34.25	37.29	30	15	16.1	17.27
-3	66.96	74.11	81.96	14	30.04	32.71	35.58	31	14.39	15.43	16.54
-2	63.74	70.48	77.87	15	29.72	31.24	33.95	32	13.81	14.79	15.34
-1	60.69	67.05	74	16	28.19	29.91	32.48	33	13.25	14.18	15.17
0	57.81	63.8	70.34	17	26.66	28.58	31.01	34	12.72	13.6	14.54
1	55.08	60.72	66.88	18	25.13	27.26	29.55	35	12.21	13.05	13.93
2	52.49	57.81	63.61	19	24.05	26.07	28.23	36	11.72	12.52	13.36
3	50.03	55.05	60.52	20	23.02	24.93	26.97	37	11.26	12.01	12.81
4	47.71	52.44	57.59	21	22.04	23.84	25.77	38	10.82	11.53	12.29
5	45.5	49.97	54.82	22	21.1	22.81	24.63	39	10.29	11.07	11.78
6	43.41	47.62	52.2	23	20.21	21.83	23.55	40	9.986	10.63	11.31



Thank You