Error Codes

Model: AW12.4, AW24.4, AWHV5

When failure or protection happens in the system, error codes will show in LCD screen of wired controller and LED screen on indoor unit.

When failures or protections (except for temperature sensor failure) happen, system can only recover its normal operation after problems being solved and units re-fed with power.

Error Codes display in wired controller

Protection/Failure	Error Code	Ways to check and remedies
Improper communication between indoor and outdoor unit/outdoor communication failure	F1	Check whether port “S” of Indoor and outdoor unit gets loose. Fasten it. Change the indoor PCB. Change the outdoor PCB
Indoor temperature sensor failure	F2	Check whether the indoor unit sensor connection gets loose.
Current sensor, voltage sensor failure	F3	Input current too high or too low,Check compressor input current. Refrigerant leakage. Replace outdoor PCB.
Compressor drive failure, IPM failure, IPM module protection (overload), compressor drive protection	F4	Check whether compressor driver PCB or compressor is broken.
EEPROM failure	F5	
Overload protection (indoor heat exchanger temperature too high in heating mode; outdoor coil temperature too high in cooling mode, over-current)	F6	Check the water flow of the unit
Too low or too high voltage	F7	Check the voltage of the power supply. Change the outdoor PCB
Pressure switch failure	F8*	Check the pressure of the system Change the pressure switch
Outdoor EEPROM failure	F9	

Outdoor temperature sensor failure	Fb	Check whether the Outdoor unit sensor connection gets loose. Check if Temp sensor resistance drifting.
System protection caused by too high(low) pressure	Fc*	Measure the high (low) pressure switch to check whether it is shirt-circuited or open.
System protection caused by the ambient Temp.	Fd	Check the ambient Temp sensor. Check whether the ambient Temp is too high(low) for unit working.
Indoor coil anti-freezing protection	FE	Water inlet temperature in cooling mode is too low.
Indoor water Pump or flow switch failure	FF	Check the flow rate of the water pump. Check the connection of the flow switch. Check if there is enough water flow in the system Check Dip-switch seting of indoor PCB
Communication failure of wired controller	E0	Check whether the wire connection gets loose.
Wire connection between LCD controller and indoor PCB open or short-circuited. LCD controller failure.	E1	Check whether the wire connection gets loose Change it.
Room temperature sensor in wired controller failure	E2	Check whether the sensor connection gets loose.

Remark

1. **Anti-freezing function for indoor**
   Anti-freezing function for indoor (must work with new version indoor PCB):
   When unit is in standby mode, if ambient temperature is lower than 5℃, then water pump works for 1 minute in every 10 minutes, unit show P1 code.

   When unit is in standby mode, if ambient temperature is lower than 0℃ and water temperature lower than 3℃, unit show P2 code and start to work in heating mode till water temperature higher than 8℃ or ambient temperature higher than 3℃.

2. *__Difference between F8* and Fc*:__
   System Pressure Protection In compressor's operation, when system pressure rise too high and pressure switch turns off, (in system's normal operation, pressure switch keeps on),the controller will lower compressor's running speed until pressure switch reconnects. Meanwhile, it records the compressor's current running speed, and takes the value one level lower as the maximum speed. This limit will be released automatically after compressor keeps on running for 2 hours. However, if during this process, similar pressure protection happens again, the controller will records the new running frequency and takes 1 level lower than this new frequency as the maximum speed. And it will release this protection in 2 hours since the

time when this new protection happens. If compressor is off, but pressure switch is disconnected for 5 seconds, the controller will judge it as "Pressure Switch Failure"and relevant error code will be shown in wired controller. For check whether the system have this pressure switch failure or protection is due to hardware failure, we can do like this: 1.Turn the unit off, and cut the power. Leave the unit without power for 10 minutes. 2.Power up the unit. 3.If F8* comes once after power the unit, then it is for sure that it is the pressure switch itself, or the cable loosen that cause F8* failure. 4.If not, then it is for sure that the refrigerant system working abnormal, that caused this high pressure switch failure.

Error codes on indoor unit PCB

There is an indication LED light on indoor PCB board, this light flickers in a frequency. Different times of flickering indicate different kinds of failures.

Time of flickering	Protection/Failure	Time of flickering	Protection/Failure
1	Indoor water outlet temp. sensor failure	10	Outdoor coil temp. sensor failure
2	Indoor coil outlet temp. sensor failure	11	Compressor discharge temp. sensor failure
3	Indoor water inter temp. sensor failure	12	Voltage sensor failure
4	Indoor EEPROM failure	13	Current sensor failure
5	Improper communication between wired controller and indoor PCB bard	14	IPM failure
6	Pressure switch failure	15	Improper communication in outdoor unit
7	Improper communication between indoor and outdoor unit	16	Modbus communication failure
8	Preserved		
9	Outdoor room temp. sensor failure		

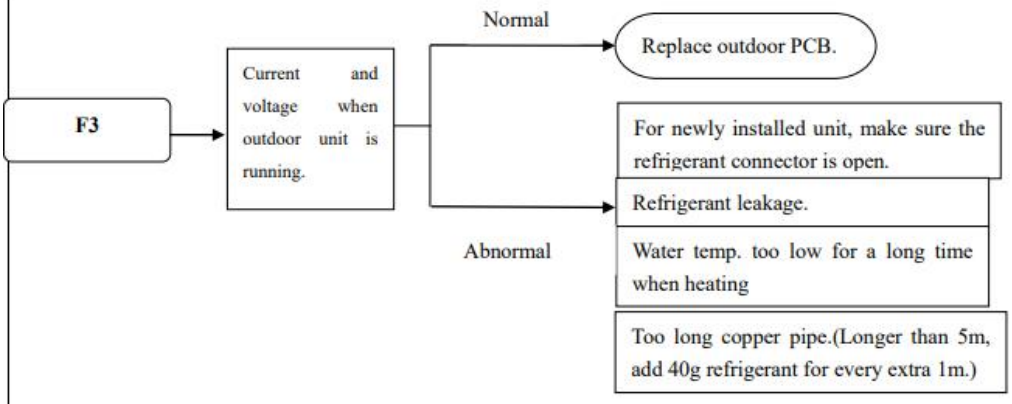
Error codes on outdoor PCB

There is an indication light on outdoor PCB board or module board to show the system's operation. When compressor turns on, this light flickers in a frequency of "on for 1 second, and then off for 1 second"; when compressor is in normal operation, this light shines; when failure happens in outdoor unit, this light turns off for 2 seconds and then turns on for 3 seconds, and then flickers in a way of "on for 0.2 second, and then off for 0.2 second". Different times of flickering indicate different kinds of failures.

Time of flickering	Failure	Time of flickering	Failure
1	IPM protection	10	Outdoor coil temperature sensor failure
2	Improper voltage	11	Compressor discharge temperature sensor failure
3	Over current	12	Voltage sensor failure
4	Compressor discharge temperature too high	13	Current sensor failure
5	Outdoor coil temperature too high	14	IPM failure
6	Compressor drive failure	15	Outdoor communication failure
7	Improper communication with indoor unit	16	Modbus communication failure
8	Preserved	17	Preserved
9	Ambient temperature sensor failure	18	Preserved
19	Preserved	20	Preserved
21	Preserved	22	Defrosting
23	Preserved	24	Preserved
25	Room Temp sensor failure	26	Indoor coil temp sensor failure
27	Indoor EEPROM failure	28	Indoor water outlet temperature sensor failure
29	Preserve	30	Preserved
31	Too low/high outdoor Temp	32	Indoor anti-freezing protection
33	Indoor coil over-heat protection	34	Abnormal pressure
35	Pressure sensor failure	36	Communication failure between indoor PCB and operation panel

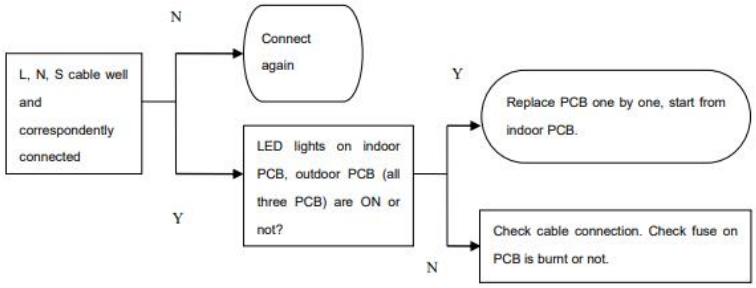
Trouble Shooting Instruction

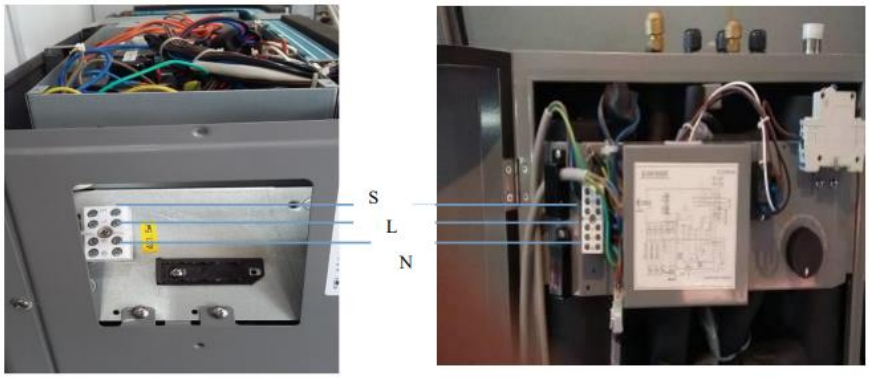
F3 Current sensor, voltage sensor failure



The current is 6.22A in the picture.
If failure code F3 occurs, and the measured current is over than 1A, replace the outdoor PCB.

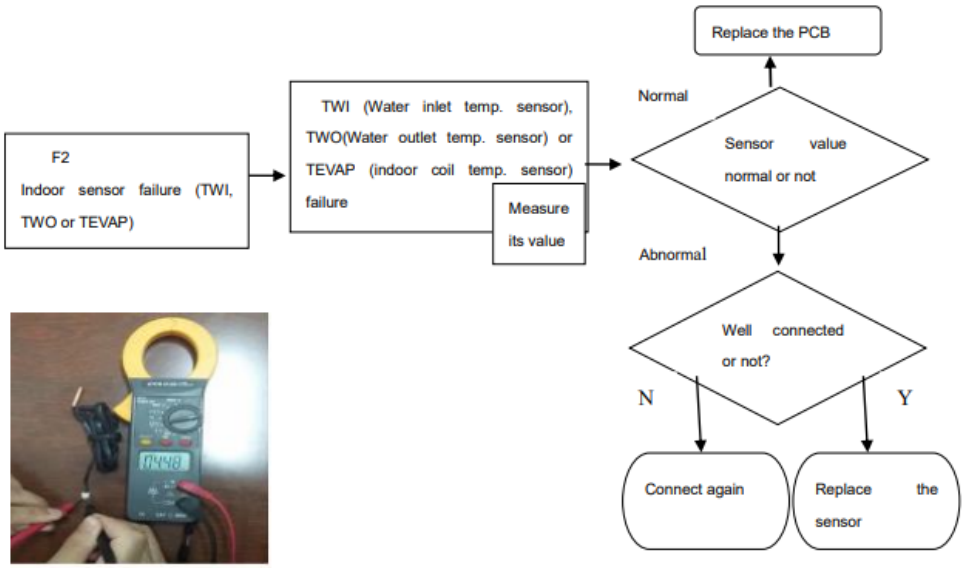
F1 Indoor&outdoor unit communication failure





L 、 N 、 S must be connected correspondently.

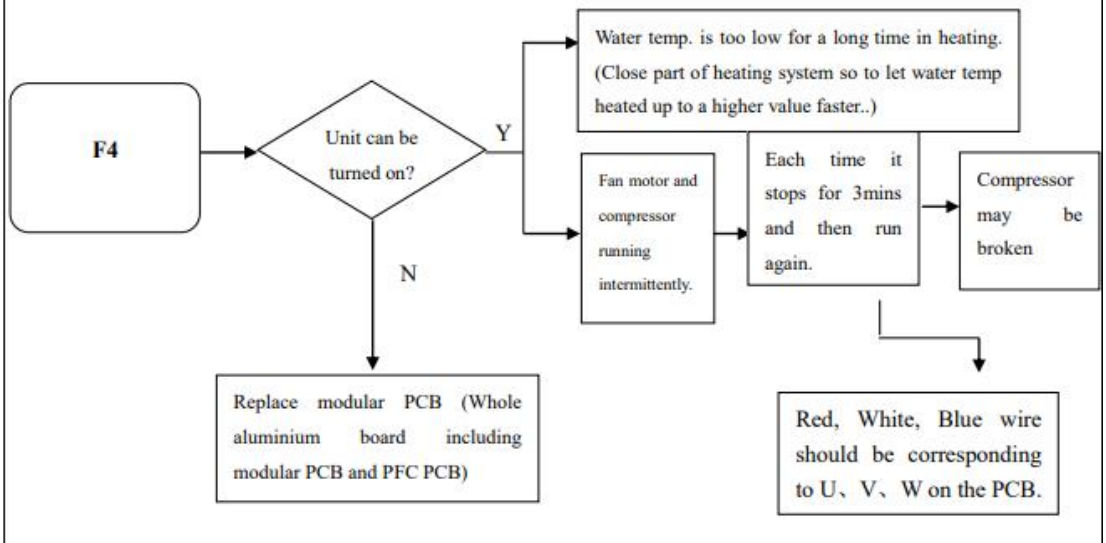
F2 indoor sensor failure



Sensor value measuring: Take the sensor out. Use multi-meter to check the value of the sensor and compare it with sensor value table.

For example, this sensor is a 5KOhm sensor. Its measure value is 4.8 K Ω. If current environment temperature is 28℃, then this sensor is OK. If the value is infinity or drift too much, then this sensor is broken.

F4 Compressor driver failure、IPM failure、IPM modular protection(overload)、driver protection



These three wires are compressor connecting wire. Red wire is corresponding to U on the PCB, blue wire is corresponding to V on the PCB, black wire is corresponding to W on the PCB. The three wires should not be mixed.