

# Trouble Shooting Guide

# Guide des Codes Erreurs

## WIT-12322.MH

## R32



**Updated on: 16 SEP 22**

# Trouble Shooting Guide – Guide des Codes Erreurs WIT-12322.MH

## 1" Failure code

| Code | Reason   | Remark   |
|------|--|--|
| E0   | IDU & ODU Communication failure  | The IDU & ODU wiring connection correct?             |
| E1   | IDU Room Temperature sensor failure. (IDU RT failure)                          | IDU sensor and PCB.                                  |
| E2   | IDU Coil temperature sensor failure. (IDU IPT failure)                         | IDU sensor and PCB.                                  |
| E3   | ODU Coil temperature sensor failure. (OPT)                                     | ODU coil sensor and ODU PCB                          |
| E4   | AC Cooling system abnormal   | Gas leakage? 2-way or 3-way valve blocked etc.       |
| E5   | IDU/ODU mismatched failure (specially performance test on the production line) | /  |
| E6   | IDU PG Fan motor / DC fan motor works abnormal (IDU failure)                   | Fan motor, fan blade and PCB.                        |
| E7   | ODU Ambient Temperature sensor failure   | ODU ambient sensor and ODU PCB.                      |
| E8   | ODU Discharge Temperature sensor failure.                                      | ODU discharge sensor and ODU PCB.                    |
| E9   | IPM / Compressor driving control abnormal.                                     | ODU PCB , compressor, etc.                           |
| EA   | ODU Current Test circuit failure   | ODU PCB broken?                                      |
| Eb   | The Communication abnormal of Main PCB and Display board (IDU failure)         | Display board and main PCB.                          |
| EE   | ODU EEPROM failure.  | 1. ODU PCB broken?<br>2. Try to re-power on AC unit. |
| EF   | ODU DC fan motor failure.  | Fan motor, ODU PCB.                                  |
| EU   | ODU Voltage test circuit abnormal.   | ODU PCB.   |
| P0   | IPM module protection.   | ODU PCB  |
| P1   | Over / under voltage protection.   | 1. ODU PCB broken?<br>2. Power supply abnormal?      |
| P2   | Over current protection.   | 1. ODU PCB broken?<br>2. Power supply abnormal?      |
| P4   | ODU Discharge pipe Over temperature protection.                                | Please check the troubleshooting for detail.         |
| P5   | Sub-cooling protection on Cooling mode.  | Please check the troubleshooting for detail.         |
| P6   | Overheating protection on Cooling mode.  | Please check the troubleshooting for detail.         |
| P7   | Overheating protection on Heating mode.  | Please check the troubleshooting for detail.         |
| P8   | Outdoor Over temperature/Under temperature protection.                         | Please check the troubleshooting for detail.         |
| P9   | Compressor driving protection (Load abnormal).                                 | Please check the troubleshooting for detail.         |
| PA   | Communication failure for TOP flow unit/ Preset mode conflict. (IDU failure)   | Please check the troubleshooting for detail.         |
| F0   | Infrared Customer feeling test sensor failure. (IDU failure)                   | Querying by press remote controller                  |
| F1   | Electric Power test module failure. (IDU failure)                              | Querying by press remote controller                  |
| F2   | Discharge temperature sensor failure PROTECTION.                               | Please check the troubleshooting for detail.         |
| F3   | ODU coil temperature failure PROTECTION..                                      | Please check the troubleshooting for detail.         |

|    |   |  |
|----|---|--|
| F4 | Cooling system gas flow abnormal PROTECTION.  | Please check the troubleshooting for detail. |
| F5 | PFC PROTECTION  | Please check the troubleshooting for detail. |
| F6 | The Compressor lack of phase / Anti-phase PROTECTION.                                     | Please check the troubleshooting for detail. |
| F7 | IPM Module temperature PROTECTION   | Please check the troubleshooting for detail. |
| F8 | 4-Way Valve reversing abnormal..  | Please check the troubleshooting for detail. |
| F9 | The module temperature test circuit failure.  | ODU PCB                                      |
| FA | The compressor Phase-current test circuit failure.  | ODU PCB                                      |
| 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 over temperature protection.                    | Querying by press remote controller          |
| Fn | Limiting/Reducing frequency for ODU AC Current protection.                                | Querying by press remote controller          |
| Fy | Gas leakage protection  | Please check the troubleshooting for detail. |
| bf | TVOC sensor failure (IDU failure, optional)   | Querying by press remote controller          |
| bc | PM2.5 sensor failure (IDU failure, optional)  | Querying by press remote controller          |
| bj | Humidity sensor failure. (IDU failure)  | Querying by press remote controller          |

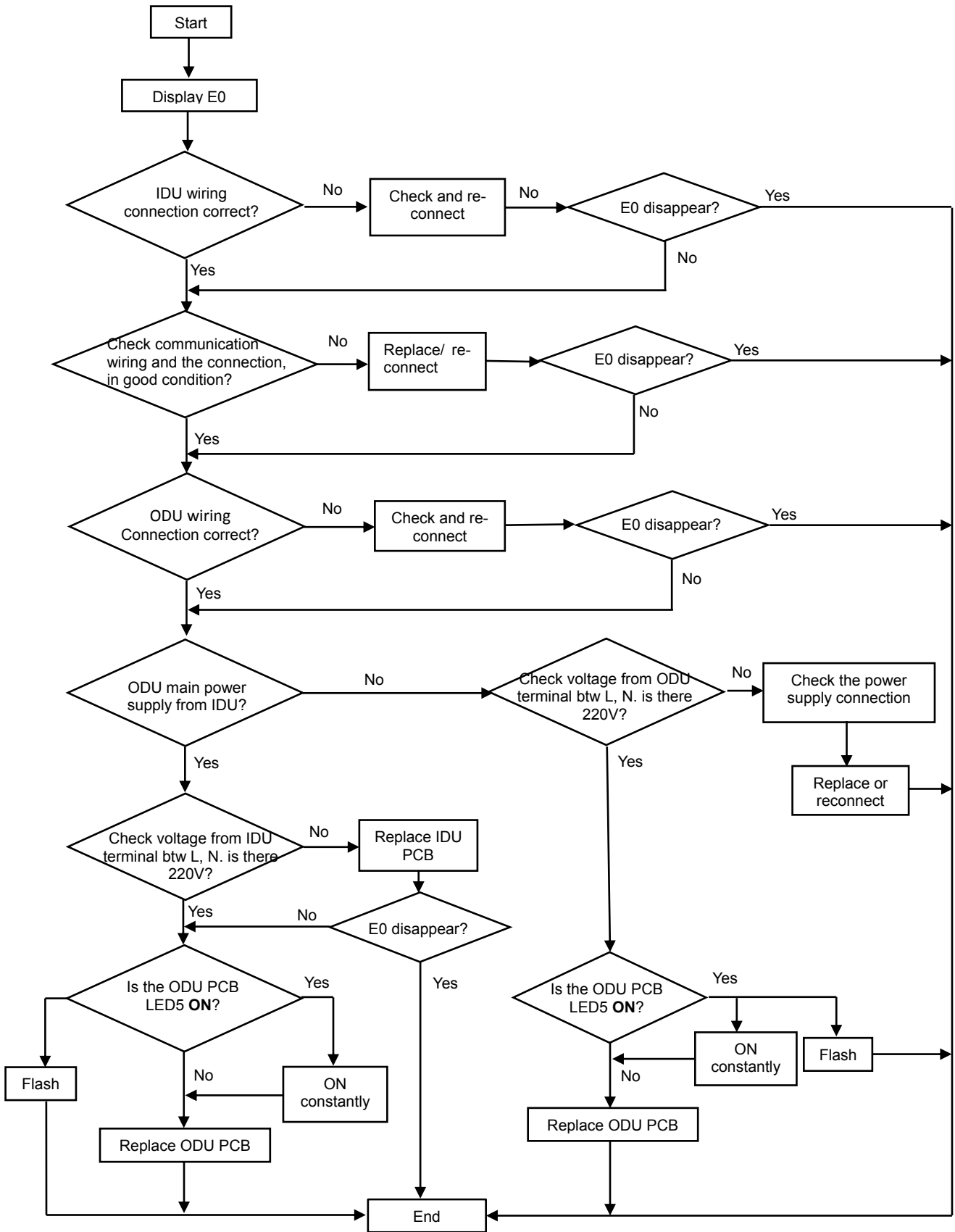
**Note: Remote controller FAILURE CODE Querying function**

As shown in the failure codes, some of the codes (Fb~bj) need to press remote control for inspection.

While unit on operation, press the ECO button 8 times with 8 seconds, the buzzer BIBI 2 times, you can inspect the special failure code as Fb ~Fn, bj etc.

# "Trouble shooting

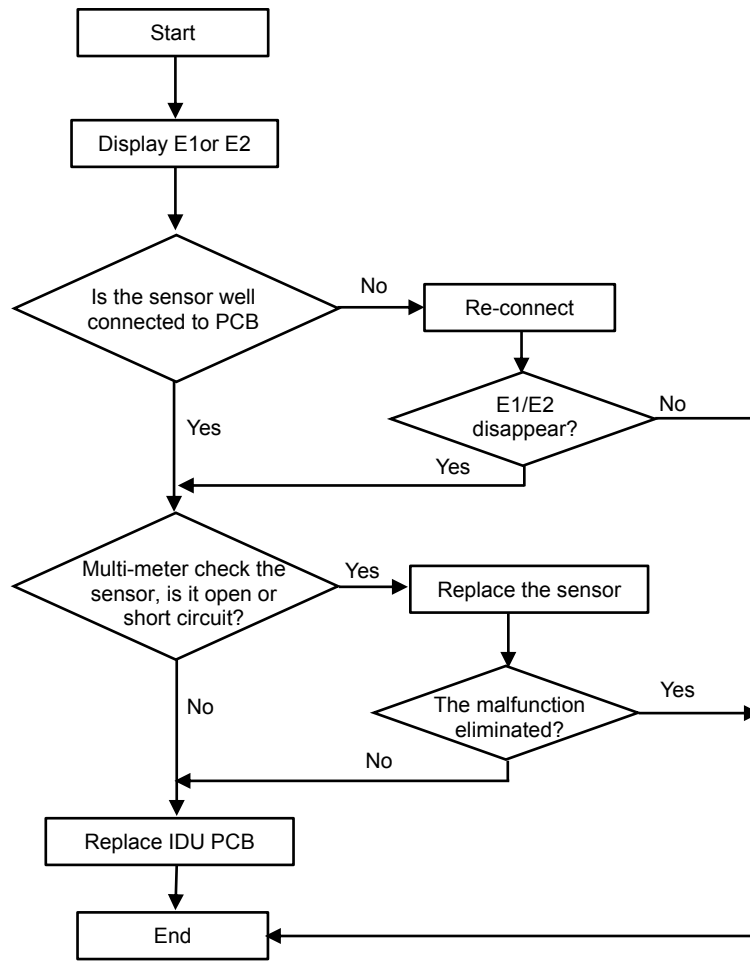
## 2.1 E0 ---IDU & ODU communication failure



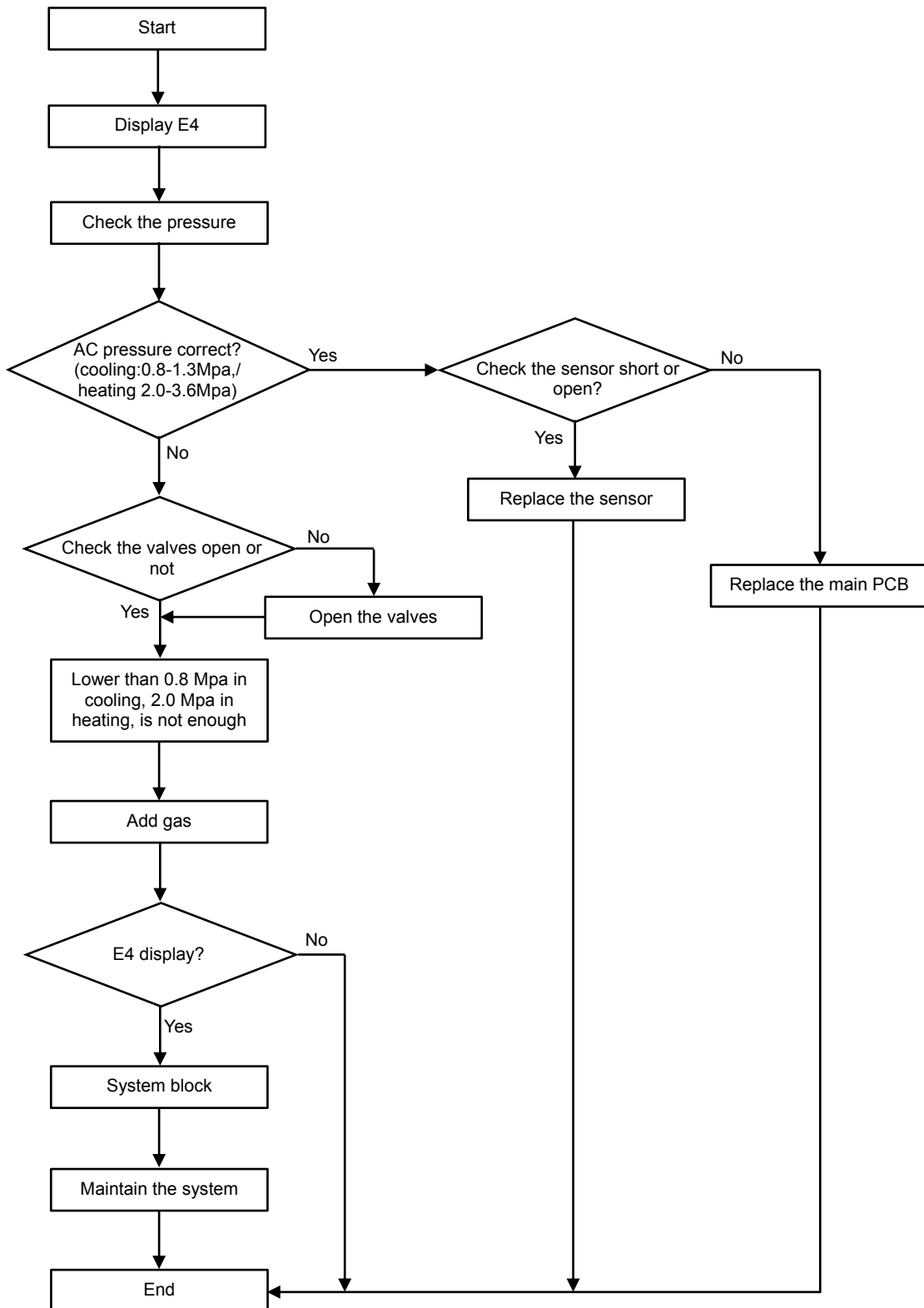
**Remark:** 1. if the communication wiring **1(S)** is not well connected, the ODU LED5 will light **ON** always.

2. When unit works normal, there is a variable DC voltage (**0~24V**) btw **1(S)** & **N**. and LED5 flashes.

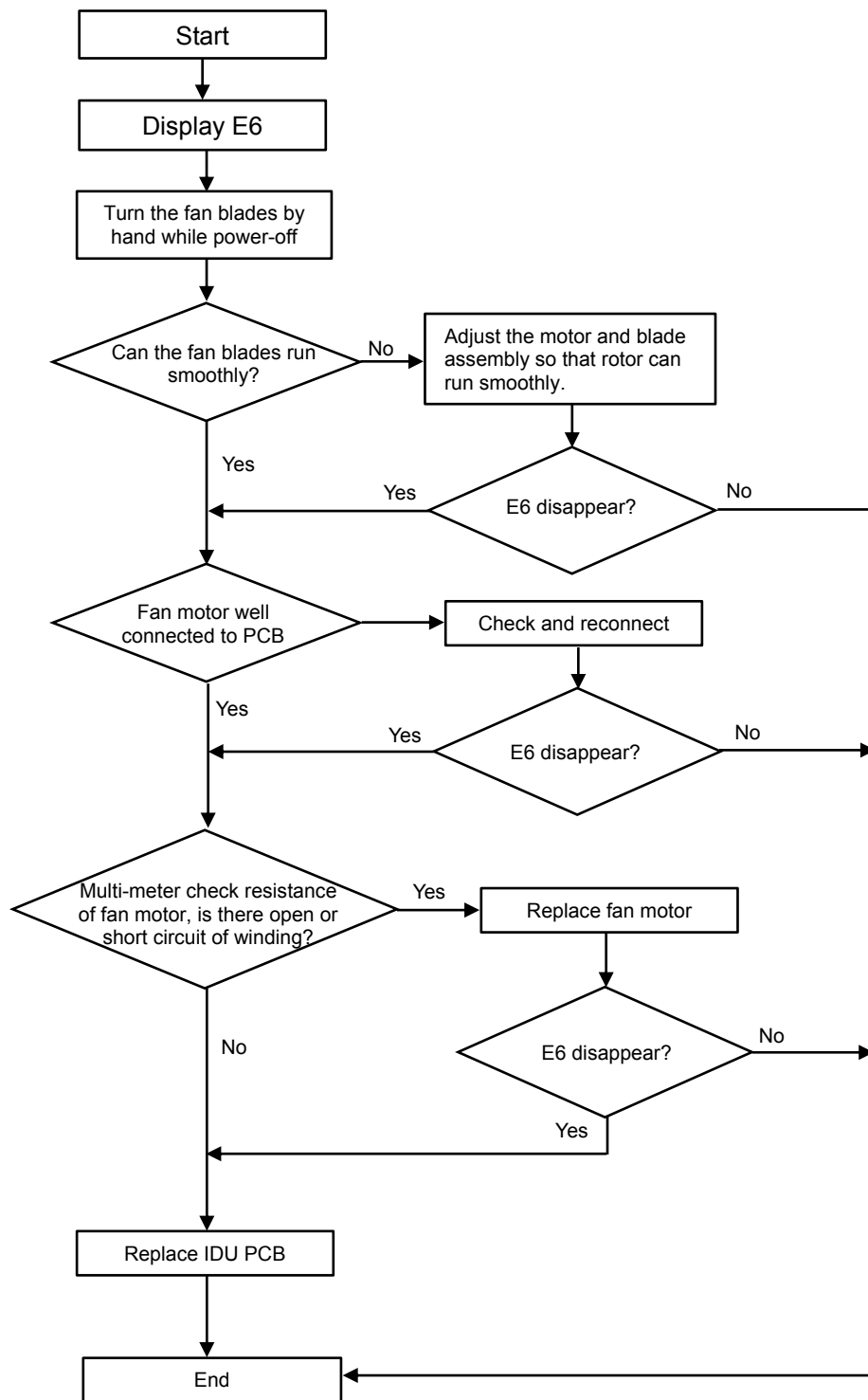
2.2 E1, E2 ---IDU Room temperature sensor and/or coil temperature sensor failure.



### 2.3 E4 --- AC Cooling system abnormal (Gas not enough)

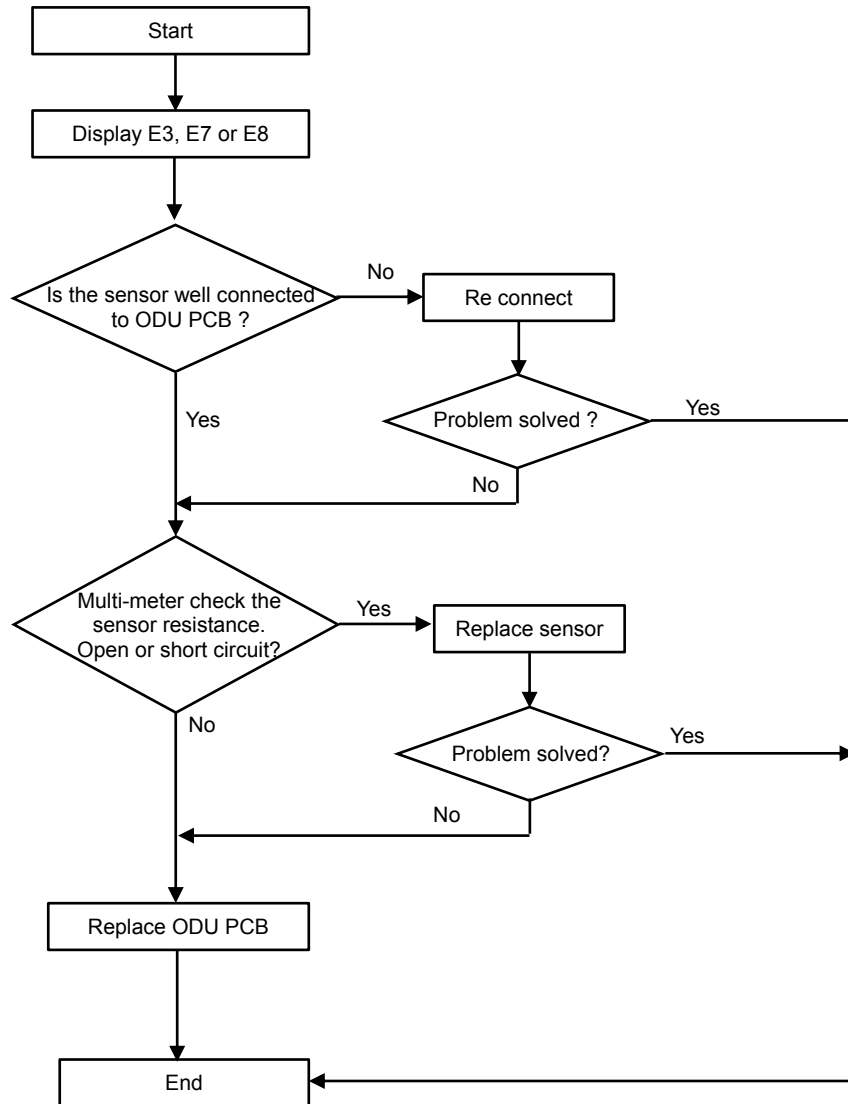


## 2.4 E6----IDU ventilation failure (PG and DC fan motor only)



## 2.5 E3, E7 or E8----ODU Coil temperature sensor, Ambient temperature sensor or Discharge temperature sensor failure.

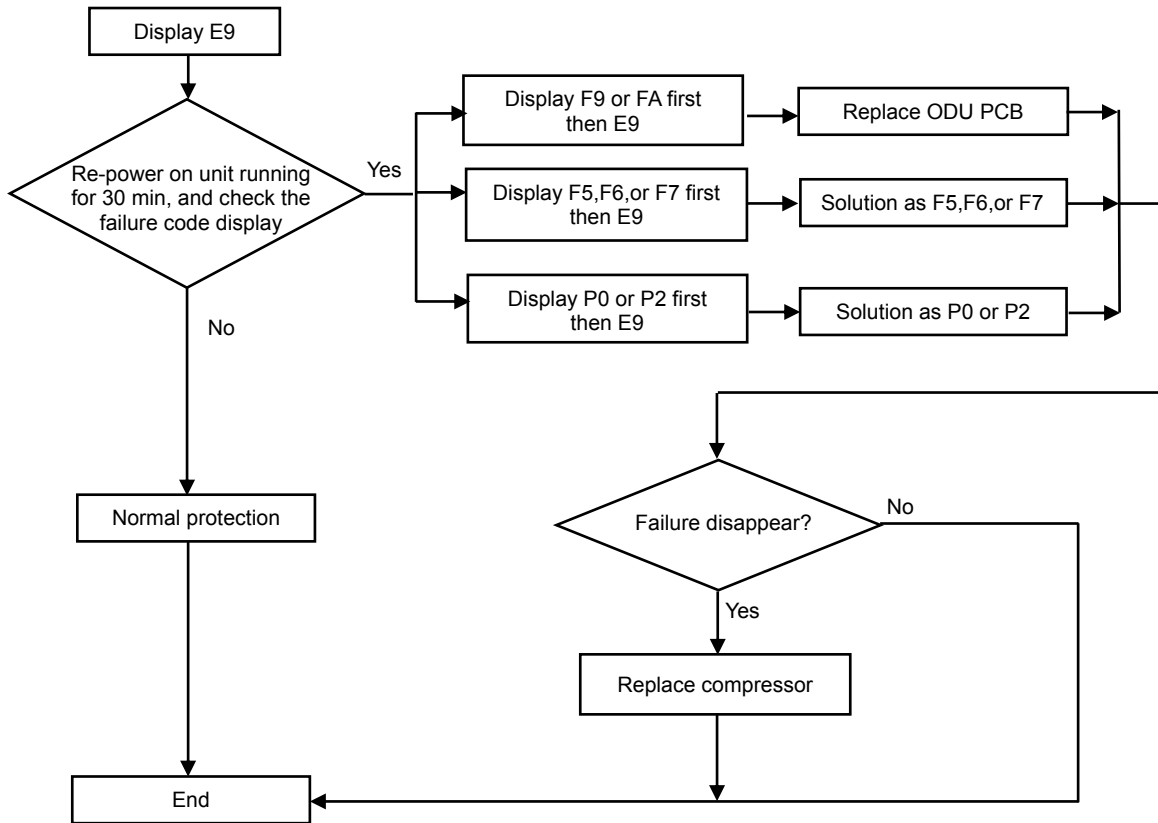
When any of the sensor resistance open or short circuit , unit will display failure code as E3/E7 or E8, IDU and ODU turns off. When the sensor resistance recovery, unit revert to be standby, customer can switch on the unit directly.





## 2.6 E9---ODU IPM /Compressor drive fault

If unit have 6 times stopping works for IPM protection (P0) continuously, it will display E9 error, and unit can't be recovered to operation, except press ON/OFF button.



### Remark:

#### 1. F9 code

Reason: The IPM module temperature test circuit failure.

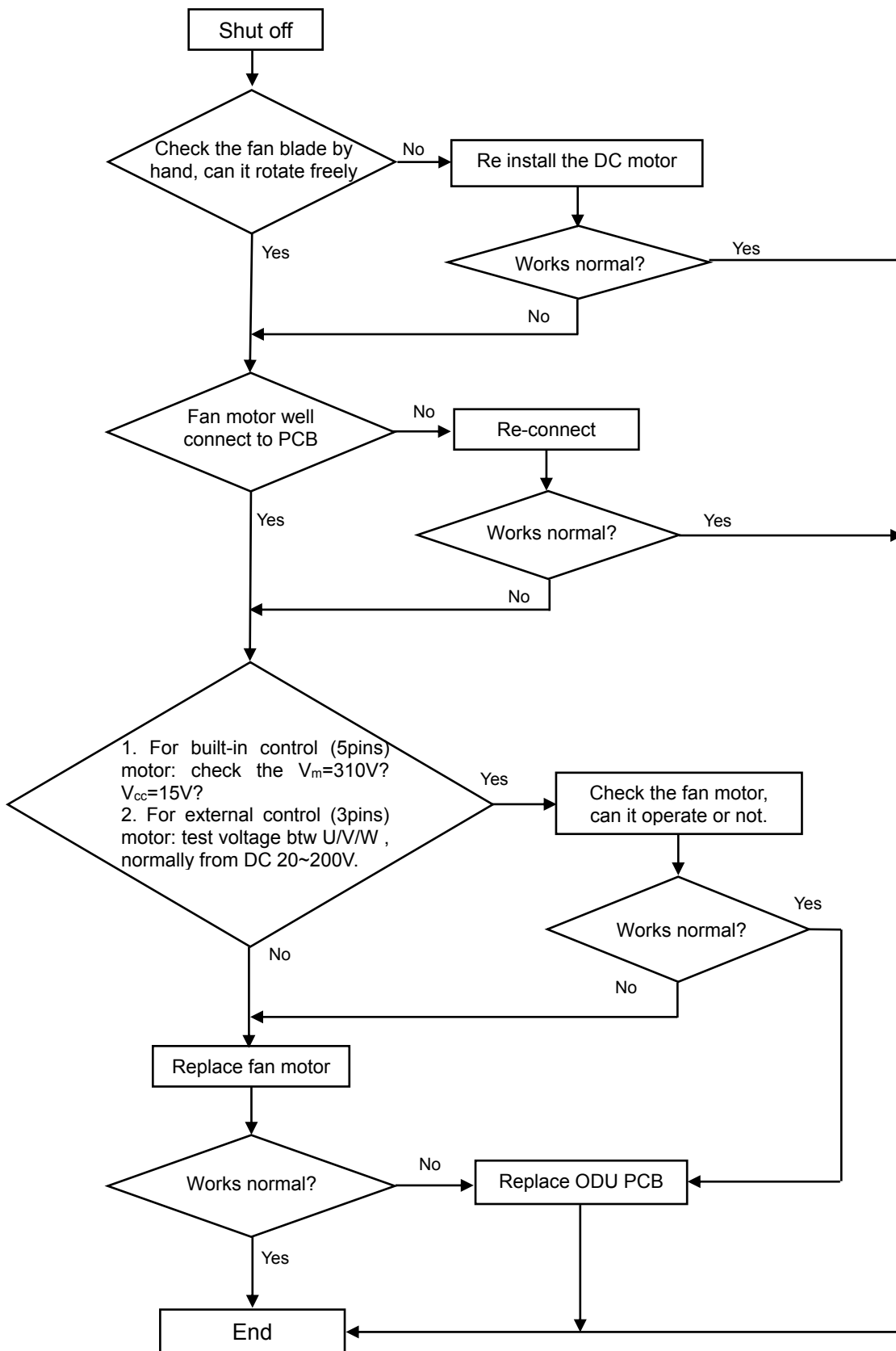
Solution: Replace the ODU PCB.

#### 2. FA code

Reason: The compressor phase-current test circuit failure.

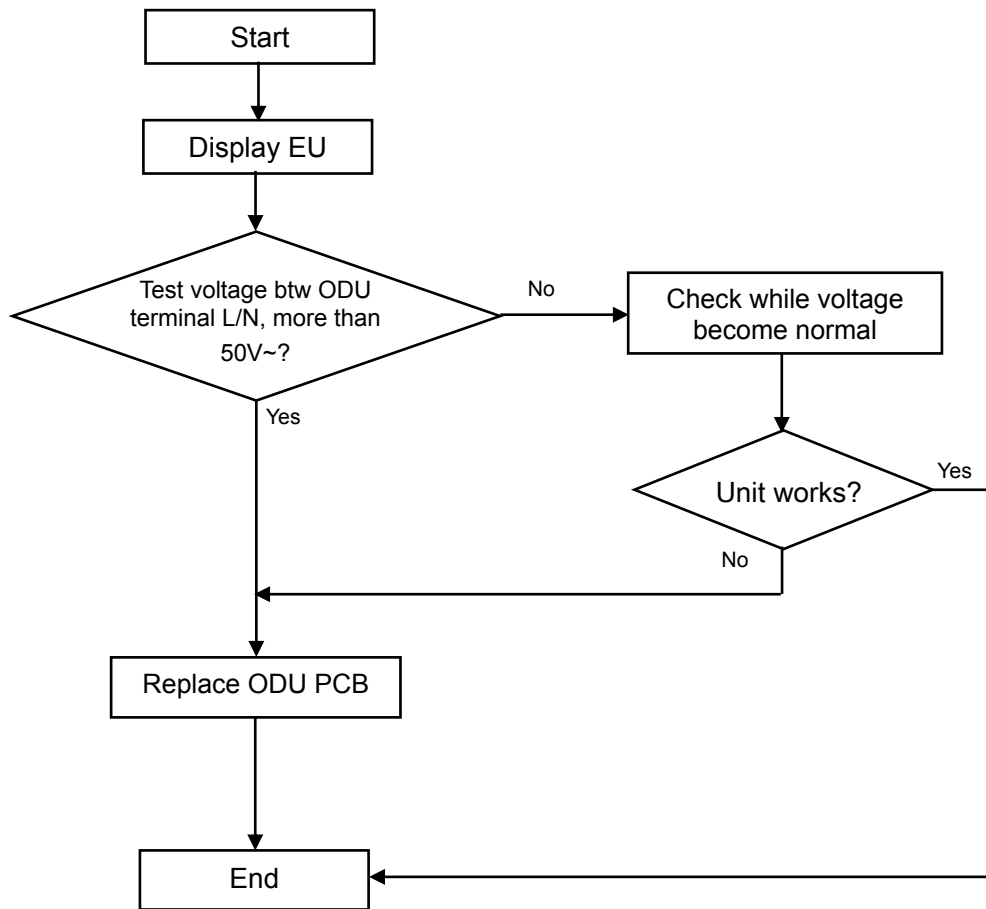
Solution: Replace the ODU PCB.

## 2.7 EF---ODU DC fan motor failure



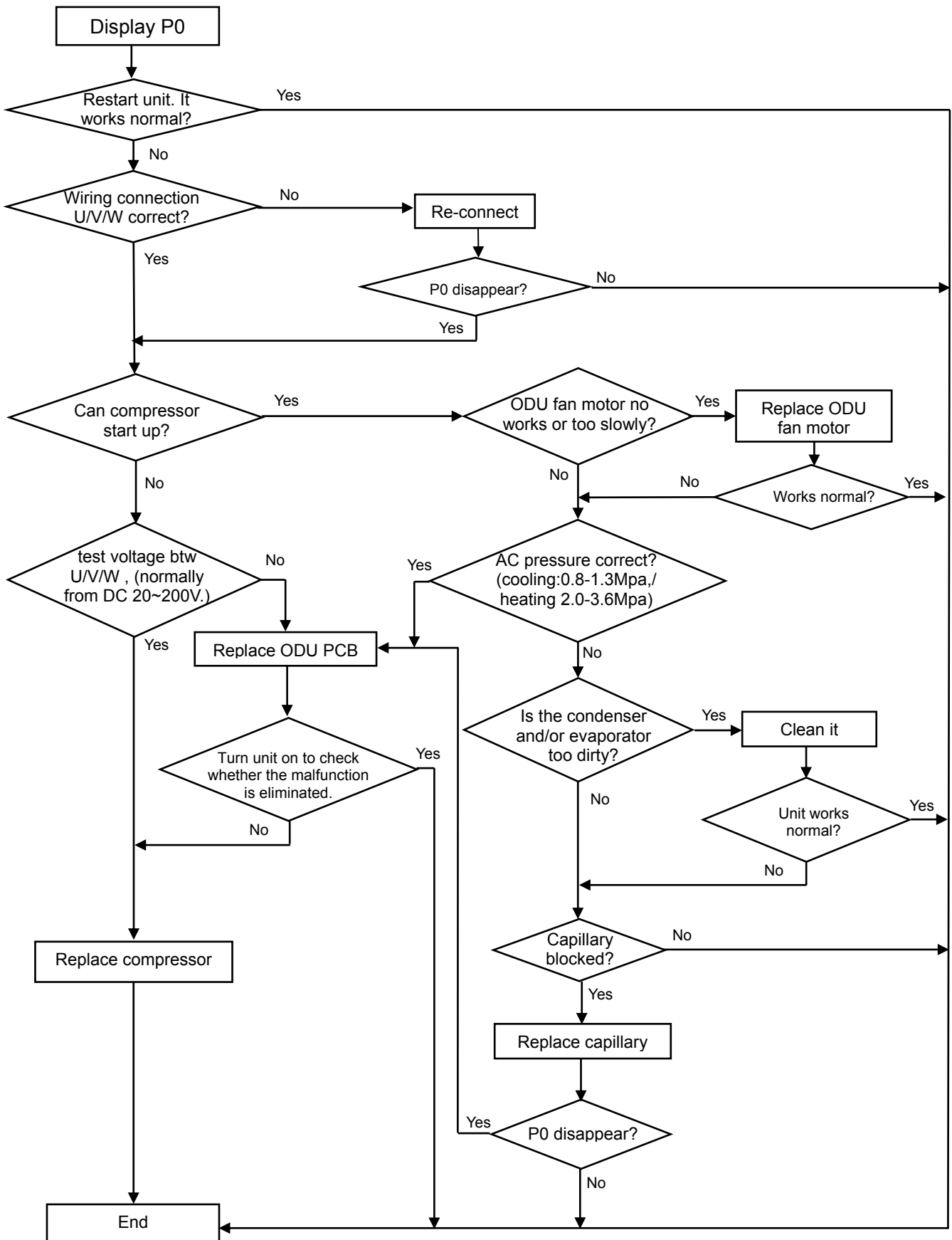
## 2.8 EU---ODU voltage test sensor failure

After power relay works, when tested voltage effective value less than 50V for 3s continuously, unit will display EU.



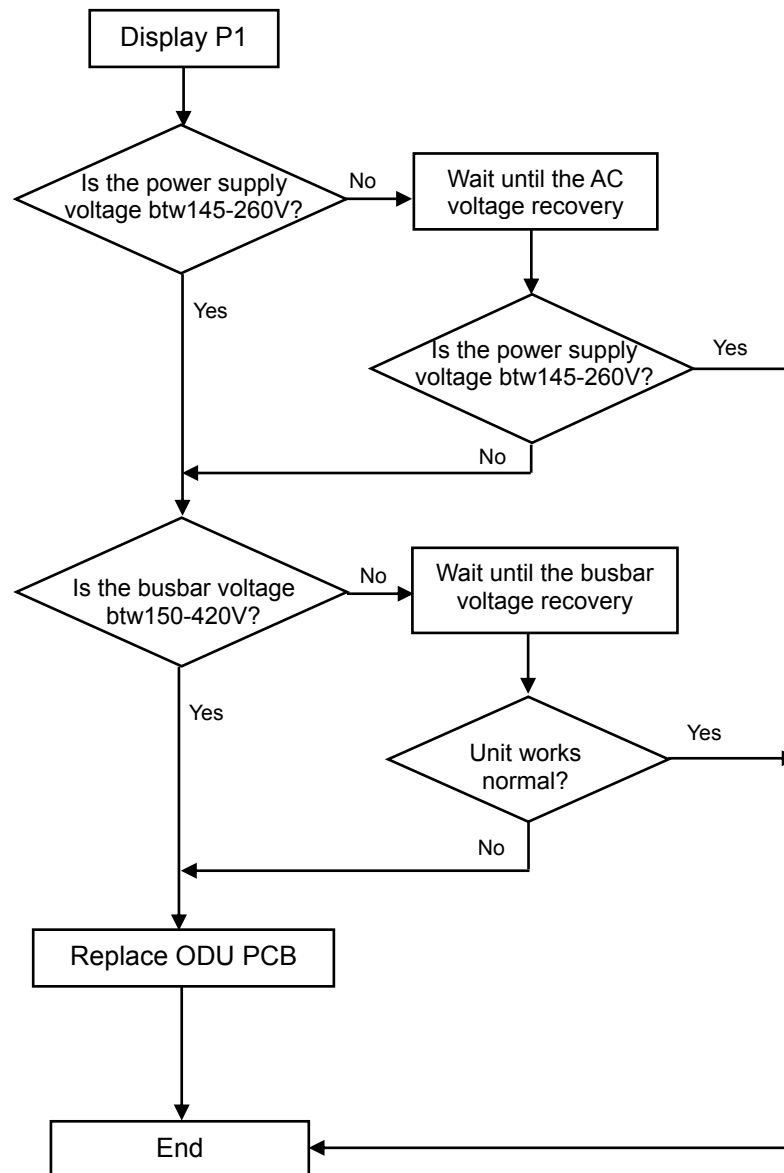
## 2.9 P0---IPM protection

When overheat or overcurrent for IPM, AC unit will display P0protection.



## 2.10 P1--- Over / under voltage protection

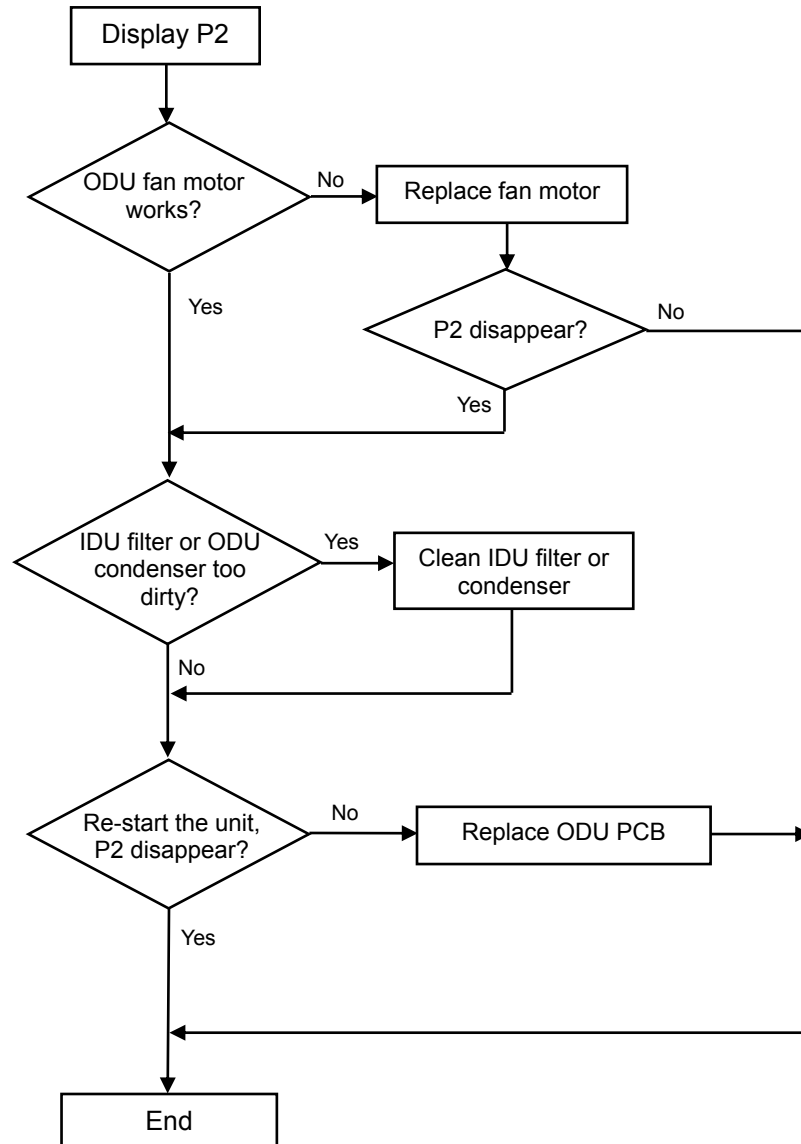
1. Test voltage between L & N, When the power supply  $V > AC260V$  or  $V < AC150V$ , AC will display P1 protection, unit will recover back to previous status while  $V > AC155V$ .
2. Test voltage on the big size electrolytic capacitor of ODU PCB, When DC busbar voltage  $V > DC420V$  or  $V < DC150V$ , unit will recover back to previous status while  $DC190V < V < DC410V$



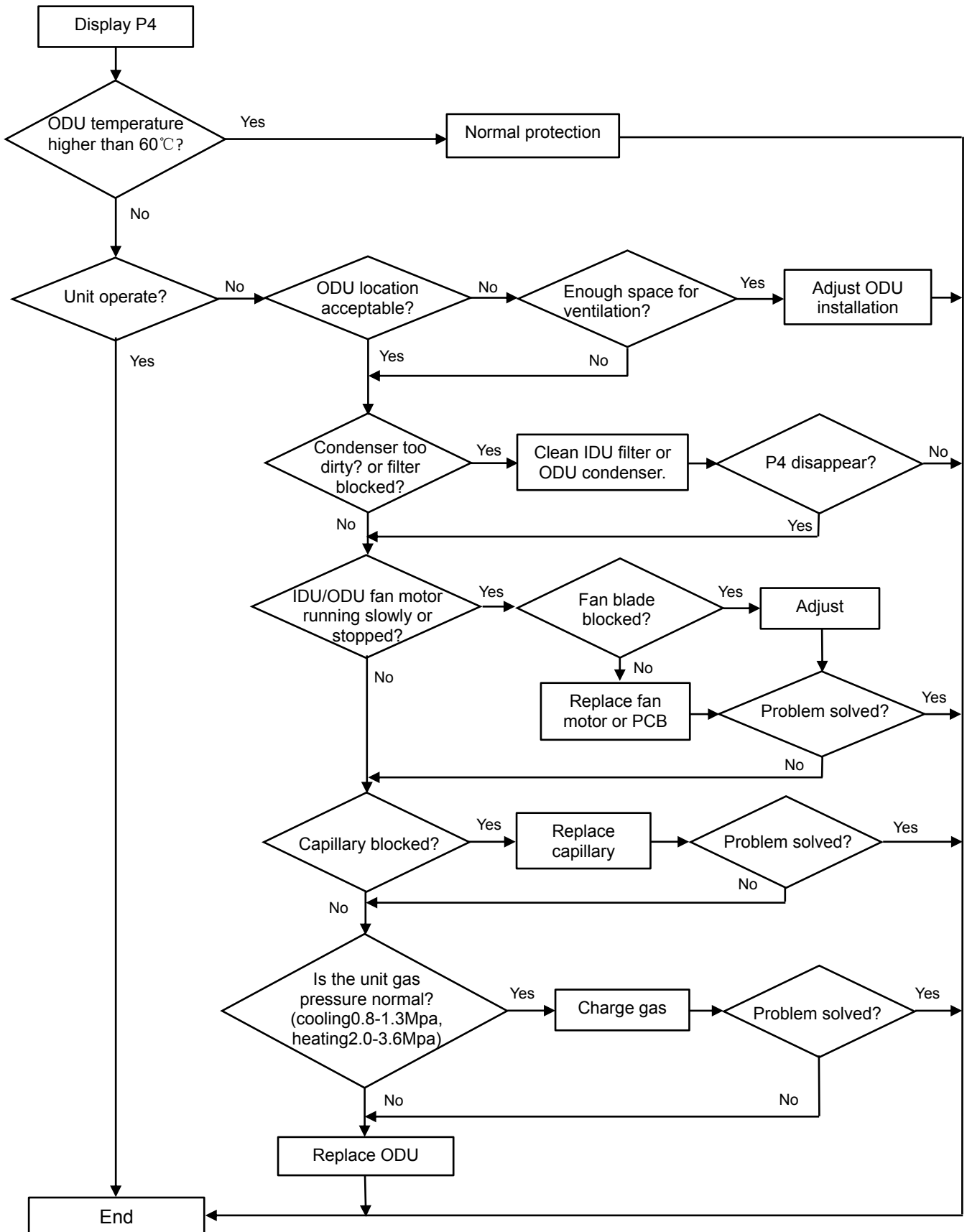
## 2.11 P2---Over Current protection

When the AC unit running current more than  $I_{max}$ , it will stop and display P2 protection.

*Note: for different AC model,  $I_{max}$  has difference valve.*

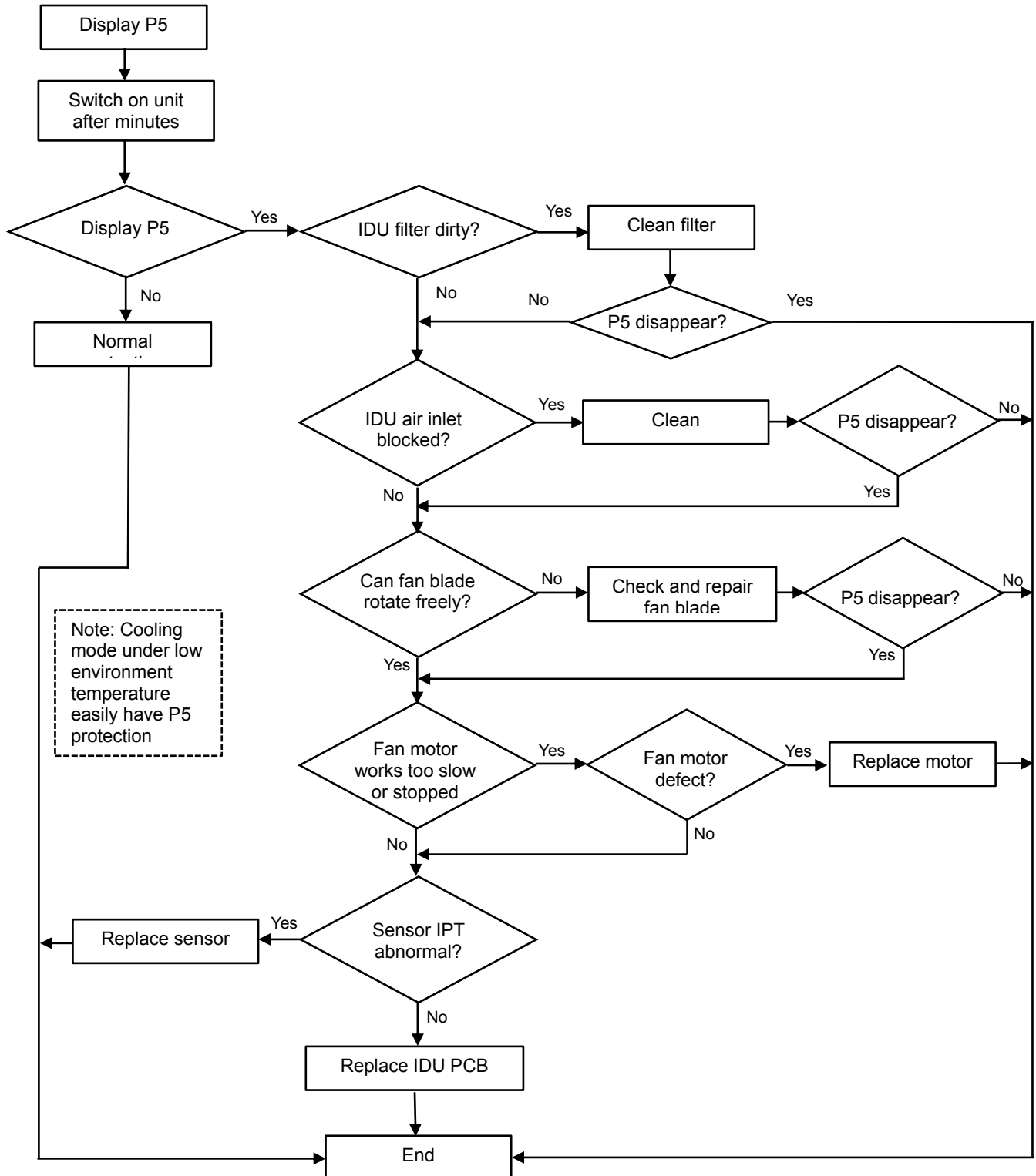


## 2.12 P4 ---ODU Discharge temperature overheating protection



## 2.13 P5---Sub-cooling protection on Cooling/Dry mode

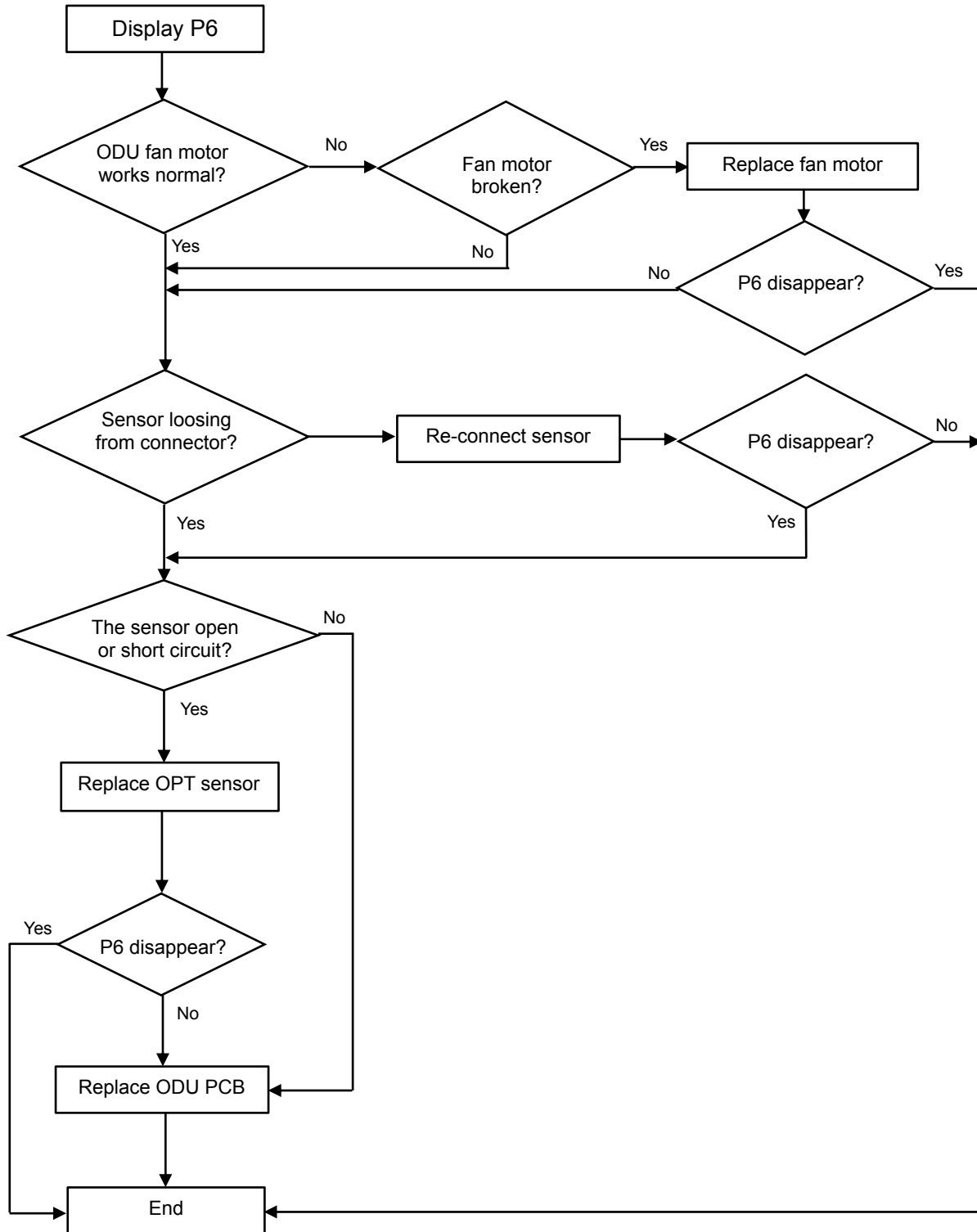
On Cooling or Dry mode, when IDU evaporator coil temperature  $IPT < 1^{\circ}\text{C}$  continuously for 3 min after compressor start up for 6 min, CPU will switch off outdoor unit and show P5 failure code.





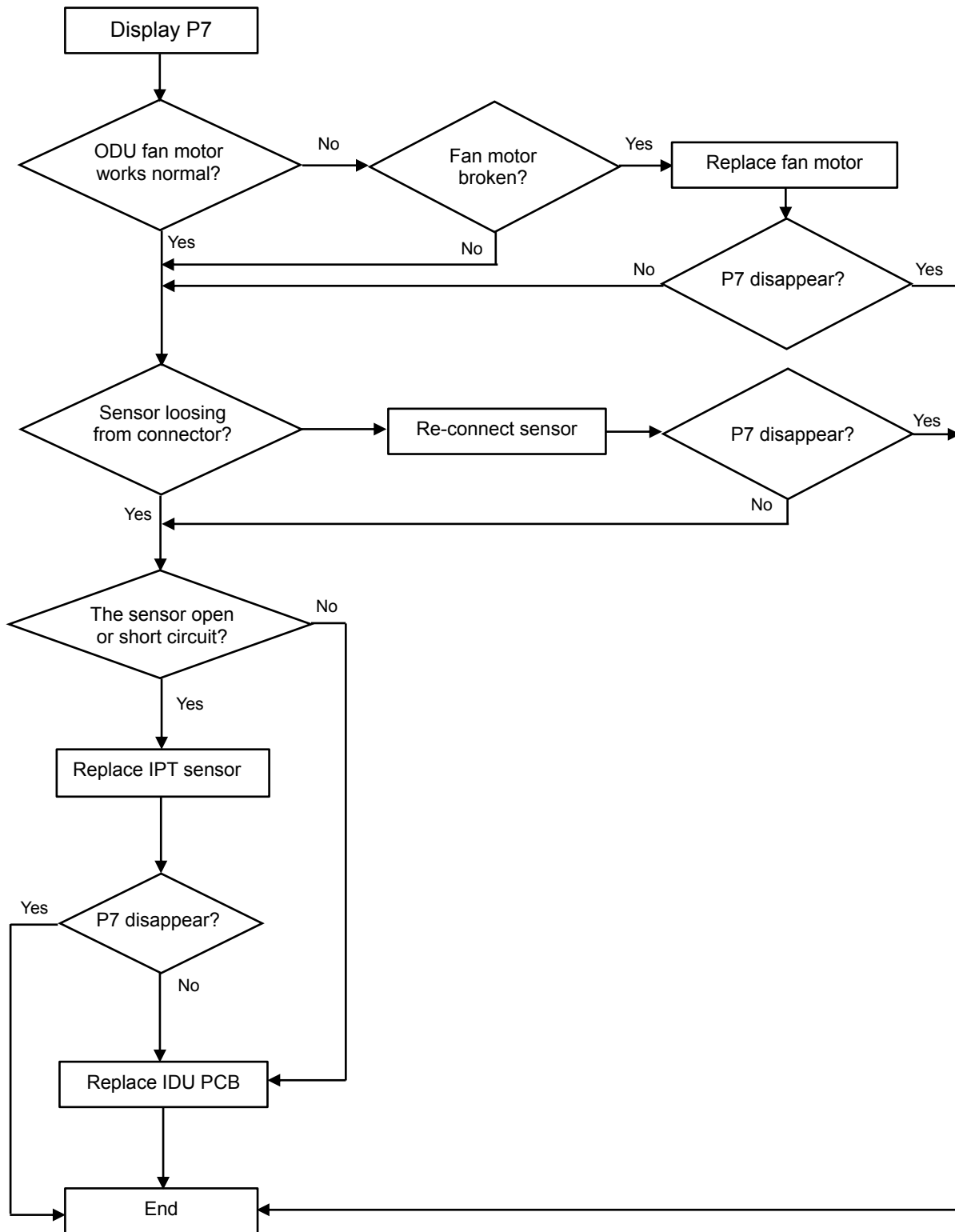
## 2.14 P6---Overheating protection on Cooling mode

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



## 2.15 P7---Overheating protection on Cooling mode

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.



## 2.16 P8---Outdoor Overtemperature/Under-temperature protection

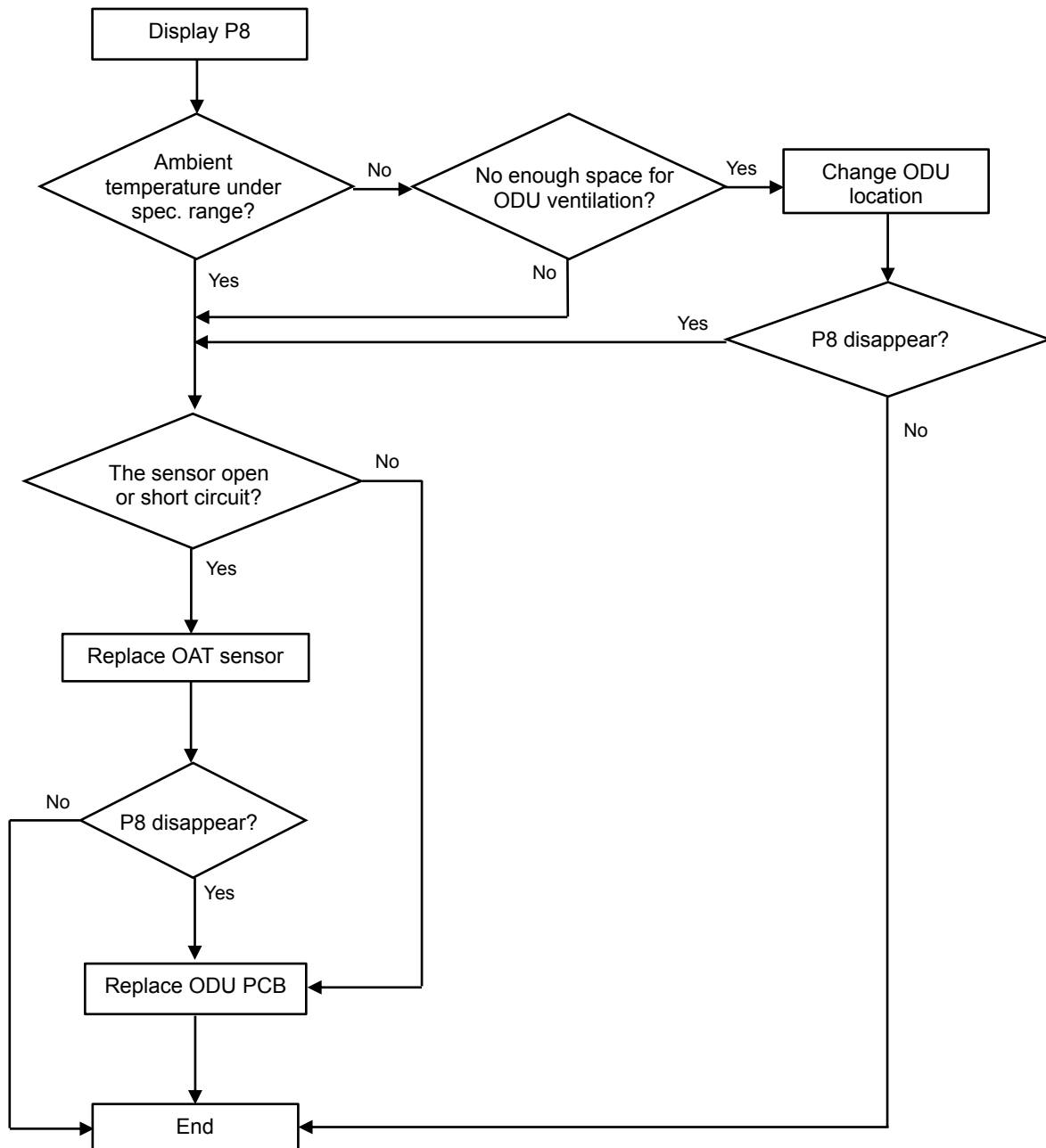
When environment temperature as below condition, the compressor will stop working, after 200s delay, the IDU will show P8 failure code.

(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  $RT > 35^{\circ}\text{C}$



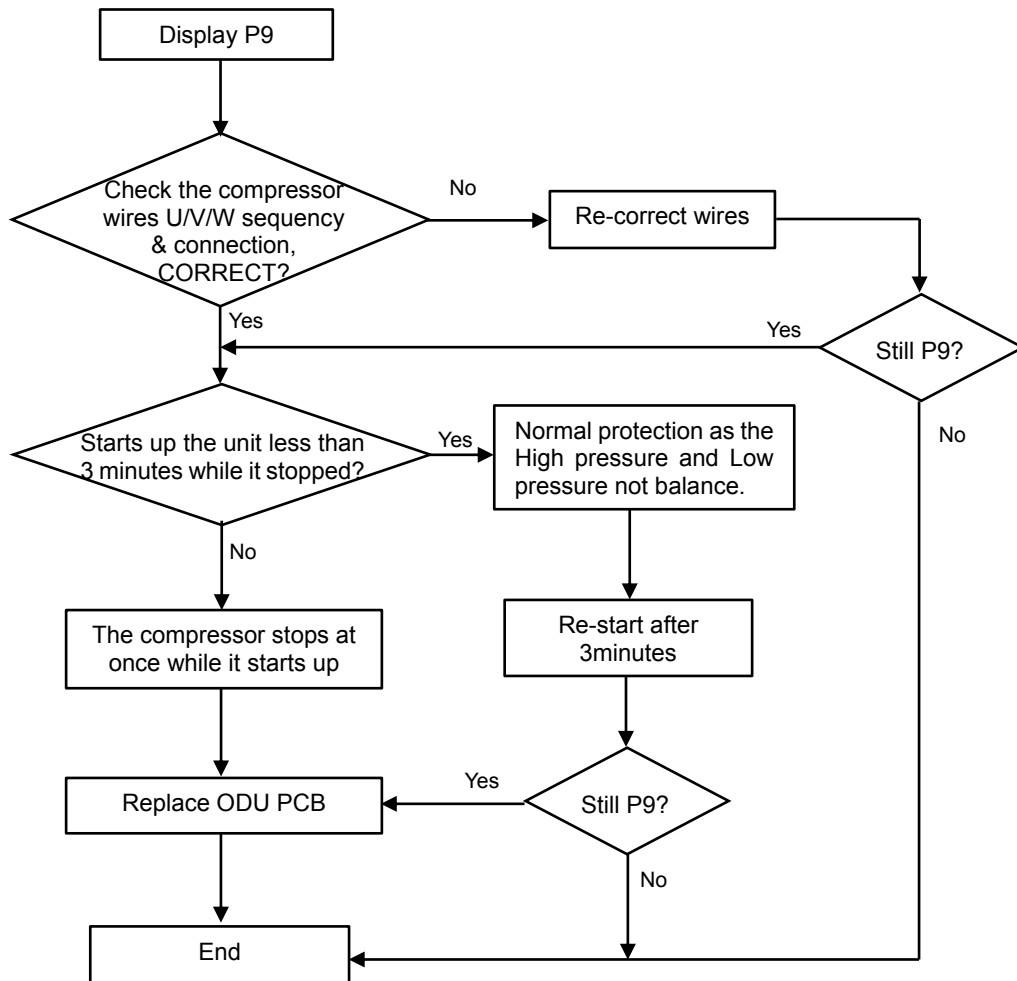
## 2.17 P9---The compressor driving protection (the compressor load abnormal)

When compressor start up or in the process of operation, if:

- (1). MCU can't test the feedback signal from compressor, or
- (2). Tested a abnormal signal from compressor, or
- (3). The compressor startup abnormal.

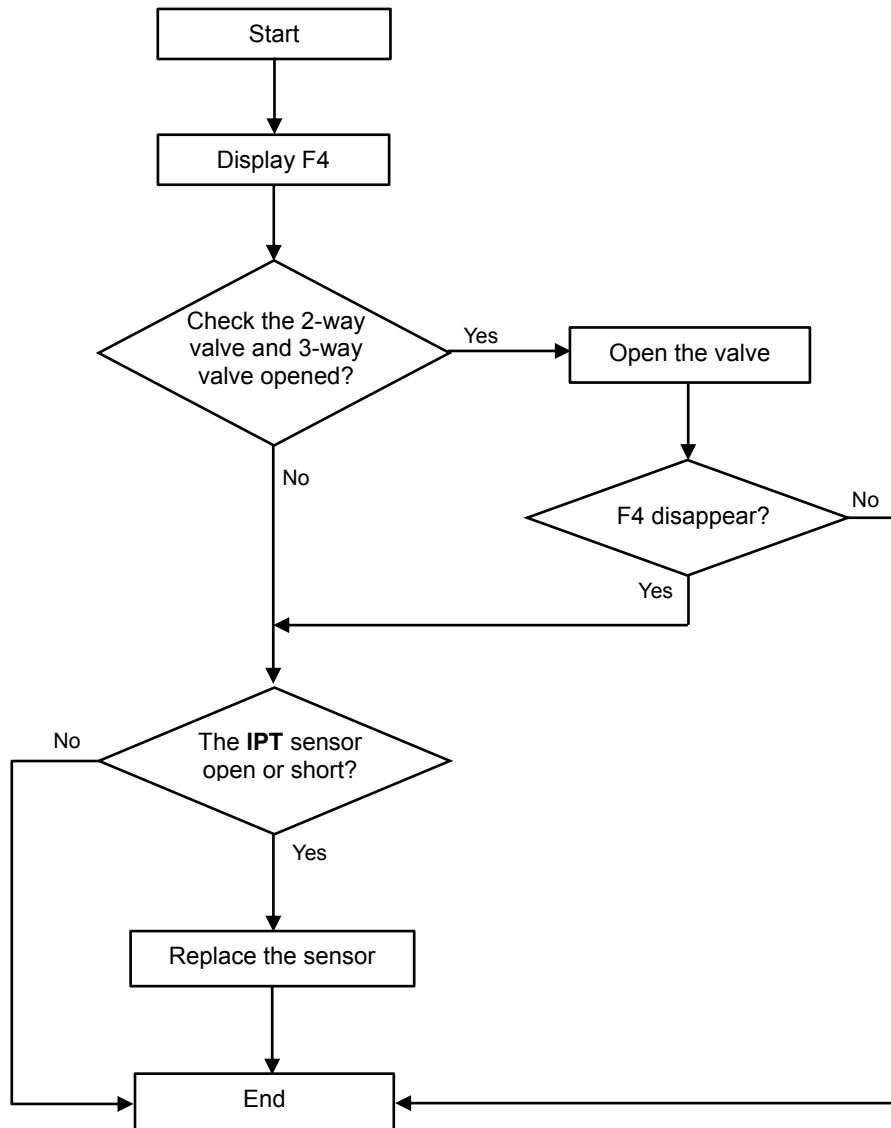
The outdoor unit will shut off, and show P9 protection.

(The unit will re-startup 6 times continuously, if it still can't work normal, then show P9 code)



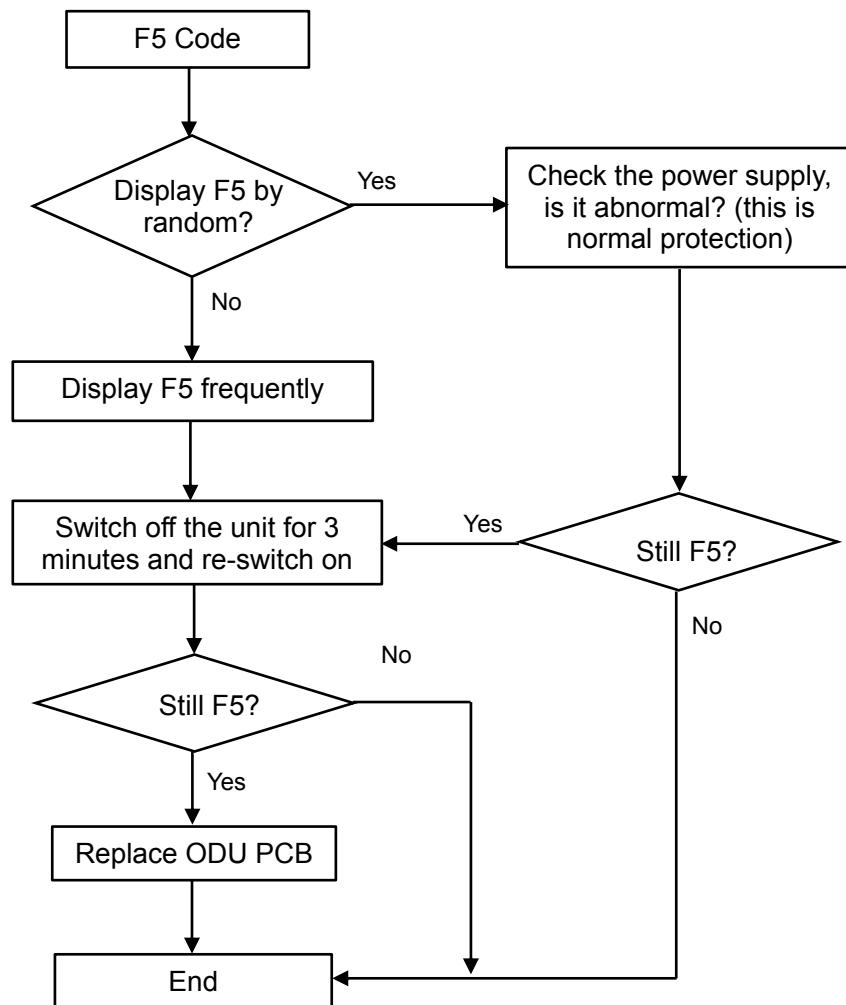
## 2.18 F4---Cooling system Gas flow abnormal protection

When compressor startup, unit will check the variation of IDU coil temperature. If there is mistake installer forgetting to open the 2-way or 3-way valve on ODU, the gas can't flow in the cooling system, it will show F4 protection.



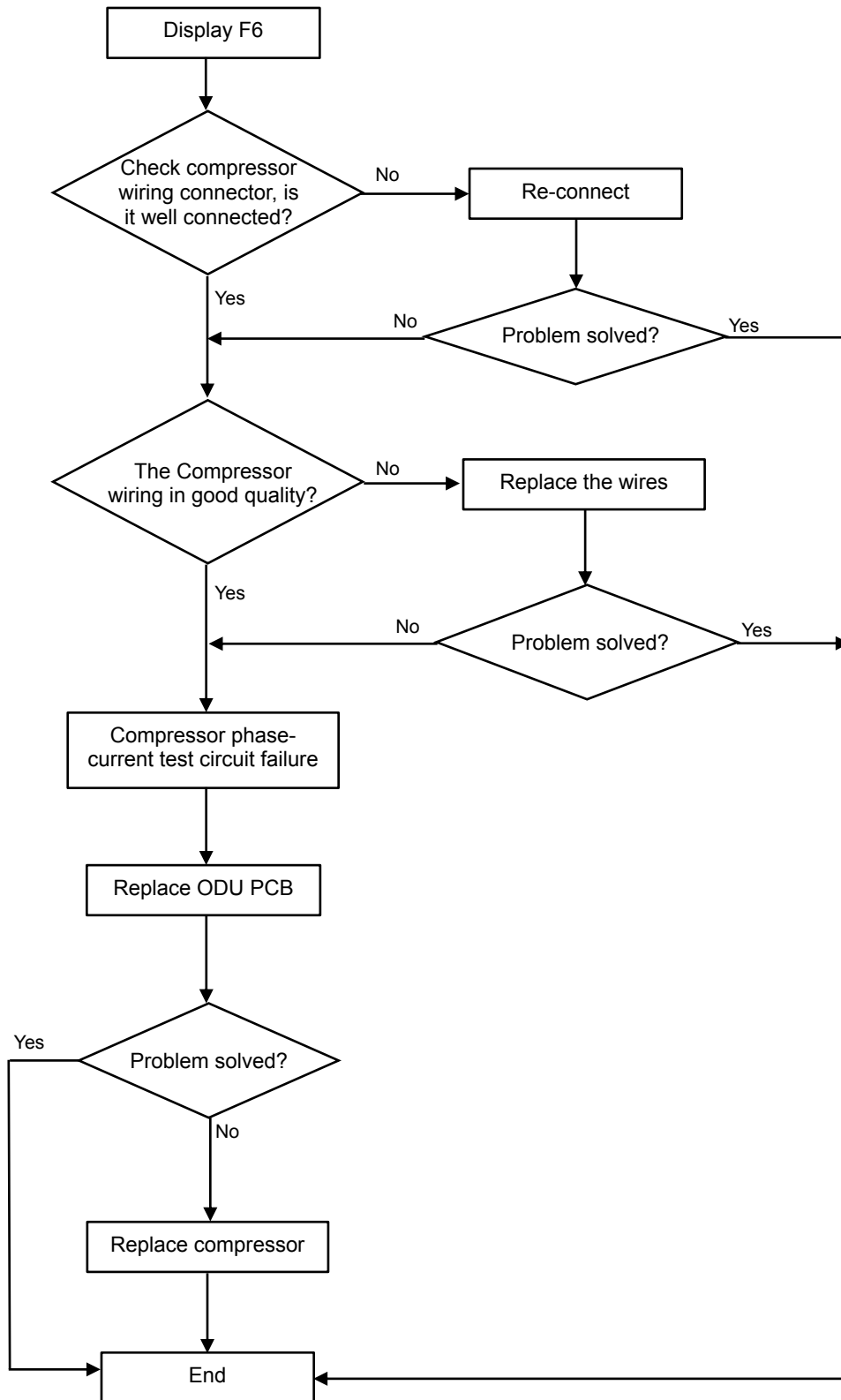
## 2.19 F5---PFC Protection

PFC Overcurrent protection



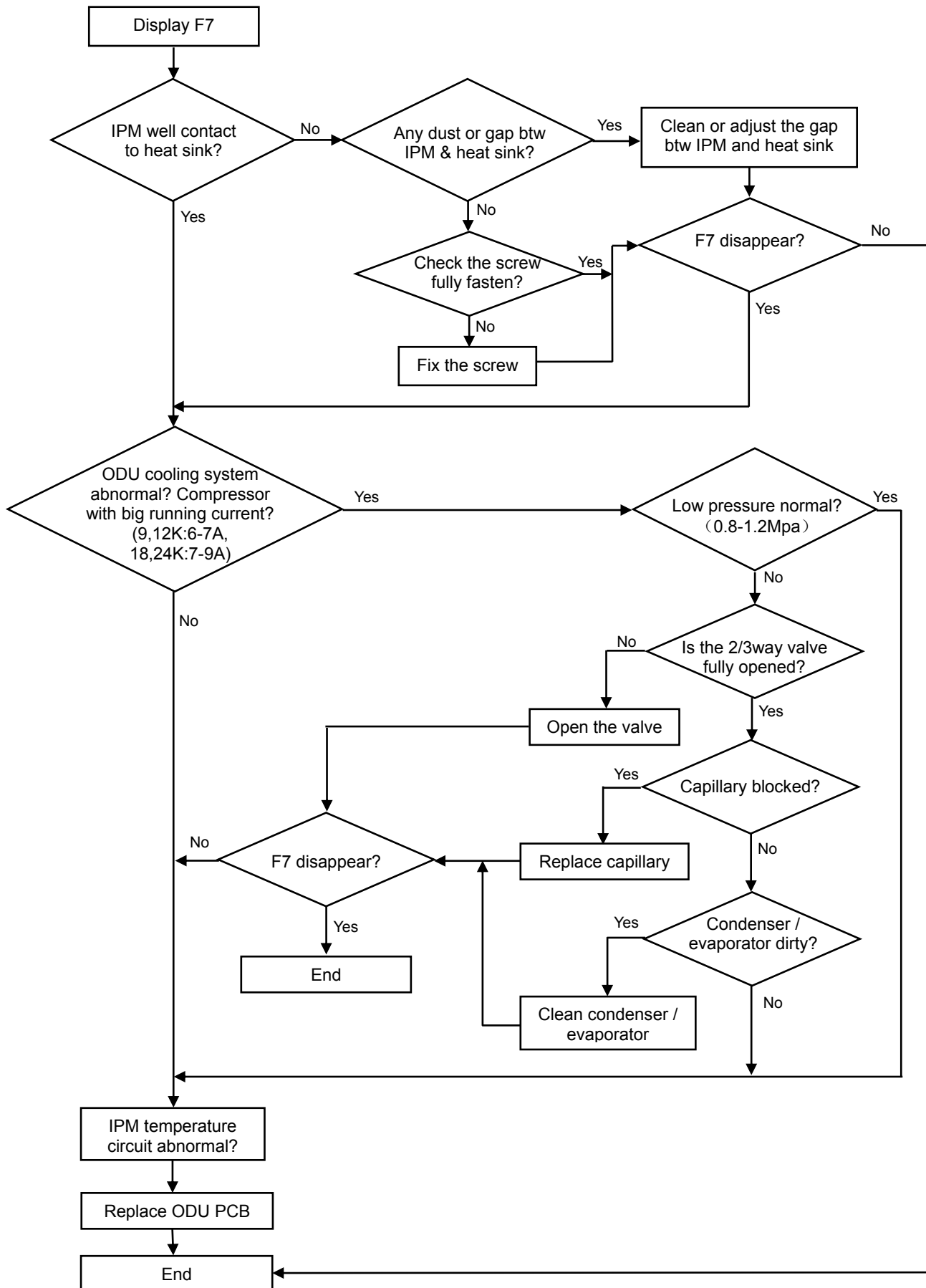
## 2.20 F6 The Compressor Lack of phase / Anti-phase protection.

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



## 2.21 F7---Module temperature protection.

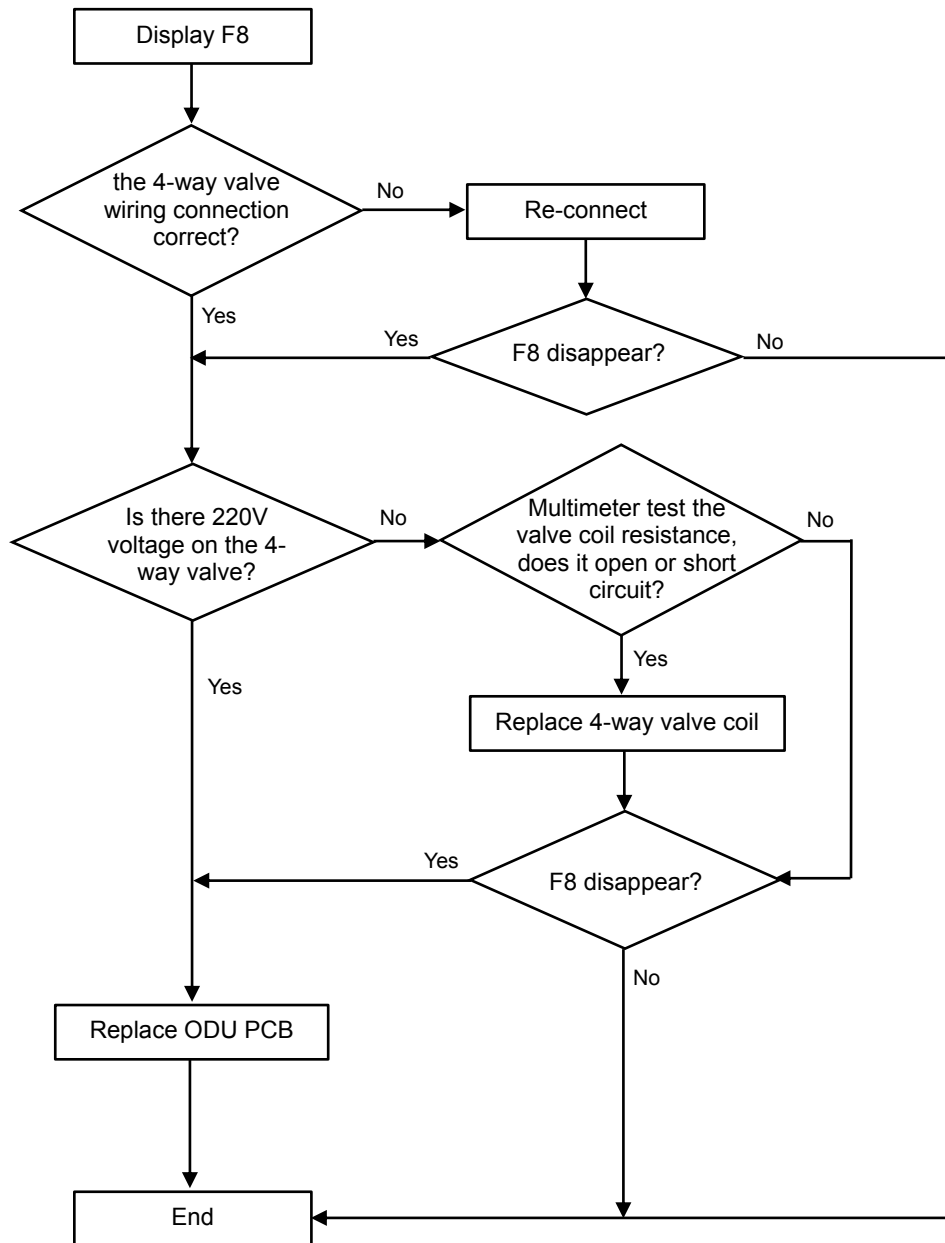
IPM overtemperature protection, when IPM temperature more than 95°C, it will show F7.





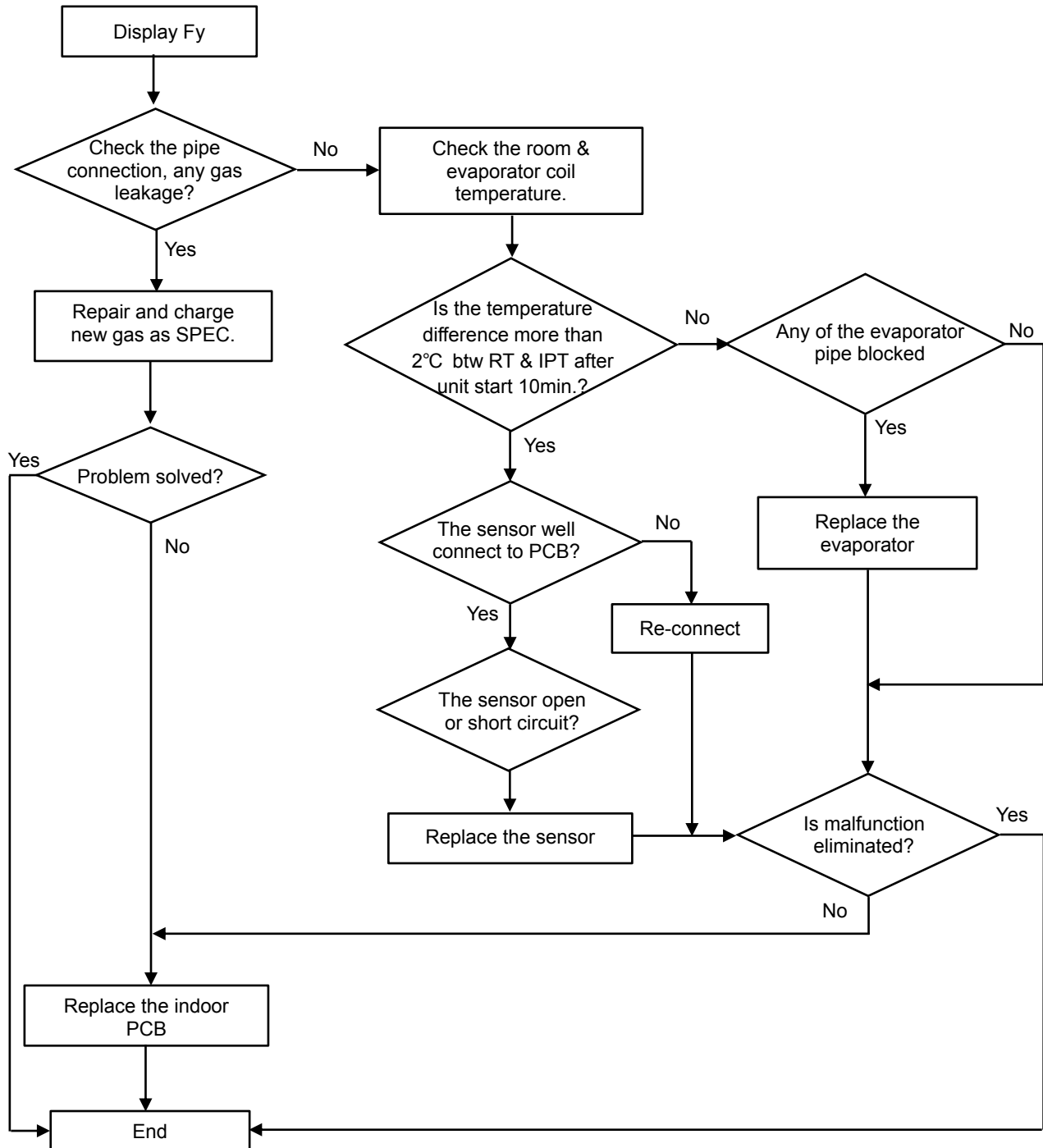
## 2.22 F8---4-Way Value Reversing abnormal

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 code.



## 2.23 Fy--- Gas leakage protection

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 Fy failure code.

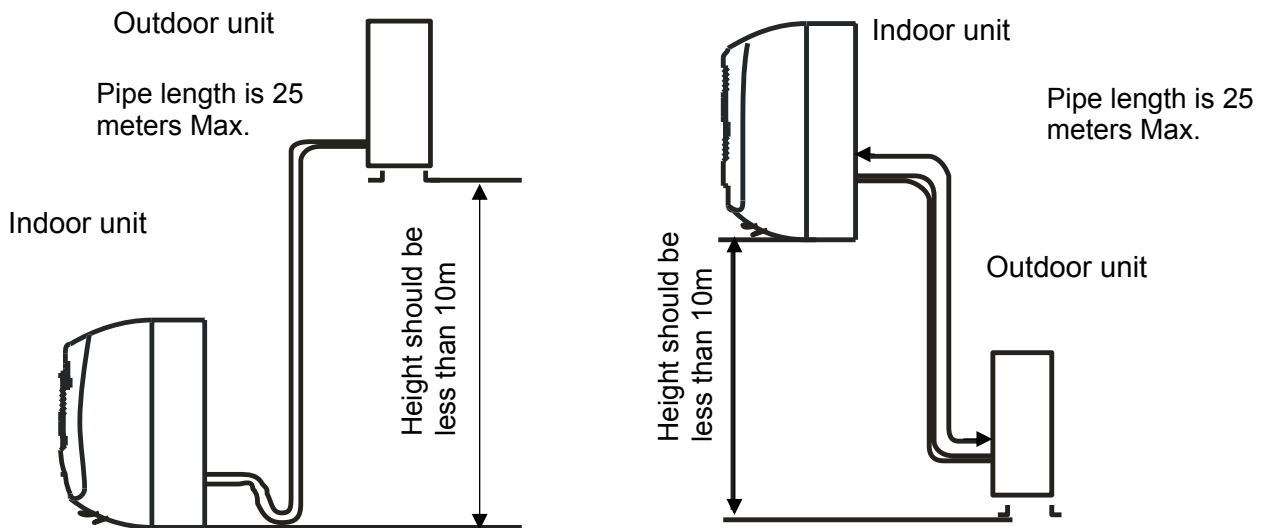


# APPENDIX

## Appendix 1 The comparison table of Celsius-Fahrenheit temperature

| Fahrenheit display temperature (°F) | Fahrenheit (°F) | Celsius (°C) | Fahrenheit display temperature (°F) | Fahrenheit (°F) | Celsius (°C) | Fahrenheit display temperature (°F) | Fahrenheit (°F) | Celsius (°C) |
|-------------------------------------|-----------------|--------------|-------------------------------------|-----------------|--------------|-------------------------------------|-----------------|--------------|
| 61                                  | 60.8            | 16           | 69/70                               | 69.8            | 21           | 78/79                               | 78.8            | 26           |
| 62/63                               | 62.6            | 17           | 71/72                               | 71.6            | 22           | 80/81                               | 80.6            | 27           |
| 64/65                               | 64.4            | 18           | 73/74                               | 73.4            | 23           | 82/83                               | 82.4            | 28           |
| 66/67                               | 66.2            | 19           | 75/76                               | 75.2            | 24           | 84/85                               | 84.2            | 29           |
| 68                                  | 68              | 20           | 77                                  | 77              | 25           | 86                                  | 86              | 30           |

## Appendix 2 The Pipe length and Gas charging



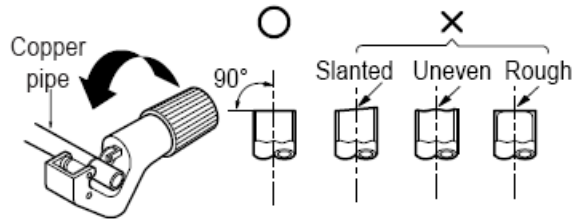
| Mode | Standard length (m) | Refrigerant piping Max. length (m) | Additional refrigerant charging: $X_g = B * (A - 5m)$ |
|------|---------------------|------------------------------------|---|
|      |                     | A                                  | B   |
| 9K   | 5.0                 | 25                                 | 20g/m   |
| 12K  | 5.0                 | 25                                 | 20g/m   |
| 18K  | 5.0                 | 25                                 | 30g/m   |
| 24K  | 5.0                 | 25                                 | 30g/m   |
| 30K  | 5.0                 | 25                                 | 30g/m   |
| 36K  | 5.0                 | 25                                 | 30g/m   |

## Appendix 3 Pipes Flaring

Main cause for gas leakage is due to defect in flaring work. Carry out correct flaring work in the following procedure.

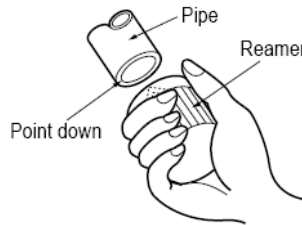
### A. Cut the pipes and the cable.

- 1) Use the piping kit accessory or the pipes purchased locally.
- 2) Measure the distance between the indoor and the outdoor unit.
- 3) Cut the pipes a little longer than measured distance.
- 4) Cut the cable 1.5m longer than the pipe length.



### B. Burrs removal

- 1) Completely remove all burrs from the cut cross section of pipe/tube.
- 2) Put the end of the copper tube/pipe in a down ward direction as you remove burrs in order to avoid dropping burrs into the tubing.

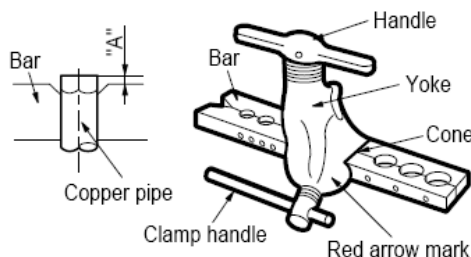


### C. Flaring work

- Carry out flaring work using flaring tool as shown below.

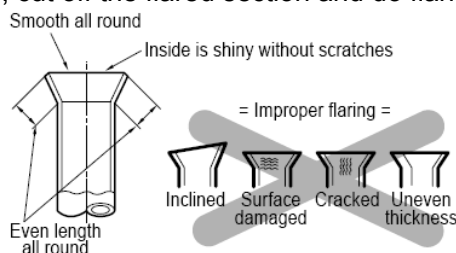
| Outside diameter |      | A       |
|------------------|------|---------|
| mm               | inch | mm      |
| ø6.35            | 1/4  | 1.0~1.3 |
| ø9.52            | 3/8  | 0.8~1.0 |
| ø12.7            | 1/2  | 0.5~0.8 |
| ø15.88           | 5/8  | 0.5~0.8 |

Firmly hold copper pipe in a die in the dimension shown in the table above.



### D. Check

- 1) Compare the flared work with figure below.
- 2) If flare is noted to be defective, cut off the flared section and do flaring work again.

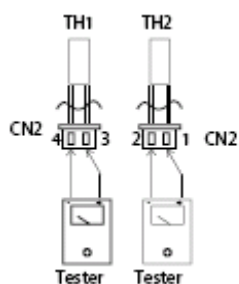


## Appendix 4 THERMISTOR TEMPERATURE CHARACTERISTICS

### 1). Indoor unit and outdoor exchange temperature and outside air temperature sensor temperature characteristics

| TEMP. (°C) | Resistance (k Ohm) | Voltage of resistance | TEMP. (°C) | Resistance (k Ohm) | Voltage of resistance | TEMP. (°C) | Resistance (k Ohm) | Voltage of resistance |
|------------|--------------------|-----------------------|------------|--------------------|-----------------------|------------|--------------------|-----------------------|
| -30        | 63.513             | 4.628                 | 15         | 7.447              | 2.968                 | 60         | 1.464              | 1.115                 |
| -29        | 60.135             | 4.609                 | 16         | 7.148              | 2.918                 | 61         | 1.418              | 1.088                 |
| -28        | 56.956             | 4.589                 | 17         | 6.863              | 2.868                 | 62         | 1.374              | 1.061                 |
| -27        | 53.963             | 4.568                 | 18         | 6.591              | 2.819                 | 63         | 1.331              | 1.035                 |
| -26        | 51.144             | 4.547                 | 19         | 6.332              | 2.769                 | 64         | 1.290              | 1.009                 |
| -25        | 48.488             | 4.524                 | 20         | 6.084              | 2.720                 | 65         | 1.250              | 0.984                 |
| -24        | 45.985             | 4.501                 | 21         | 5.847              | 2.671                 | 66         | 1.212              | 0.960                 |
| -23        | 43.627             | 4.477                 | 22         | 5.621              | 2.621                 | 67         | 1.175              | 0.936                 |
| -22        | 41.403             | 4.452                 | 23         | 5.404              | 2.572                 | 68         | 1.139              | 0.913                 |
| -21        | 39.305             | 4.426                 | 24         | 5.198              | 2.524                 | 69         | 1.105              | 0.890                 |
| -20        | 37.326             | 4.399                 | 25         | 5.000              | 2.475                 | 70         | 1.072              | 0.868                 |
| -19        | 35.458             | 4.371                 | 26         | 4.811              | 2.427                 | 71         | 1.040              | 0.847                 |
| -18        | 33.695             | 4.343                 | 27         | 4.630              | 2.379                 | 72         | 1.009              | 0.825                 |
| -17        | 32.030             | 4.313                 | 28         | 4.457              | 2.332                 | 73         | 0.979              | 0.805                 |
| -16        | 30.458             | 4.283                 | 29         | 4.292              | 2.285                 | 74         | 0.950              | 0.785                 |
| -15        | 28.972             | 4.252                 | 30         | 4.133              | 2.238                 | 75         | 0.922              | 0.765                 |
| -14        | 27.567             | 4.219                 | 31         | 3.981              | 2.192                 | 76         | 0.895              | 0.746                 |
| -13        | 26.239             | 4.186                 | 32         | 3.836              | 2.146                 | 77         | 0.869              | 0.728                 |
| -12        | 24.984             | 4.152                 | 33         | 3.697              | 2.101                 | 78         | 0.843              | 0.710                 |
| -11        | 23.795             | 4.117                 | 34         | 3.563              | 2.057                 | 79         | 0.819              | 0.692                 |
| -10        | 22.671             | 4.082                 | 35         | 3.435              | 2.012                 | 80         | 0.795              | 0.675                 |
| -9         | 21.606             | 4.045                 | 36         | 3.313              | 1.969                 | 81         | 0.773              | 0.658                 |
| -8         | 20.598             | 4.008                 | 37         | 3.195              | 1.926                 | 82         | 0.751              | 0.641                 |
| -7         | 19.644             | 3.969                 | 38         | 3.082              | 1.883                 | 83         | 0.729              | 0.625                 |
| -6         | 18.732             | 3.930                 | 39         | 2.974              | 1.842                 | 84         | 0.709              | 0.610                 |
| -5         | 17.881             | 3.890                 | 40         | 2.870              | 1.800                 | 85         | 0.689              | 0.595                 |
| -4         | 17.068             | 3.850                 | 41         | 2.770              | 1.760                 | 86         | 0.669              | 0.580                 |
| -3         | 16.297             | 3.808                 | 42         | 2.674              | 1.720                 | 87         | 0.651              | 0.566                 |
| -2         | 15.565             | 3.766                 | 43         | 2.583              | 1.681                 | 88         | 0.633              | 0.552                 |
| -1         | 14.871             | 3.723                 | 44         | 2.494              | 1.642                 | 89         | 0.615              | 0.538                 |
| 0          | 14.212             | 3.680                 | 45         | 2.410              | 1.604                 | 90         | 0.598              | 0.525                 |
| 1          | 13.586             | 3.635                 | 46         | 2.328              | 1.567                 | 91         | 0.582              | 0.512                 |
| 2          | 12.991             | 3.590                 | 47         | 2.250              | 1.530                 | 92         | 0.566              | 0.499                 |
| 3          | 12.426             | 3.545                 | 48         | 2.174              | 1.495                 | 93         | 0.550              | 0.487                 |
| 4          | 11.889             | 3.499                 | 49         | 2.102              | 1.459                 | 94         | 0.535              | 0.475                 |
| 5          | 11.378             | 3.452                 | 50         | 2.032              | 1.425                 | 95         | 0.521              | 0.463                 |
| 6          | 10.893             | 3.406                 | 51         | 1.965              | 1.391                 | 96         | 0.507              | 0.452                 |
| 7          | 10.431             | 3.358                 | 52         | 1.901              | 1.357                 | 97         | 0.493              | 0.441                 |
| 8          | 9.991              | 3.310                 | 53         | 1.839              | 1.325                 | 98         | 0.480              | 0.430                 |
| 9          | 9.573              | 3.262                 | 54         | 1.779              | 1.293                 | 99         | 0.467              | 0.419                 |
| 10         | 9.174              | 3.214                 | 55         | 1.721              | 1.262                 | 100        | 0.455              | 0.409                 |
| 11         | 8.795              | 3.165                 | 56         | 1.666              | 1.231                 |            |                    |                       |
| 12         | 8.433              | 3.116                 | 57         | 1.613              | 1.201                 |            |                    |                       |
| 13         | 8.089              | 3.067                 | 58         | 1.561              | 1.172                 |            |                    |                       |
| 14         | 7.760              | 3.017                 | 59         | 1.512              | 1.143                 |            |                    |                       |

Resistance at 25°C: 5 kΩ.



**TH1: indoor room temperature sensor and outside air temperature sensor**

**TH2: indoor exchange temperature sensor and outside exchange temperature sensor**

**Before measuring resistance, disconnect connectors as shown above.**

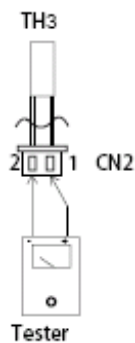
**1) Outdoor unit sensor temperature characteristics**

| TEMP. (°C) | R min (k Ohm) | R(t) (k Ohm) | R max (k Ohm) | TEMP. (°C) | R min (k Ohm) | R(t) (k Ohm) | R max (k Ohm) | TEMP. (°C) | R min (k Ohm) | R(t) (k Ohm) | R max (k Ohm) |
|------------|---------------|--------------|---------------|------------|---------------|--------------|---------------|------------|---------------|--------------|---------------|
| -30        | 283.3         | 322.9        | 367.7         | 24         | 19.36         | 20.89        | 22.52         | 78         | 2.563         | 2.654        | 2.745         |
| -29        | 267.4         | 304.4        | 346.3         | 25         | 18.55         | 20           | 21.54         | 79         | 2.481         | 2.567        | 2.654         |
| -28        | 252.5         | 287.1        | 307.4         | 26         | 17.77         | 19.14        | 20.6          | 80         | 2.402         | 2.484        | 2.567         |
| -27        | 238.5         | 270.9        | 307.4         | 27         | 17.03         | 18.32        | 19.7          | 81         | 2.327         | 2.404        | 2.483         |
| -26        | 225.4         | 255.7        | 289.8         | 28         | 16.32         | 17.55        | 18.85         | 82         | 2.254         | 2.327        | 2.401         |
| -25        | 213.1         | 241.4        | 273.3         | 29         | 15.65         | 16.81        | 18.04         | 83         | 2.183         | 2.253        | 2.323         |
| -24        | 201.5         | 228          | 257.9         | 30         | 15            | 16.1         | 17.27         | 84         | 2.115         | 2.182        | 2.248         |
| -23        | 190.6         | 215.5        | 243.4         | 31         | 14.39         | 15.43        | 16.54         | 85         | 2.05          | 2.113        | 2.176         |
| -22        | 180.3         | 203.6        | 229.8         | 32         | 13.81         | 14.79        | 15.34         | 86         | 1.985         | 2.047        | 2.109         |
| -21        | 170.7         | 192.5        | 217           | 33         | 13.25         | 14.18        | 15.17         | 87         | 1.922         | 1.983        | 2.045         |
| -20        | 161.6         | 182.1        | 205           | 34         | 12.72         | 13.6         | 14.54         | 88         | 1.861         | 1.922        | 1.983         |
| -19        | 153.1         | 172.3        | 193.7         | 35         | 12.21         | 13.05        | 13.93         | 89         | 1.802         | 1.862        | 1.923         |
| -18        | 145           | 163.1        | 183.2         | 36         | 11.72         | 12.52        | 13.36         | 90         | 1.746         | 1.805        | 1.865         |
| -17        | 137.5         | 154.4        | 173.2         | 37         | 11.26         | 12.01        | 12.81         | 91         | 1.692         | 1.75         | 1.809         |
| -16        | 130.3         | 146.2        | 163.9         | 38         | 10.82         | 11.53        | 12.29         | 92         | 1.639         | 1.697        | 1.755         |
| -15        | 123.6         | 138.5        | 155.1         | 39         | 10.29         | 11.07        | 11.78         | 93         | 1.589         | 1.646        | 1.703         |
| -14        | 117.3         | 131.3        | 146.8         | 40         | 9.986         | 10.63        | 11.31         | 94         | 1.54          | 1.596        | 1.653         |
| -13        | 111.3         | 124.4        | 139           | 41         | 9.6           | 10.21        | 10.85         | 95         | 1.493         | 1.549        | 1.604         |
| -12        | 105.6         | 118          | 131.7         | 42         | 9.231         | 9.813        | 10.42         | 96         | 1.448         | 1.502        | 1.558         |
| -11        | 100.3         | 111.9        | 124.7         | 43         | 8.878         | 9.43         | 10            | 97         | 1.404         | 1.458        | 1.512         |
| -10        | 95.24         | 106.2        | 118.2         | 44         | 8.54          | 9.064        | 9.612         | 98         | 1.362         | 1.415        | 1.469         |
| -9         | 90.49         | 100.8        | 112.1         | 45         | 8.217         | 8.714        | 9.233         | 99         | 1.321         | 1.373        | 1.426         |
| -8         | 85.99         | 95.68        | 106.3         | 46         | 7.908         | 8.38         | 8.872         | 100        | 1.284         | 1.335        | 1.387         |
| -7         | 81.75         | 90.86        | 100.8         | 47         | 7.612         | 8.06         | 8.526         | 101        | 1.245         | 1.296        | 1.348         |
| -6         | 77.74         | 86.31        | 95.74         | 48         | 7.328         | 7.754        | 8.196         | 102        | 1.209         | 1.258        | 1.309         |
| -5         | 73.94         | 82.01        | 90.88         | 49         | 7.057         | 7.461        | 7.88          | 103        | 1.173         | 1.222        | 1.272         |
| -4         | 70.35         | 77.95        | 86.29         | 50         | 6.797         | 7.18         | 7.578         | 104        | 1.139         | 1.187        | 1.236         |
| -3         | 66.96         | 74.11        | 81.96         | 51         | 6.548         | 6.912        | 7.289         | 105        | 1.105         | 1.153        | 1.202         |

|    |       |       |       |    |       |       |       |     |        |        |        |
|----|-------|-------|-------|----|-------|-------|-------|-----|--------|--------|--------|
| -2 | 63.74 | 70.48 | 77.87 | 52 | 6.309 | 6.655 | 7.013 | 106 | 1.073  | 1.12   | 1.168  |
| -1 | 60.69 | 67.05 | 74    | 53 | 6.08  | 6.409 | 6.748 | 107 | 1.042  | 1.089  | 1.136  |
| 0  | 57.81 | 63.8  | 70.34 | 54 | 5.861 | 6.173 | 6.495 | 108 | 1.013  | 1.058  | 1.104  |
| 1  | 55.08 | 60.72 | 66.88 | 55 | 5.651 | 5.947 | 6.253 | 109 | 0.9833 | 1.028  | 1.074  |
| 2  | 52.49 | 57.81 | 63.61 | 56 | 5.449 | 5.73  | 6.02  | 110 | 0.9553 | 0.9997 | 1.045  |
| 3  | 50.03 | 55.05 | 60.52 | 57 | 5.255 | 5.522 | 5.798 | 111 | 0.9283 | 0.9719 | 1.016  |
| 4  | 47.71 | 52.44 | 57.59 | 58 | 5.07  | 5.323 | 5.585 | 112 | 0.9021 | 0.9451 | 0.9892 |
| 5  | 45.5  | 49.97 | 54.82 | 59 | 4.891 | 5.132 | 5.381 | 113 | 0.8765 | 0.9191 | 0.9626 |
| 6  | 43.41 | 47.62 | 52.2  | 60 | 4.72  | 4.949 | 5.101 | 114 | 0.8524 | 0.894  | 0.9367 |
| 7  | 41.42 | 45.4  | 49.71 | 61 | 4.556 | 4.774 | 4.997 | 115 | 0.8087 | 0.8595 | 0.9117 |
| 8  | 39.53 | 43.2  | 42.33 | 62 | 4.398 | 4.605 | 4.817 | 116 | 0.8059 | 0.8461 | 0.8875 |
| 9  | 37.74 | 41.29 | 45.12 | 63 | 4.247 | 4.448 | 4.644 | 117 | 0.7837 | 0.8233 | 0.8641 |
| 10 | 36.04 | 39.39 | 43.01 | 64 | 4.101 | 4.288 | 4.479 | 118 | 0.7623 | 0.8012 | 0.8413 |
| 11 | 34.42 | 37.59 | 41    | 65 | 3.961 | 4.139 | 4.32  | 119 | 0.7415 | 0.7798 | 0.8193 |
| 12 | 32.89 | 35.87 | 39.1  | 66 | 3.827 | 3.995 | 4.167 | 120 |        |        |        |
| 13 | 31.43 | 34.25 | 37.29 | 67 | 3.698 | 3.858 | 4.021 | 121 | 0.702  | 0.7386 | 0.7773 |
| 14 | 30.04 | 32.71 | 35.58 | 68 |       |       |       | 122 | 0.6631 | 0.7195 | 0.7572 |
| 15 | 29.72 | 31.24 | 33.95 | 69 |       |       |       | 123 | 0.6649 | 0.7007 | 0.7378 |
| 16 |       |       |       | 70 | 3.339 | 3.476 | 3.616 | 124 | 0.6472 | 0.6824 | 0.7189 |
| 17 |       |       |       | 71 | 3.229 | 3.359 | 3.491 | 125 | 0.6301 | 0.6647 | 0.7006 |
| 18 | 25.13 | 27.26 | 29.55 | 72 | 3.122 | 3.246 | 3.372 | 126 | 0.6135 | 0.6476 | 0.6829 |
| 19 | 24.05 | 26.07 | 28.23 | 73 | 3.02  | 3.138 | 3.257 | 127 | 0.5974 | 0.6309 | 0.6657 |
| 20 | 23.02 | 24.93 | 26.97 | 74 | 2.921 | 3.033 | 3.146 | 128 | 0.5818 | 0.6148 | 0.649  |
| 21 | 22.04 | 23.84 | 25.77 | 75 | 2.827 | 2.933 | 3.04  | 129 | 0.5667 | 0.5991 | 0.6328 |
| 22 | 21.1  | 22.81 | 24.63 | 76 | 2.735 | 2.836 | 2.938 | 130 | 0.5521 | 0.5839 | 0.6171 |
| 23 | 20.21 | 21.83 | 23.55 | 77 | 2.647 | 2.743 | 2.84  |     |        |        |        |
|    |       |       |       |    |       |       |       |     |        |        |        |
|    |       |       |       |    |       |       |       |     |        |        |        |
|    |       |       |       |    |       |       |       |     |        |        |        |

**R—Resistance**

**Resistance at 25°C:20 kΩ**



**TH3: Outdoor unit discharge pipe sensor**

**Before measuring resistance, disconnect connectors as shown above.**