

Inverter Air Conditioner **Service Manual**

Models:

WYT012GLUI25FV

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Part I Technical Information

1. Important Notice

This service manual is intended for individuals with adequate electrical, electronic, and mechanical experience. Any attempt to repair the appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

The information, specifications, and parameters are subject to change due to technical modifications or improvements without any prior notice. The accurate specifications are presented on the nameplate label.

How to Order Spare Parts

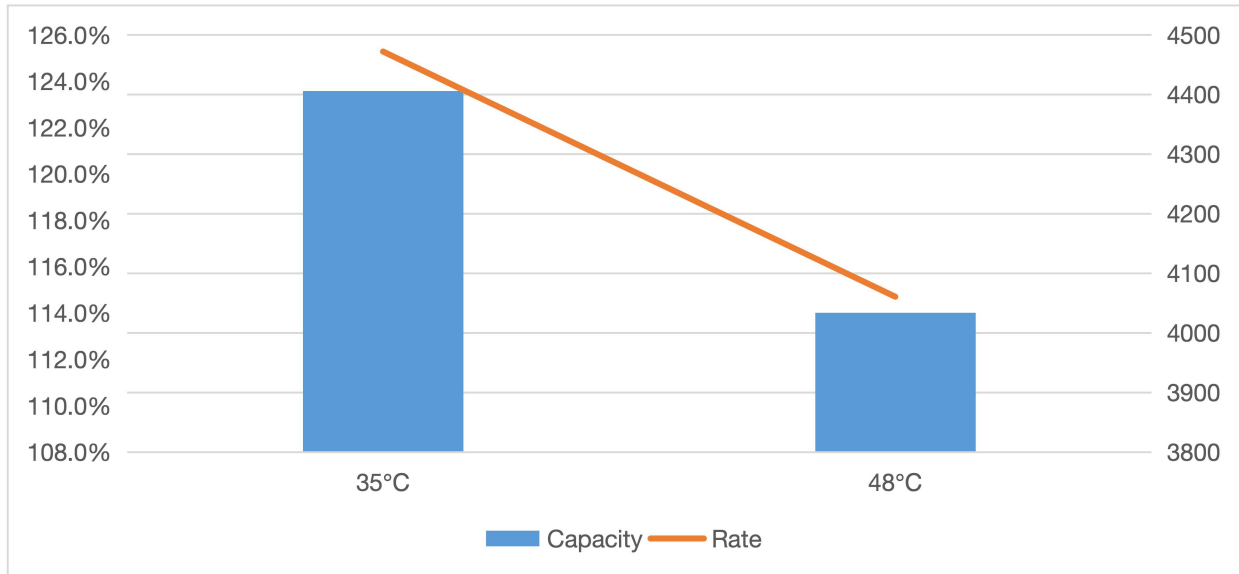
To ensure you place an accurate order, provide the following information.

- 1) Model numbers of the indoor and outdoor units
- 2) Item number in the exploded diagram
- 3) Part number
- 4) The quantity of parts you want to order

2. Specifications

2.1 Operation Characteristic Curve

The Relation Curve of Capacity-Ambient Temperature



The Relation Curve of Pressure-Temperature

	WYT012GLUI25FV		
	f(Hz)	High Pressure (MPa/psi)	Low Pressure (MPa/psi)
95°F(35°C) Cooling	84	2.996/434.5	0.863/ 125.1
109°F(43°C) Cooling	82	3.76/545.3	0.965/139.9
118°F(48°C) Cooling	76	3.85/558.4	1.05/152.2
45°F(7°C) Heating	92	3.336/483.8	0.697/101
75°F(24°C) Heating	42	3.25/471.3	1.045/151.5

Test Conditions:

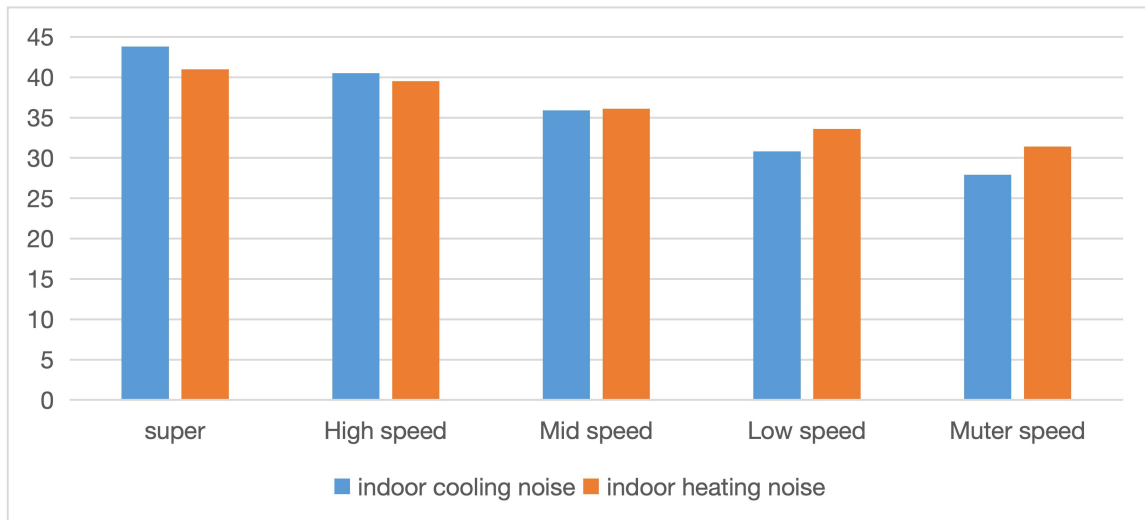
Rated Cooling: IDU dry bulb: 81°F(27°C) / IDU wet bulb: 66°F(19°C) | ODU dry bulb: 95°F(35°C) / ODU wet bulb: 75°F(24°C) | Connection pipes: 16.4 ft(5m).

Rated Heating: IDU dry bulb: 68°F(20°C) / IDU wet bulb: 59°F(15°C) | ODU dry bulb: 45°F(7°C) / ODU wet bulb: 43°F(6°C) | Connection pipes: 16.4 ft(5m).

Note:

Under the established laboratory test standard, both high pressure and low pressure will fluctuate in response to variations in operation frequency, ambient temperature, and/or fan speed.

The Relation Curve of Noise-Operation Frequency

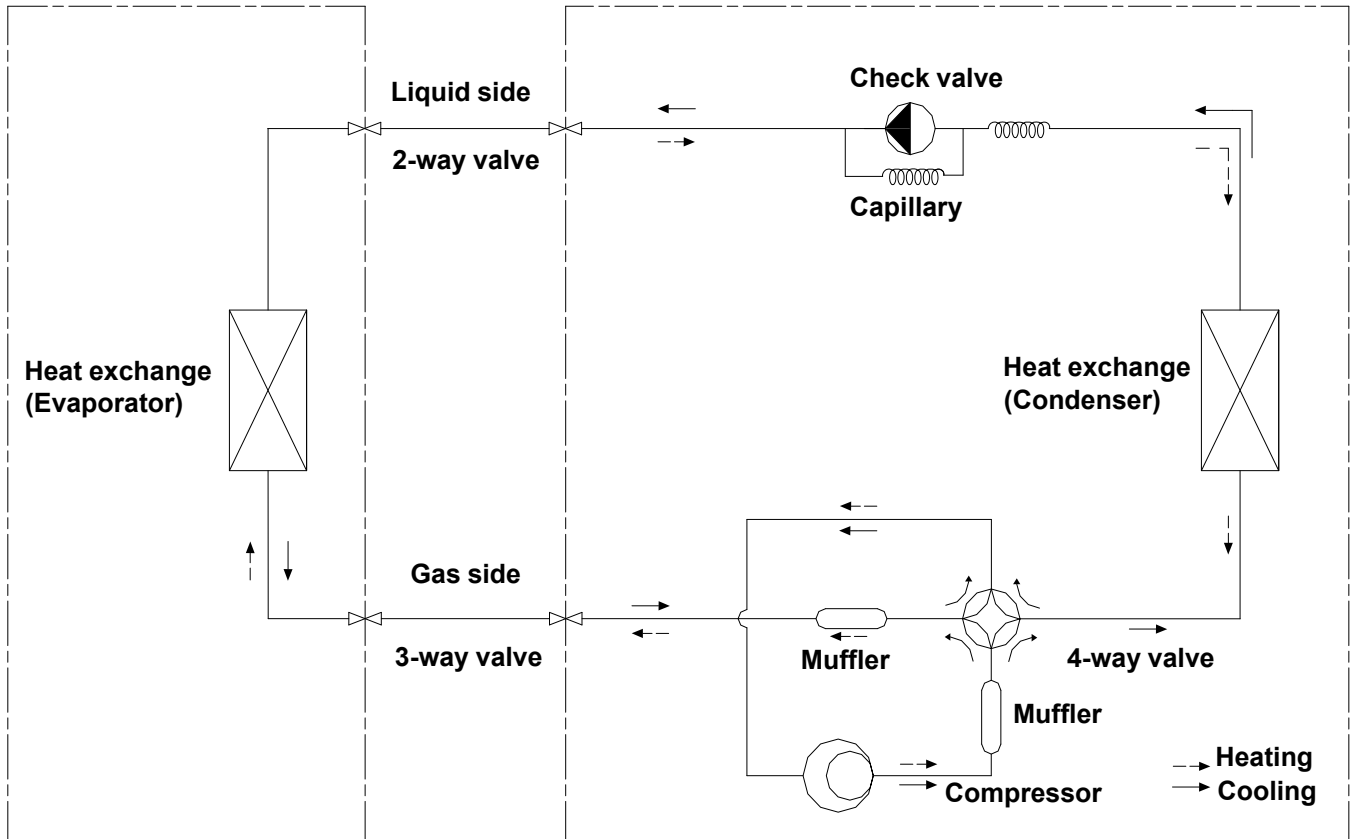


Range of Normal Operating Environment Temperature

	WYT012GLUI25FV	
Mode	Room Temperature	Outdoor Temperature
Cooling Operation	63~90°F(17~32°C)	5~118°F(-15~48°C)
Heating Operation	32~81°F(0~27°C)	19~75°F(-7~24°C)
Drying Operation	64~90°F(18~32°C)	59~118°F(15~48°C)

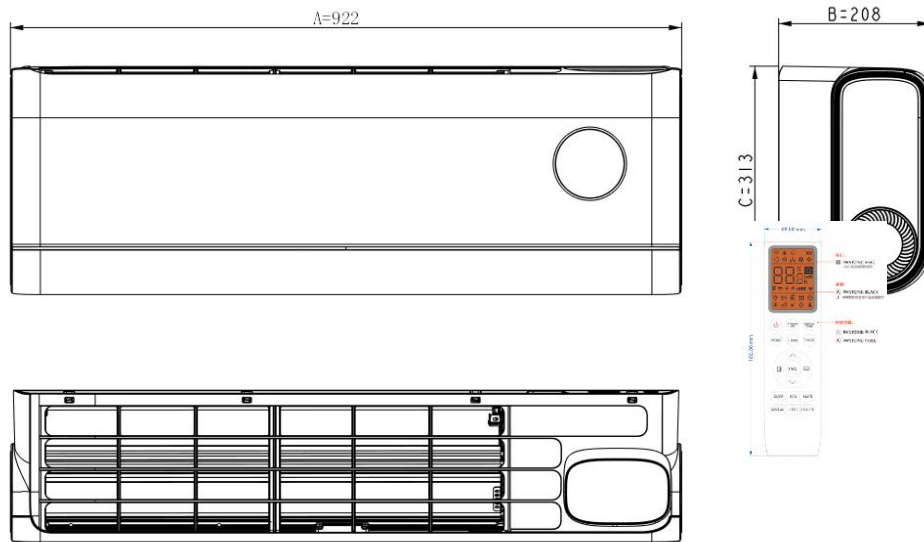
2.2 Refrigeration Cycle Diagram

WYT012GLUI25FV

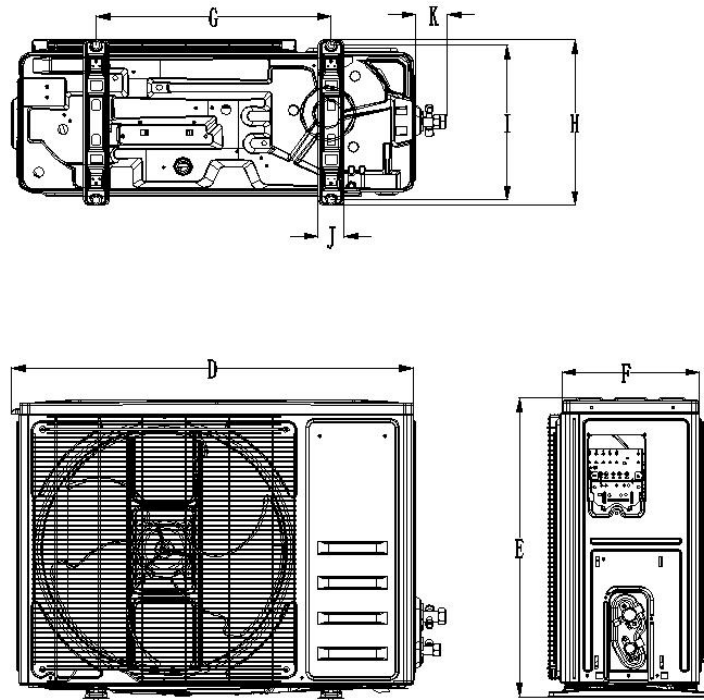


3. Product Dimensions

Indoor Unit



Outdoor Unit



Model	Indoor Unit (inch/mm)			Outdoor Unit (inch/mm)							
	A	B	C	D	E	F	G	H	I	J	K
WYT012GLUI25FV	36 $\frac{1}{4}$ inch 922mm	8 $\frac{1}{4}$ inch 208mm	12 $\frac{1}{4}$ inch 313mm	29 $\frac{1}{4}$ inch 741mm	21 $\frac{1}{4}$ inch 551mm	10 inch 253mm	17 $\frac{1}{8}$ inch 434mm	12 inch 305mm	11 $\frac{1}{8}$ inch 285mm	1 $\frac{1}{8}$ inch 48mm	2 $\frac{1}{4}$ inch 58mm

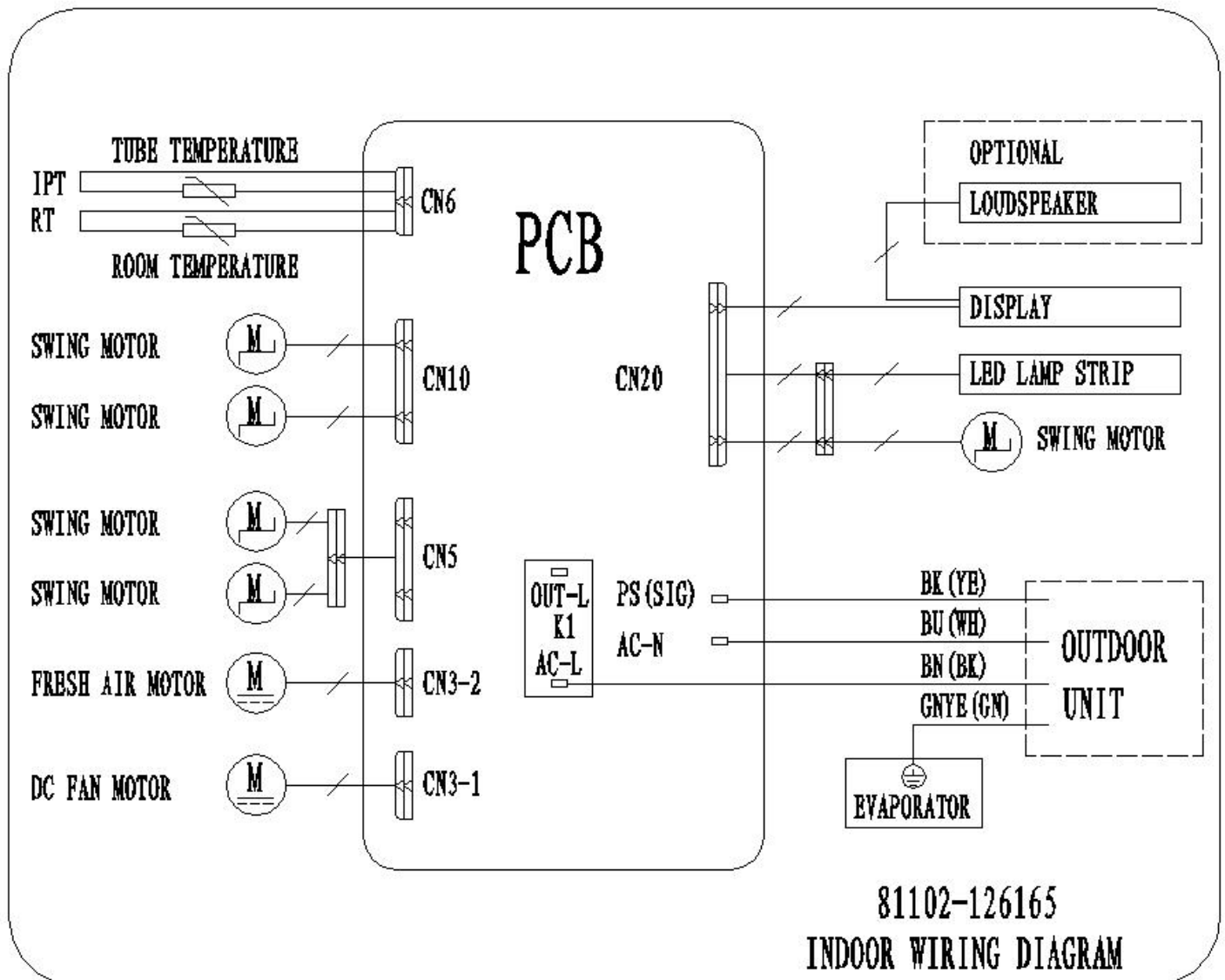
4. Electric Diagram

4.1 Wiring Diagram

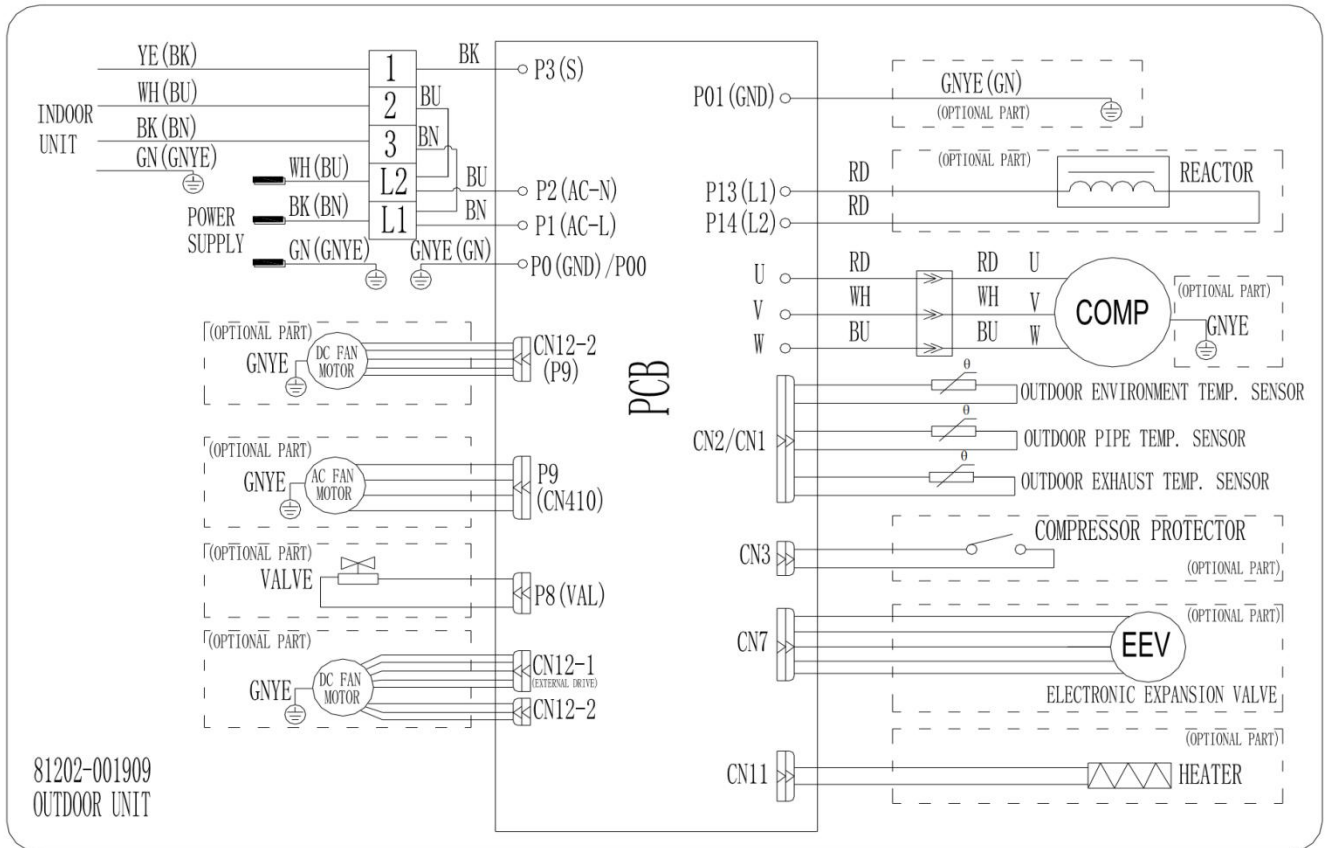
Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	CAP	Jumper cap
YE	Yellow	BN	Brown	COMP	Compressor
RD	Red	BU	Blue		Grounding wire
YEGN	Yellow/Green	BK	Black	/	/
VT	Violet	OG	Orange	/	/

Model: WYT012GLUI25FV

Indoor Unit



Outdoor Unit:



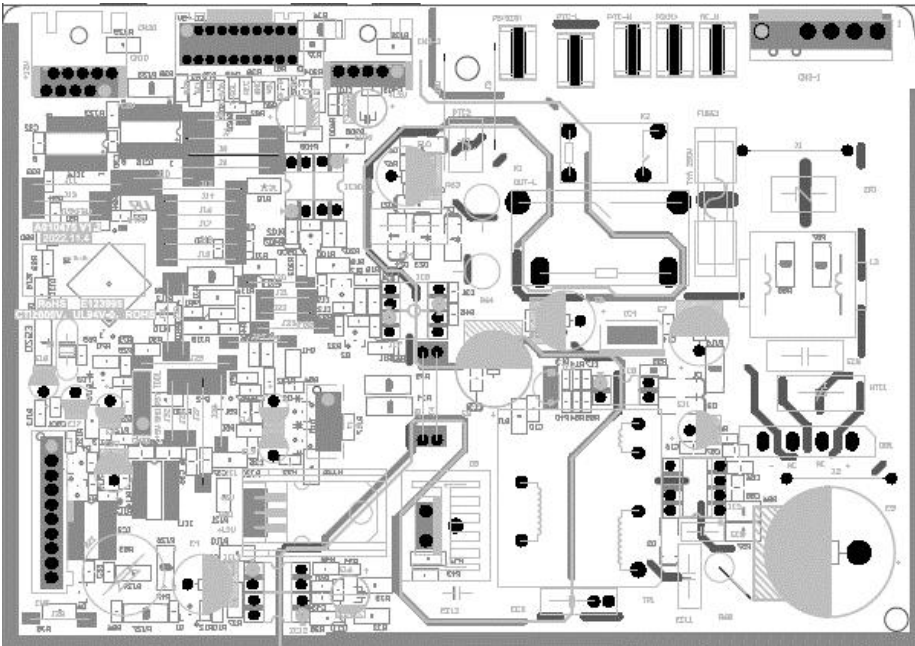
4.2 PCB Layout

Indoor Unit

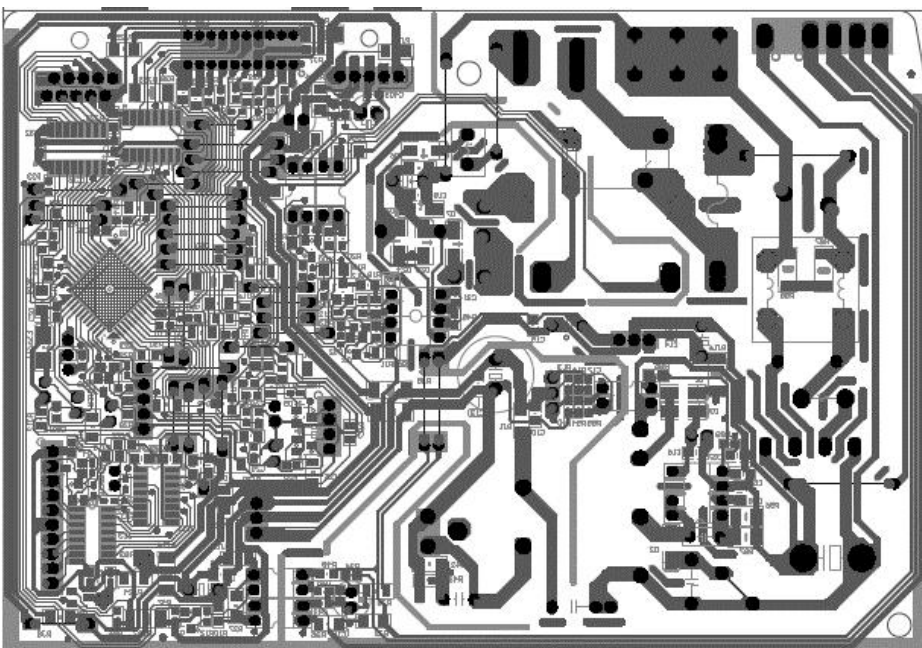
Indoor PCB

Model: WYT012GLUI25FV

Top view



Bottom view



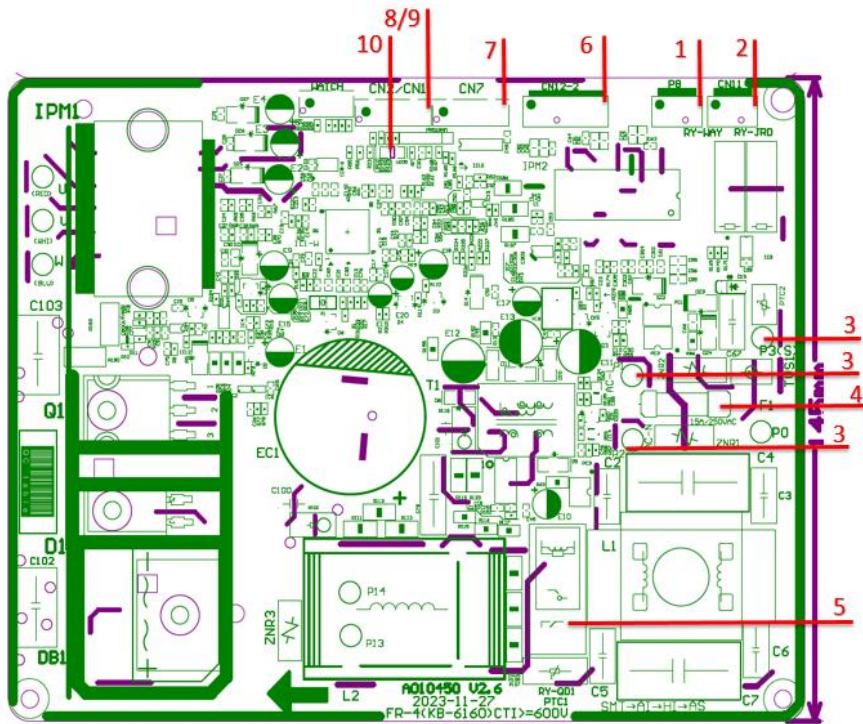
1	ODU AC power output
2	Fuse
3	ODU AC power input
-3	ODU power supply IDU power input
4	DC motor driver
5	IDU/ODU wiring connection-N connector
6	Power supply-N connector
7	Wireless module connector
8	IDU/ODU communication wiring
9	Display
10	Fresh fan swing connector
11	PTC connector
12	Temperature sensor connector
13	Left-right swing connector
14	Up-down swing connector
15	Light-display
16	Fresh fan DC motor drive

Outdoor Unit

Outdoor PCB

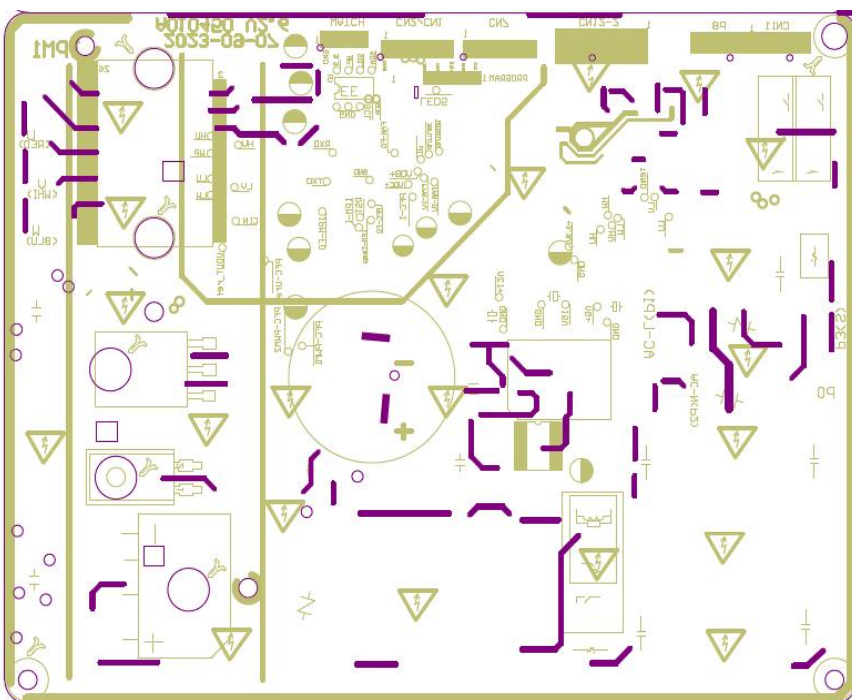
Model: WYT012GLUI25FV

Top view



1	4-way valve
2	Heater
3	L, N and communication
4	Fuse
5	ODU PCB main relay
6	DC motor connector
7	Electronic expansion valve
8	Discharge sensor connector
9	OAT/OPT sensor connector
10	LED5

Bottom view



5. Electronic Controller Introduction

5.1 Remote Controller

No.	Symbols	Meaning
1		Battery indicator
2		Auto Mode
3		Cooling Mode
4		Dry Mode
5		Fan only Mode
6		Heating Mode
7		ECO Mode
8		Timer
9		Temperature indicator
10		Fan speed: Auto/ low/ low-mid/ mid/ mid-high/ high
11		Mute function
12		TURBO function
13		Up-down auto swing
14		Left-right auto swing
15		SLEEP function
16		I FEEL function
17		8°C heating function
18		Signal indicator
19		Gentle wind
20		Child-Lock
21		Display ON/OFF
22		Self-Clean function
23		Fresh air



⚠ The display and some functions of the remote controller may differ.

No.	Button	Function
1		To turn on/off the air conditioner .
2		To increase temperature, or Timer setting hours.
3		To decrease temperature, or Timer setting hours.
4	MODE	To select the mode of operation (AUTO, COOL, DRY, FAN, HEAT).
5	ECO	To activate/deactivate the ECO function.
		Long press to activate/deactivate the 8°C heating function (depending on models).
6	TURBO	To activate/deactivate the TURBO function.
7	FAN	To select the fan speed of auto/mute/low/low-mid/mid/mid-high/high/turbo.
8	TIMER	To set the time for timer on/off.
9	SLEEP	To switch-on/off the function SLEEP.
10	DISPLAY	To switch-on/off the LED display.
11		To stop or start horizontal louver movement or set the desired up/down air flow direction.
12		To stop or start horizontal louver movement or set the desired left/right air flow direction.
13	I FEEL	To switch-on/off the I FEEL function.
14	MUTE	To switch-on/off the MUTE function.
		Long press to activate/deactivate the GEN function (depending on models).
15	MODE + TIMER	To activate/deactivate the CHILD-LOCK function.
16	GENTLE WIND	To activate/deactivate the GENTLE WIND function (depending on models).
17	CLEAN	To activate/deactivate the SELF-CLEAN function (depending on models)
18	FRESH AIR	To activate/deactivate the Fresh Air function and select the fan speed.

⚠ The display and some functions of the remote controller may differ.

⚠ The shape/position of the switches and indicators may differ according to the model, but the function is the same.

⚠ The unit confirms each button press with a beep.

5.2 Electronic Controller

RT --- Room Temperature
 IPT --- Indoor Pipe Coil Temperature
 ST --- Indoor Setting Temperature
 OPT --- Outdoor Pipe Temperature
 OAT --- Outdoor Ambient Temperature
 ODT --- Outdoor Discharge Temperature
 CRT --- Compensated Room Temperature
 IDU --- Indoor Unit
 ODU --- Outdoor Unit

Note: When finishing installation, the air inlet on the unit and airflow throughout the room can vary in temperature. This occurs because the air ventilation and temperature test sensor are in different locations. The sensor is located in the unit's air inlet. The temperature for the IDU PCB control needs compensation.

- 1) **Cooling mode:** CRT=RT
- 2) **Heating mode:** CRT=RT 27°F(-3°C) --- Split AC

5.2.1 Auto Mode

1) The set temperature can be adjusted from 61-88°F(16-31°C) in Auto mode. The fan speed and louver position will automatically adjust based on the Auto mode presets.

2) Operation

When the unit is set to Auto mode, it will operate in Cooling, Heating, or Fan mode according to Δt -- the temperature difference between RT and ST shown in the table:

Mode	$\Delta t = RT - ST$
Cooling	$\Delta t > 34^{\circ}\text{F}(1^{\circ}\text{C})$
Fan	$30^{\circ}\text{F}(-1^{\circ}\text{C}) \leq \Delta t \leq 34^{\circ}\text{F}(1^{\circ}\text{C})$
Heating	$\Delta t < 30^{\circ}\text{F}(-1^{\circ}\text{C})$

5.2.2 Cooling Mode

(1). Temperature Control: 61-88°F(16-31°C), and the fan speed and louver position will automatically adjust based on the Cooling mode presets.

(2). Compressor and Process Control:

- 1) When $RT-ST \geq 34^{\circ}F(1^{\circ}C)$, the compressor starts up and the AC operates as customer preset.
- 2) When:
 - A. $RT-ST \leq 27^{\circ}F(-3^{\circ}C)$ and the compressor keeps 2 min continuously or
 - B. $RT-ST \leq 28^{\circ}F(-2^{\circ}C)$ and the compressor operates in the lowest frequency for 5 min continuously or
 - C. $RT-ST \leq 30^{\circ}F(-1^{\circ}C)$ and the compressor operates in the lowest frequency for 10 min continuously.
 The compressor stops operation.
- 3) The compressor frequency control: Based on the relation of RT and ST and the changing speed of RT.
- 4) The compressor also stops operating while the unit is:
 - A. Switched Off
 - B. Under protection
 - C. Changed to Fan mode
- 5) The compressor operates for a minimum of 7 min before being stopped by its programming in normal operation.
- 6) In the process of unit operation, once the compressor stops, there should be a 3-min delay until the next procedure.

(3). ODU Fan Motor Control:

- 1) While the unit is:
 - A. Switched Off
 - B. Under protection
 - C. To the set temperature

After the compressor ceases, the fan motor stops operating according to the temperature of OPT and OAT. The max delay for the motor should be less than 160s.

- 2) When switching the unit On in Cooling mode, the ODU fan motor will delay 5s after the compressor starts up.
- (4).** When ODU failures or protection occur, the IDU operates as preset.

(5). Anti-Frosting Protection:

Control the unit operation frequency and frequency-changing rate to achieve anti-frosting protection.

- 1) Frequency Slowly Increasing (FSI):

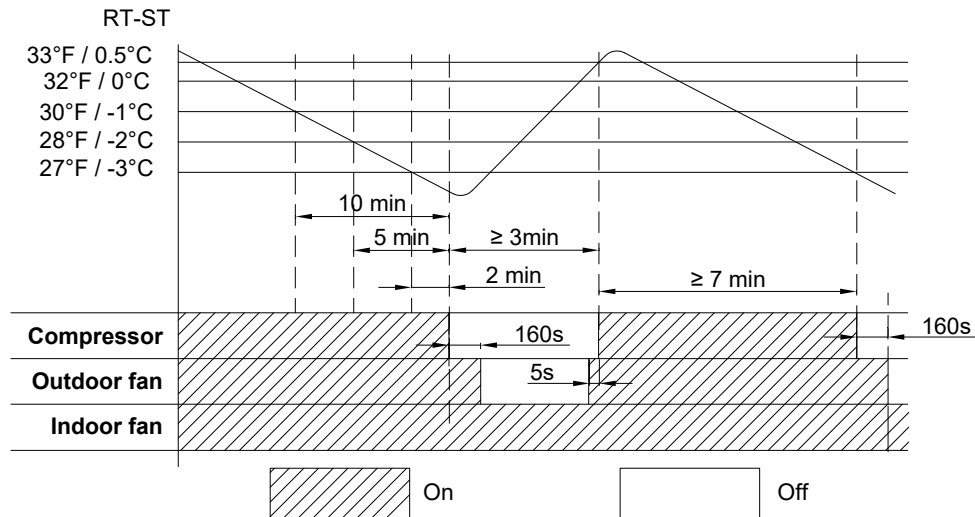
If $43^{\circ}F(6^{\circ}C) \leq IPT < 45^{\circ}F(7^{\circ}C)$, the frequency increasing rate is 1Hz/60s, slowly increasing the operation speed.

When $IPT \geq 45^{\circ}F(7^{\circ}C)$, the unit quits from protection.
- 2) Frequency Limitation:

If $41^{\circ}F(5^{\circ}C) \leq IPT < 43^{\circ}F(6^{\circ}C)$, the compressor frequency is restricted to increase.
- 3) Normal Frequency Decreasing (NFD):

If $37^{\circ}F(3^{\circ}C) \leq IPT < 39^{\circ}F(4^{\circ}C)$, the frequency decreasing rate is 8Hz/90s until reaching the lower frequency limit.
- 4) Fast Frequency Decreasing (FFD):

If $36^{\circ}F(2^{\circ}C) \leq IPT < 37^{\circ}F(3^{\circ}C)$, the frequency decreasing rate is 16Hz/90s until reaching the lower frequency limit.
- 5) Unit stop:
 - A. When $IPT < 34^{\circ}F(1^{\circ}C)$ for 3 min continuously, the unit stops operating for anti-defrosting protection.
 - B. While $IPT > 43^{\circ}F(6^{\circ}C)$ and the unit has stopped for 3 min already, the unit can recover to operation.



5.2.3 Dry Mode

1) Temperature Control: 61-88°F(16-31°C)

Fan Speed: Low

Vane Blade Position: As customer preset

2) When ODU failure or stops for protection, the IDU operates as preset.

3) Failure Protection: Cooling mode

4) Energy Saving and Sleep Mode: Invalid

5) The ODU fan motor stops operating.

5.2.4 Heating Mode

(1). Temperature Control: 61-88°F(16-31°C)

(2). Compressor and Process Control:

1) When ST-CRT ≥ 33°F(0.5°C), the compressor starts up and the AC operates as customer preset.

2) When:

A. ST-CRT ≤ 27°F(-3°C) and the compressor keeps 2 min continuously or

B. ST-CRT ≤ 28°F(-2°C) and the compressor operates in the lowest frequency for 5 min continuously or

C. ST-CRT ≤ 30°F(-1°C) and the compressor operates in the lowest frequency for 10 min continuously.

The compressor stops operating.

3) The compressor frequency control: Based on the relation of RT and ST and the changing speed of RT.

4) The compressor will also stop operating while the unit is:

A. Switched Off

B. Under protection

C. Changed to Fan mode

5) The compressor operates for a minimum of 7 min before being stopped by its programming in normal operation (Active cooling, heating, or an error code.)

6) In the process of unit operation, once the compressor stops, there should be a 3-min delay until the next procedure.

(3). IDU Time Delay

When the compressor stops or the unit switches Off while in Heating mode, the IDU fan motor will operate for a few more seconds to prevent overheating.

(4). ODU Fan Motor Control

1) While unit:

- A. Switched Off
- B. Under protection
- C. To the set temperature

After the compressor ceases, the fan motor stops operating according to the temperature of OPT and OAT. The max delay for the motor should be less than 160s.

2) When switching the unit On in Heating mode, the ODU fan motor will delay 5s after the compressor starts up.

3) In the defrosting process, the fan motor will stop operating for a 48s delay after the compressor stops.

4) When defrosting finishes, the compressor stops operating and the fan motor will start operating simultaneously.

(5). 4-Way Valve Control

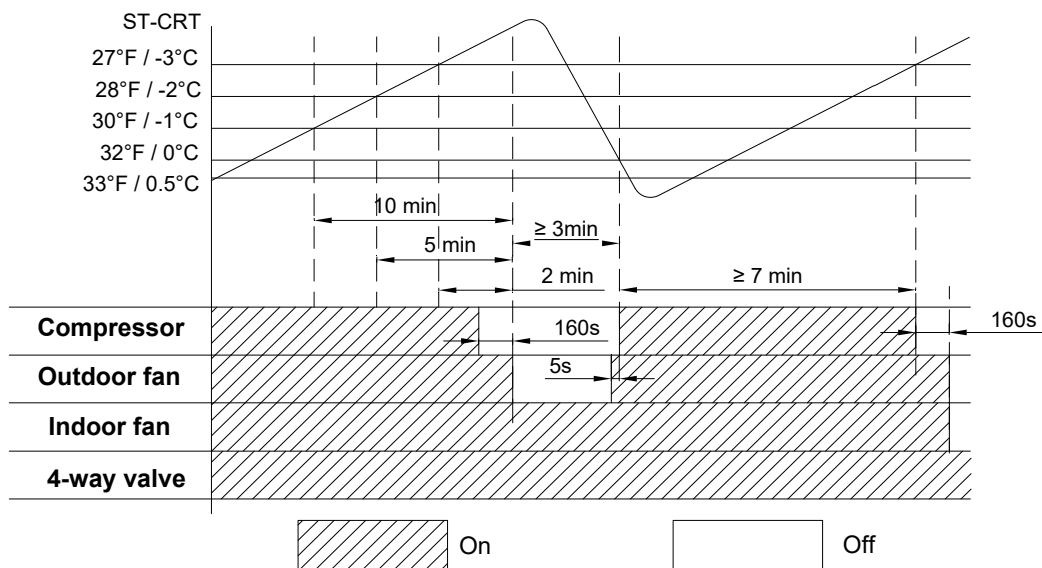
1) In Cooling/Dry/Fan mode, the 4-way valve will be Off. When the unit switches to Heating mode, the 4-way valve will be On.

2) When Heating mode switches Off or changes to other modes, the 4-way valve will be Off for a 2-min delay after the compressor stops operating.

3) The unit stops working due to any kind of protection, the 4-way valve will be Off for a 4-min delay.

4) In the defrosting process, the 4-way valve will be Off for a 43s delay after the compressor stops.

5) When defrosting finishes, the compressor stops operating and the 4-way valve will be On after a 43s delay.



(6). Defrost

Note:

t1: The compressor continuous operation time.

t2: AC unit operation first time going to defrost circle.

t3: The compressor accumulated operation time. When $OPT \leq 37^{\circ}\text{F}(3^{\circ}\text{C})$, the unit starts to count the time for t3.

When AC unit operates to:

A. $t1 \geq t2$ or

B. $t3 \leq t1 < t2$

and also the temperature (related to OAT and OPT) tested 3 min continuously meets for defrosting.

1) Defrosting starts up: The compressor stops operating, restarts, and begins working again after 50s delay.

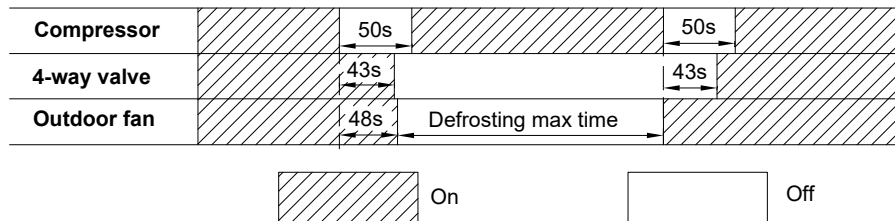
2) Conditions for quitting defrosting:

A. After defrosting 60s, and $OAT \geq 54^{\circ}\text{F}(12^{\circ}\text{C})$ or

B. $OAT < 23^{\circ}\text{F}(-5^{\circ}\text{C})$, and $OPT \geq 46^{\circ}\text{F}(8^{\circ}\text{C})$ for 80s continuously or

C. The defrosting for 10 min.

When the AC meets any of the conditions for defrosting finish.



3) Defrosting finishes: The compressor stops operating and restarts after a 50s delay.

(7). Cold Air Prevention

This function prevents cold air from being discharged when the heating operation starts up.

1) IDU Fan Motor for Cold Air Prevention:

--- When $RT < 75^{\circ}\text{F}(24^{\circ}\text{C})$:

A. If $ITP > 88^{\circ}\text{F}(31^{\circ}\text{C})$ while the compressor works for 5 min, the fan motor will operate according to the preset fan speed.

B. If $IPT \leq 88^{\circ}\text{F}(31^{\circ}\text{C})$, the fan motor stops operating within 2 min of the compressor starting.

C. If $IPT \geq 81^{\circ}\text{F}(27^{\circ}\text{C})$, the fan motor operates in low speed for 2 min, then changes to the preset speed.

--- When $RT \geq 75^{\circ}\text{F}(24^{\circ}\text{C})$:

A. Within 2 min after the compressor starts up and once $IPT > 81^{\circ}\text{F}(27^{\circ}\text{C})$, the fan motor changes to preset speed.

B. After the compressor starts operating for 2 min, the fan motor changes to preset speed directly.

2) Vane Blade Operation for Cold Air Prevention:

A. If the vane works on the status of **non-swing** while IPT increases to a special degree, the vane blade will change the position to:

- Default angle or
- Previous position or
- Customer preset.

The above operation can only work 1 time. When the compressor stops operating, the unit will once again inspect the function.

B. If the vane works on the status of **swing** when the IDU quits from cold air prevention, the vane operates as preset.

(8). 46°F(8°C) Heating

When this function is effective, it ensures the room temperature will not reach 46°F(8°C). Once the room temperature is lower than 46°F(8°C), the unit operates in Heating mode.

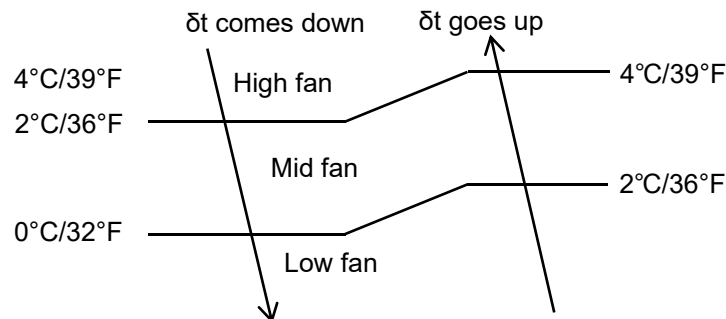
5.2.5 Fan Mode

1) Temperature Setting: 61-88°F(16-31°C)

Fan Speed and Vane Position: As preset. The function for remote controller 58E only.

2) For the above function, when the unit is preset for Auto Fan mode, the fan motor will change its operation speed based on the temperature difference of the ambient and preset temperatures.

3) The ODU always Off.



5.2.6 Timer

The unit has times control. When the unit meets the timer preset, it will switch On or Off automatically.

Timer On

- 1) Timer On can only be set when the air conditioner is Off.
- 2) Press "Timer" on the remote control 1 time to enter the time setting.
- 3) Press "▲" or "▼" to set the start time for the unit.
- 4) Set the other function as Mode, Fan Speed, Swing, etc.
- 5) Press "Timer" 1 time again to confirm the Time On setting.

Timer Off

- 1) Timer Off can only be set when the air conditioner is On.
- 2) Press "Timer" on the remote control 1 time to enter the time setting.
- 3) Press "▲" or "▼" to set the stop time for the unit.
- 4) Press "Timer" 1 time again to confirm the Time Off setting.

Note: If you do not input a selection for the time setting within 10s, the timer function will turn Off automatically.

5.2.7 Sleeping Mode

While the AC operates in Sleeping mode, the power supply and sleep lights will always be On. The temperature display will be Off after 15s. In this mode, the AC unit works according to the Sleep Curve as designed. In Sleeping mode, the unit can operate for 10 hours continuously. After, the unit will quit from this mode and operate as previous preset.

5.2.8 Emergency Switch

When the emergency switch is pressed 1 time, Cooling mode is selected. If the switch is pressed again within 3s, Heating mode is selected. If pressed 1 time again, the unit will be switched Off. For example, if the remote controller is out of function and the batteries lost power, the emergency button on the front of the indoor unit can be used for the function test.

Note: Do not press the emergency switch during normal operation.

5.2.9 Auto-Restart Function

While the air conditioner is operating in one mode, all of its operation data will be memorized into IC by the main PCB, such as the operating mode, preset temperature, etc. If the power supply cuts Off due to reasons and recovers again, the Auto-Restart function will set synchronously and the air conditioner will operate in the same mode as before.

Note: The function setting:

Within 3 min of powering On the unit, set the unit to Cooling mode, temperature to 86°F(30°C), and mid fan speed. Press the "Eco" or "Sleep" button 10 times consecutively within 8s and the Auto-Restart function activates.

5.2.10 Protection

(1). Overload Protection for Cooling or Dry Mode

1) If:

- A. OPT $\geq$ 144°F(62°C), the unit stops operating for overload protection.
- B. OPT < 131°F(55°C) and after the compressor stops for 3 min, the unit can be started.

2) When OPT $\geq$ 131°F(55°C), the compressor will be frequency limited/reduced for overload protection.

3) If the unit has entered overload stop-working protection 6 times consecutively, the protection can't be recovered unless you press the On/Off button. The unit will show a failure code. Once the compressor runs more than 6 min continuously, the counter of the overload stop-working protection will be reset to zero, restarting the counting process. The failure and times for protection will eliminate immediately once the unit has switched Off or changed to Fan or Heating mode.

Note: If the defective failure can't be recovered, the failure can't be eliminated even if the operation mode changes.

(2). Overload Protection for Heating Mode

1) If:

- A. IPT $\geq$ 144°F(62°C), the unit stops operating for overload protection.
- B. IPT < 131°F(55°C) and after the compressor stops for 3 min, the unit can be started.

2) When IPT $\geq$ 131°F(55°C), the compressor will be frequency limited/reduced for overload protection.

3) If the unit has entered overload stop-working protection 6 times consecutively, the protection can't be recovered unless pressing the On/Off button. The unit will show a failure code. Once the compressor runs more than 6 min continuously, the counter of the overload stop-working protection will be reset to zero, restarting the counting process. The failure and times for protection will eliminate immediately once the unit has switched Off or changed to Fan or Heating mode.

Note: If the defective failure can't be recovered, the failure can't be eliminated even if the operation mode changes.

(3). Compressor Discharge Temperature Protection

1) If ODT $\geq 239^{\circ}\text{F}(115^{\circ}\text{C})$, the unit stops operating for over-temperature protection. While ODT $< 212^{\circ}\text{F}(100^{\circ}\text{C})$ and after the compressor stops for 3 min, the unit can be started.

2) If ODT $\geq 212^{\circ}\text{F}(100^{\circ}\text{C})$, the compressor will be frequency limited/reduced for over-temperature protection.

3) If the unit has entered discharge over-temperature stop-working protection 6 times consecutively, the protection can't be recovered unless you press the On/Off button. The unit will show a failure code. Once the compressor runs more than 6 min continuously, the counter of the discharge over-temperature stop-working protection will be reset to zero, restarting the counting process. The failure and times for protection will eliminate immediately once the unit has switched Off or changed to Fan mode.

Note: If the defective failure can't be recovered, the failure can't be eliminated even if the operation mode changes.

(4). The Current Protection

1) If the A/C unit's working current is more than limited current (ILC), the compressor will be frequency limited/reduced for over-current protection.

2) When the A/C unit's working current is more than stopped current (ISC), the AC unit stops operating. The compressor must stop for 3 min for the unit to be recovered.

3) If the unit has entered over-current stop-working protection 6 times consecutively, the protection can't be recovered unless you press the On/Off button. Once the compressor runs more than 6 min continuously, the counter of the stop-working protection will be reset to zero, restarting the counting process.

Note: For different models, ILC and ISC have different programmed values.

(5). IPM Overheating Protection

1) When IPM temperature TIPM $\geq 189^{\circ}\text{F}(87^{\circ}\text{C})$, the compressor will be frequency limited/reduced for IPM over-temperature protection.

2) When TIPM $\geq 203^{\circ}\text{F}(95^{\circ}\text{C})$, the AC unit stops operating for AC-system protection.

If TIPM $< 189^{\circ}\text{F}(87^{\circ}\text{C})$ and after the compressor stops for 3 min, the unit can be started.

3) If the unit has entered IPM over-temperature stop-working protection 6 times consecutively, the protection can't be recovered unless you press the On/Off button. The unit will show a failure code. Once the compressor runs more than 6 min continuously, the counter of the overload stop-working protection will be reset to zero, restarting the counting process. The failure and times for protection will eliminate immediately once the unit is switched Off or changed to Fan mode.

Note: If the defective failure can't be recovered, the failure can't be eliminated even if the operation mode changes.

5.2.11 Complementary

1) Energy Saving (Eco)

Function effective in Cooling and Heating modes only.

In Cooling mode, the set temperature range is from 79-88°F (26-31°C). In Heating mode, the set temperature range is from 61-77°F (16-25°C).

2) Turbo

Function effective in Cooling, Heating, Fan, and Auto modes. The fan speed operates on the highest setting.

3) The Communication Control

If the ODU PCB can't get signal feedback from the IDU for 2 min continuously, the AC unit stops operating and displays the "E0" error code. The "E0" error code represents IDU/ODU communication failure. The unit can be recovered to operate after the IDU and ODU communication recovers and the compressor stops for 3 min.

5.2.12 Calibration Test Mode

Within 3 min of turning On the indoor unit, set the unit as:

1) Cooling mode

2) Set temperature to 86°F(30°C)

3) Mid-fan speed

Press the Eco button 7 times consecutively within 8s and the unit will change to Calibration Test mode. The buzzer sounds 3 times.

5.2.13 Fresh Air Function

1) The Fresh Air function is available when the air conditioner is On and Off.

2) The Fresh Air Speed button offers the following functions: Low wind, stroke, strong, and intelligent.

Note: The intelligent air speed will automatically adjust the fresh air speed according to the TVOC concentration.

3) If the temperature difference between the indoor and outdoor units is too large, the outdoor air temperature is lower than the dew point temperature of indoor air, and the operation time is too long, it may lead to condensation problems for the indoor fresh air module, as well as condensation and freezing in the fresh air duct during exhaust. If these situations occur, implement the control operation of fresh air anti-condensation. When the fresh air is undergoing anti-condensation, the fresh fan is suspended.

4) The dehumidification and fresh air functions are mutually exclusive.

5) After the fresh air function is used for a long period of time, the filter screen will accumulate a large amount of dust. Set reminders for replacing the filter screen so that the fresh air function can blow fresh air. The duration of the filter screen is 1,440 hours. When the remaining duration of the filter is less than or equal to 20%, the remaining life cycle of the current filter will display after shutting down and the reminder for replacing the filter will appear.

6) The fresh air icon on the display board will show different colors according to the air quality level:

-- Blue: Excellent or good

-- Yellow: Medium

-- Orange-red: Poor or very poor.

7) If the fresh air motors fails, the display screen will show the BD fault code and the after-sales service will be contacted for a replacement when the fault occurs.

Part II Installation and Maintenance

1. Notes for Installation and Maintenance

Safety Precautions

Important!

Read the safety precautions carefully before installation and maintenance. The following contents are important for installation and maintenance.

Follow the instructions below:

- The installation or maintenance must accord with the instructions.
- Comply with all national and local electrical codes.
- Pay attention to the warnings and cautions in this manual.
- Installation and maintenance must be performed by a distributor or qualified person.
- All electric work must be performed by a licensed technician according to the local regulations and instructions given in this manual.
- Be cautious during installation and maintenance. Prohibit incorrect operation to prevent electric shock, casualty, and other accidents.
- Use the flammable gas detector to check the area before unloading and opening the container.
- No fire sources and smoking.

Warnings

Electrical Safety Precautions

- 1) Turn Off the air conditioner's power supply before starting maintenance.
- 2) The air conditioner must apply a specialized circuit. Prohibit sharing the same circuit with other appliances.
- 3) Install the air conditioner in a suitable location. Ensure the power plug is touchable.
- 4) Make sure each wiring terminal is connected firmly during installation and maintenance.
- 5) Have the unit adequately grounded. The grounding wire can't be used for other purposes.
- 6) Apply protective accessories such as protective boards, cable-cross loops, and wire clips.
- 7) The live, neutral, and grounding wires of the power supply must be correspond to the live, neutral, and grounding wires of the air conditioner.
- 8) The power cord and power connection wires can't be pressed by hard objects.
- 9) If the power cord or connection wire is broken, it must be replaced by a qualified person.
- 10) If the power cord or connection wire is not long enough, get a specialized power cord or connection wire from the manufacturer or distributor. Prohibit prolonging the wire by yourself.
- 11) For air conditioners without plugs, an air switch must be installed in the circuit. The air switch should be all-pole parting and the contact parting distance should be more than 0.1 inch (3 mm).
- 12) Confirm the wires and pipes are connected properly and the valves are opened before energizing.
- 13) Check if there is electric leakage on the unit body. If yes, eliminate the electric leakage.
- 14) Replace the fuse with a new one of the same specification if it is burnt down. Don't replace it with cooper or conducting wires.
- 15) If installing the unit in a humid place, a circuit breaker must be installed.

Installation Safety Precautions

- 1) Select the installation location according to the requirements of this manual. (See the requirements in the Installation section).
- 2) Handle unit transportation with care. The unit should not be carried by only 1 person if it is more than 44 lbs (20kg).
- 3) When installing the indoor and outdoor units, a sufficient fixing bolt must be installed, ensuring the installation supporter is firm.
- 4) Wear a safety belt if the working height is above 7 ft. (2m).
- 5) Use equipped or appointed components during installation.
- 6) Make sure no foreign objects are left in the unit after finishing installation.

Improper installation may lead to fire hazards, explosions, electric shocks, or injuries.

Safety precautions for installing and relocating the unit.
To ensure safety, be mindful of the following precautions.

 Warnings

- 1) When installing or relocating the unit, ensure the refrigerant circuit is purged and free from air and other contaminants. Any presence of air or other foreign substances in the refrigerant circuit will cause system pressure rises or compressor ruptures, resulting in injury.
- 2) Do not charge the unit with a refrigerant that does not comply with the specifications on the nameplate. In addition, do not use any unqualified refrigerants. Otherwise, it may cause abnormal operations, wrong actions, mechanical malfunctions, or even safety accidents.
- 3) When refrigerant needs to be recovered during relocating or repairing the unit, confirm the unit is running is Cooling mode. Then fully close the valve at the high-pressure side (2-way valve). About 30-40s later, fully close the valve at the low-pressure side (3-way valve). Immediately stop the unit and disconnect the power.
Note: The duration of the refrigerant recover should not exceed 1 min. If refrigerant recovery takes too long, it may cause the compressor to overheat, resulting in injury.
- 4) During refrigerant recovery, ensure that both the 2-way and 3-way valves are fully closed and the power is disconnected before detaching the connecting pipe. If the compressor starts running when the valve is open and the connecting pipe is not yet connected, air will be sucked in, which can cause the pressure to rise, potentially leading to compressor overheating or a gas leak.
- 5) Ensure the connecting pipe is securely attached before starting the compressor when installing the unit. If the compressor starts running when the valve is open and the connecting pipe is not yet connected, air will be sucked in, which can cause the pressure to rise, potentially leading to compressor overheating or a gas leak.
- 6) Do not install the unit in a place where corrosive or flammable gas may leak. If there is leaked gas around the unit, it may cause an explosion or other accidents.
- 7) Do not use extension cords for electrical connections. If the electric wire is not long enough, contact an authorized local service center and ask for a proper electric wire. Poor connection may lead to electric shocks or fires.
- 8) Use the specified types of wires for electrical connections between the indoor and outdoor units. Firmly clamp the wires so the terminals receive no external stresses. Electric wires with insufficient capacity, wrong wire connections, or insecure wire terminals may cause electric shocks or fires.

Introduction R32 Air Conditioner Installation

1) Introduction to Refrigerants R32

The refrigerants used for air conditioners are environmentally-friendly hydrocarbons R32. The two kinds of refrigerants are combustible and odorless. In addition, they can burn and explode under certain condition. However, there will be no risk of burning and explosion, if you correctly utilize the following table to install your air conditioner in a room with an appropriate area. Compared to ordinary refrigerants, Refrigerants R32 are environmentally friendly and do not destroy the ozone sphere. Their values of greenhouse effect are also considerably low.

2) R32 Air Conditioner Installation Area Requirement

$m1=(4m^3) \times LFL$, $m2=(26m^3) \times LFL$, $m3=(130m^3) \times LFL$

Where LFL is the lower-flammable limit in kg/m³, R32 LFL is 0.306kg/m³.

For the appliances with a charge amount $m1 < M < m2$:

The maximum charge in a room must be in accordance with the following: $M_{max}=2.5 \times (LFL)^{(5/4)} \times h_0 \times A^{1/2}$

The required minimum floor area A_{min} to install an appliance with refrigerant charge $M(kg)$ must be in accordance with the following: $A_{min}= (M / (2.5 \times (LFL)^{(5/4)} \times h_0))^2$

Where:

- M_{max} is the allowable maximum charge in a room, in kg;
- M is the refrigerant charge amount in appliance, in kg
- A_{min} is the required minimum room area, in m²;
- A is the room area, in m²;
- LFL is the lower-flammable limit, in kg/m³
- h_0 is the installation height of the appliance, in feet/meters for calculating M_{max} or A_{min} , 5.9 ft (1.8m) for wall mounted.

Table GG.1 - Maximum Charge (kg)

Category	LFL (kg/m ³)	h ₀ (m)	Floor Area (m ²) Maximum Charge (kg)						
			4	7	10	15	20	30	50
R32	0.306	0.6	0.68	0.9	1.08	1.32	1.53	1.87	2.41
		1	1.14	1.51	1.8	2.2	2.54	3.12	4.02
		1.8	2.05	2.71	3.24	3.97	4.58	5.61	7.254
		2.2	2.5	3.31	3.96	4.85	5.6	6.86	8.85

Table GG.2 - Minimum Room Area (m²)

Category	LFL (kg/m ³)	h ₀ (m)	Charge Amount (M) (kg) Minimum Room Area (m ²)						
			1.224kg	1.836kg	2.448kg	3.672kg	4.896kg	6.12kg	7.956kg
R32	0.306								
		0.6	/	29	51	116	206	321	543
		1	/	10	19	42	74	116	196
		1.8	/	3	6	13	23	36	60
		2.2	/	2	4	9	15	24	40

Caution:

- Contact your nearest after-sale service center when maintenance is necessary. At the time of maintenance, the maintenance personnel must strictly comply with the Operation Manual provided by the corresponding manufacturer. Any non-professional individual is prohibited to maintain the air conditioner.
- Comply with the provisions of the gas-related national laws and regulations.
- Clear away the refrigerant in the system when maintaining or scrapping the air conditioner.
- When filling the combustible refrigerant, any of your rude operations may cause serious injury or injuries to human body or bodies.
- A leak test must be done after the installation is completed.
- Before maintaining or repairing an air conditioner using combustible refrigerant, complete the safety inspection in order to ensure the fire risk is reduced to minimum.

3) Installation Safety**Installation Safety Principles**

Open flames prohibited



Ventilation necessary



Operation safety



Mind static electricity



Must wear protective clothing and anti-static gloves



Don't use mobile phone

Installation Safety

- Refrigerant Leak Detector
- Appropriate Installation Location



The left picture is the schematic diagram of a refrigerant leak detector.

Caution:

- Installation must occur in a well-ventilated location.
- When using Refrigerant R32/R290 during installation or maintenance, the location must be free from open fire, welding, smoking, drying oven, or any other goods with temperatures higher than 698°F/370°C (R290) and 1,018°F/548°C (R32).
- Appropriate anti-static measures, such as wearing anti-static clothing and gloves, are necessary when installing air conditioners using R32/R290.
- Select a location where the indoor and outdoor units' air inlets and outlets are unobstructed. Ensure the air inlets and outlets of the indoor unit are even.
- Ensure the location is not near heat sources or a combustible/explosive environment.
- Select a location that ensures the air inlet and air outlet of the indoor unit are even.
- Avoid locations where electrical products, power switch plugs, electrical sockets, kitchen cabinets, beds, sofas, and other valuables are right under the lines of the indoor unit.
- If the indoor unit experiences a refrigerant leak during installation, immediately turn Off the valve of the outdoor unit. All personnel must leave the location for a least 15 min until the refrigerant leaks completely. If the product is damaged, carry it back to the maintenance station. Welding the refrigerant pipe or conducting other operations on the user's site is prohibited.

Special Tools:

Tool Name	Requirement(s) for Use
Mini Vacuum Pump	An explosion-proof vacuum pump that can ensure certain precision. Its vacuum degree should be lower than 10Pa.
Filling Device	A special explosion-proof filling device that can ensure certain precision. Its filling deviation should be less than 5g.
Leak Detector	Ensure it is calibrated regularly. Its annual leak rate should not exceed 10g.
Concentration Detector	A) Equip the maintenance site with a fixed-type combustible refrigerant concentration detector. Connect the detector to a safeguard alarm system. Its error must not exceed 5%. B) Equip the installation site with a portable combustible refrigerant concentration detector that can realize the two-level audible and visual alarm. Its error must not exceed more than 10%. C) Ensure the concentration detectors are calibrated regularly. D) Check and confirm the functions before using the concentration detectors.
Pressure Gauge	A) Ensure the pressure gauges are calibrated regularly. B) The pressure gauge used for Refrigerant 22 can also be used for Refrigerants R290 and R161. The pressure gauge used for R410A can also be used for Refrigerant 32.
Fire Extinguisher	Carry fire extinguisher(s) during installation and maintenance. On the maintenance site, ensure there are 2 or more kinds of dry powder, carbon dioxide, and foam fire extinguishers. The items should have eye-catching labels and be placed in stipulated positions.

Maintenance

(1). Inspections Before Maintenance

1) Inspection of Maintenance Environment

- Before operation, ensure no leaked refrigerant is present in the room.
- Only operate in rooms meeting the area requirements on the nameplate.
- Ensure the room maintains a continuous ventilation state.
- Restrict fire, welding, smoking, drying oven, or any other goods with temperatures higher than 698°F/370°C (R290) or 1,018°F/548°C (R32) from being in the room.
- Ensure mobile phones or any electronic products containing radiation are powered Off while in the room.
- Equip the maintenance area with a functioning dry powder or carbon dioxide fire extinguish.

2) Inspection of Maintenance Equipment

- Check whether the maintenance equipment is applicable to the refrigerant or not. Only use the professional equipment recommended by the air conditioner manufacturer.
- Check whether the refrigerant leak detector has been calibrated. The set maximum alarm concentration of the refrigerant leak detector should not exceed 25% of the lower explosion limit (LEL). The refrigerant leak detector must be operating during maintenance.

(2). Inspection of Air Conditioner

- Before maintenance, ensure the air conditioner is in reliable ground connection.
- Ensure the air conditioner's power supply is Off. Before maintenance, turn Off the power and discharge the capacitor power, which is used in the air conditioner. If you need the power supply during maintenance, perform ongoing leak detections at the most dangerous position/point to avoid potential danger.
- Check whether the warning labels on the air conditioner are in good condition. It is necessary to replace damaged or smeared warning labels.

(3). Leak Inspection Before Maintenance

Before maintenance, check whether the air conditioner is leaking using the leak detector or concentration detector (pump-type) recommended by the corresponding air conditioner manufacturer.

Warning

If a leak potentially exists, extinguish or remove all the fire from the site. Then immediately shut Off the air conditioner. Meanwhile, ensure the area is well-ventilated.

(4). Safety Principles During Maintenance

- During maintenance, ensure the site is well-ventilated.
- Using fire, such as welding or smoking, is prohibited. Using mobile phones is also prohibited.
- If the relative humidity is lower than 40%, wear anti-static clothing and gloves.
- If the combustible refrigerant is found leaking during maintenance, immediately implement forced ventilation and plug up the leak source.

- If the product is damaged to the extent that the refrigerant system must be opened for maintenance, carry the product back to the maintenance station. Welding refrigerant pipes or conducting similar operations are prohibited at the user's site.
- If providing on-site service is necessary due to lacking spare parts during maintenance, return the air conditioner to its initial state. Ensure the refrigerant system is in secure ground connection.
- When providing on-site service with a refrigerant cylinder, the volume of the refrigerant filled must not exceed the specified limit.
- When storing the cylinder in a vehicle or in the maintenance site, ensure it is placed vertically and securely. Keep the cylinder away from heat, combustion, and radiation sources, as well as electrical equipment.

(5). Requirements for the Maintenance-Station Site

- The maintenance location must be well-ventilated with leveled a ground. The location must not be in a basement.
- Divide the maintenance location into welding and non-welding areas and label them clearly. Ensure there is a certain safety distance between the two areas.
- Equip the maintenance location with ventilation and air-exhaustion to prevent the refrigerant gas from aggregating.
- Set the main power switch outside the maintenance location. Equip the main power switch with protective (explosion-proof) devices.
- Provide a combustible refrigerant leak detector and leak detecting instrument management system. Confirm the leak detector is operating normally before maintenance.
- Provide firefighting devices appropriate for extinguishing electrical fires, such as dry power or carbon dioxide fire extinguishers. Keep the firefighting devices in usable condition.
- Temporary wires and sockets are prohibited in the maintenance location.

(6). Requirements for Filling the Refrigerants

- Before operating the refrigerant system, clear the cyclic system using nitrogen. Vacuum the outdoor unit for at least 30 min.
- Ensure there is no cross contamination among different refrigerants when using the refrigerant filling device. The total length, including the refrigerant pipeline, should be as short as possible in order to reduce the residual refrigerant inside the pipeline.
- Vertically place the refrigerant storage tanks.
- Ensure the refrigerating system is in ground connection before filling the refrigerant.
- When filling the refrigerant, utilize the corresponding type and volume of refrigerant as per the requirements on the product nameplate. Overfilling is prohibited.
- Seal the system safely after maintaining the refrigerating system.
- Ensure the maintenance will not damage or reduce the safety protection grade of the original system.

(7). In-Maintenance Welding

- Ensure the maintenance location is well-ventilated.
- Before welding the outdoor unit, confirm the refrigerating system has been drained and cleaned. Ensure there is no refrigerant in the outdoor unit.
- Close the stop valve of the outdoor unit when using a welding gun to complete maintenance work such as cutting and welding.

(8). Maintenance of Electrical Components

- Use a special leak detector to check whether the location of the maintained electrical parts has a refrigerant leak.
- It is prohibited to refit, remove, or cancel any component with the safety protection function after finishing maintenance.
- When maintaining the sealed parts, you must turn Off the air conditioner's power before opening the sealing cover. When a power supply is needed, perform ongoing leak detection at the most dangerous position.
- It is necessary to note that the maintenance of the electrical components must not affect the replacement of the protective cover.
- Ensure the sealing function is not damaged after maintenance. Ensure the sealing material's ability to prevent combustible gas leaks will not diminish due to aging. The substitute components must meet the requirements recommended by the air conditioner manufacturer.

Warning

Before doing the trial operation after finishing the maintenance, use a practical leak detector to inspect the refrigerant leakage and reliability of the ground connection. This is required to ensure there is a reliable ground connection and no refrigerant leakage. Separately place the refrigerant storage tanks in a well-ventilated place with the temperatures ranging from 14-122°F (-10-50°C). Label refrigerant storage tanks with warning labels.

(9). Emergency Accident Handling

Establish emergency handling plans for the maintenance station. Take appropriate precautionary measures while working. For example, it is prohibited to enter the location with any kindling material or wear clothing and shoes that easily produce static.

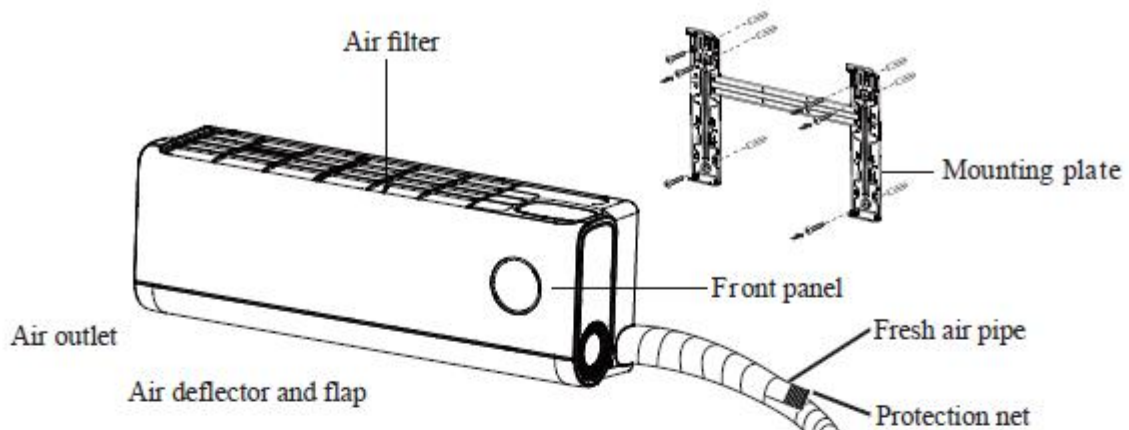
Use these suggestions if a large amount of combustible refrigerant leaks:

- Immediately operate the ventilating equipment while cutting Off the other power supply. Evacuate the affected personnel urgently from the location.
- Inform nearby residents to evacuate for over 66 ft (20m) from the location and make an alarm call. Set the emergency area and prohibit irrelevant personnel and vehicles from approaching.
- The professional firefighters must wear anti-static clothing to handle the emergency on the site. The firefighters must also cut Off the source of the leak.
- Use nitrogen for blowing the site, especially the low-lying positions. Clear away the residual combustible refrigerant gas from any area surrounding the leak point and nearby. Use a handheld detector for leak detection. Do not clear the alarm until the concentration of refrigerant is zero.

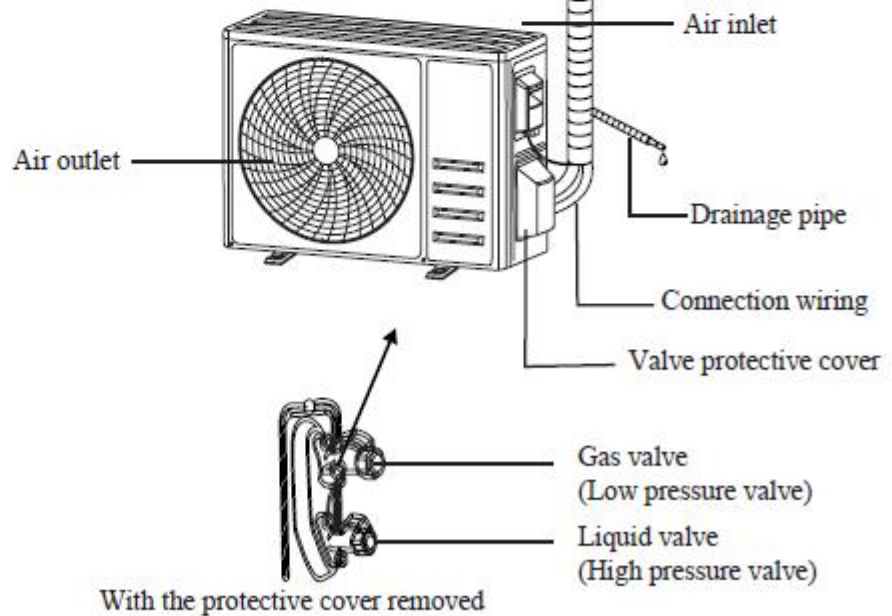
2. Installation

2.1 Installation Dimension Diagram

Indoor Unit

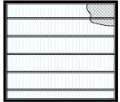
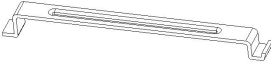
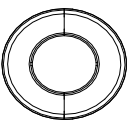
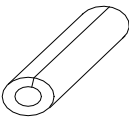


Outdoor Unit



Note: This figure shown may be different from the actual object. Please take the latter as the standard.

2.2 Accessory

Remote controller 	Batteries 	Screw 	Vinyl tape 
Efficient purification filter 	Wall cover 	Pressure tube plate 	Sealant 
Threaded fresh air pipe 	Hole cover 	Drain hose 	Insulation material 

2.3 Tools

Tool Name	Picture	Tool Name	Picture	Tool Name	Picture
Standard wrench		Pipe cutter		Vacuum pump	
Adjustable/Crescent wrench		Screw drivers (Phillips & Flat blade)		Safety glasses	
Torque wrench		Manifold & Gauges		Work gloves	
Hex keys or Allen wrenches		Level		Refrigerant scale	
Drill & Drill bits		Flaring tool		Micron gauge	
Hole saw		Clamp on Amp meter			

2.4 Position

Indoor Unit

- Install the indoor unit on a strong wall that is not subject to vibrations.
- The inlet and outlet ports must not be obstructed. The air should be able to blow all over the room.
- Do not install the unit near a source of heat, steam, or flammable gas.
- Do not install the unit in places that are too windy or dusty.
- Do not install the unit where people often pass. Select a place where the air discharge and operating sound level will not disturb the neighbors.
- Install the unit in a location that simplifies the connection process for the indoor and outdoor units.
- Install the unit where it is easy to drain the condensed water.
- Check the machine operation regularly and leave the necessary spaces as shown in the picture.
- Install the indoor unit where the filter can be easily accessible.

Outdoor Unit

- Do not install the outdoor unit near sources of heat, steam, or flammable gas.
- Do not install the unit in places that are too windy or dusty.
- Do not install the unit where people often pass. Select a place where the air discharge and operating sound level will not disturb the neighbors.
- Avoid installing the unit where it will be exposed to direct sunlight. If needed, use protection that will not interfere with the air flow.
- Leave the spaces, as shown in the picture, for the air to circulate freely.
- Install the outdoor unit in a safe and solid place.
- If the outdoor unit is subject to vibration, place rubber gaskets onto the feet of the unit.
- Install the indoor unit in a room that will be air conditioned. Avoid installation in corridors or communal areas.
- Install the indoor unit at a height of at least 8.2 ft (2.5m) from the ground.

2.5 Electricity and Wiring

Safety Precautions

- Follow the electric safety regulations when installing the unit.
- According to the local safety regulations, use qualified power supply circuits and air switches.
- Ensure the power supply matches with the requirements of the air conditioner. Unstable power supply or incorrect wiring may result in electric shock, fire hazard, or malfunction. Install proper power supply cables before using the air conditioner.

Select the power cord according to the following specifications sheet:

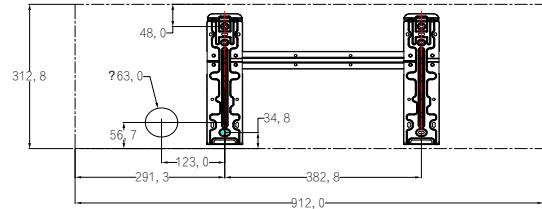
Appliance Amps (A)	Wire Size (mm ² /in ²)
5	0.75/0.0012
10	1.0/0.0016
13	1.5/0.0023
18	1.6/0.0025
25	2.0/0.0031
30	2.5/0.0039

2.6 IDU Installation

2.6.1 Installation of the Mounting Plate

- 1) Using a level, place the mounting plate in a perfect square position vertically and horizontally.
- 2) Drill 1¼ in (33mm) deep holes in the wall to fix the plate.
- 3) Insert the plastic anchors into the hole.
- 4) Fix the mounting plate by using the provided tapping screws.
- 5) Check that the mounting plate is correctly fixed.

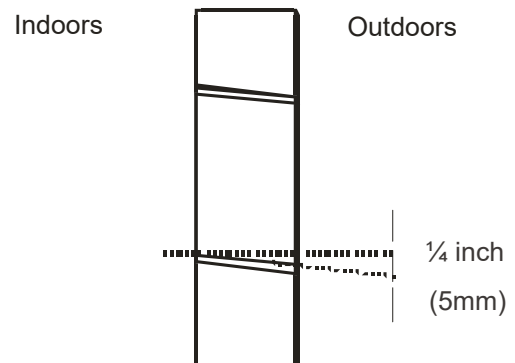
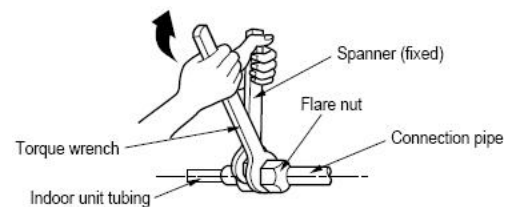
For the special installation of the back pipe, drill 2 standard wall holes (diameter 2½ inch / 63mm) side by side (width 4½ inch / 105mm) as shown in the following figure.



Note: The shape of the mounting plate may be different from the one above, but the installation method is similar.

2.6.2 Drill a Hole in the Wall for the Piping

- 1) Decide where to drill the hole in the wall for the piping (if necessary) according to the position of the mounting plate.
- 2) Install a flexible flange through the hole in the wall to keep the latter intact and clean.

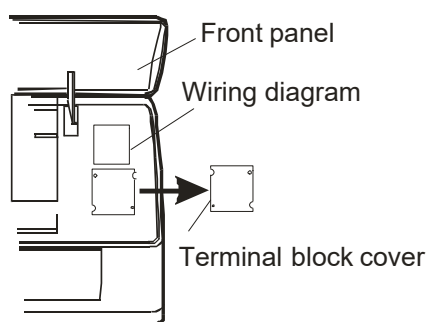


The hole must slope downwards towards the exterior.

Note: Keep the drain pipe down towards the direction of the wall hole, otherwise leakage may occur.

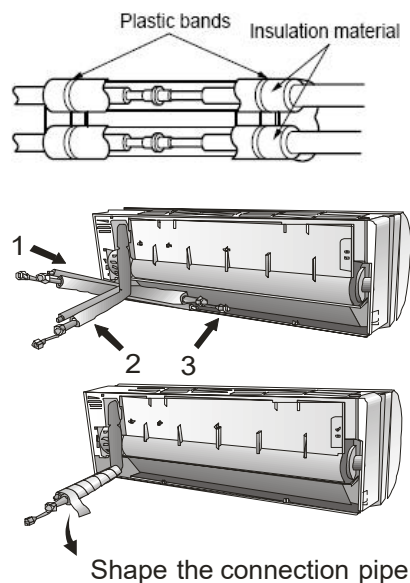
2.6.3 Electrical Connections --- Indoor unit

- 1) Lift the front panel.
- 2) Take off the cover, as indicated in the picture, by removing a screw or breaking the hooks.
- 3) For the electrical connections, see the circuit diagram on the right part of the unit under the front panel.
- 4) Connect the cable wires to the screw terminals by following the numbering. Use a wire size suitable to the electric power input (see the nameplate on the unit) and according to all current national safety code requirements.
- 5) The cable connecting the outdoor and indoor units must be suitable for outdoor use.
- 6) The plug must be accessible after the appliance has been installed so that it can be pulled out if necessary.
- 7) Ensure an efficient ground connection.
- 8) If the power cable is damaged, it must be replaced by an authorized Service Centre.



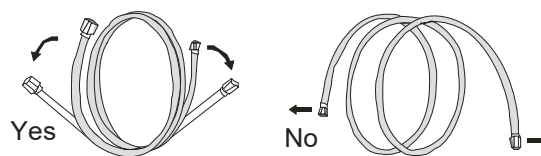
★ Refrigerant Piping Connection

The piping can be run in 3 directions, which is indicated by numbers in the picture. When the piping is run in direction 1 or 3, cut a notch along the groove on the side of the indoor unit with a cutter. Run the piping in the direction of the wall hole. Then bind the copper pipes, drain pipe, and the power cables together with the tape. The drain pipe must be at the bottom, so water can flow freely.



2.6.4 Connect the Pipes

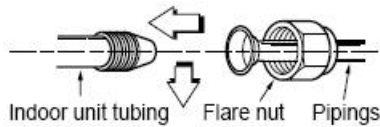
- Do not remove the cap from the pipe until connecting it, to avoid dampness or dirt from entering.
- If the pipe is bent or pulled too often, it will become stiff. Do not bend the pipe more than 3 times at one point.
- When extending the rolled pipe, straighten the pipe by unwinding it gently as shown in the picture.



Extending the rolled pipe

2.6.5 Connections to the Indoor Unit

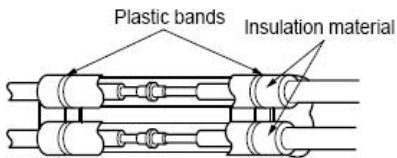
- 1) Remove the indoor unit pipe cap. Confirm there is no debris inside.
- 2) Insert the flare nut and create a flare at the extreme end of the connection pipe.



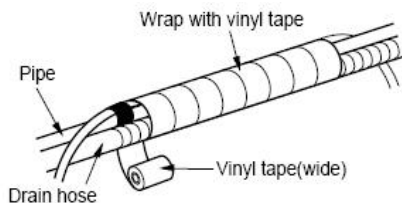
- 3) Tighten the connections by using 2 wrenches working in opposite directions.
- 4) When extending the drain hose at the indoor unit, install the drain pipe.

Wrap the Insulation Material around the Connecting Portion

- 1) Overlap the connection pipe insulation material and indoor unit pipe insulation material. Bind them together with vinyl tape so that there is no gap.



- 2) Wrap the area that accommodates the rear piping housing section with vinyl tape.
- 3) Bundle the piping and drain hose together by wrapping them with vinyl tape. Ensure the tape covers the entire range within which they fit into the rear piping housing section.



2.6.6 Indoor Unit Condensed Water Drainage

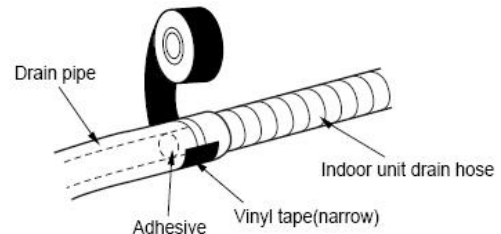
The indoor unit condensed water drainage is fundamental for the success of the installation.

- 1) Place the drain hose below the piping, taking care not to create siphons.

- 2) The drain hose must slant downwards to aid drainage.

- 3) Do not bend the drain hose or leave it protruding or twisted. In addition, do not put the end of the drain hose in water. If an extension is connected to the drain hose, ensure that it is lagged when it passes into the indoor unit.

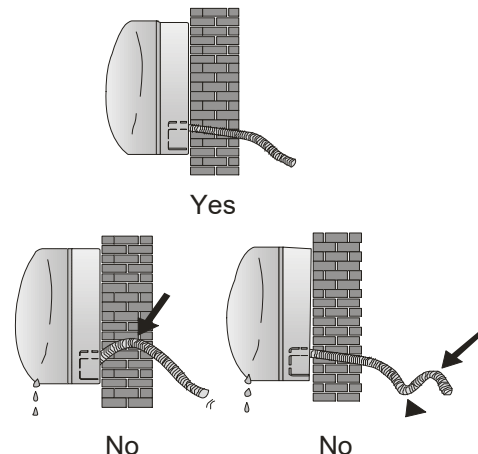
- 4) If the piping is installed to the right, the pipes, power cable, and drain hose must be lagged and secured onto the rear of the unit with a pipe connection.



- 5) Insert the pipe connection into the relative slot.

Capacity (Btu/h)	Pipe Size (Torque)	
	Gas	Liquid
7/9/12K	3/8" (4.2kg.m/30.3 8ibf.ft)	1/4" (1.8kg.m/13.02 ibf.ft)
18K	1/2" (5.5kg.m/39.7 8ibf.ft)	1/4" (1.8kg.m/13.02 ibf.ft)
24K	5/8" (6.6kg.m/47.74 ibf.ft)	3/8" (4.2kg.m/30.38 ibf.ft)

- 6) Press to join the pipe connection to the base.



2.6.7 Connect the Fresh Air pipe

1) Select the appropriate piping mode according to the wall hole position.

Mode 1: (Left) Together with the refrigerant piping, drainage pipe, and connecting cables.

Mode 2: (Right) Together with the refrigerant piping, drainage pipe, and connecting cables.

Mode 3: (Back) Together with the refrigerant piping, drainage pipe, and connecting cables.

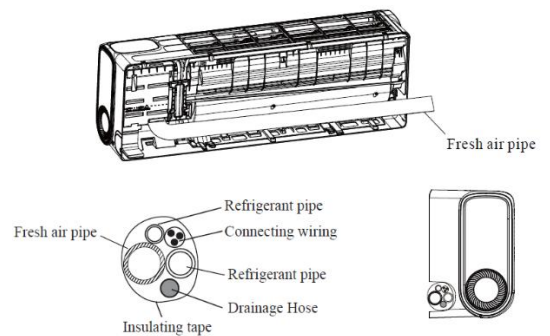
2.6.8 Wrap Piping and Cable

After the refrigerant pipes, connecting wires, and drainage hose are installed, bundle them together with insulating tape before passing them through the wall hole. This will save space, as well as protect and insulate the piping and cables.

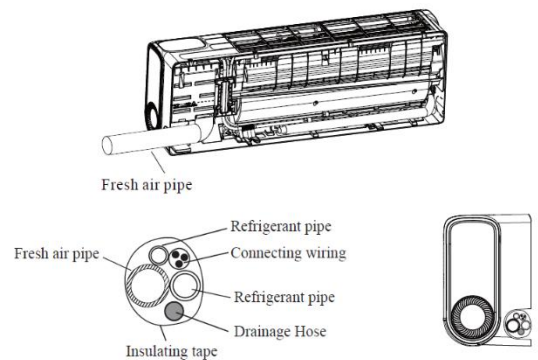
1) Arrange the pipes, cables, and drainage hose as shown in the following photos.

Note: Avoid crossing and bending the parts.

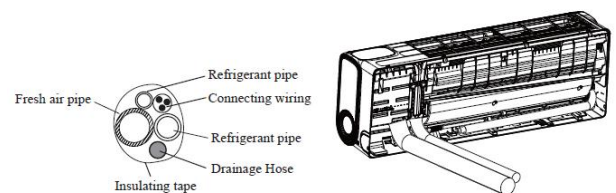
Mode 1:



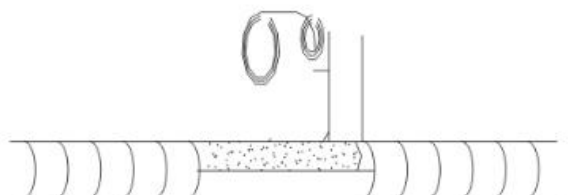
Mode 2:



Mode 3:



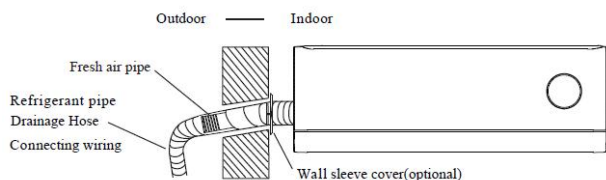
2) Use the insulation tape to tightly wrap the fresh air pipes, refrigerant pipes, connecting wires, and drainage hose together.



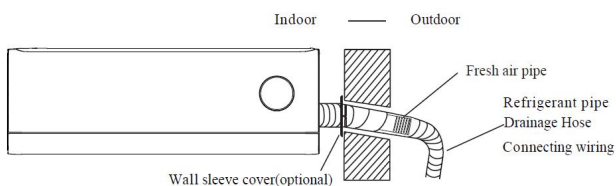
2.6.9 Mount Indoor Unit

- 1) Slowly pass the refrigerant pipes, connecting wires, and drainage hose wrapped in a bundle through the wall hole.
- 2) Hook the top of the indoor unit to the mounting plate. Slightly apply pressure to the left and right sides of the indoor unit, ensuring the indoor unit is firmly hooked.
- 3) Push the bottom of the indoor unit down to snap it to the hooks of the mounting plate. This will ensure it is firmly hooked.

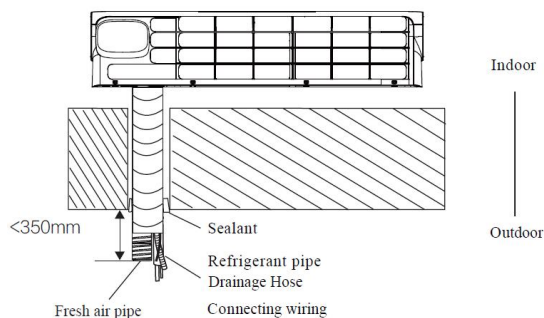
Mode 1:



Mode 2:



Mode 3:



Notes:

- 1) The distance between the fresh air inlet and the wall should not exceed 13³/₄ inch (350mm).
- 2) Ensure the fresh air pipe assembly can rotate at an appropriate angle according to the position of the outdoor unit, so that the connecting pipe does not block the fresh air inlet.
- 3) Slightly incline the fresh air pipe downward and ensure there is no rising section to prevent rain water from entering the room.
- 4) If bending the fresh air pipe is necessary, the minimum radius of the fresh air pipe's bend should be greater than 2³/₈ inch (60mm), otherwise it may affect the fresh air effect.
- 5) Do not place the fresh air inlet in the air outlet of the outdoor unit, a closed space, or in an area with bad air.

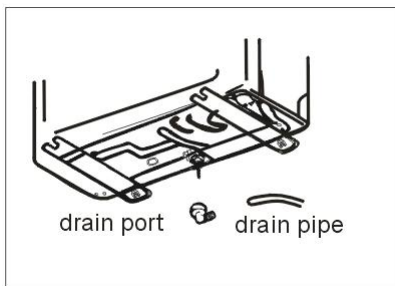
2.7 ODU Installation

- Install the outdoor unit on a solid wall and fasten the unit securely.
- Before connecting the pipes and cables, select the position on the wall and leave enough space for maintenance.
- Fasten the support to the wall using screw anchors, which are particularly suited for the type of wall.
- To avoid vibration during operation, use a larger quantity of screw anchors than normally required. Keep the anchors fastened in the same position for years without the screws becoming loose.
- The unit must be installed following the national regulations.

Outdoor Unit Condensed Water Drainage (Only for Heat Pump Models)

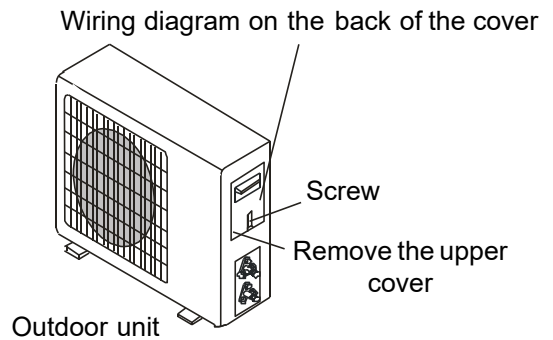
The condensed water and the ice formed in the outdoor unit during heating operation can be drained away through the drain pipe.

- 1) Fasten the drain port in the 1 inch (25mm) hole placed in the part of the unit as shown in the picture.
- 2) Connect the drain port and the drain pipe. Ensure the water is draining in a suitable place.



Electronic Connections

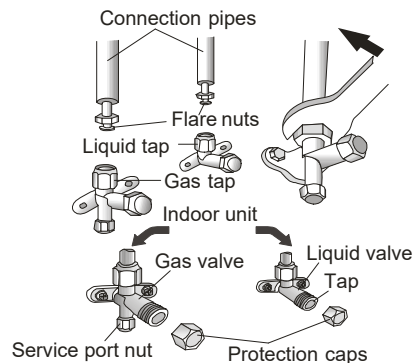
- 1) Take the cover away.
- 2) Connect the cable wires to the terminal board using the same numbering as in the indoor unit.
- 3) For the electrical connections, see the wiring diagram on the back of the cover.
- 4) Fasten the cables with a cable-clamp.
- 5) An efficient ground connection must be ensured.
- 6) Replace the covers.



Connecting the Pipe

Screw the flare nuts to the outdoor unit coupling with the same tightening procedures described for the indoor unit.

Note: If the tightening torque is not sufficient, there will probably be some leakage. With excessive tightening torque there will also be some leakage, as the flange could be damaged.



2.8 Vacuum and Gas Leakage Test

(1). Use Vacuum Pump

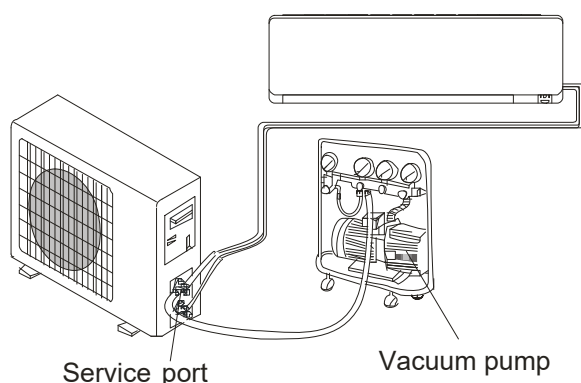
1) After connecting the indoor and outdoor units, bleed the air and humidity from the refrigerant circuit by using a vacuum pump. Air and humidity left inside the refrigerant circuit can cause compressor malfunctions.

2) Open the piezometer and conduct the operation for 10-15 min to check if the piezometer's pressure remains in -0.1Mpa.

3) Close the vacuum pump and maintain this status for 1-2 min to check if the pressure of piezometer remains in -0.1Mpa. If the pressure decreases, there may be leakage.

4) Remove the piezometer, open the valve core of liquid valve and gas valve completely.

5) Tighten the screw caps of the valve and refrigerant charging vent.



(2). Leakage Detection

1) Check if there is leakage with leakage detection.

2) If leakage detection is not available, use soap water for leakage detection. Apply soap water at the suspected position and keep the soap water there for more than 3 min. If there are air bubbles coming out of this position, there's a leakage.

2.9 Final Test

(1). Preparation of Test Operation

- The client approves the air conditioner installation.
- Specify the important notes for air conditioner to the client.

(2). Method of Test Operation

1) Press the On/Off button on the remote controller to start the operation.

2) Press the Mode button, then select either Auto, Cool, Dry, Fan, and Heat to check whether the operation is normal. If the ambient temperature is lower than 61°F(16°C), the air conditioner can't start cooling.

3. Maintenance

3.1 Failure Code

Code	Reason	Remark
E0	IDU and ODU communication failure	Is the IDU and 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
E5	IDU/ODU mismatched failure (Specific performance test on the production line)	/
E6	IDU PG fan motor / DC fan motor operating 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	Is the ODU PCB broken?
Eb	Abnormal communication between the main PCB and display board (IDU failure)	Display board and main PCB
EE	ODU EEPROM failure	1. Is the ODU PCB broken? 2. Try to re-power On the AC unit.
EF	ODU DC fan motor failure	Fan motor and 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? 2. Power supply abnormal?
P2	Over-current protection.	1. ODU PCB broken? 2. Power supply abnormal?
P4	ODU discharge pipe over-temperature protection	Check the troubleshooting for details
P5	Sub-cooling protection in Cooling mode	Check the troubleshooting for details
P6	Overheating protection in Cooling mode	Check the troubleshooting for details
P7	Overheating protection in Heating mode	Check the troubleshooting for details
P8	Outdoor over-temperature / under-temperature protection	Check the troubleshooting for details
P9	Compressor driving protection (Load abnormal)	Check the troubleshooting for details
PA	Communication failure for Top flow unit / Preset mode conflict (IDU failure)	Check the troubleshooting for details
F0	Infrared customer feeling test sensor failure (IDU failure)	Query by pressing the remote controller
F1	Electric power test module failure (IDU failure)	Query by pressing the remote controller
F2	Discharge temperature sensor failure protection	Check the troubleshooting for details
F3	ODU coil temperature failure protection	Check the troubleshooting for details
F4	Cooling system gas flow abnormal protection	Check the troubleshooting for details

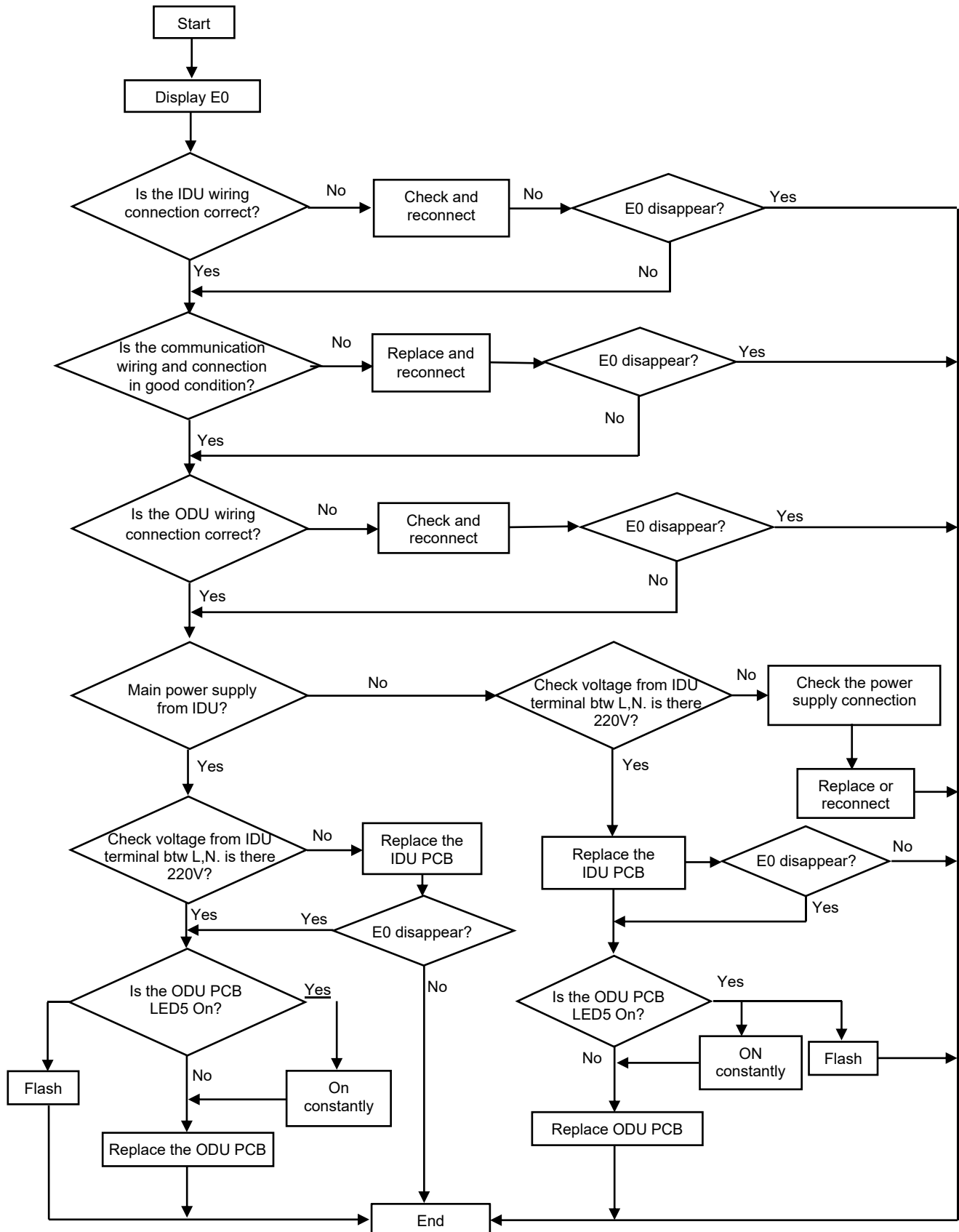
F5	PFC protection	Check the troubleshooting for details
F6	Compressor lack of phase / Anti-phase protection	Check the troubleshooting for details
F7	IPM module temperature protection	Check the troubleshooting for details
F8	4-way valve reversing abnormal	Check the troubleshooting for details
F9	Module temperature test circuit failure	ODU PCB
FA	Compressor phase-current test circuit failure	ODU PCB
Fb	Limiting/Reducing frequency for overload protection in Cooling/Heating mode	Query by pressing the remote controller
FC	Limiting/Reducing frequency for high-power consumption protection	Query by pressing the remote controller
FE	Limiting/Reducing frequency for module current protection (phase current of compressor)	Query by pressing the remote controller
FF	Limiting/Reducing frequency for module temperature protection	Query by pressing the remote controller
FH	Limiting/Reducing frequency for compressor driving protection.	Query by pressing the remote controller
FP	Limiting/Reducing frequency for anti-condensation protection	Query by pressing the remote controller
FU	Limiting/Reducing frequency for anti-frost protection	Query by pressing the remote controller
Fj	Limiting/Reducing frequency for discharge over-temperature protection	Query by pressing the remote controller
Fn	Limiting/Reducing frequency for ODU AC-current protection	Query by pressing the remote controller
Fy	Gas leakage protection	Check the troubleshooting for details
bf	TVOC sensor failure (IDU failure, optional)	Query by pressing the remote controller
bc	PM2.5 sensor failure (IDU failure, optional)	Query by pressing the remote controller
bj	Humidity sensor failure (IDU failure)	Query by pressing the remote controller
bd	Fresh air motor failure	Fresh motor, fan blade, and PCB

Note: Remote Controller Failure Code Querying Function

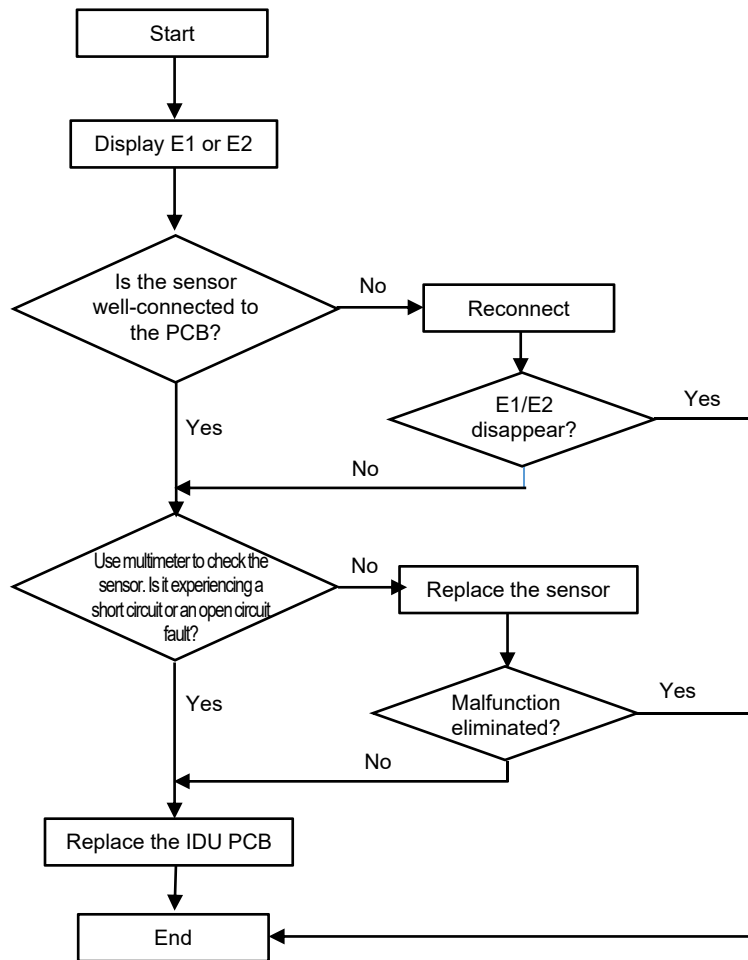
As shown in the table above, some of the codes (Fb~bj) need you to press the remote control for inspection. To inspect special failures codes (Fb~Fn, bj, etc), press the Eco button 8 times consecutively in 8s, as well as the buzzer BIBI 2 times.

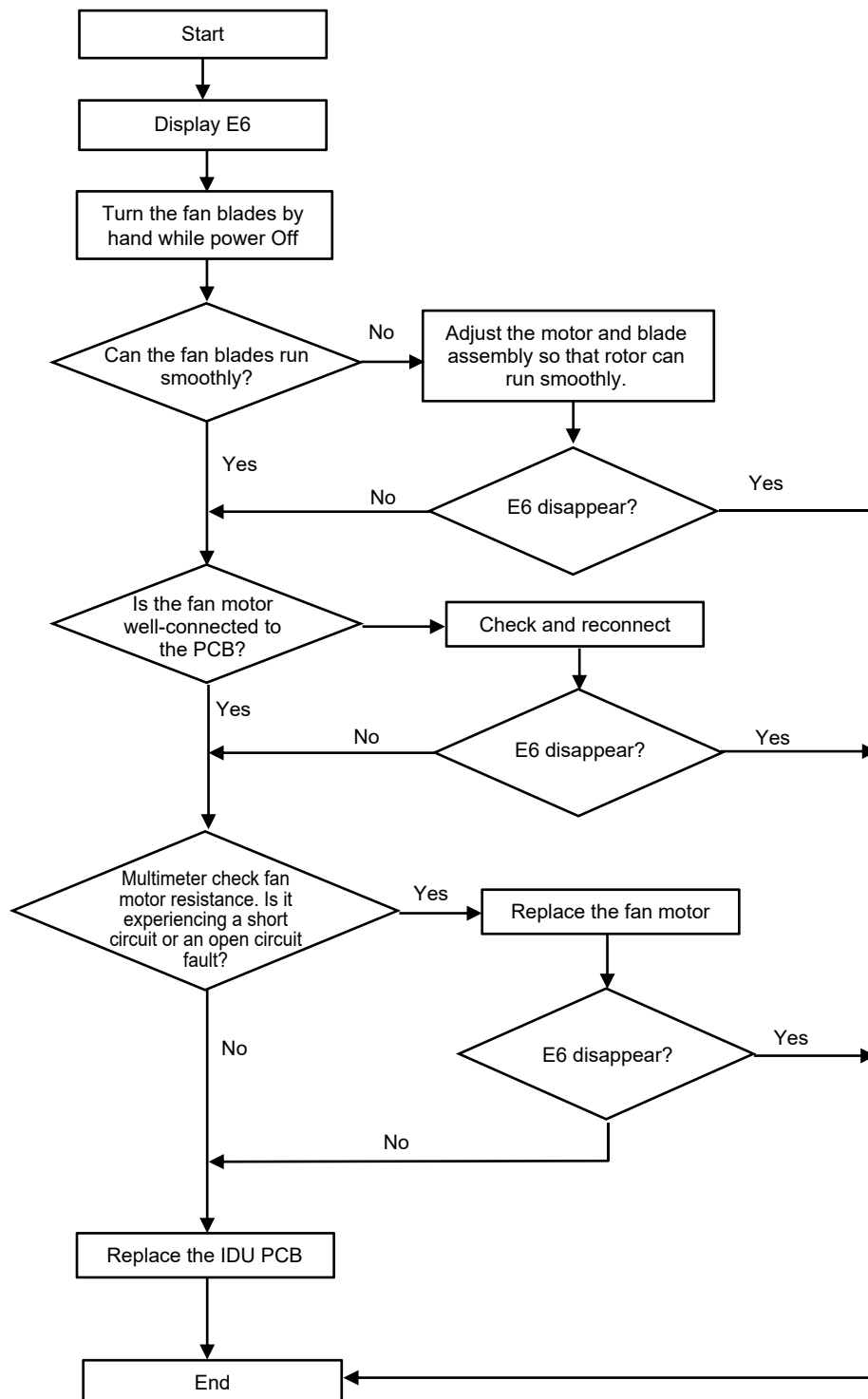
3.2 Troubleshooting

1) E0 --- IDU and ODU Communication Failure



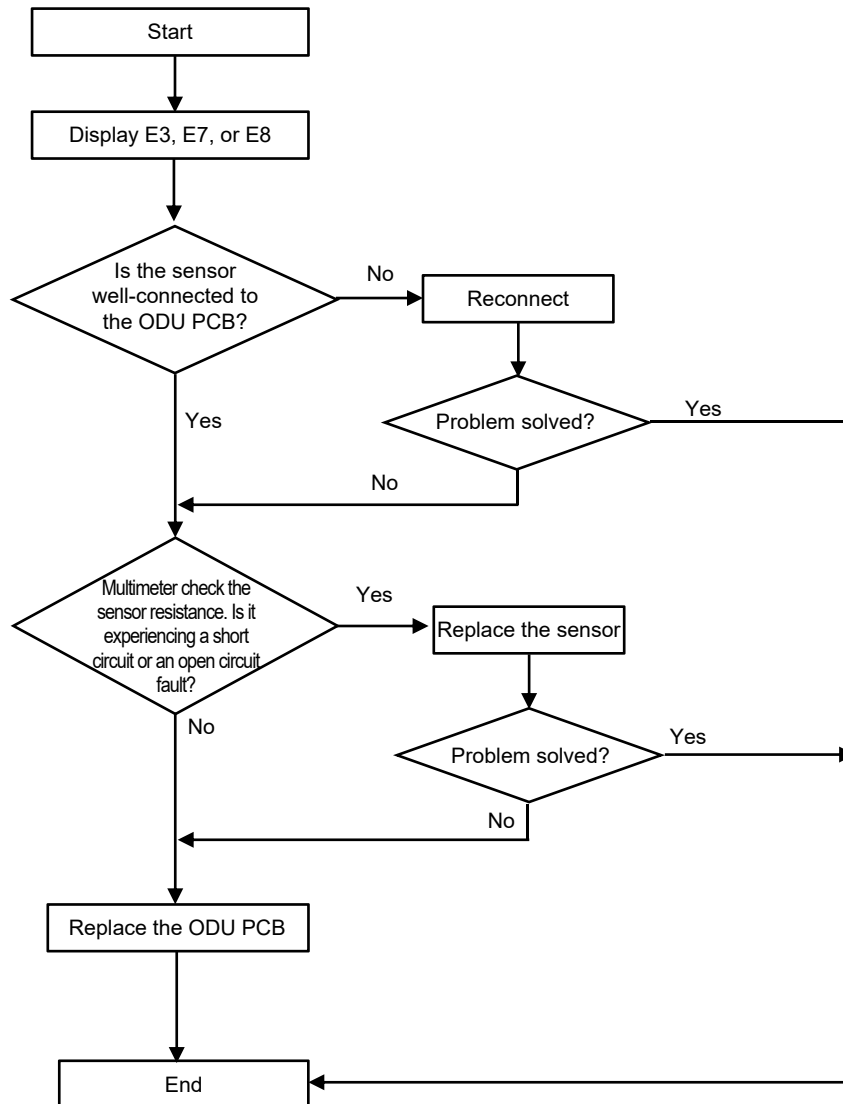
2) E1, E2 --- IDU Room Temperature Sensor Failure and/or Coil Temperature Sensor Failure



3) E6 --- IDU Ventilation Failure (PG and DC Fan Motor Only)

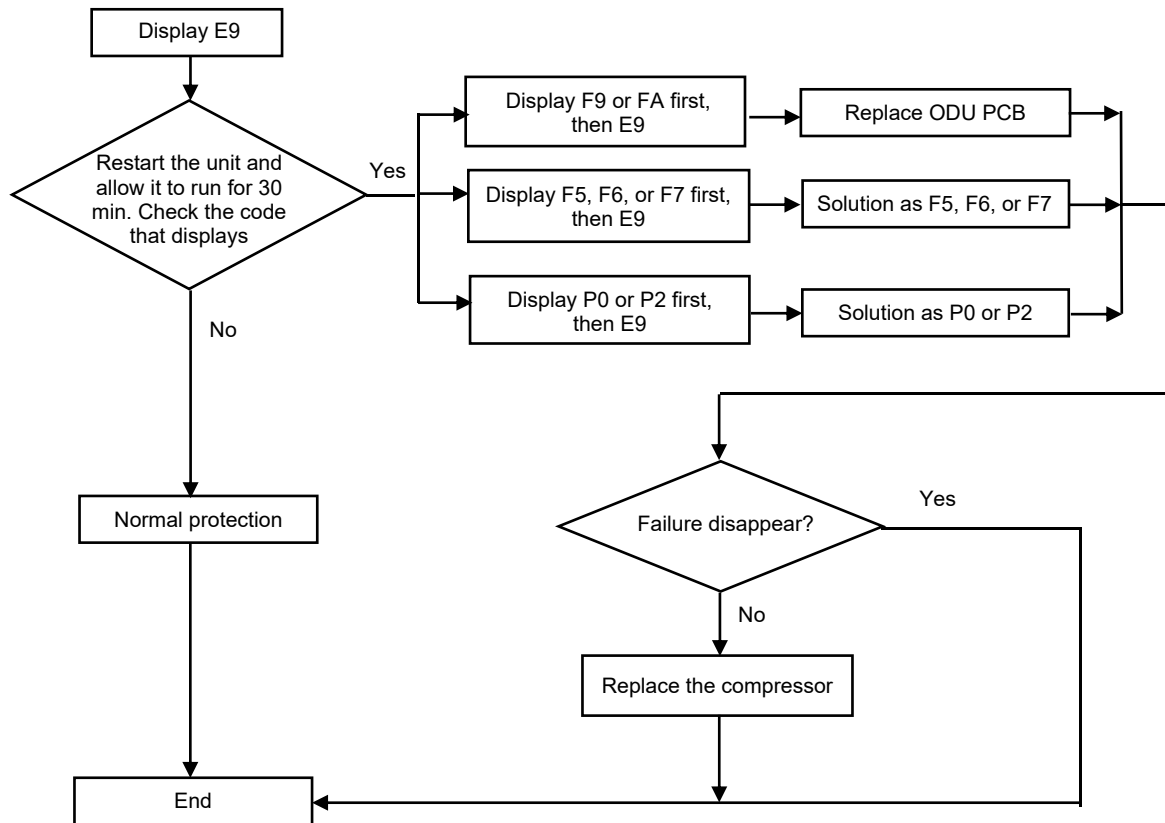
4) E3, E7, or E8 --- ODU Coil Temperature Sensor Failure, Ambient Temperature Sensor Failure, and/or Discharge Temperature Sensor Failure

If any of the sensors resistances experience a short circuit or an open circuit fault, the unit will display error codes as "E3", "E7", or "E8". The IDU and ODU turns Off. When the sensor resistance recovers, the unit reverts to standby. The customer can switch On the unit directly.



5) E9 --- ODU IPM / Compressor Drive Fault

If the unit stops operating for IPM protection 6 times consecutively, it will display the "E9" error code. The unit can't be recovered to operation, except by pressing the On/Off button.



Remark:

1. F9 code

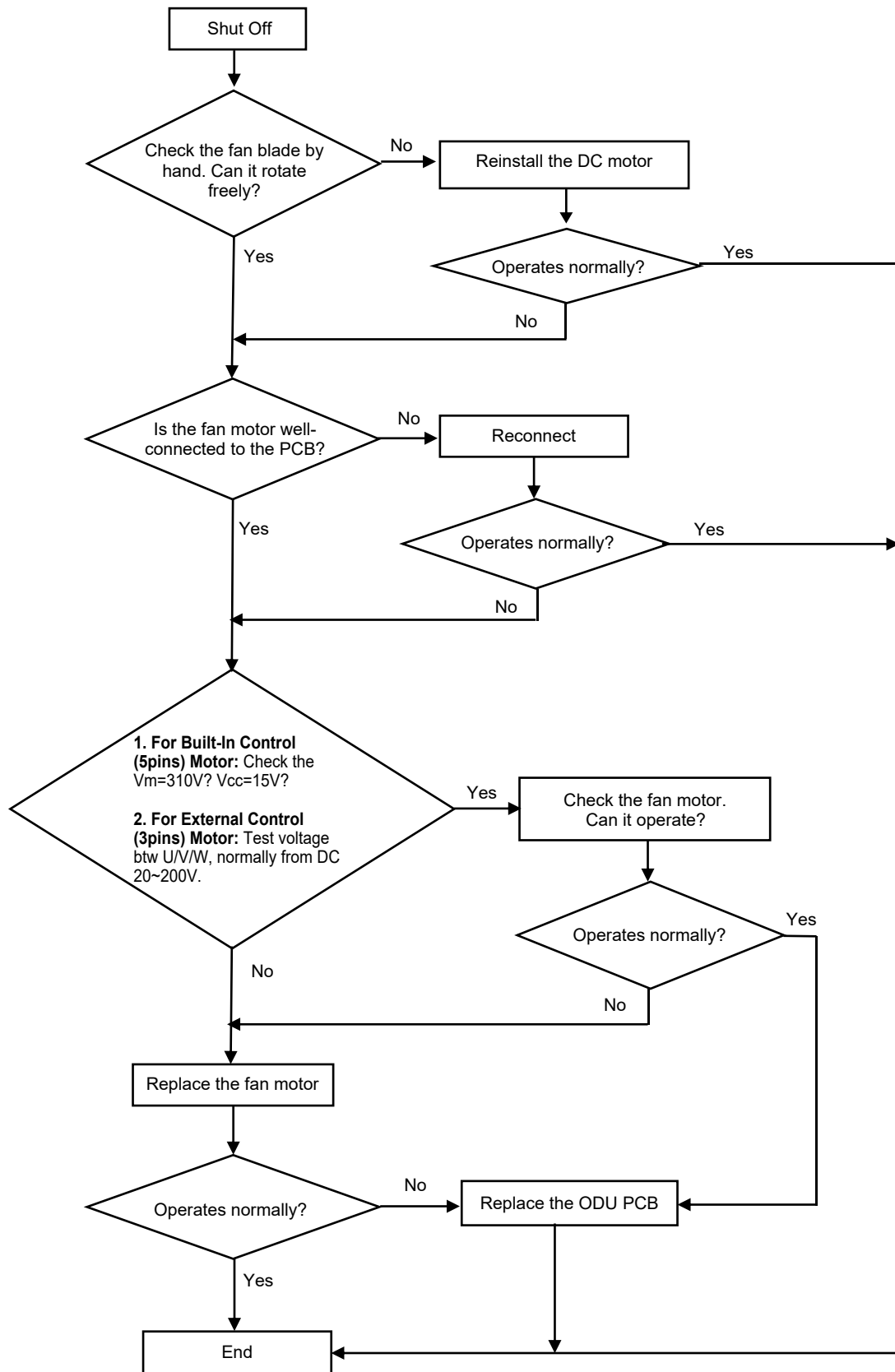
Reason: The IPM module temperature test circuit failure.

Solution: Replace the ODU PCB.

2. FA code

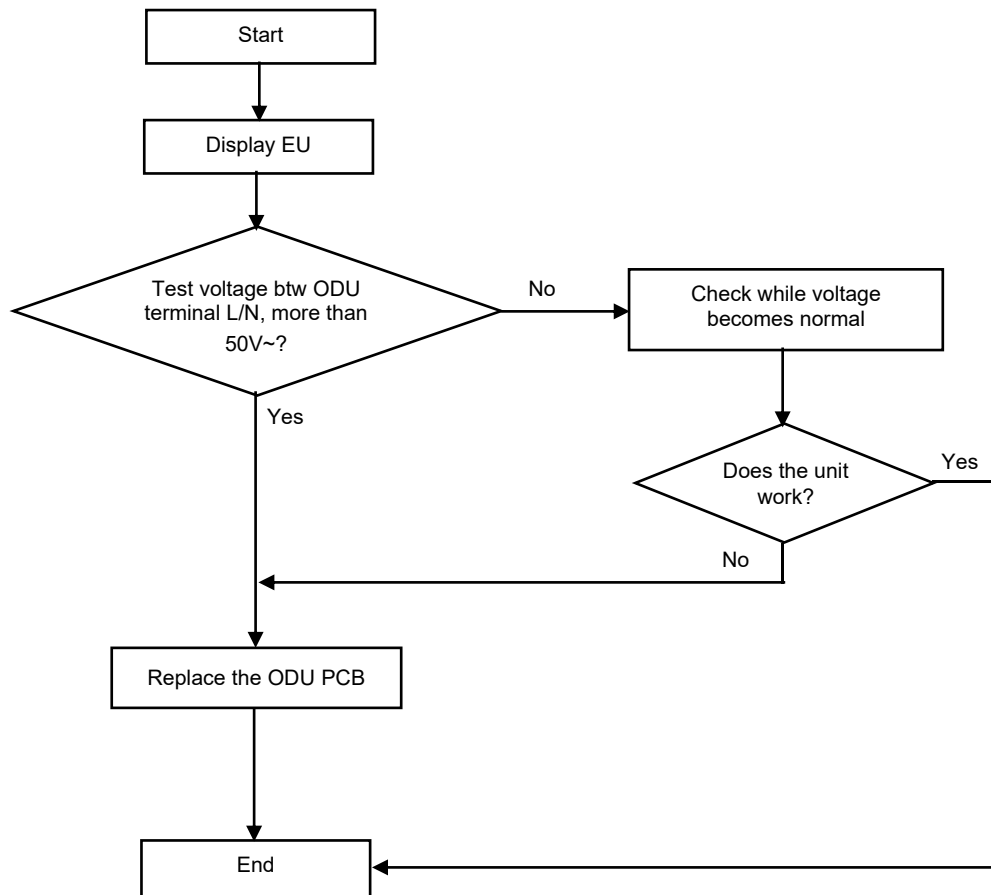
Reason: The compressor phase-current test circuit failure.

Solution: Replace the ODU PCB.

6) EF --- ODU DC Fan Motor Failure

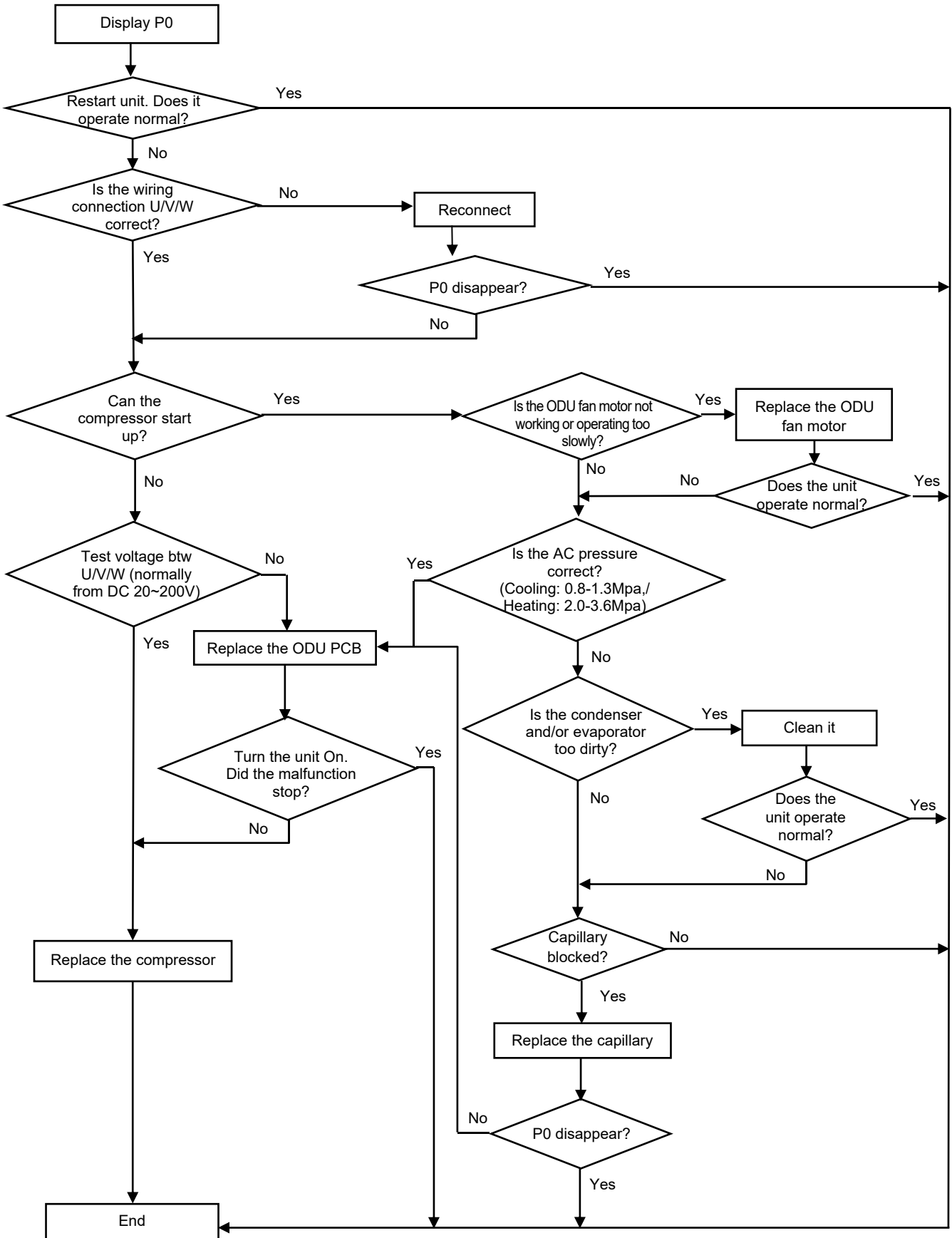
7) EU --- ODU Voltage Test Sensor Failure

After the power relay begins operating, if the tested effective voltage is less than 50V for 3s continuously, the unit will display the “EU” error code.



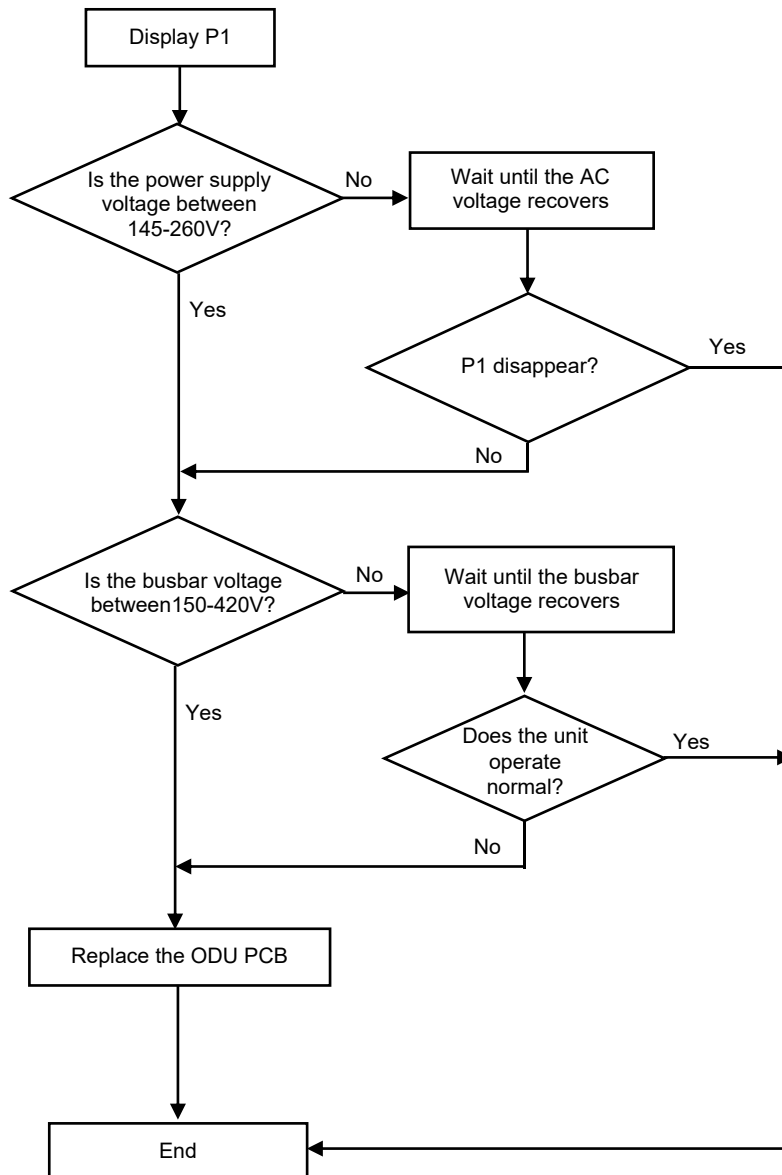
8) P0 --- IPM Protection

If the IPM is experiencing overheating or over-current conditions, the AC unit will display the "P0" error code.



9) P1 --- Over /Under-Voltage Protection

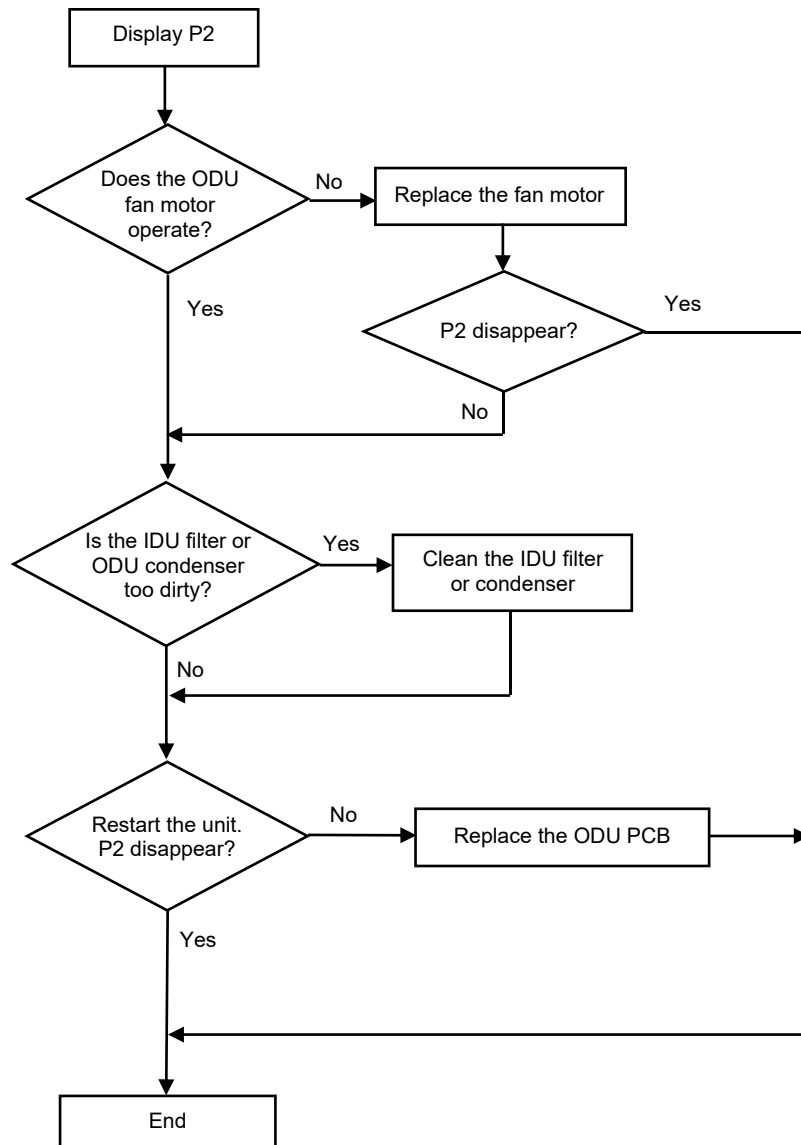
1. Test voltage between L and N. When the power supply $V > AC260V$ or $V < AC150V$, the AC will display the "P1" error code. The unit will recover back to the previous status while $V > AC155V$.
2. Test voltage on the big size electrolytic capacitor of the ODU PCB. When DC busbar voltage $V > DC420V$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



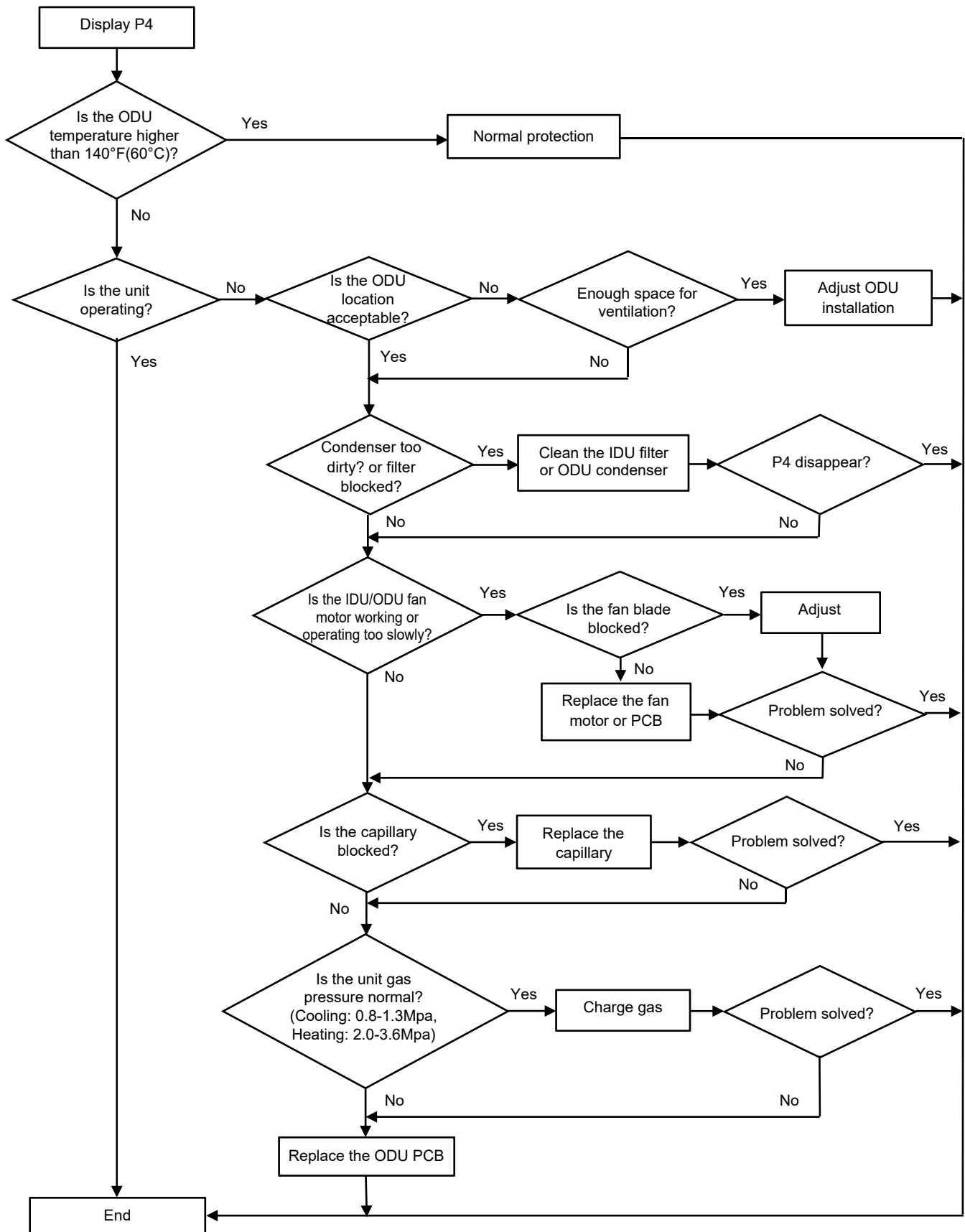
10) P2 --- Over-Current Protection

When the AC unit's running current is more than I_{max} , the unit will stop and display the "P2" error code.

Note: For different AC models, the I_{max} has different values.

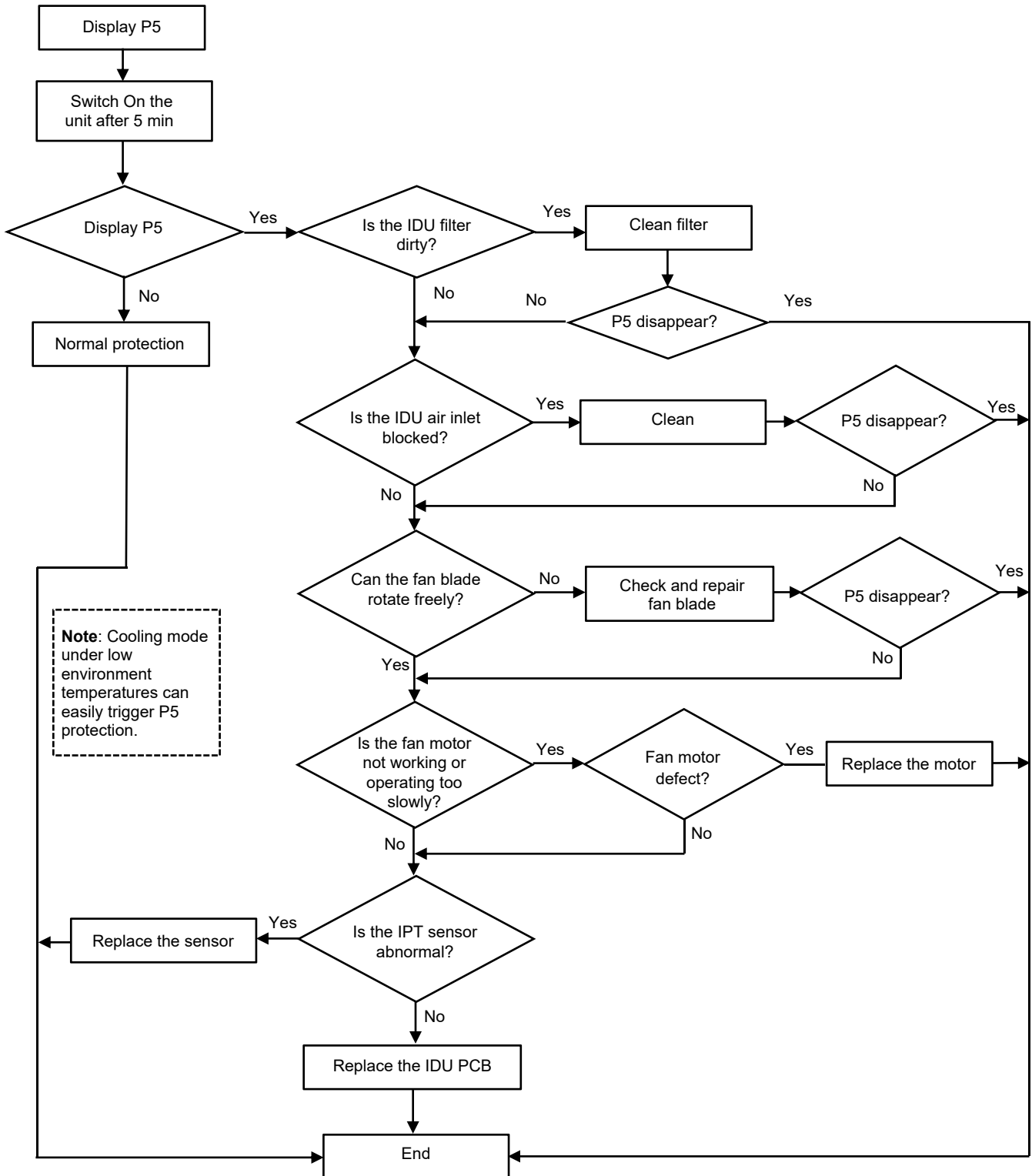


11) P4 --- ODU Discharge Temperature Overheating Protection



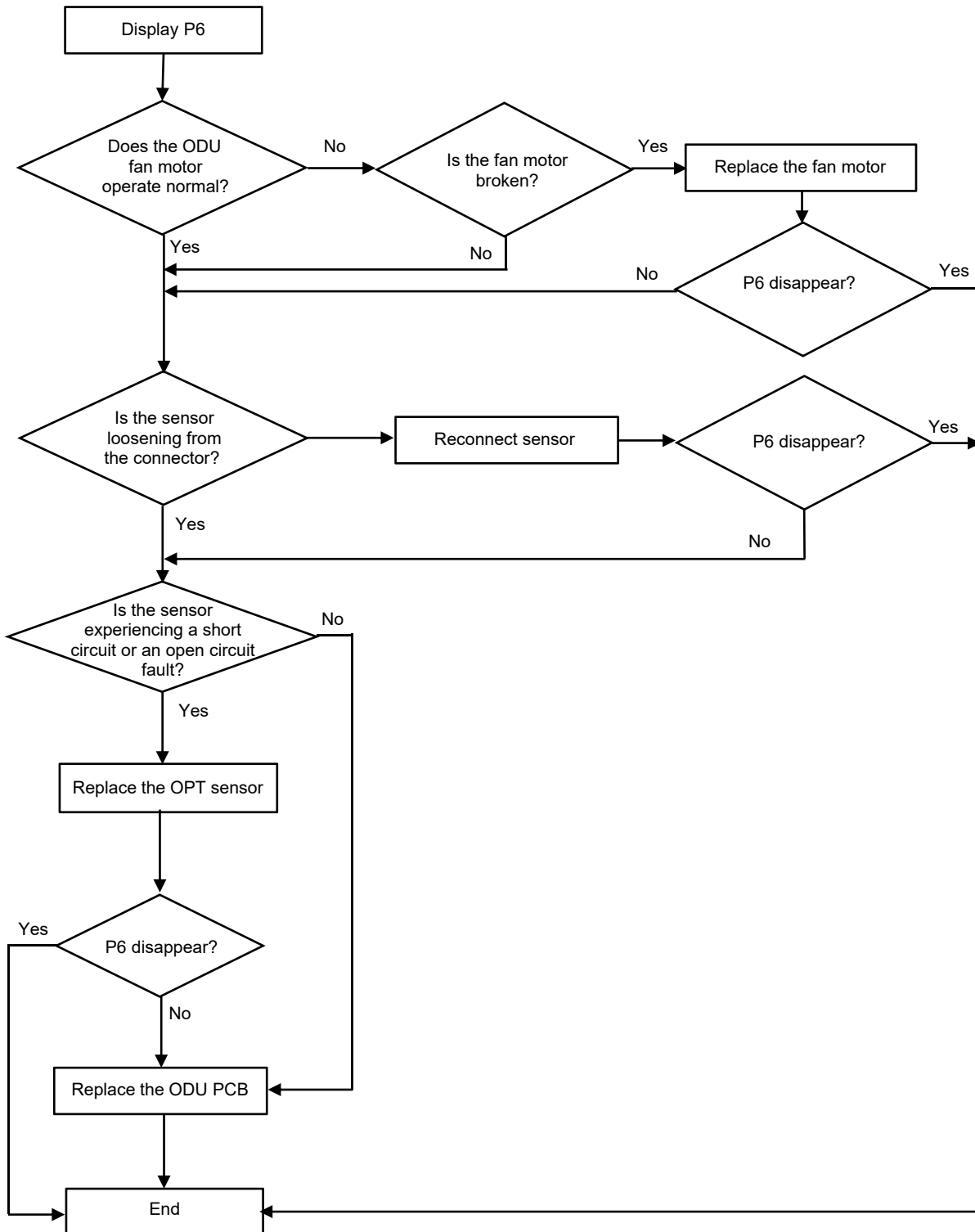
12) P5 --- Sub-Cooling Protection in Cooling/Dry Mode

In Cooling or Dry mode, when the IDU evaporator coil temperature is IPT < 34°F(1°C) continuously for 3 min after the compressor starts up for 6 min, the CPU will switch Off the outdoor unit and display the "P5" error code.



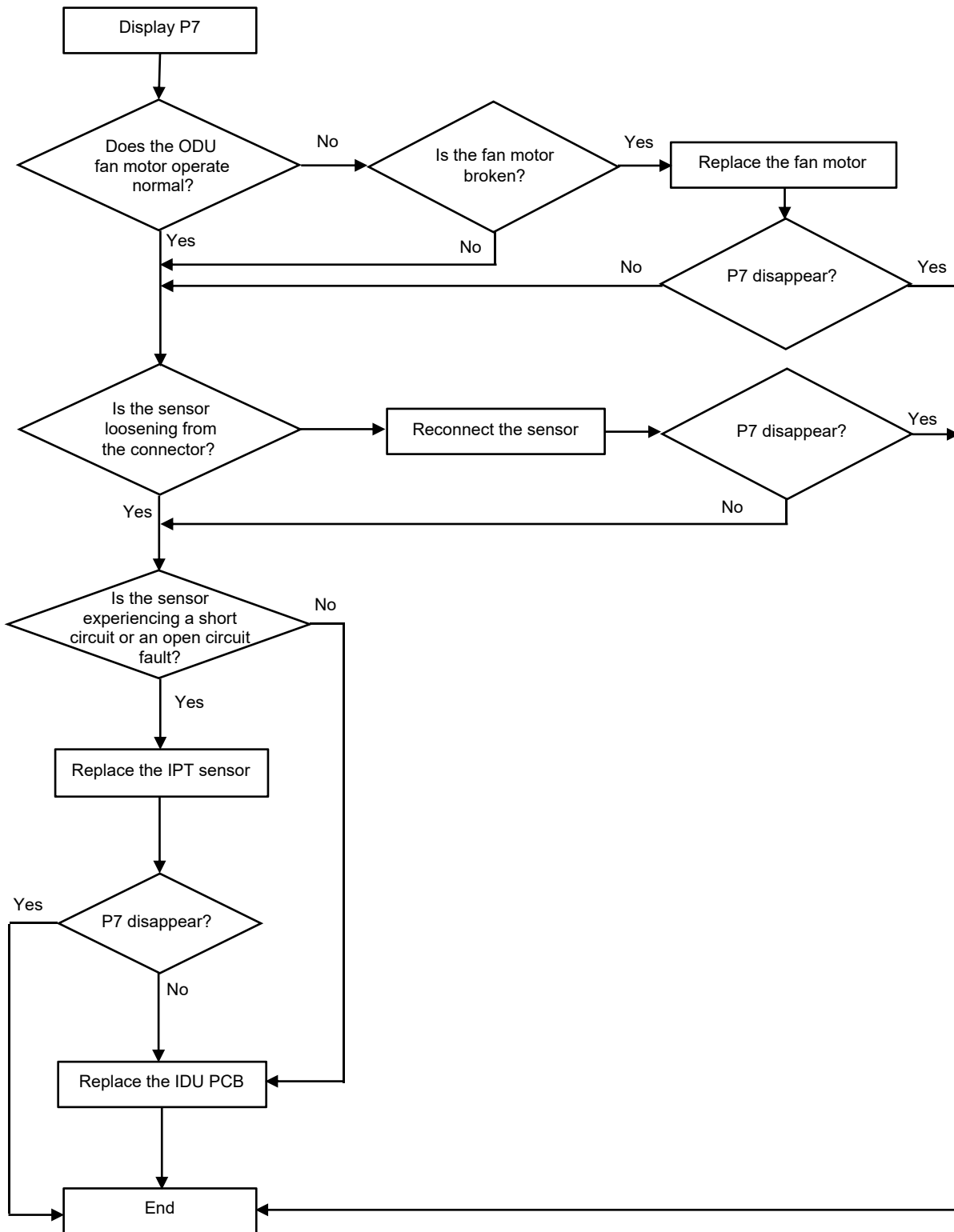
13) P6 --- Overheating Protection in Cooling Mode

In Cooling or Dry mode, when the ODU condenser coil temperature is $OPT \geq 144^{\circ}\text{F}(62^{\circ}\text{C})$, the MCU will switch Off the outdoor unit and display the "P6" error code.



14) P7 --- Overheating Protection in Heating Mode

In Heating mode, when the IDU evaporator coil temperature is $\text{IPT} \geq 144^{\circ}\text{F}(62^{\circ}\text{C})$, the ODU PCB will switch Off the outdoor unit and display the "P7" error code.



15) P8 --- Outdoor Over-Temperature / Under-Temperature Protection

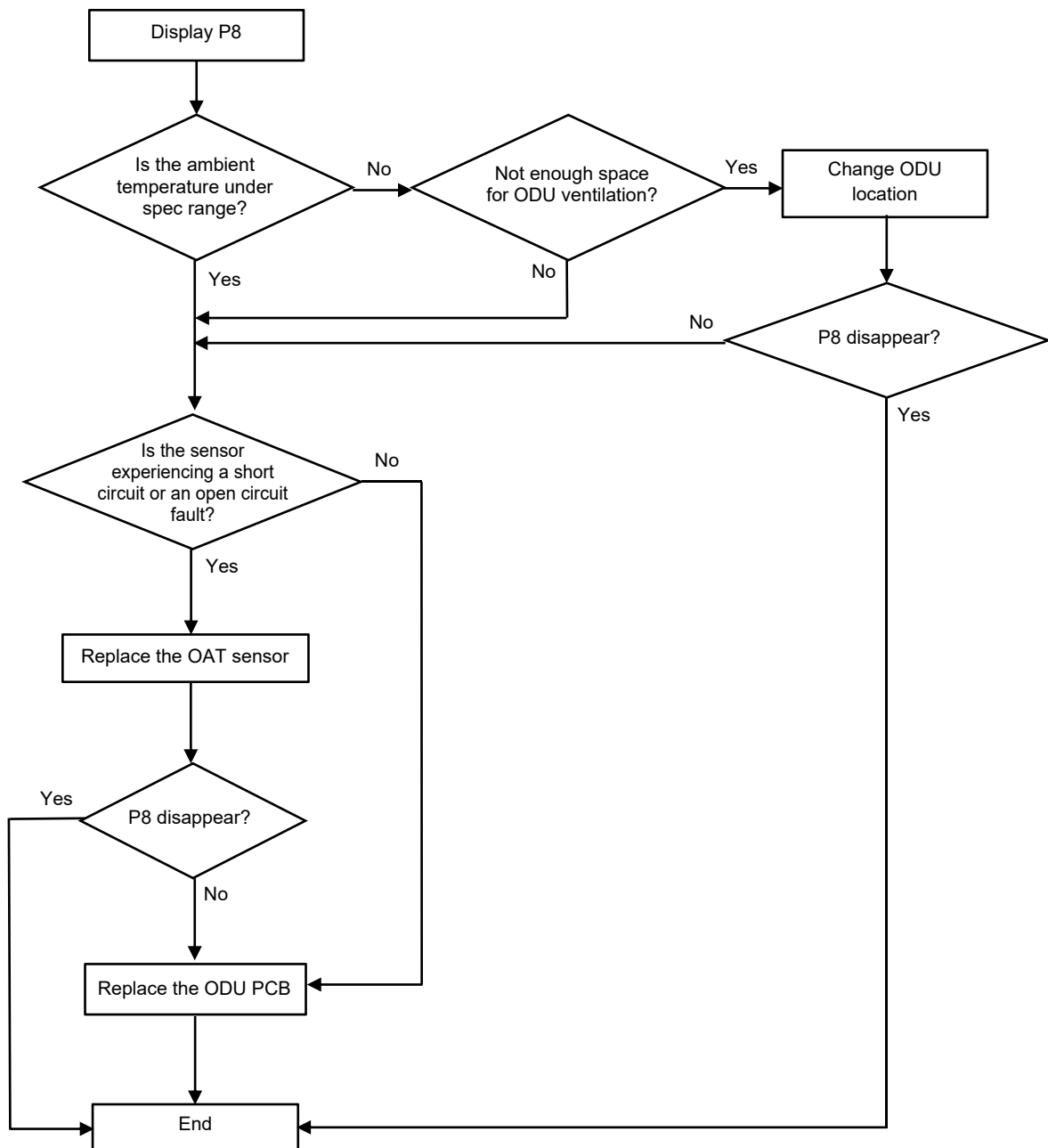
If the system experiences the following environment temperatures, the compressor will stop operating. After a 200s delay, the IDU will display the "P8" error code.

1) **In Cooling or Dry mode:** ODU ambient temperature: $OAT < -4^{\circ}\text{F}(-20^{\circ}\text{C})$ or $OAT > 145^{\circ}\text{F}(63^{\circ}\text{C})$

2) **In Heating mode:**

a. $OAT \geq 104^{\circ}\text{F}(40^{\circ}\text{C})$

b. $86^{\circ}\text{F}(30^{\circ}\text{C}) < OAT \leq 104^{\circ}\text{F}(40^{\circ}\text{C})$ and $RT > 95^{\circ}\text{F}(35^{\circ}\text{C})$



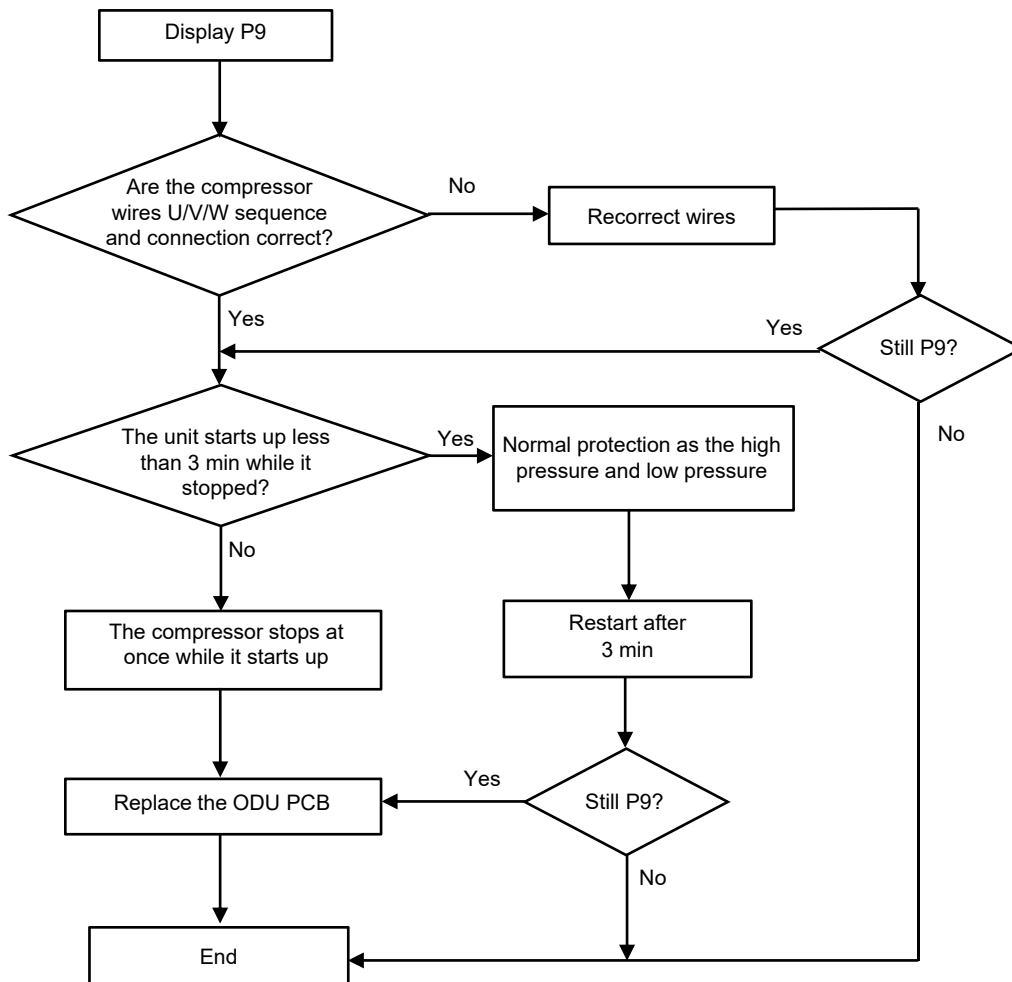
16) P9 --- Compressor Driving Protection (Compressor Load Abnormal)

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

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

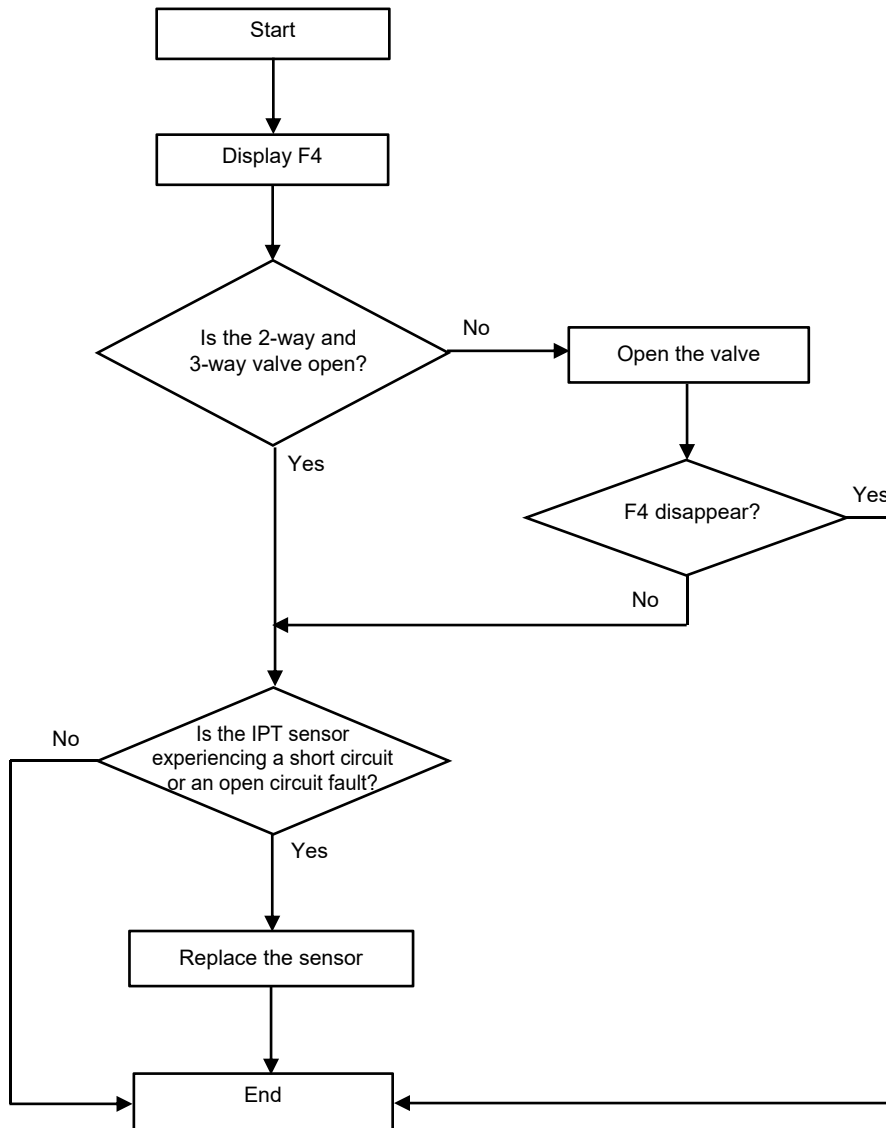
The outdoor unit will shut Off and display the "P9" error code.

The unit will restart 6 times continuously. If it still can't operate normally, the unit will display the error code again.



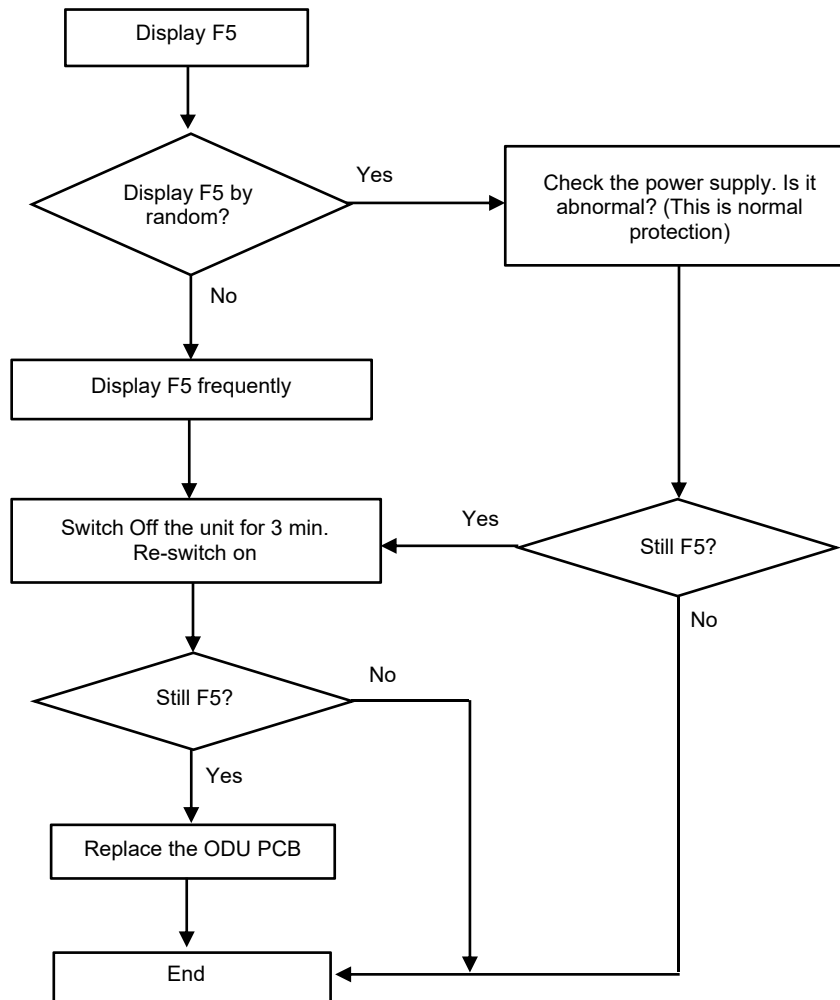
17) F4 --- Cooling System Gas Flow Abnormal Protection

When the compressor starts up, the unit will check the variation of the IDU coil temperature. If the installer forgets to open the 2-way or 3-way valve on the ODU, the gas can't flow in the cooling system. The unit will undergo cooling system gas flow abnormal protection and display the "F4" error code.



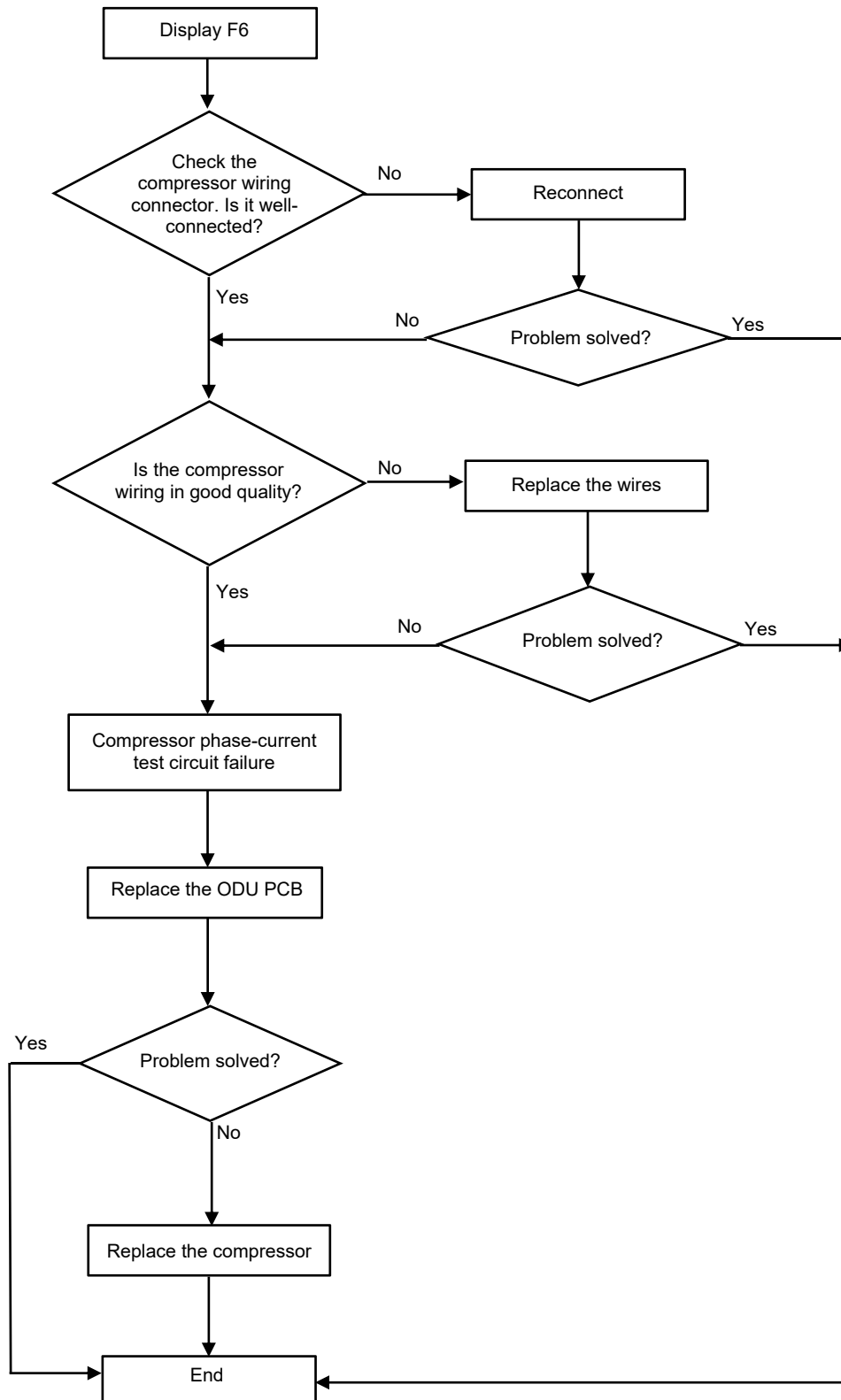
18) F5 --- PFC Protection

If the system undergoes PFC over-current protection, the unit will display the "F5" error code.



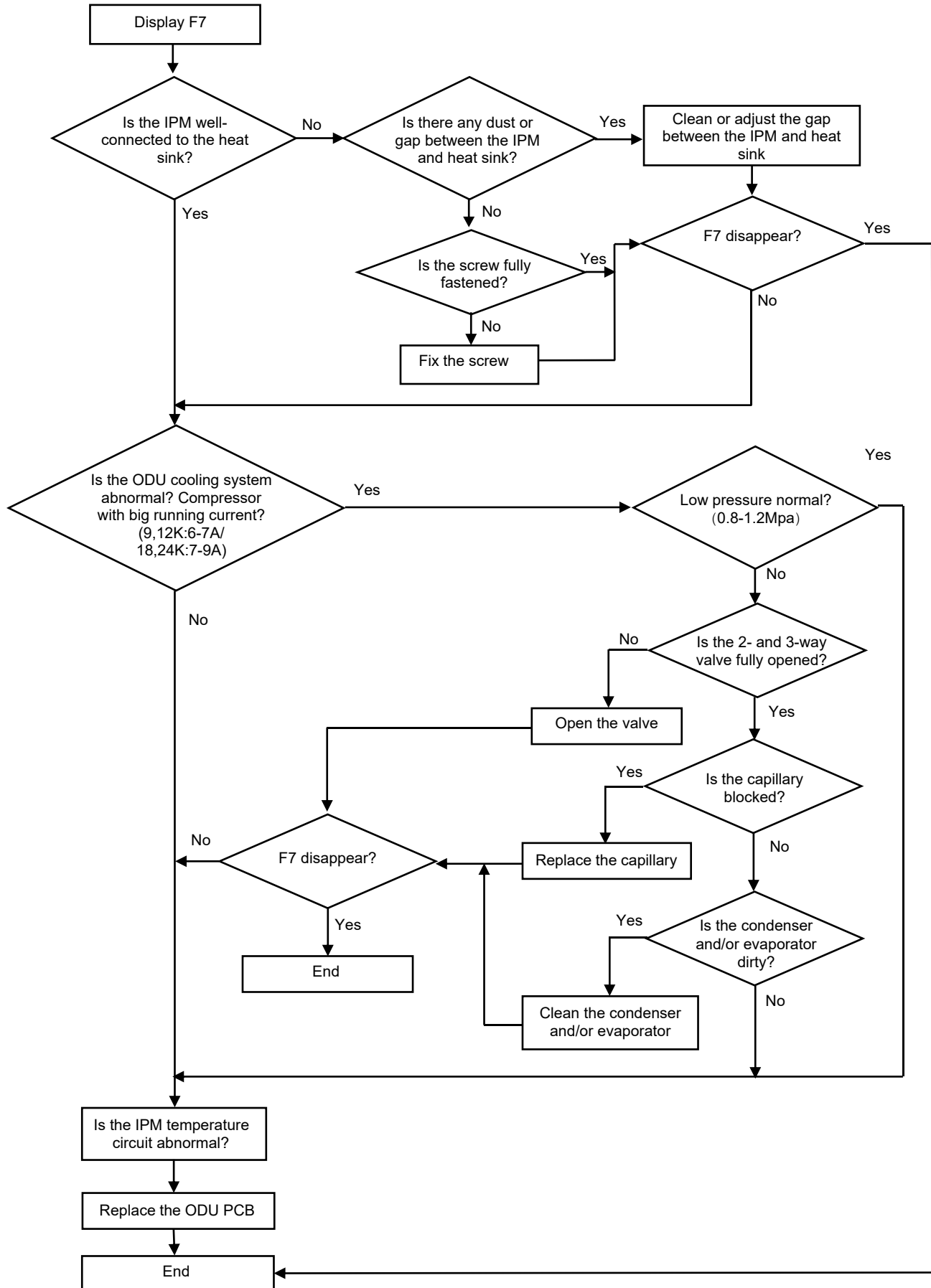
19) F6 --- Compressor Lack of Phase / Anti-Phase Protection

If the ODU PCB can't test one or even three phases of the compressor's current, the unit will undergo anti-phase protection and display the "F6" error code.



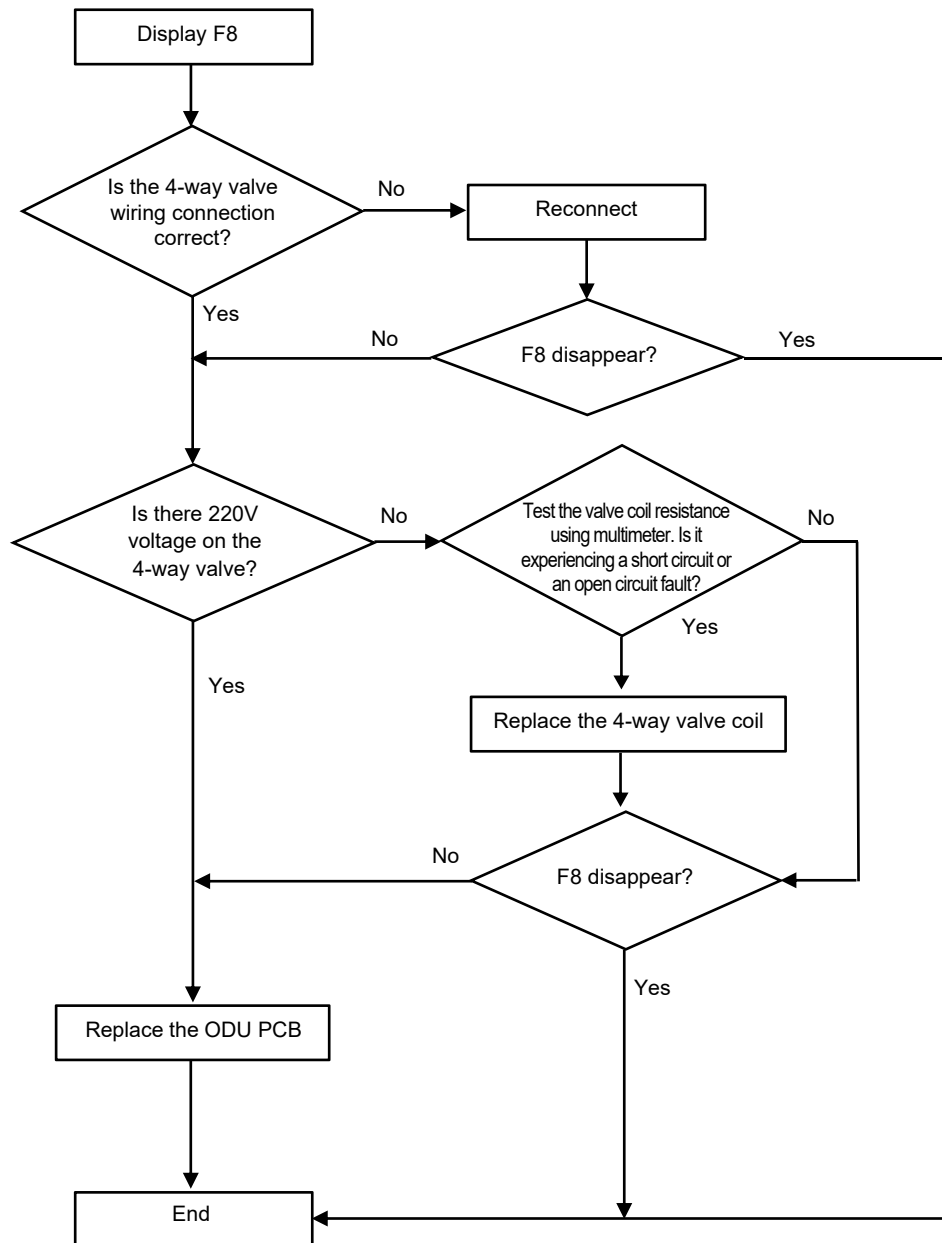
20) F7 --- Module Temperature Protection

If the IPM temperature is more than 203°F(95°C), the system will undergo IPM over-temperature protection and display the “F7” error code.



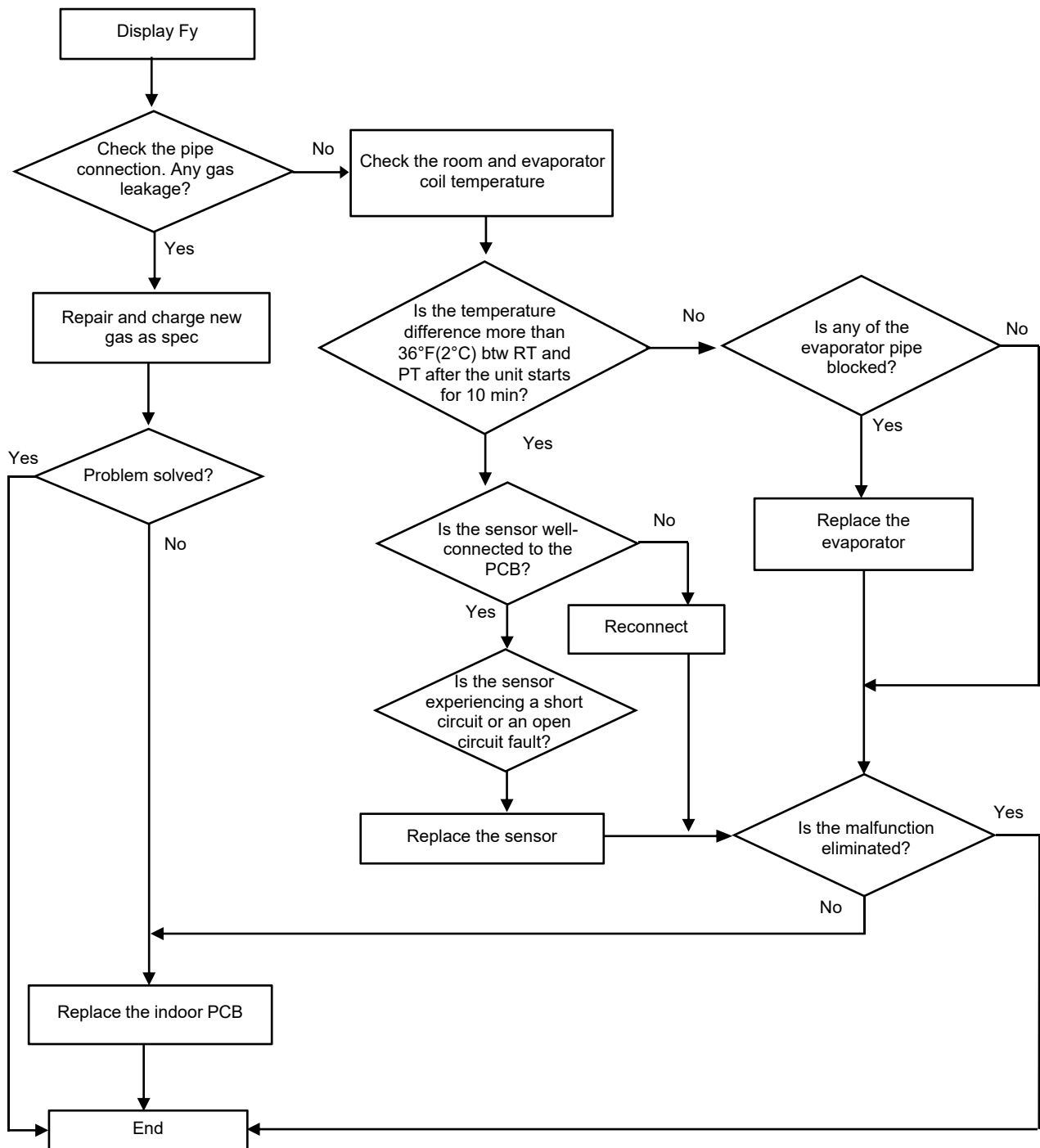
21) F8 --- 4-Way Value Reversing Abnormal

In Heating mode, if the IDU coil temperature is measured at 41°F/5°C (room temperature) or lower after the compressor operates for 8 min, the unit will display the "F8" error code.



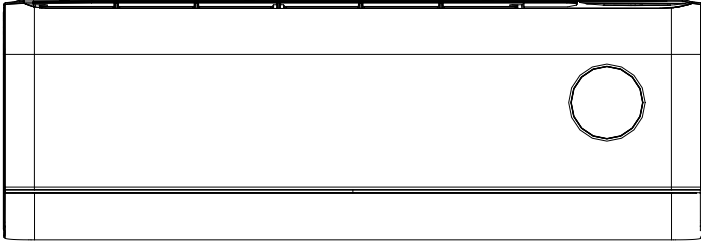
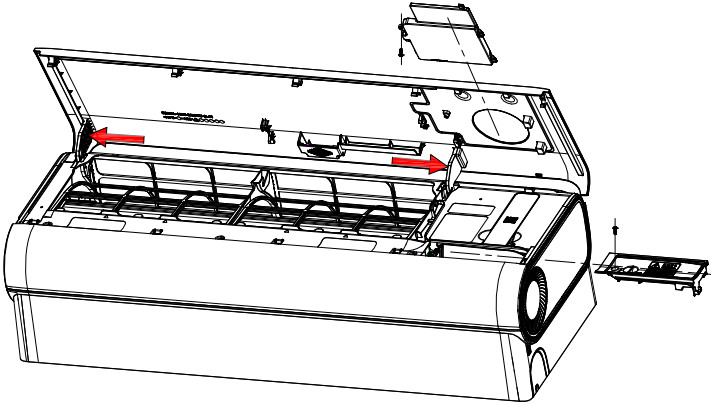
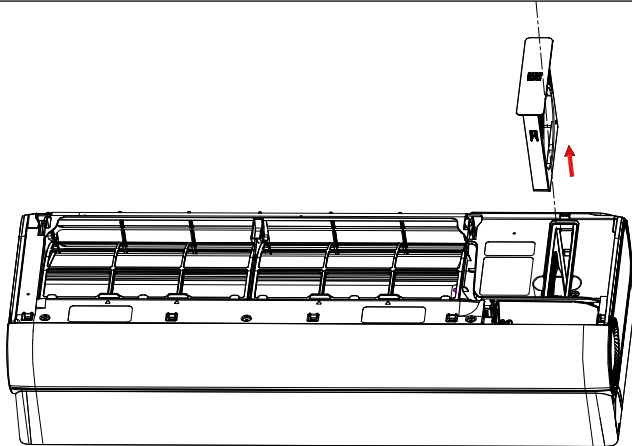
22) Fy --- Gas Leakage Protection

After the compressor operates at high frequency for 9 min, if the IDU evaporator and ODU condenser temperatures show only minor variations compared to previous readings but the compressor discharge temperature remains high, the unit will display the "Fy" error code.



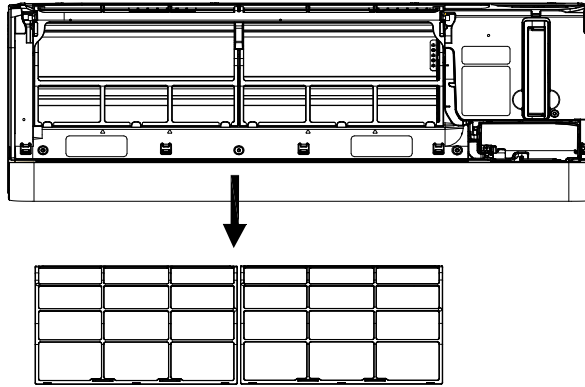
4. IDU and ODU Disassembly

4.1 IDU Disassembly

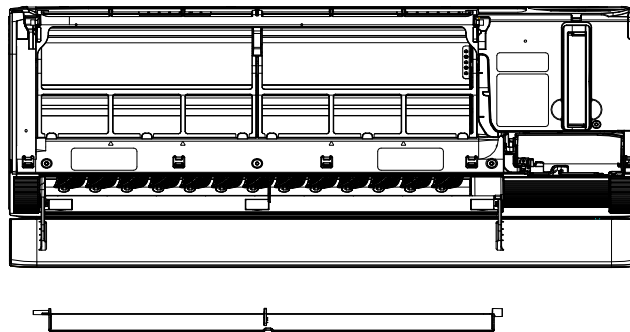
Steps	Reference Photo
Before disassembly	
1. Disassemble the front panel and display PCB	
A. Open the front panel. B. Unfix the screw on the electric control box cover, then remove the cover. C. Unfix the screw on the display PCB, then remove the display PCB. D. Slightly release the panel axis by hand, then remove the panel from the unit.	
2. Disassemble the purification filter	
A. Remove the purification filter from the unit in the direction shown in the photo.	

3. Remove the filter

A. Remove the filter from the unit in the direction shown in the photo. Press the 2 holding buttons on the filter in order to remove it easily.

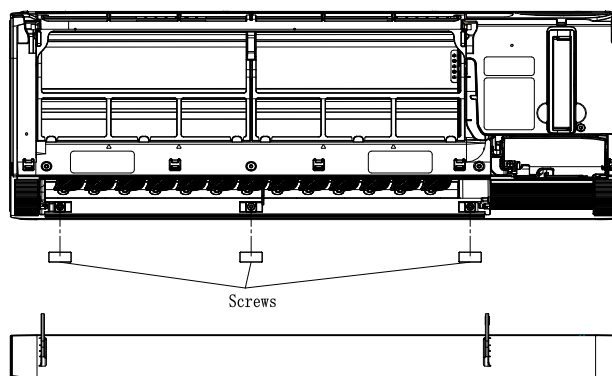
**4. Remove the small vane**

A. Open the large valve to its maximum capacity, then remove the small vane.

**5. Remove the screw covers and large vane**

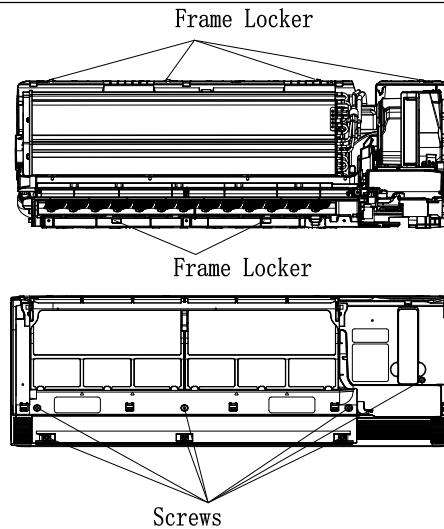
A. Remove the 3 screw covers.

B. Remove the large vane.

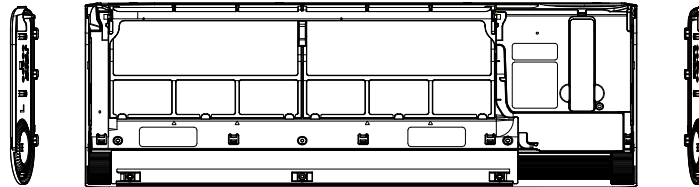


6. Disassemble the middle frame

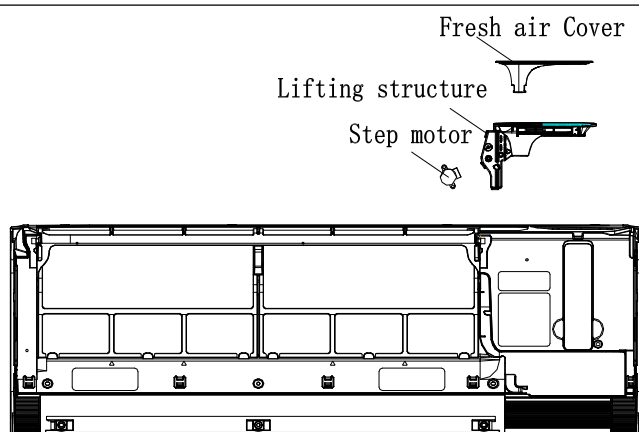
- A. Remove the 7 screws on the mid frame.
- B. Lift the mid frame to loosen the first frame locker in the direction shown in the photo. (4 lockers in total)
- C. Hold the unit with both hands and lift slightly to loosen the second frame locker.
- D. Remove the middle frame the unit.

**7. Disassemble the side plate**

- A. Remove the side plate from the frame.

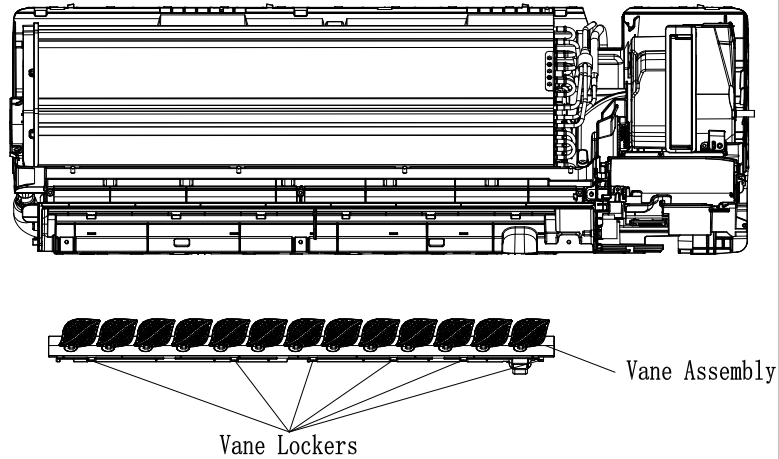
**8. Disassemble the lifting structure**

- A. Unfix 1 screw on the lifting structure.
- B. Loosen the 3 lockers between the middle frame and lifting structure. Then remove the structure.
- C. Unfix 1 screw on the stepping motor of the lifting structure and withdraw the motor.



9. Disassemble the stepping vane assembly

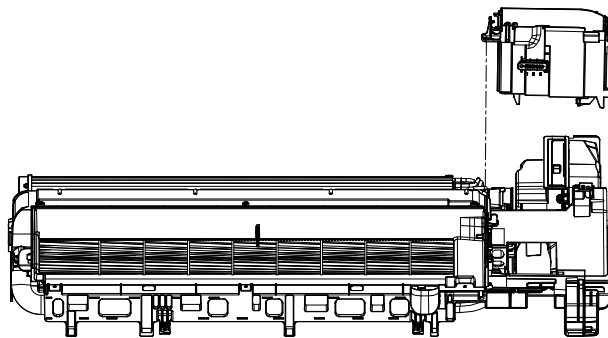
A. Loosen the 6 vane lockers, then remove the vane assembly from the unit.

**10. Disassemble the electric box**

A. Unfix the screws on the electric box and unit base.

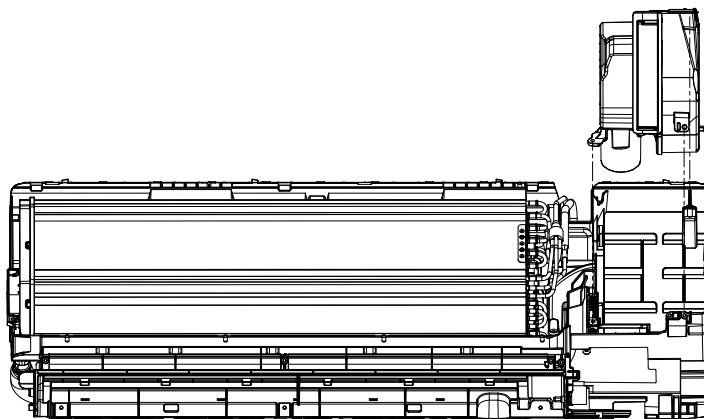
B. Unfix the ground screw on the evaporator, then remove the copper pipe sensor.

C. Remove the electric box from the unit.

**11. Disassemble the Air-Fresh module**

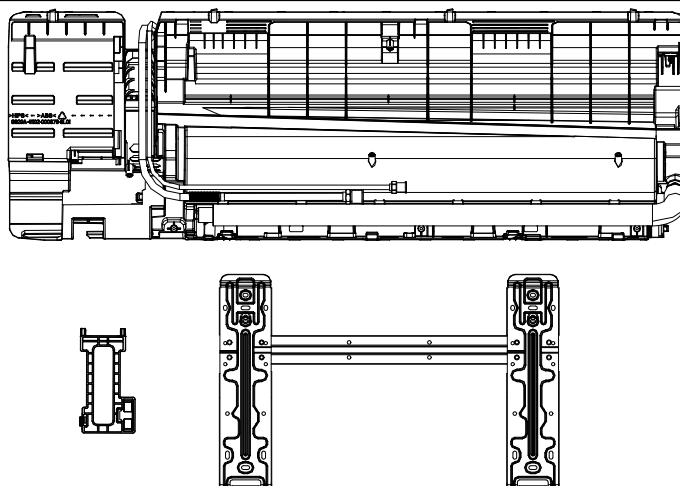
A. Unfix 3 screws on the Air-Fresh module and the unit base.

B. Remove the Air-Fresh assembly.



12. Disassemble the installation plate and pipe clamp

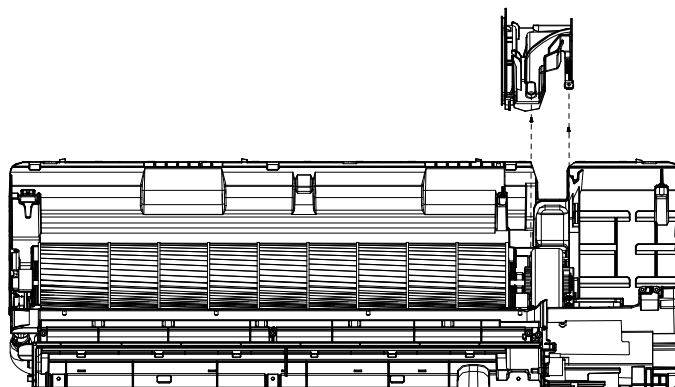
- A. Unfix the screws on the installation plate and unit base.
- B. Loosen the lockers on the plate and base, then remove the installation plate.
- C. Slightly lift the hand clasp, then remove the clamp.

**13. Disassemble the evaporator**

- A. Unfix 2 screws on the left side of the evaporator. Then unfix 1 screw on the right side of the evaporator.
- B. Loosen the left side locker of the EVP, then lift the left side of the EVP.
- C. While the left side of the EVP is lifted, remove the EVP from the right locker.

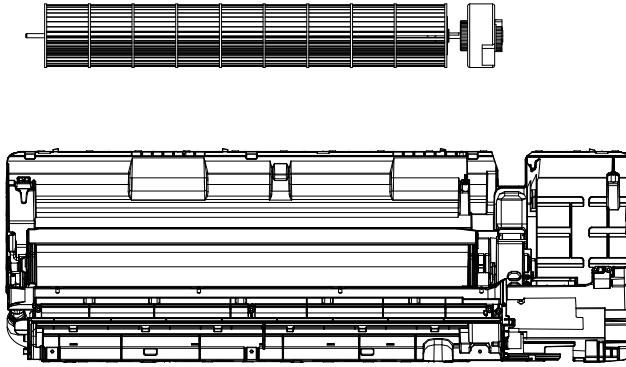
**14. Remove the motor cover**

- A. Unfix 2 screws on the motor cover and unit base. Remove the cover.

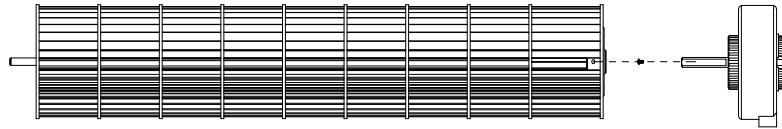


15. Remove the cross-flow fan and fan motor

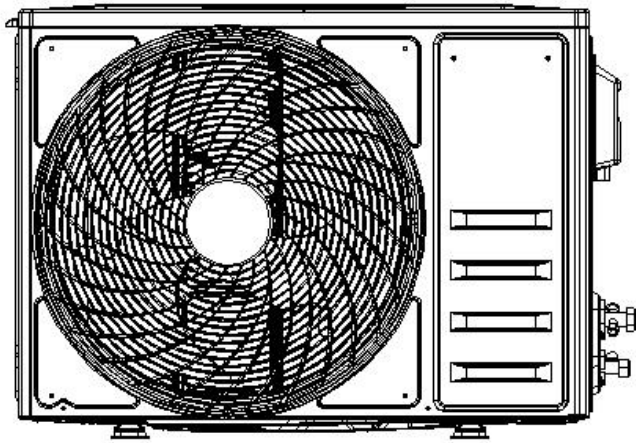
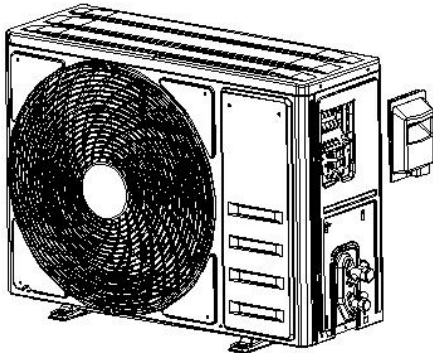
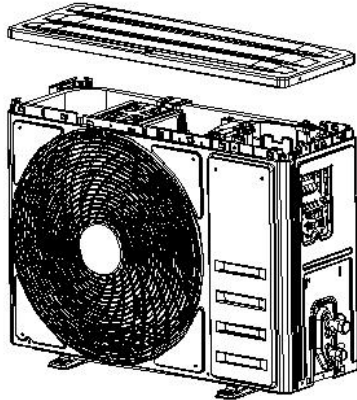
A. Lift the cross-flow fan and fan motor and move them to the right. Remove the cross-flow fan shaft out of the bearing. Then take out the cross-flow fan and fan motor from the unit.

**16. Disassemble the cross-flow fan and fan motor**

A. Remove the fixing screw on the cross-flow fan and fan motor, then take out the cross-flow fan and fan motor separately.

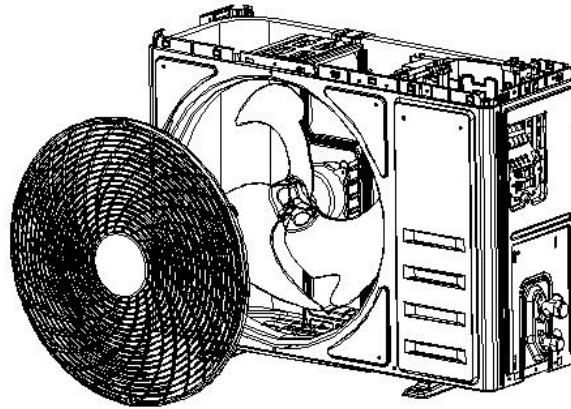


4.2 ODU Disassembly

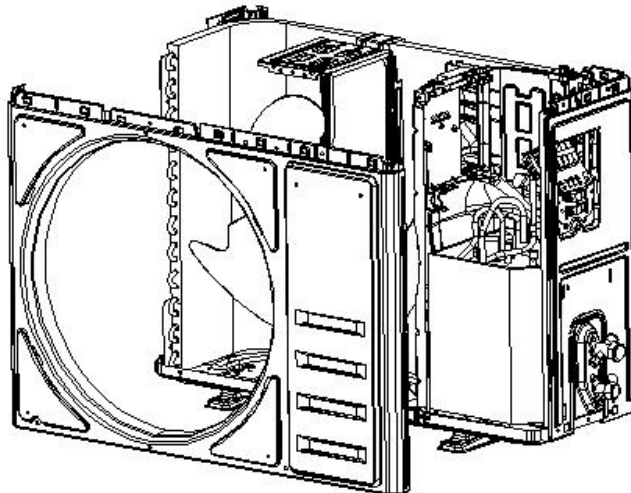
Steps		Reference Photo
Before disassembly		
1. Remove the handle and top cover		
A	Remove the handle by unfixing the screw between the handle and the right plate	
B	Unfix the screws on the top cover, front panel, left panel, right panel, then take off the top cover.	

2. Disassemble the fan guard and front panel**A**

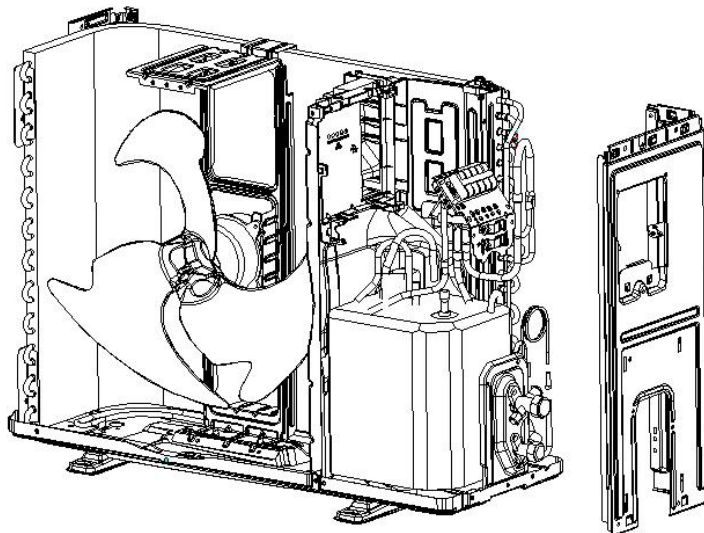
Unfix the screws on the front panel of the fan guard. Then turn the fan guard anticlockwise to remove it from the unit.

**B**

Unfix the screws between the top cover of the ODU middle separate plate and the base plate. Lift the front panel upward, then remove it from the unit.

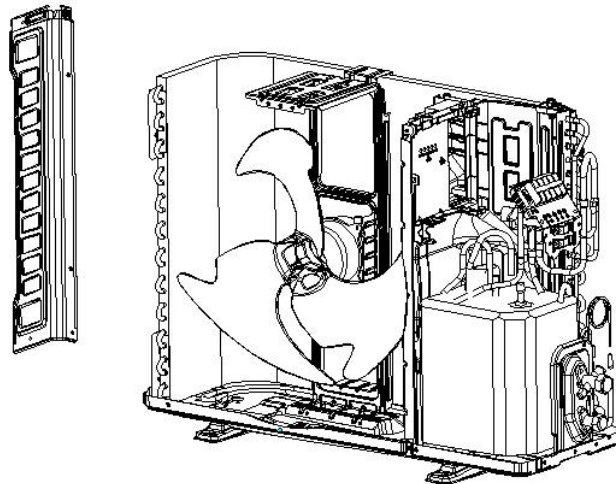
**3. Disassemble the left and right plate****A**

Unfix the screws on the right plate, electric box assembly, valve plate, and base plate. Then remove the right plate.



B

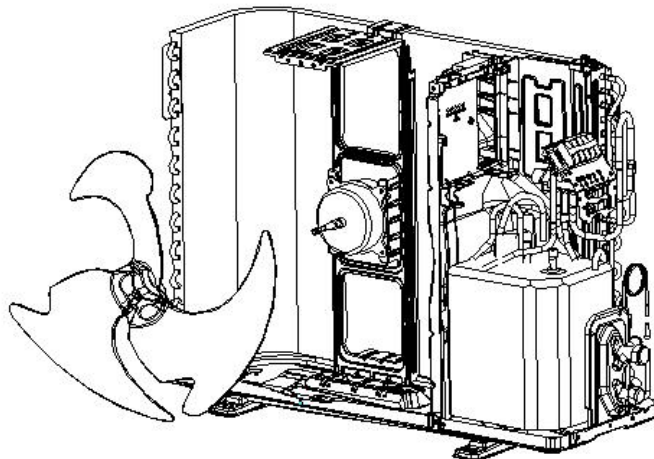
Unfix the screws on the left plate, base plate, and condenser plate. Then take out the left plate.



4. Disassemble the axis fan blade

A

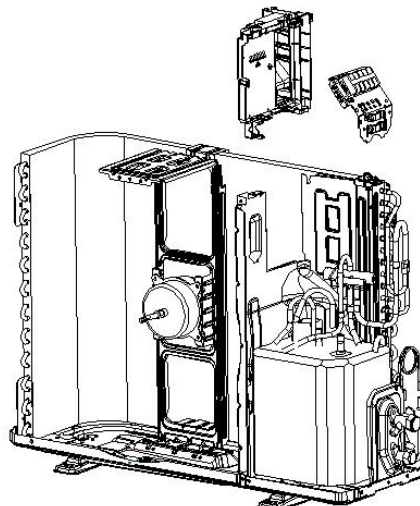
Unscrew the fan blade nut. Then remove the fan blade from the fan motor.



5. Disassemble the electric box

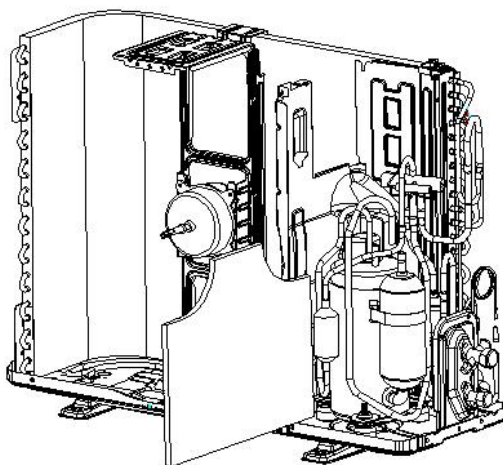
A

Remove the wire of the fan motor and the temperature sensors from the PCB. In addition, remove the wire of the compressor from the connector. Next unfix the screw between the electric box and partition plate. Then remove the electric box from the unit.

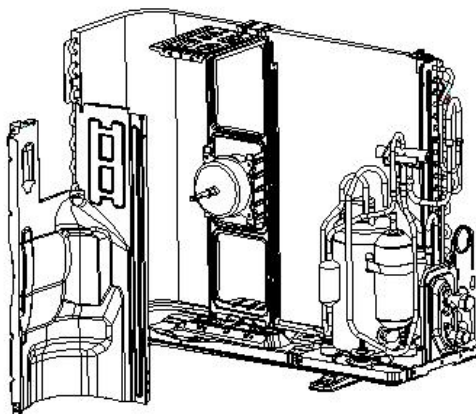


6. Remove the soundproof cotton**A**

Remove the soundproof cotton from the compressor carefully.

**7. Disassemble the partition plate****A**

Unfix the screw between the separate plate and unit, then remove it from the unit.

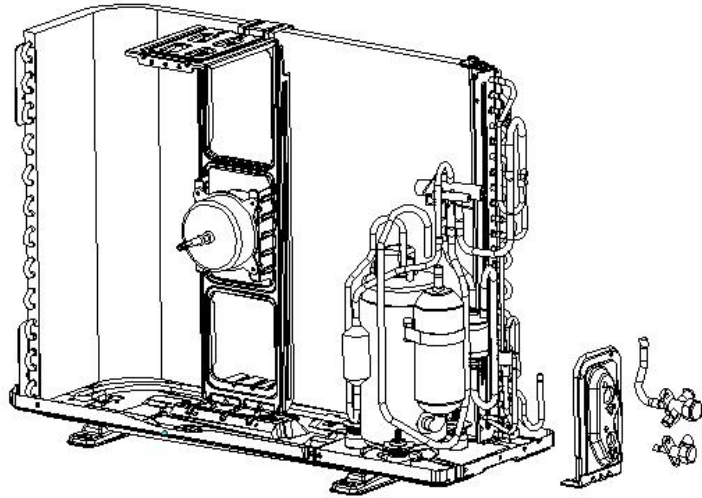


8. Disassemble the gas and liquid valves**A**

Unfix the screws between the valve support plate and the unit. Then remove it from the unit by welding.

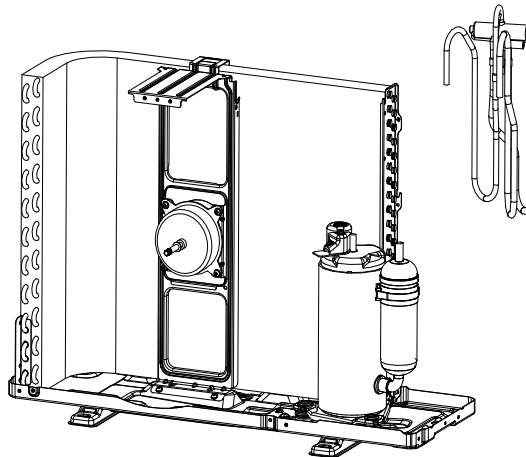
Notes:

- 1) Before welding, release all the refrigerant in the unit.
- 2) Use wet cloths to protect the gas and liquid valve from heat damage.

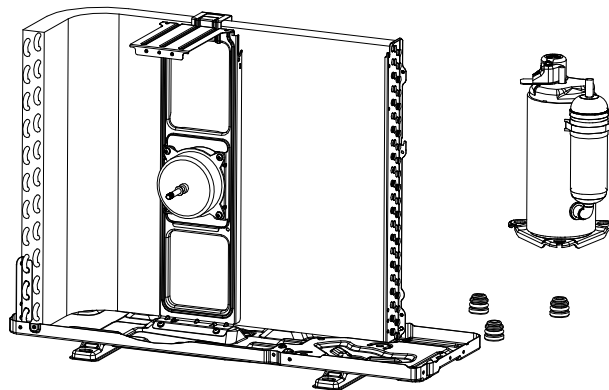
**9. Disassemble the 4-way valve assembly****A**

Remove the 4-way valve from the system by welding from the suction and discharge port of the compressor.

Note: Ensure there is no damage to the compressor, nameplate, etc.

**10. Disassemble the compressor****A**

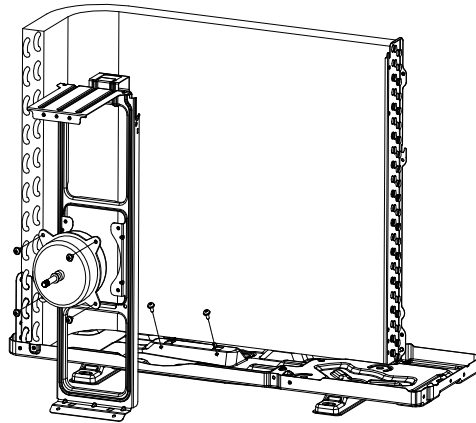
Unscrew the nuts and remove the compressor from the unit.



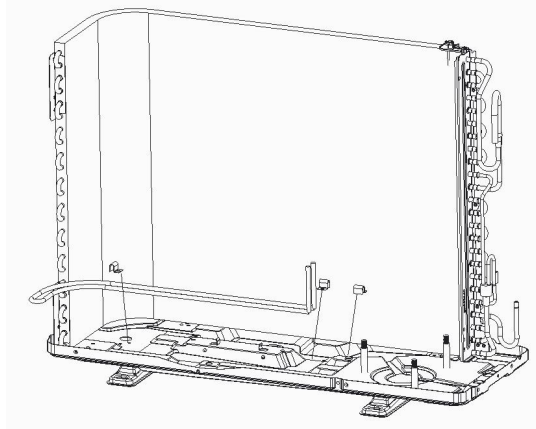
11. Disassemble the fan motor and fan support**A**

Unfix the screws between the fan support and base plate, then remove the support from the unit. Loosen the metal cable clamps on the back of the fan support. Next unfix the screws between the support and fan motor, then remove the fan motor from the fan support.

Note: Take care of the 4 rubber sleeves.

**12. Disassemble the chassis electric heating belt****A**

Unfix the screws securing the electric heating fixed card to the chassis electric heating tube. Then remove the chassis electric heating tube.



Appendix

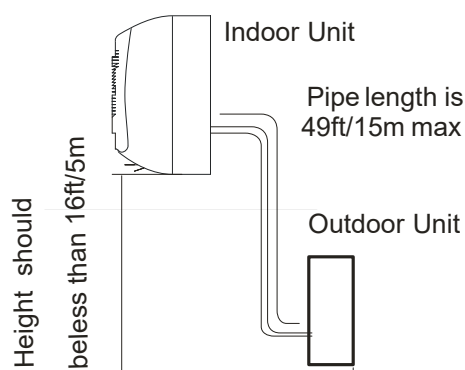
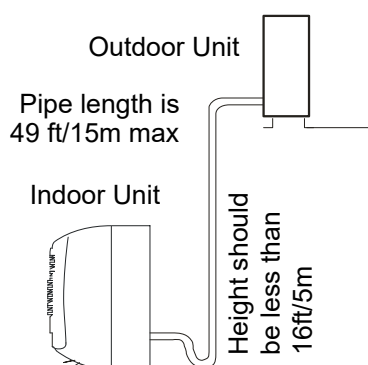
Appendix 1 Comparison Table of Celsius-Fahrenheit Temperature

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 Pipe Length and Gas Charging

Connecting pipes size and length for installation

Model	Pipe Size (Inch)	
	Liquid	Gas
WYT012GLUI25FV	1/4	3/8



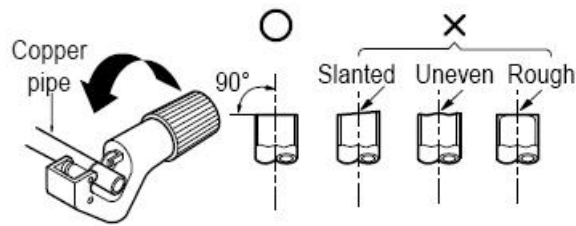
Mode	Standard length (ft/m)	Refrigerant piping Max. length (ft/m) A	Additional refrigerant charging: $Xg = B * (A - 5m)$ B
WYT012GLUI25FV	16.4 ft / 5m	49.2 ft / 15m	20g/m(20g/39.4inch)

Appendix 3 Pipes Flaring

Main causes for gas leakages are defects in flaring work. Carry out the correct flaring work with the following procedure:

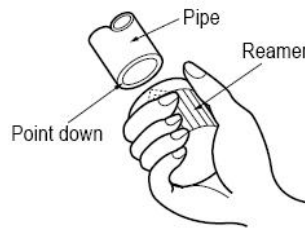
A. Cut the Pipes and Cable

- 1) Use the piping kit accessory or the pipes purchased locally.
- 2) Measure the distance between the indoor and outdoor units.
- 3) Cut the pipes a little longer than the measured distance.
- 4) Cut the cable 5 ft (1.5m) longer than the pipe length.



B. Burrs Removal

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

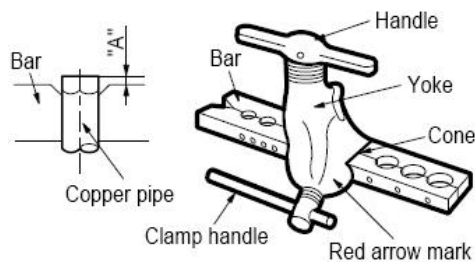


C. Flaring Work

- 1) Carry out the flaring work using the flaring tool, as shown below.

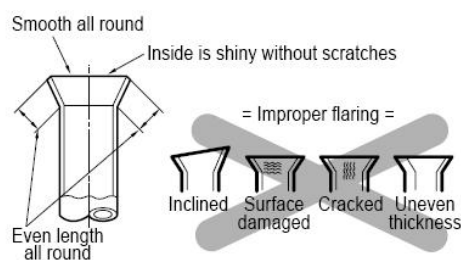
Outer Diameter		A
inch	mm	inch / mm
$\frac{1}{4}$	$\phi 6.35$	0.04~0.06 inch / 1.0~1.3 mm
$\frac{3}{8}$	$\phi 9.52$	0.03~0.04 inch / 0.8~1.0 mm
$\frac{1}{2}$	$\phi 12.7$	0.02~0.03 inch / 0.5~0.8 mm
$\frac{5}{8}$	$\phi 15.88$	0.02~0.03 inch / 0.5~0.8 mm

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



D. Check

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

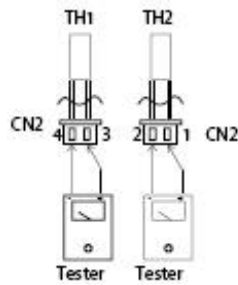


Appendix 4 Thermistor Temperature Characteristics

Indoor Unit and Outdoor Exchange Temperature and Outside Air Temperature Sensor Temperature Characteristics

Temp. °F(°C)	Resistance (k Ohm)	Voltage of Resistance	Temp. °F(°C)	Resistance (k Ohm)	Voltage of Resistance	Temp. °F(°C)	Resistance (k Ohm)	Voltage of Resistance
-22(-30)	63.513	4.628	59(15)	7.447	2.968	140(60)	1.464	1.115
-20(-29)	60.135	4.609	61(16)	7.148	2.918	142(61)	1.418	1.088
-18(-28)	56.956	4.589	63(17)	6.863	2.868	144(62)	1.374	1.061
-17(-27)	53.963	4.568	64(18)	6.591	2.819	145(63)	1.331	1.035
-15(-26)	51.144	4.547	66(19)	6.332	2.769	147(64)	1.290	1.009
-13(-25)	48.488	4.524	68(20)	6.084	2.720	149(65)	1.250	0.984
-11(-24)	45.985	4.501	70(21)	5.847	2.671	151(66)	1.212	0.960
-9(-23)	43.627	4.477	72(22)	5.621	2.621	153(67)	1.175	0.936
-8(-22)	41.403	4.452	73(23)	5.404	2.572	154(68)	1.139	0.913
-6(-21)	39.305	4.426	75(24)	5.198	2.524	156(69)	1.105	0.890
-4(-20)	37.326	4.399	77(25)	5.000	2.475	158(70)	1.072	0.868
-2(-19)	35.458	4.371	79(26)	4.811	2.427	160(71)	1.040	0.847
0(-18)	33.695	4.343	81(27)	4.630	2.379	162(72)	1.009	0.825
1(-17)	32.030	4.313	82(28)	4.457	2.332	163(73)	0.979	0.805
3(-16)	30.458	4.283	84(29)	4.292	2.285	165(74)	0.950	0.785
5(-15)	28.972	4.252	86(30)	4.133	2.238	167(75)	0.922	0.765
7(-14)	27.567	4.219	88(31)	3.981	2.192	169(76)	0.895	0.746
9(-13)	26.239	4.186	90(32)	3.836	2.146	171(77)	0.869	0.728
10(-12)	24.984	4.152	91(33)	3.697	2.101	172(78)	0.843	0.710
12(-11)	23.795	4.117	93(34)	3.563	2.057	174(79)	0.819	0.692
14(-10)	22.671	4.082	95(35)	3.435	2.012	176(80)	0.795	0.675
16(-9)	21.606	4.045	97(36)	3.313	1.969	178(81)	0.773	0.658
18(-8)	20.598	4.008	99(37)	3.195	1.926	180(82)	0.751	0.641
19(-7)	19.644	3.969	100(38)	3.082	1.883	181(83)	0.729	0.625
21(-6)	18.732	3.930	102(39)	2.974	1.842	183(84)	0.709	0.610
23(-5)	17.881	3.890	104(40)	2.870	1.800	185(85)	0.689	0.595
25(-4)	17.068	3.850	106(41)	2.770	1.760	187(86)	0.669	0.580
27(-3)	16.297	3.808	108(42)	2.674	1.720	189(87)	0.651	0.566
28(-2)	15.565	3.766	109(43)	2.583	1.681	190(88)	0.633	0.552
30(-1)	14.871	3.723	111(44)	2.494	1.642	192(89)	0.615	0.538
32(0)	14.212	3.680	113(45)	2.410	1.604	194(90)	0.598	0.525
34(1)	13.586	3.635	115(46)	2.328	1.567	196(91)	0.582	0.512
36(2)	12.991	3.590	117(47)	2.250	1.530	198(92)	0.566	0.499
37(3)	12.426	3.545	118(48)	2.174	1.495	199(93)	0.550	0.487
39(4)	11.889	3.499	120(49)	2.102	1.459	201(94)	0.535	0.475
41(5)	11.378	3.452	122(50)	2.032	1.425	203(95)	0.521	0.463
43(6)	10.893	3.406	124(51)	1.965	1.391	205(96)	0.507	0.452
45(7)	10.431	3.358	126(52)	1.901	1.357	207(97)	0.493	0.441
46(8)	9.991	3.310	127(53)	1.839	1.325	208(98)	0.480	0.430
48(9)	9.573	3.262	129(54)	1.779	1.293	210(99)	0.467	0.419
50(10)	9.174	3.214	131(55)	1.721	1.262	212(100)	0.455	0.409
52(11)	8.795	3.165	133(56)	1.666	1.231			
54(12)	8.433	3.116	135(57)	1.613	1.201			
55(13)	8.089	3.067	136(58)	1.561	1.172			
57(14)	7.760	3.017	138(59)	1.512	1.143			

Resistance at 77°F(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 the resistance, disconnect the connectors as shown above.

Outdoor Unit Sensor Temperature Characteristics

Temp. °F(°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)	Temp. °F(°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)	Temp. °F(°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)
-22(-30)	283.3	322.9	367.7	75(24)	19.36	20.89	22.52	172(78)	2.563	2.654	2.745
-20(-29)	267.4	304.4	346.3	77(25)	18.55	20	21.54	174(79)	2.481	2.567	2.654
-18(-28)	252.5	287.1	307.4	79(26)	17.77	19.14	20.6	176(80)	2.402	2.484	2.567
-17(-27)	238.5	270.9	307.4	81(27)	17.03	18.32	19.7	178(81)	2.327	2.404	2.483
-15(-26)	225.4	255.7	289.8	82(28)	16.32	17.55	18.85	180(82)	2.254	2.327	2.401
-13(-25)	213.1	241.4	273.3	84(29)	15.65	16.81	18.04	181(83)	2.183	2.253	2.323
-11(-24)	201.5	228	257.9	86(30)	15	16.1	17.27	183(84)	2.115	2.182	2.248
-9(-23)	190.6	215.5	243.4	88(31)	14.39	15.43	16.54	185(85)	2.05	2.113	2.176
-8(-22)	180.3	203.6	229.8	90(32)	13.81	14.79	15.34	187(86)	1.985	2.047	2.109
-6(-21)	170.7	192.5	217	91(33)	13.25	14.18	15.17	189(87)	1.922	1.983	2.045
-4(-20)	161.6	182.1	205	93(34)	12.72	13.6	14.54	190(88)	1.861	1.922	1.983
-2(-19)	153.1	172.3	193.7	95(35)	12.21	13.05	13.93	192(89)	1.802	1.862	1.923
0(-18)	145	163.1	183.2	97(36)	11.72	12.52	13.36	194(90)	1.746	1.805	1.865
1(-17)	137.5	154.4	173.2	99(37)	11.26	12.01	12.81	196(91)	1.692	1.75	1.809
3(-16)	130.3	146.2	163.9	100(38)	10.82	11.53	12.29	198(92)	1.639	1.697	1.755
5(-15)	123.6	138.5	155.1	102(39)	10.29	11.07	11.78	199(93)	1.589	1.646	1.703
7(-14)	117.3	131.3	146.8	104(40)	9.986	10.63	11.31	201(94)	1.54	1.596	1.653
9(-13)	111.3	124.4	139	106(41)	9.6	10.21	10.85	203(95)	1.493	1.549	1.604
10(-12)	105.6	118	131.7	108(42)	9.231	9.813	10.42	205(96)	1.448	1.502	1.558
12(-11)	100.3	111.9	124.7	109(43)	8.878	9.43	10	207(97)	1.404	1.458	1.512
14(-10)	95.24	106.2	118.2	111(44)	8.54	9.064	9.612	208(98)	1.362	1.415	1.469
16(-9)	90.49	100.8	112.1	113(45)	8.217	8.714	9.233	210(99)	1.321	1.373	1.426

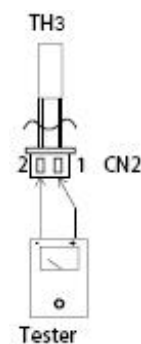
18(-8)	85.99	95.68	106.3	115(46)	7.908	8.38	8.872	212(100)	1.284	1.335	1.387
19(-7)	81.75	90.86	100.8	117(47)	7.612	8.06	8.526	214(101)	1.245	1.296	1.348
21(-6)	77.74	86.31	95.74	118(48)	7.328	7.754	8.196	216(102)	1.209	1.258	1.309
23(-5)	73.94	82.01	90.88	120(49)	7.057	7.461	7.88	217(103)	1.173	1.222	1.272
25(-4)	70.35	77.95	86.29	122(50)	6.797	7.18	7.578	219(104)	1.139	1.187	1.236
27(-3)	66.96	74.11	81.96	124(51)	6.548	6.912	7.289	221(105)	1.105	1.153	1.202
28(-2)	63.74	70.48	77.87	126(52)	6.309	6.655	7.013	223(106)	1.073	1.12	1.168
30(-1)	60.69	67.05	74	127(53)	6.08	6.409	6.748	225(107)	1.042	1.089	1.136
32(0)	57.81	63.8	70.34	129(54)	5.861	6.173	6.495	226(108)	1.013	1.058	1.104
34(1)	55.08	60.72	66.88	131(55)	5.651	5.947	6.253	228(109)	0.9833	1.028	1.074
36(2)	52.49	57.81	63.61	133(56)	5.449	5.73	6.02	230(110)	0.9553	0.9997	1.045
37(3)	50.03	55.05	60.52	135(57)	5.255	5.522	5.798	232(111)	0.9283	0.9719	1.016
39(4)	47.71	52.44	57.59	136(58)	5.07	5.323	5.585	234(112)	0.9021	0.9451	0.9892
41(5)	45.5	49.97	54.82	138(59)	4.891	5.132	5.381	235(113)	0.8765	0.9191	0.9626
43(6)	43.41	47.62	52.2	140(60)	4.72	4.949	5.101	237(114)	0.8524	0.894	0.9367
45(7)	41.42	45.4	49.71	142(61)	4.556	4.774	4.997	239(115)	0.8087	0.8595	0.9117
46(8)	39.53	43.2	42.33	144(62)	4.398	4.605	4.817	241(116)	0.8059	0.8461	0.8875
48(9)	37.74	41.29	45.12	145(63)	4.247	4.448	4.644	243(117)	0.7837	0.8233	0.8641
50(10)	36.04	39.39	43.01	147(64)	4.101	4.288	4.479	244(118)	0.7623	0.8012	0.8413
52(11)	34.42	37.59	41	149(65)	3.961	4.139	4.32	246(119)	0.7415	0.7798	0.8193
54(12)	32.89	35.87	39.1	151(66)	3.827	3.995	4.167	248(120)			
55(13)	31.43	34.25	37.29	153(67)	3.698	3.858	4.021	250(121)	0.702	0.7386	0.7773
57(14)	30.04	32.71	35.58	154(68)				252(122)	0.6631	0.7195	0.7572
59(15)	29.72	31.24	33.95	156(69)				253(123)	0.6649	0.7007	0.7378
61(16)				158(70)	3.339	3.476	3.616	255(124)	0.6472	0.6824	0.7189
63(17)				160(71)	3.229	3.359	3.491	257(125)	0.6301	0.6647	0.7006
64(18)	25.13	27.26	29.55	162(72)	3.122	3.246	3.372	259(126)	0.6135	0.6476	0.6829
66(19)	24.05	26.07	28.23	163(73)	3.02	3.138	3.257	261(127)	0.5974	0.6309	0.6657
68(20)	23.02	24.93	26.97	165(74)	2.921	3.033	3.146	262(128)	0.5818	0.6148	0.649
70(21)	22.04	23.84	25.77	167(75)	2.827	2.933	3.04	264(129)	0.5667	0.5991	0.6328
72(22)	21.1	22.81	24.63	169(76)	2.735	2.836	2.938	266(130)	0.5521	0.5839	0.6171
73(23)	20.21	21.83	23.55	171(77)	2.647	2.743	2.84				

R—Resistance

Resistance at 77°F(25°C): 20 kΩ

TH3: Outdoor unit discharge pipe sensor

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



The design and specifications of this product are subject to change without prior notice as development continues. Consult with the sales agency or manufacturer for details. Refer to the equipment nameplate for all other applicable specifications.

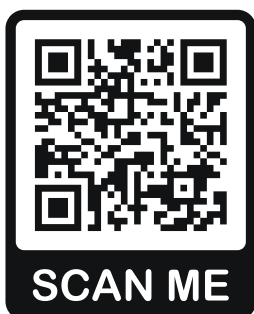


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Parker Davis HVAC International
7290 NW 77 Court, Miami, FL 33166 - USA
Tel : (305) 513-4488
Fax : (305) 513-4499
E-mail : info@pdhvac.com
Website: www.pdhvac.com

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