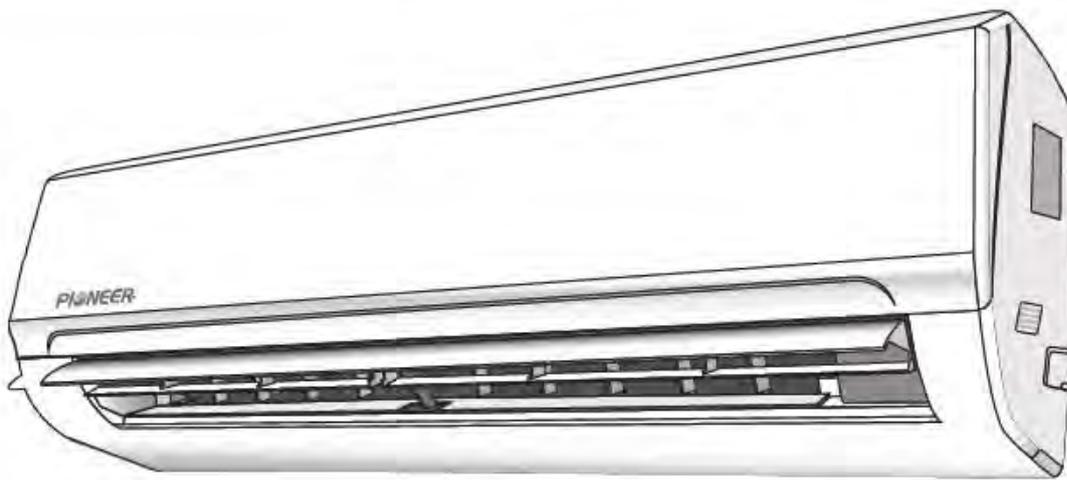


# WYT-20 Inverter Series Service Manual



**Models:**

**WYT009ALSI20RL**

**WYT009GLSI20RL**

**WYT012ALSI20RL**

**WYT012GLSI20RL**

**WYT018GLSI20RL**

**WYT024GLSI20RL**

**WYT030GLSI20RL**

**WYT036GLSI20RL**

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# Part I Technical Information

## Important Notice

1

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

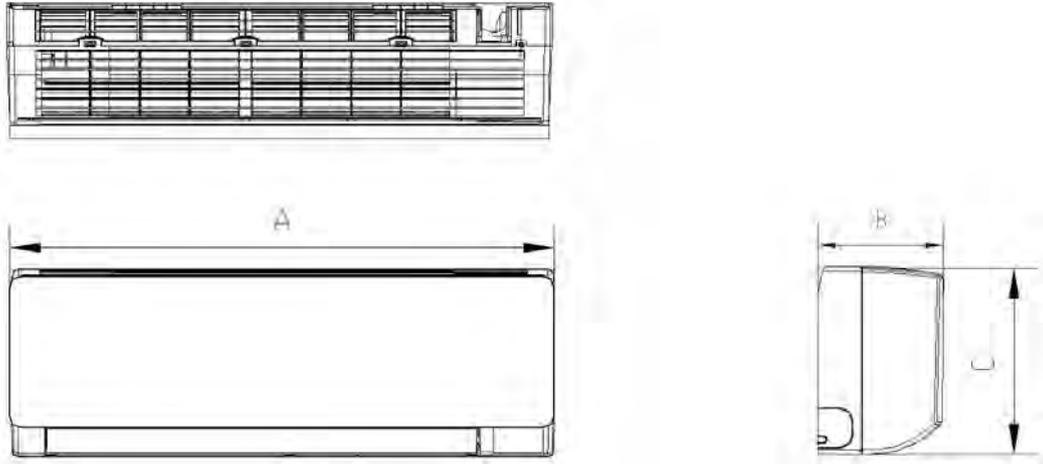
To ensure an accurate order was placed, provide the following information:

1. Model numbers of the indoor and outdoor units.
2. Item number in the exploded diagram.
3. Part number.
4. The intended quantity.

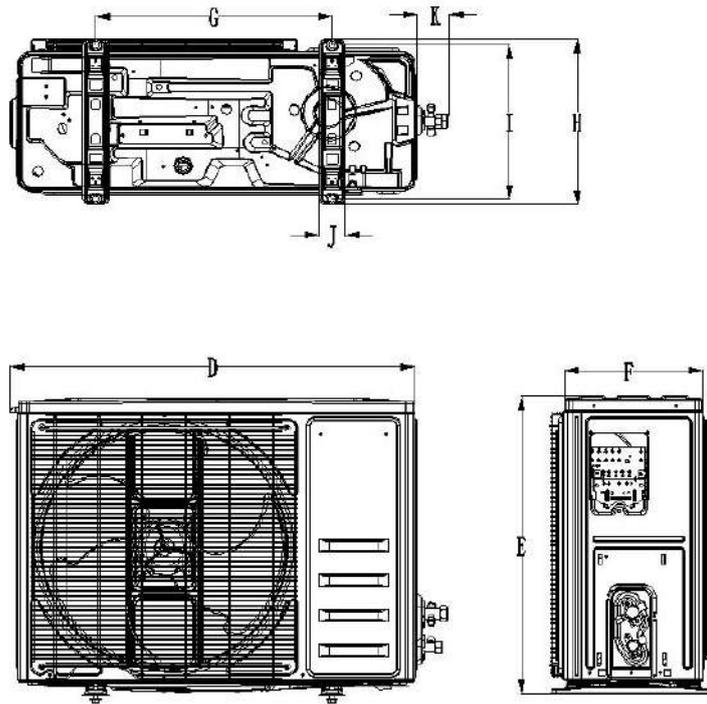
# Product Dimensions

# 2

## Indoor Unit:



## Outdoor Unit:



# Product Dimensions

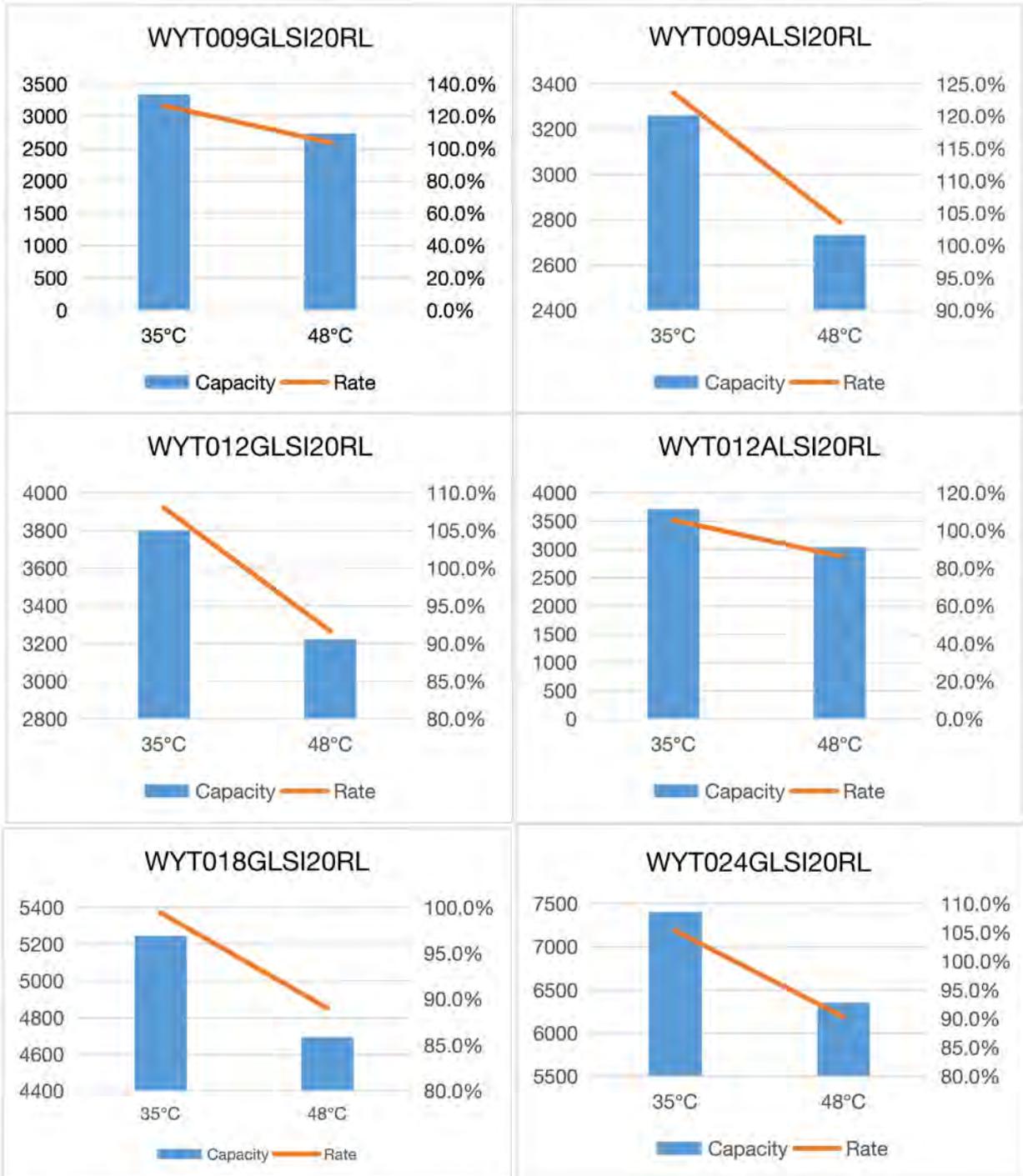
# 2

Model	Indoor Unit (mm/inch)			Outdoor Unit (mm/inch)							
	A	B	C	D	E	F	G	H	I	J	K
WYT009ALSI20RL	811	292	202	712	498	234	415	290.4	263	48	55.9
	31 $\frac{7}{8}$	11 $\frac{1}{2}$	8	28	19 $\frac{5}{8}$	9 $\frac{1}{4}$	16 $\frac{3}{8}$	11 $\frac{3}{8}$	10 $\frac{3}{8}$	1 $\frac{7}{8}$	2 $\frac{1}{4}$
WYT009GLSI20RL	811	292	202	712	498	234	415	290.4	263	48	55.9
	31 $\frac{7}{8}$	11 $\frac{1}{2}$	8	28	19 $\frac{5}{8}$	9 $\frac{1}{4}$	16 $\frac{3}{8}$	11 $\frac{3}{8}$	10 $\frac{3}{8}$	1 $\frac{7}{8}$	2 $\frac{1}{4}$
WYT012ALSI20RL	811	292	202	712	498	234	415	290.4	263	48	55.9
	31 $\frac{7}{8}$	11 $\frac{1}{2}$	8	28	19 $\frac{5}{8}$	9 $\frac{1}{4}$	16 $\frac{3}{8}$	11 $\frac{3}{8}$	10 $\frac{3}{8}$	1 $\frac{7}{8}$	2 $\frac{1}{4}$
WYT012GLSI20RL	811	292	202	712	498	234	415	290.4	263	48	55.9
	31 $\frac{7}{8}$	11 $\frac{1}{2}$	8	28	19 $\frac{5}{8}$	9 $\frac{1}{4}$	16 $\frac{3}{8}$	11 $\frac{3}{8}$	10 $\frac{3}{8}$	1 $\frac{7}{8}$	2 $\frac{1}{4}$
WYT018GLSI20RL	1010	315	220	780	602	288	516	349	314	54	57
	39 $\frac{3}{4}$	12 $\frac{3}{8}$	8 $\frac{5}{8}$	30 $\frac{3}{4}$	23 $\frac{3}{4}$	11 $\frac{3}{8}$	20 $\frac{1}{4}$	13 $\frac{3}{4}$	12 $\frac{3}{8}$	2 $\frac{1}{8}$	2 $\frac{1}{4}$
WYT024GLSI20RL	1186	340	268	845	699	326	586	375	348	55	55.9
	46 $\frac{3}{4}$	13 $\frac{3}{8}$	10 $\frac{1}{2}$	33 $\frac{3}{4}$	27 $\frac{1}{2}$	12 $\frac{7}{8}$	23 $\frac{1}{8}$	14 $\frac{3}{4}$	13 $\frac{3}{4}$	2 $\frac{1}{8}$	2 $\frac{1}{4}$
WYT030GLSI20RL / WYT036GLSI20RL	1186	340	268	910	803	359	607	421	390	60	63
	46 $\frac{3}{4}$	13 $\frac{3}{8}$	10 $\frac{1}{2}$	35 $\frac{7}{8}$	31 $\frac{5}{8}$	14 $\frac{1}{8}$	23 $\frac{1}{8}$	16 $\frac{5}{8}$	15 $\frac{3}{8}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$

# Operation Characteristic Curve

# 3

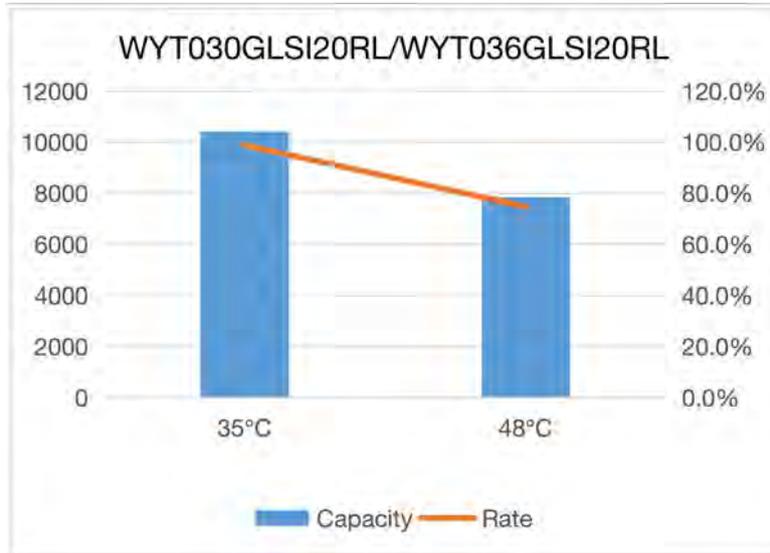
## The Relation Curve of Capacity-Ambient Temperature



# Operation Characteristic Curve

3

## The Relation Curve of Capacity-Ambient Temperature (Continued)



## The Relation Curve of Pressure-Temperature

	WYT009GLSI20RL			WYT009ALSI20RL			WYT012GLSI20RL			WYT009ALSI20RL		
	f(Hz)	HP	LP									
		(MPa/psi)	(MPa/psi)									
<b>95°F (35°C) Cooling</b>	70	2.34 /339.39	0.94 /136.34	70	2.39 /346.64	1.05 /152.29	78	1.97 /285.72	1.06 /153.74	78	1.92 /278.47	1.13 /163.89
<b>109.4°F (43°C) Cooling</b>	62	2.92 /423.51	1.02 /147.94	62	3.00 /435.11	1.08 /156.64	68	2.37 /343.74	1.00 /145.04	66	2.35 /340.84	1.01 /146.49
<b>118.4°F (48°C) Cooling</b>	54	3.32 /481.53	1.29 /187.1	54	3.32 /481.52	1.29 /187.1	54	2.73 /395.95	1.21 /175.49	56	2.67 /387.25	1.19 /172.59
<b>44.6°F (7°C) Heating</b>	78	2.12 /307.48	0.61 /88.47	78	2.12 /307.48	0.61 /88.47	78	2.36 /342.29	0.67 /97.18	78	2.36 /342.29	0.67 /97.18
	WYT018GLSI20RL			WYT024GLSI20RL			WYT030GLSI20RL			WYT036GLSI20RL		
	f(Hz)	HP	LP									
		(MPa/psi)	(MPa/psi)									
<b>95°F (35°C) Cooling</b>	84	2.86 /414.81	0.687 /99.64	84	2.93 /424.96	0.787 /114.1	96	2.717 /394.07	0.686 /99.49	96	2.717 /394.07	0.686 /99.49
<b>109.4°F (43°C) Cooling</b>	82	3.163 /458.75	0.71 /102.98	82	3.404 /493.71	0.803 /116.46	84	3.173 /460.2	0.765 /110.95	84	3.173 /460.2	0.765 /110.95
<b>118.4°F (48°C) Cooling</b>	74	3.524 /511.11	0.878 /127.34	68	3.748 /543.6	0.979 /141.99	68	3.448 /500.09	0.956 /138.65	68	3.448 /500.09	0.956 /138.65
<b>44.6°F (7°C) Heating</b>	92	2.56 /371.3	0.537 /77.89	96	2.63 /381.45	0.564 /81.80	90	2.514 /364.62	0.557 /80.78	90	2.514 /364.62	0.557 /80.78

# 3

## Operation Characteristic Curve

### The Relation Curve of Pressure-Temperature (Continued)

**Test Conditions**

**Rated Cooling:**

IDU dry bulb 80.6°F (27°C) / wet bulb 66.2°F (19°C)  
 ODU dry bulb 95°F (35°C) / wet bulb 93.2°F (34°C)  
 Connection pipes: 3.3 feet (5 m)

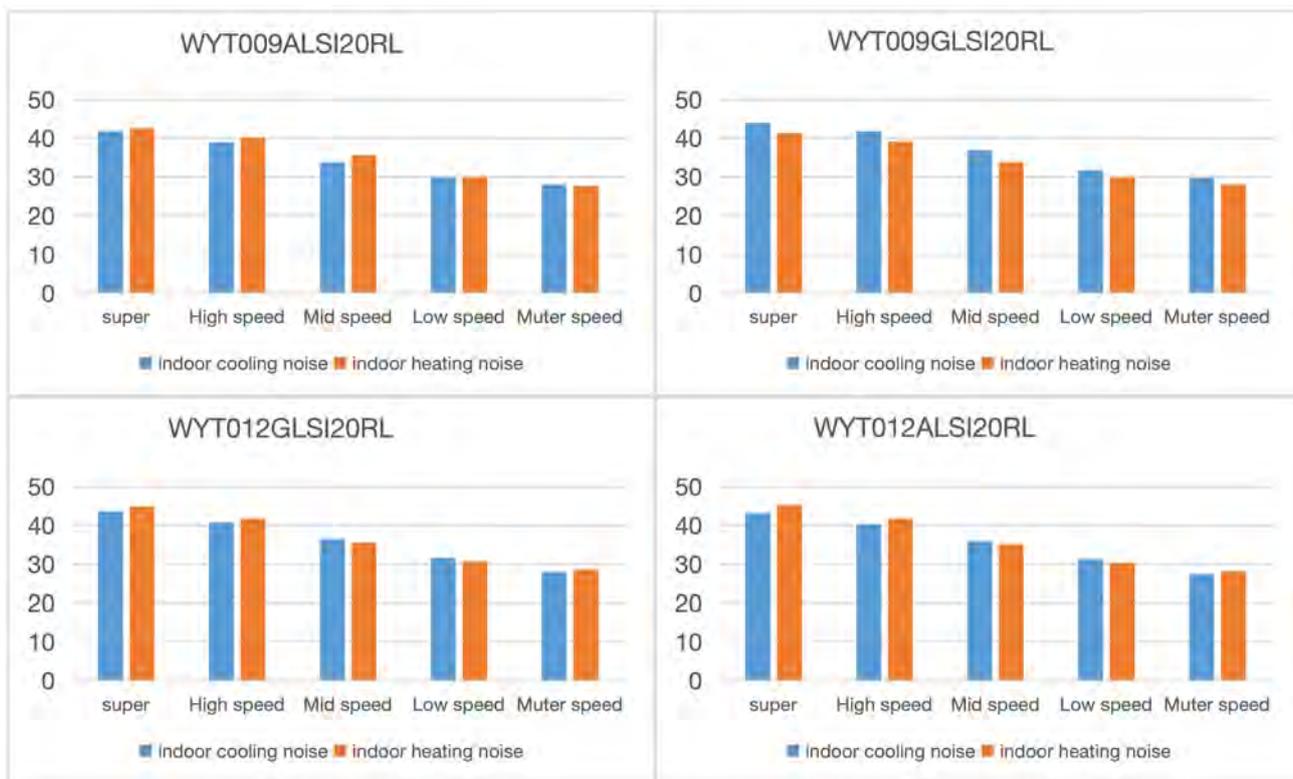
**Rated Heating:** IDU dry bulb 68°F (20°C) / wet bulb 59°F (27°C)

ODU dry bulb 44.6°F (7°C) / wet bulb 42.8°F (6°C)  
 Connection pipes: 3.3 feet (5 m).

**Important:**

The above data under test standard in the lab, the high pressure (HP) and low pressure (LP) will vary with changes in operation frequency, ambient temperature, and/or fan speed.

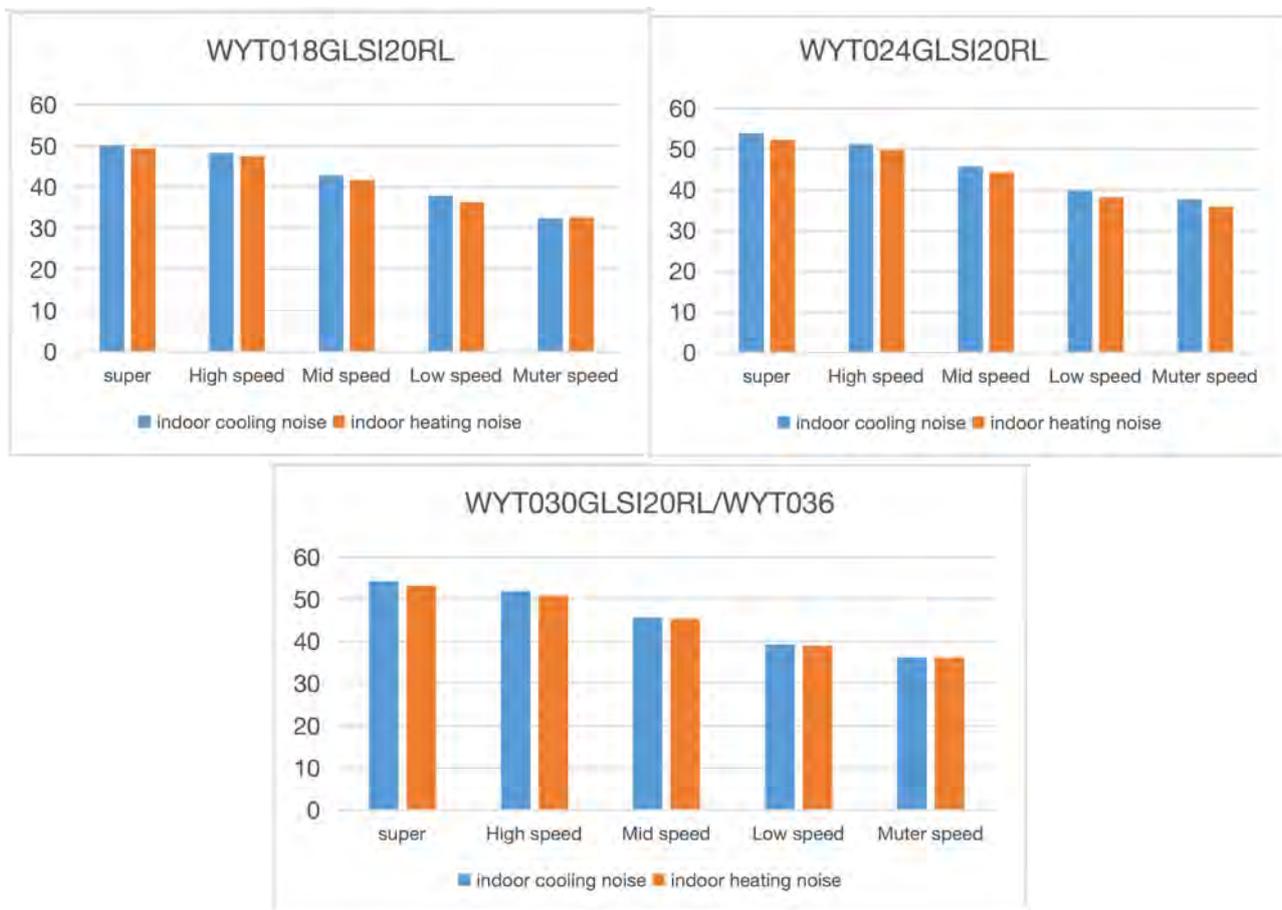
### The Relation Curve of Noise-Operation Frequency



# 3

## Operation Characteristic Curve

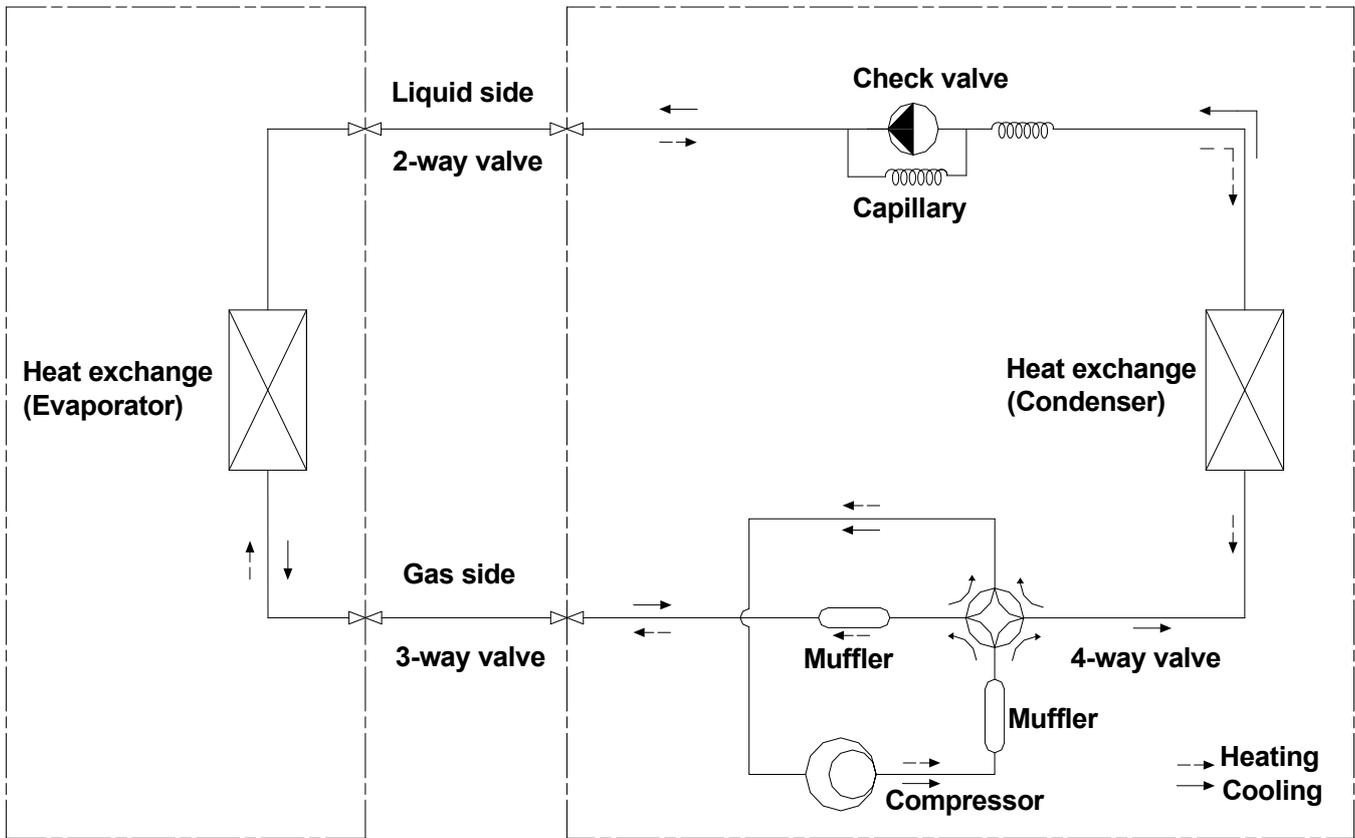
### The Relation Curve of Noise-Operation Frequency (Continued)



### The Normal Temperature Range for Working Environments

Mode	WYT009GLSI20RL		WYT009ALSI20RL		WYT012GLSI20RL		WYT012ALSI20RL	
	Room Temperature	Outdoor Temperature	Room Temperature	Room Temperature	Room Temperature	Room Temperature	Room Temperature	Room Temperature
Cooling	17~32°C	-15~53°C	17~32°C	-15~53°C	17~32°C	-15~53°C	17~32°C	-15~53°C
	63~90°F	5~127°F	63~90°F	5~127°F	63~90°F	5~127°F	63~90°F	5~127°F
Heating	0~30°C	-20~30°C	0~30°C	-20~30°C	0~30°C	-20~30°C	0~30°C	-20~30°C
	32~86°F	-4~86°F	32~86°F	-4~86°F	32~86°F	-4~86°F	32~86°F	-4~86°F
Drying	10~32°C	0~50°C	10~32°C	0~50°C	10~32°C	0~50°C	10~32°C	0~50°C
	50~90°F	32~122°F	50~90°F	32~122°F	50~90°F	32~122°F	50~90°F	32~122°F
Mode	WYT018GLSI20RL		WYT024GLSI20RL		WYT030GLSI20RL/WYT036GLSI20RL			
	Room Temperature	Outdoor Temperature	Room Temperature	Outdoor Temperature	Room Temperature	Outdoor Temperature		
Cooling	17~32°C	-15~53°C	17~32°C	-15~53°C	17~32°C	-15~53°C		
	63~90°F	5~127°F	63~90°F	5~127°F	63~90°F	5~127°F		
Heating	0~30°C	-20~30°C	0~30°C	-20~30°C	0~30°C	-20~30°C		
	32~86°F	-4~86°F	32~86°F	-4~86°F	32~86°F	-4~86°F		
Drying	10~32°C	0~50°C	10~32°C	0~50°C	10~32°C	0~50°C		
	50~90°F	32~122°F	50~90°F	32~122°F	50~90°F	32~122°F		

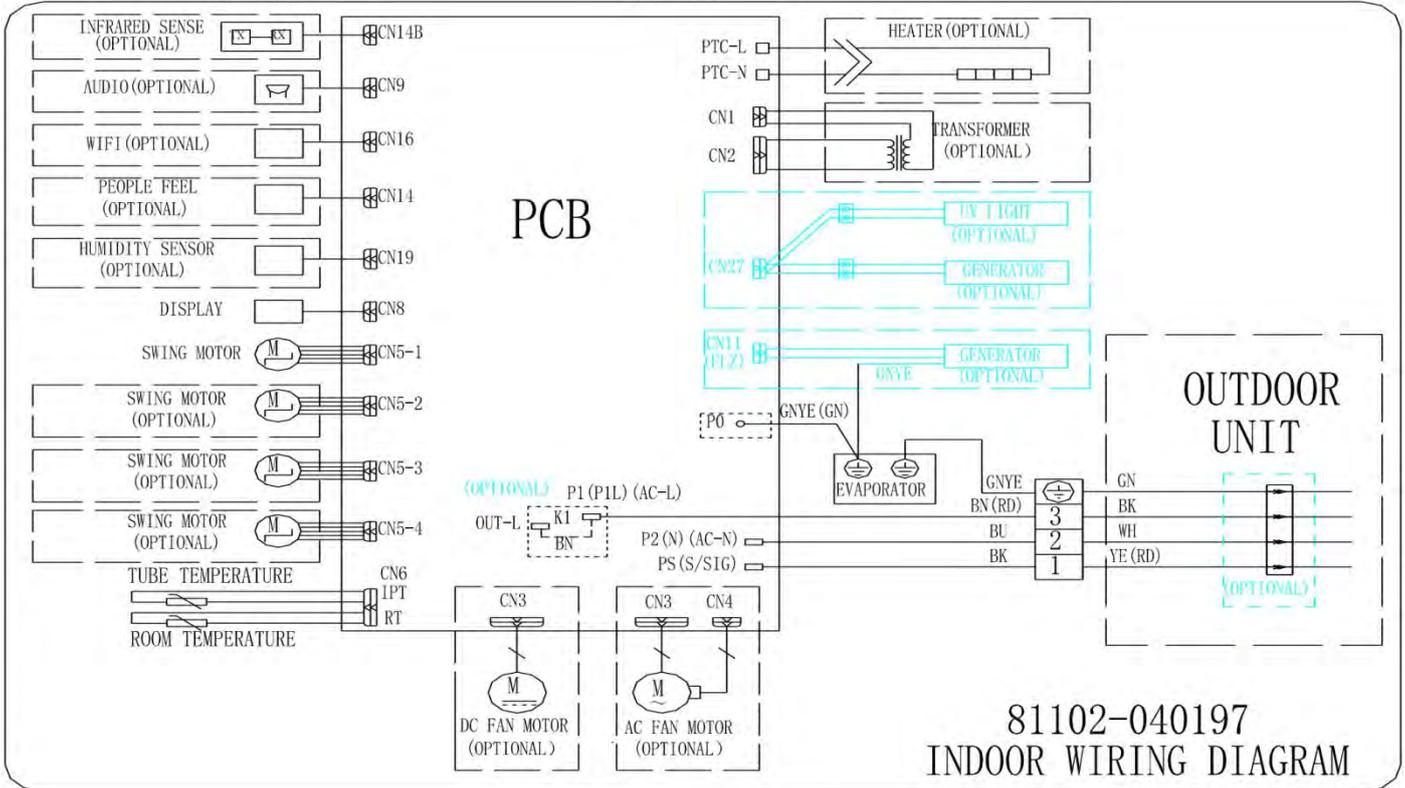
# Refrigeration Cycle Diagram



# Wiring Diagrams

# 5

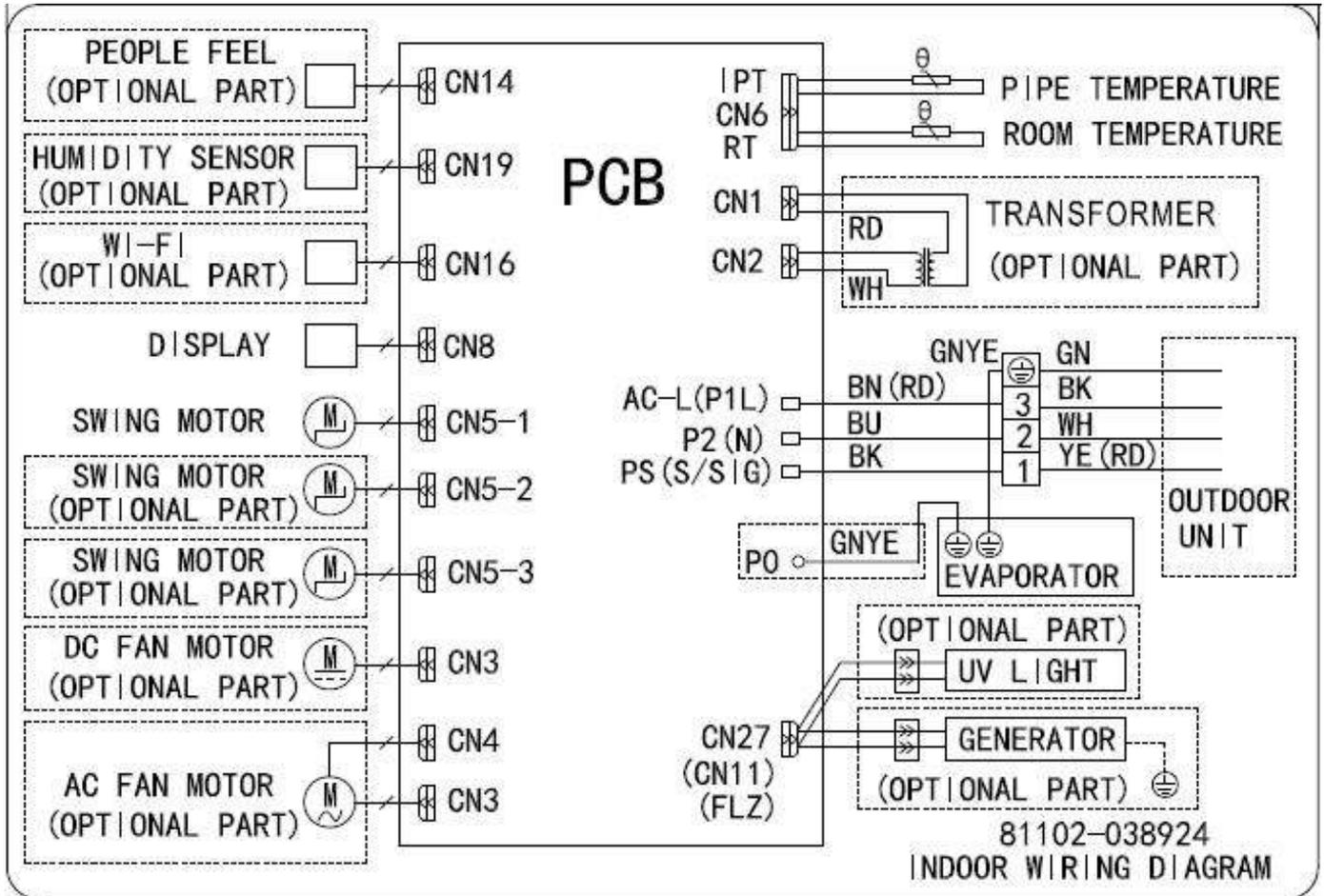
**Indoor Units:** WT009ALSI20HLF | WT009GLSI20HLF | WT012ALSI20HLF | WT012GLSI20HLF | WT018GLSI20HLF



# Wiring Diagrams

# 5

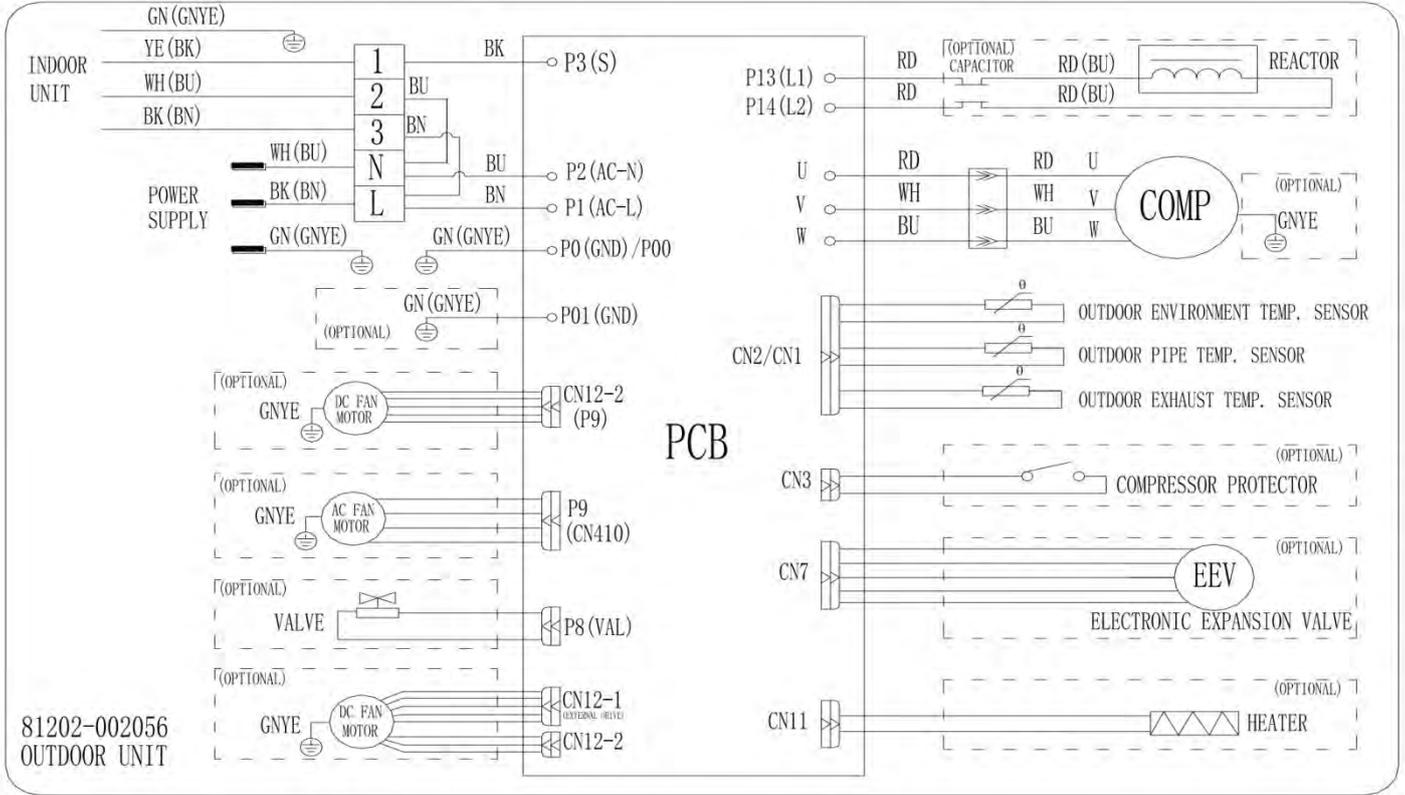
Indoor Units: WT024GLSI20HLF | WT030GLSI20HLF | WT036GLSI20HLF



# Wiring Diagrams

# 5

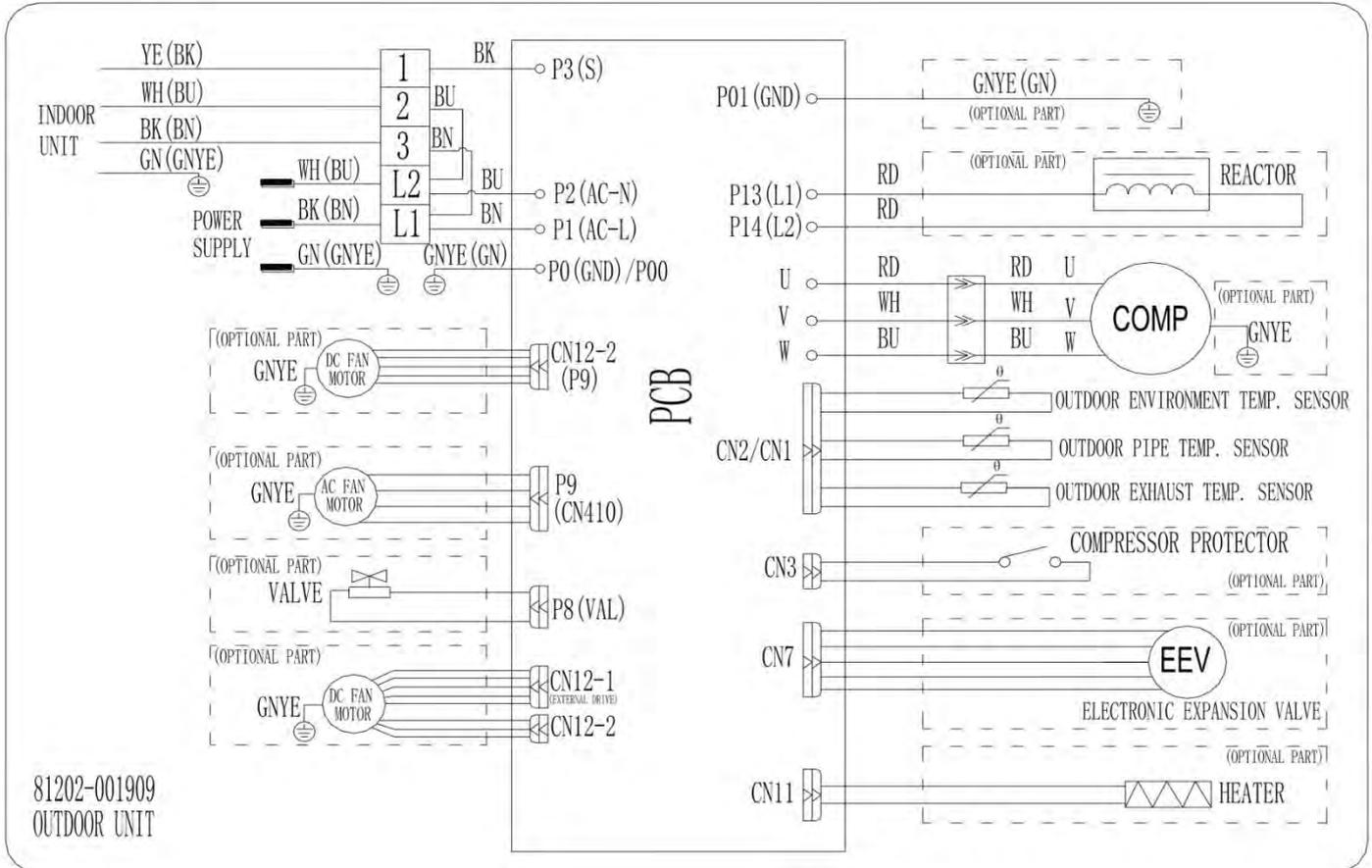
Outdoor Units: YN009ALSI20RPF | YN012ALSI20RPF



# Wiring Diagrams

# 5

**Outdoor Units:** YN009GLSI20RPF | YN012GLSI20RPF | YN018GLSI20RPF | YN024GLSI20RPF | YN030GLSI20RPF | YN036GLSI20RPF

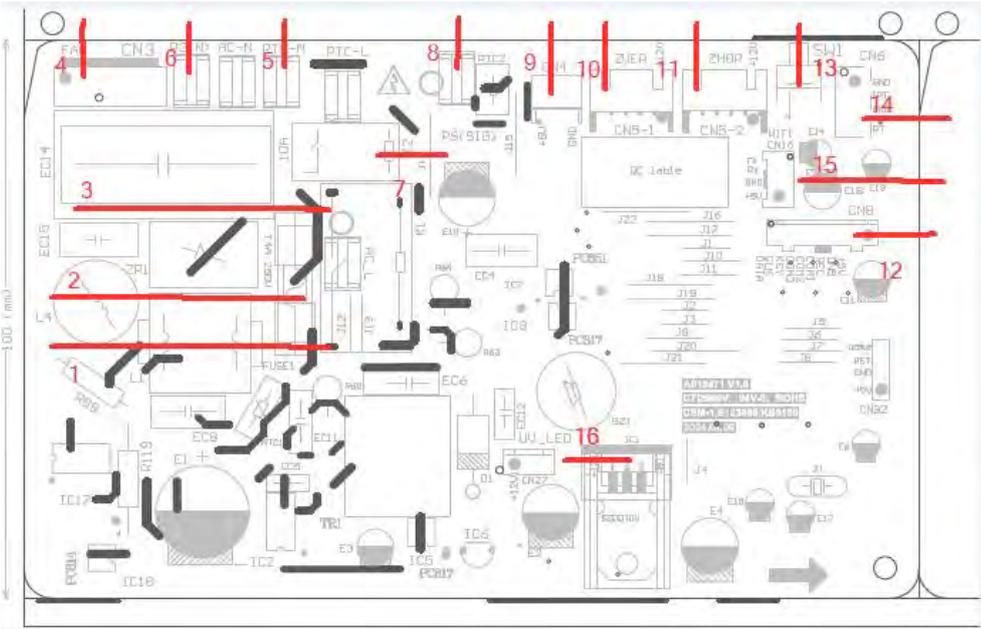


# PCB Layouts

# 6

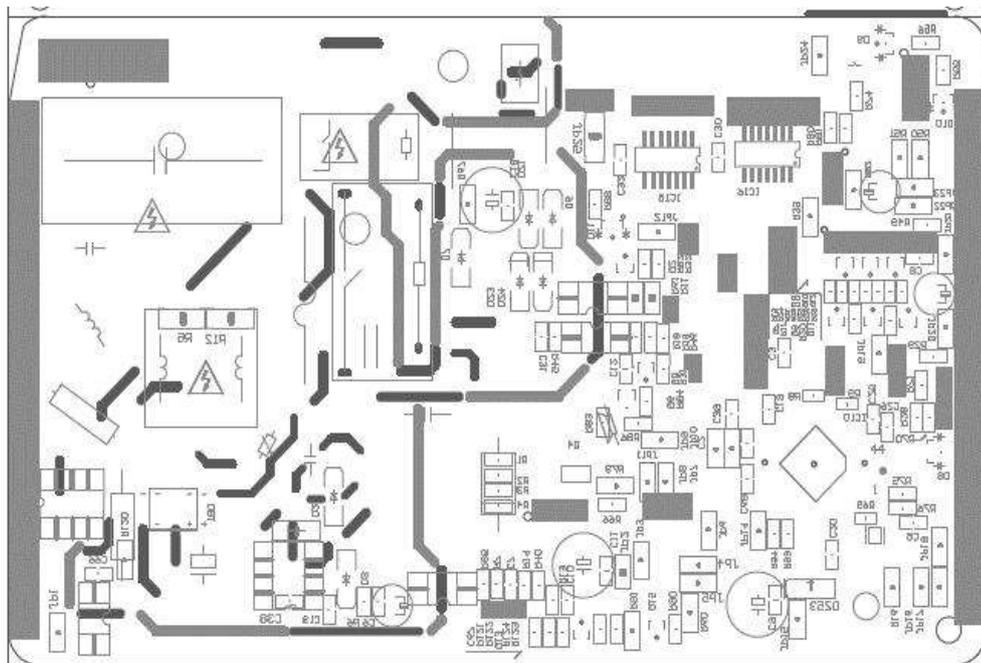
Indoor Unit: WT009ALSI20HLF

Top View



1	ODU AC power output
2	Fuse
3	ODU AC power input
(3)	ODU power supply IDU power input
4	AC motor driver
5	IDU/ODU wiring connection-N connector
6	Power supply-N connector
7	Anion connector
8	IDU/ODU communication wiring
9	AC motor feedback
10	Up-down swing connector
11	Left-right swing connector
12	Display
13	Emergency button
14	Temperature sensor connector
15	Wi-Fi connector

Bottom View

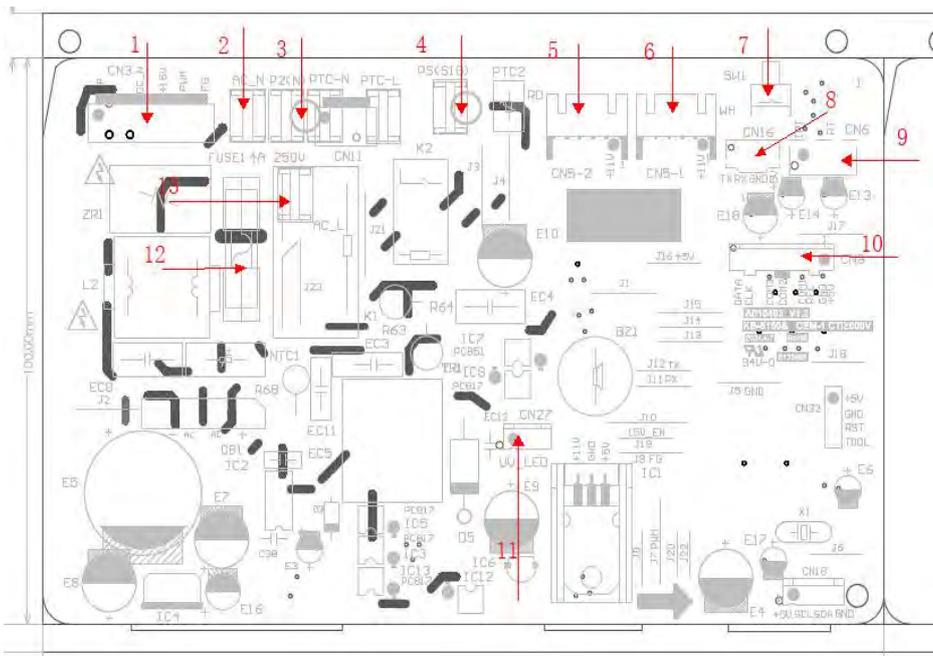


# PCB Layouts

# 6

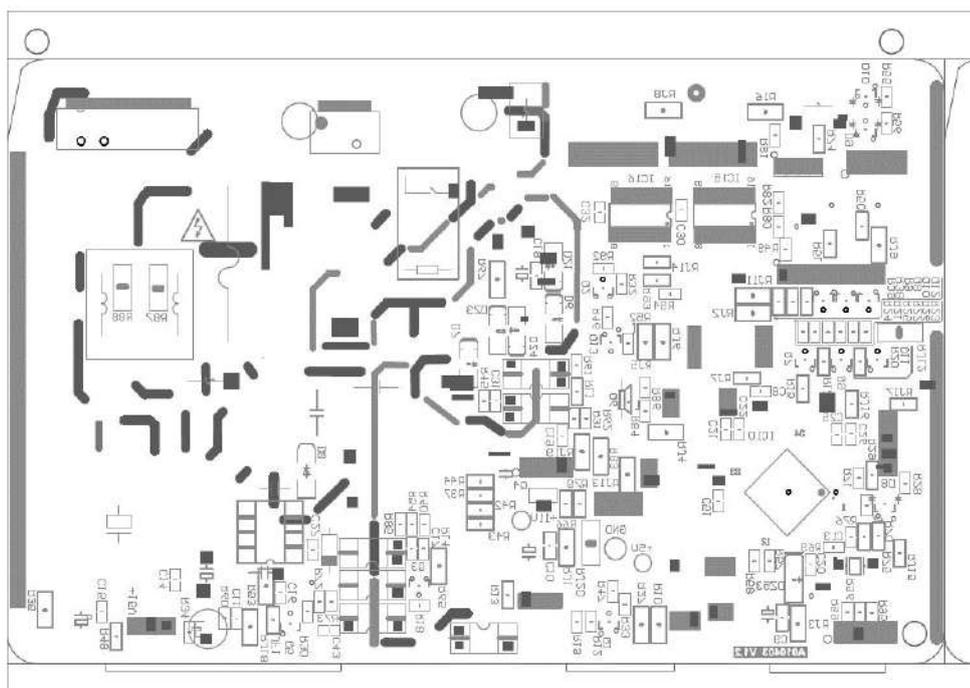
Indoor Units: WT024GLSI20HLF | WT030GLSI20HLF | WT036GLSI20HLF

## Top View



1	ODU AC power output
2	Fuse
3	ODU AC power input
4	AC motor driver
5	IDU/ODU wiring connection-N connector
6	Power supply-N connector
7	IDU/ODU communication wiring
8	AC motor feedback
9	Up-down swing connector
10	Left-right swing connector
11	Display
12	Emergency button
13	Temperature sensor connector
14	Wi-Fi connector

## Bottom View

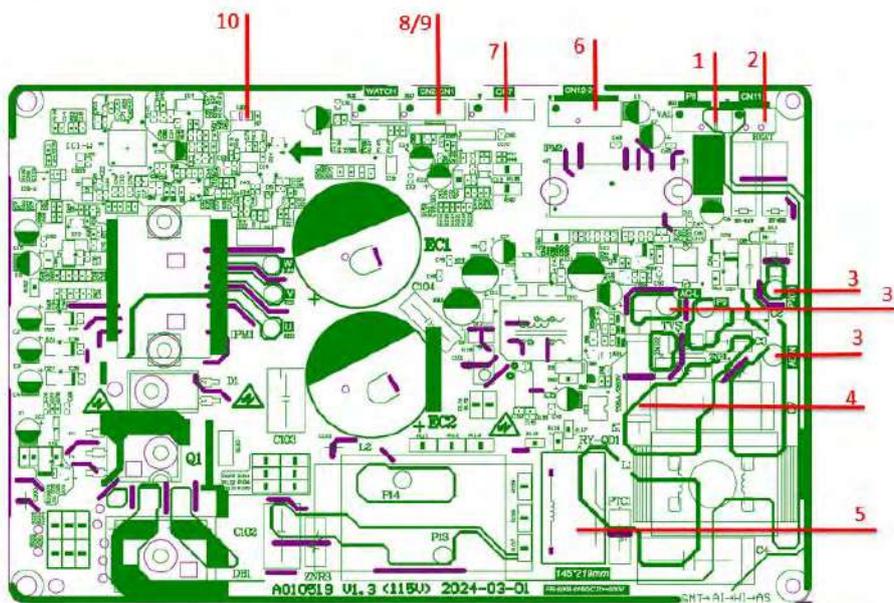


# PCB Layouts

# 6

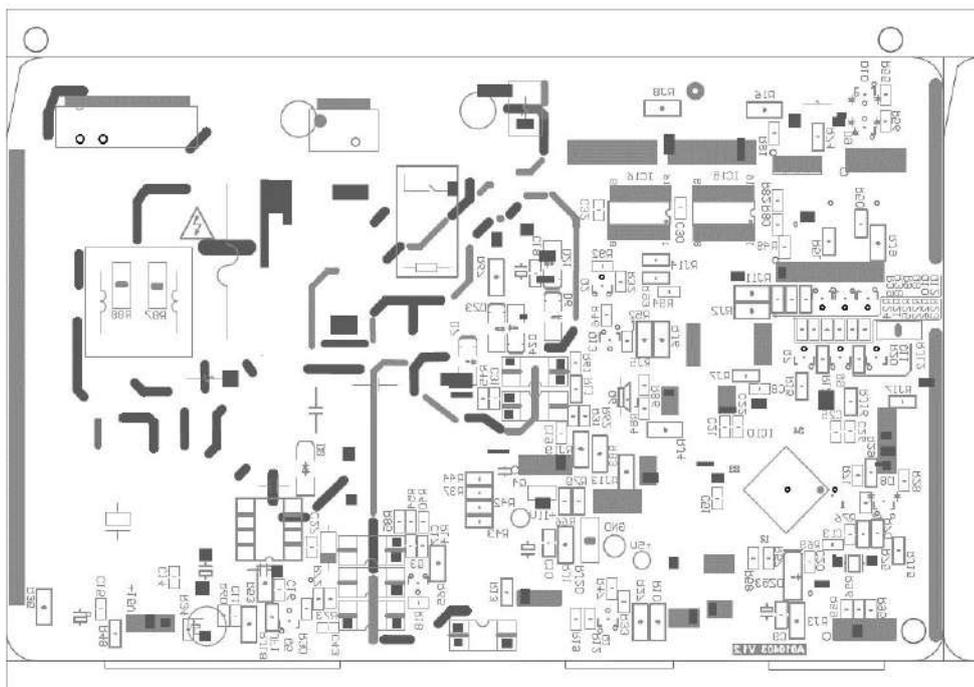
Outdoor Units: YN009ALSI20RPF | YN012ALSI20RPF

## Top View



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

## Bottom View

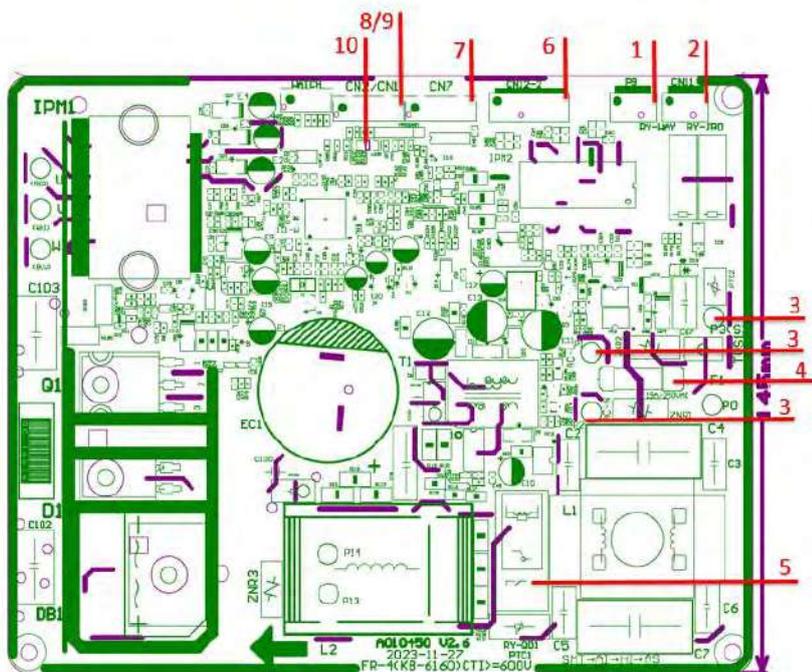


# PCB Layouts

# 6

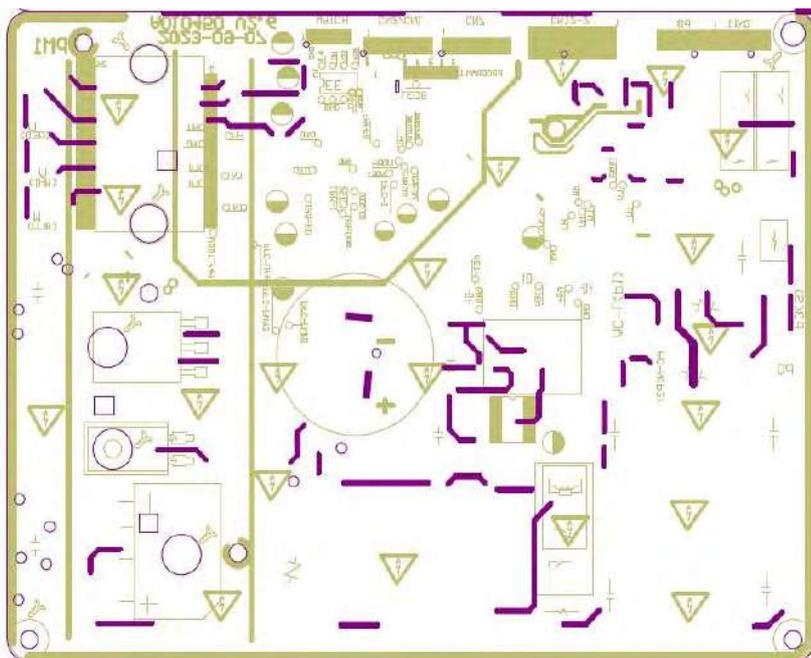
Outdoor Units: YN009GLSI20RPF | YN012GLSI20RPF

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

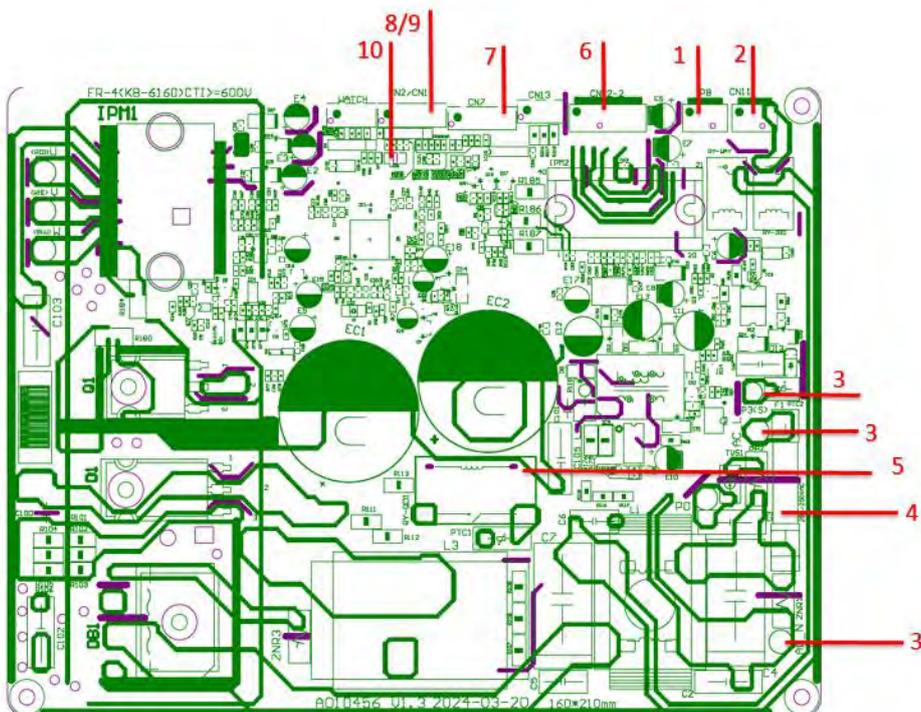


# 6

## PCB Layouts

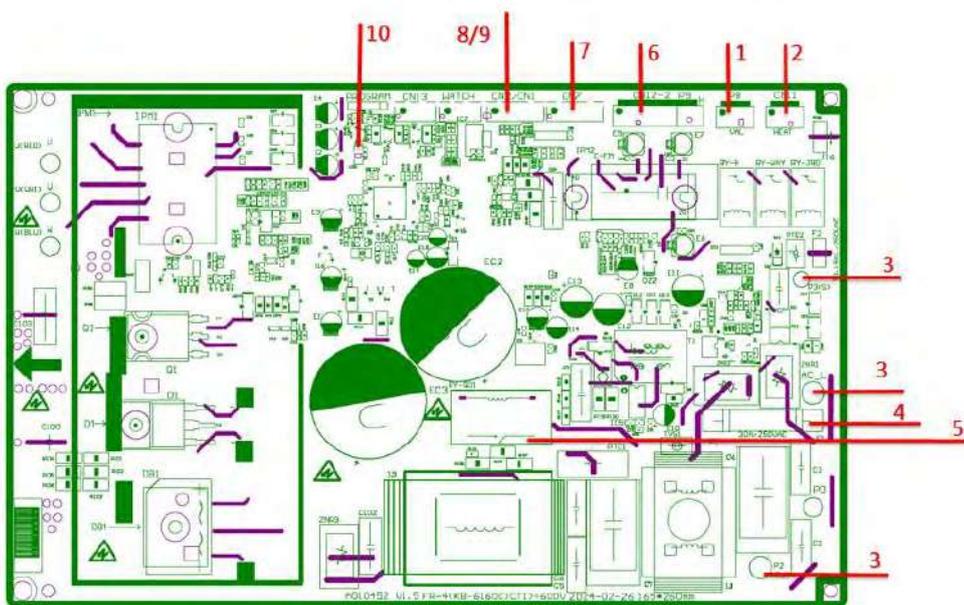
Outdoor Units: YN018GLSI20RPF | YN024GLSI20RPF | YN030GLSI20RPF | YN036GLSI20RPF

### Top View



1	DRED (Option)
2	OAT/OPT connector
3	Discharge sensor connector
4	Electronic expansion valve
5	AC/DC fan motor connector
6	Heater
7	4-way valve
8	LED5
9	Communication wiring
10	Fuse
11	L, N Line
12	ODU PCB main relay
13	LED1-LED4

### Bottom View

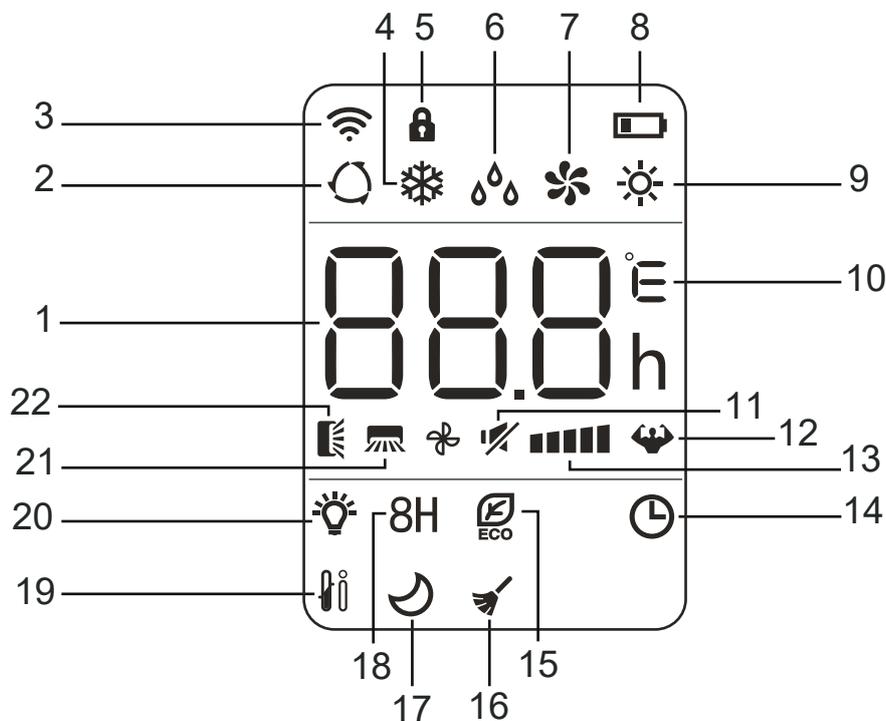


1	4-way valve P8
2	Heater CN11
3	L, N and communication
4	Fuse 1
5	ODU PCB main relay RY-QD1
6	DC motor connector CN12-2
7	Electronic expansion valve CN7
8	Discharge sensor connector CN2
9	OAT/OPT sensor connector CN1
10	LED5
11	AC motor connector P9
12	LED1-LED4

# Remote Controller

# 7

## Remote Controller LED Screen & Icons



No.	Icon	Description
1	8.8	Temperature indicator
2	⏻	Auto mode
3	📶	Signal transmit indicator
4	❄️	Cooling mode
5	🔒	Child lock indicator
6	💧	Dry mode
7	🌀	Fan Only mode
8	🔋	Battery level indicator
9	☀️	Heating mode
10	°E	Unit of temperature (°C/°F)
11	🔇	Mute function

No.	Icon	Description
12	🔥	Turbo mode
13	🌀 📶	Fan speed
14	🕒	Timer active indicator
15	🌿	ECO mode
16	🧹	Self-Clean function
17	🌙	Sleep function
18	8H	8°C (46°F) Heating function
19	👤	I Feel/Follow Me mode
20	💡	LED display on/off
21	👆	Up-Down swing indicator
22	👉	Left-Right swing indicator

### Note on Illustrations

The illustrations in this manual are strictly for explanatory purposes. The actual display and some functions of the remote controller may vary according to the manual purchased.

# Remote Controller

# 7

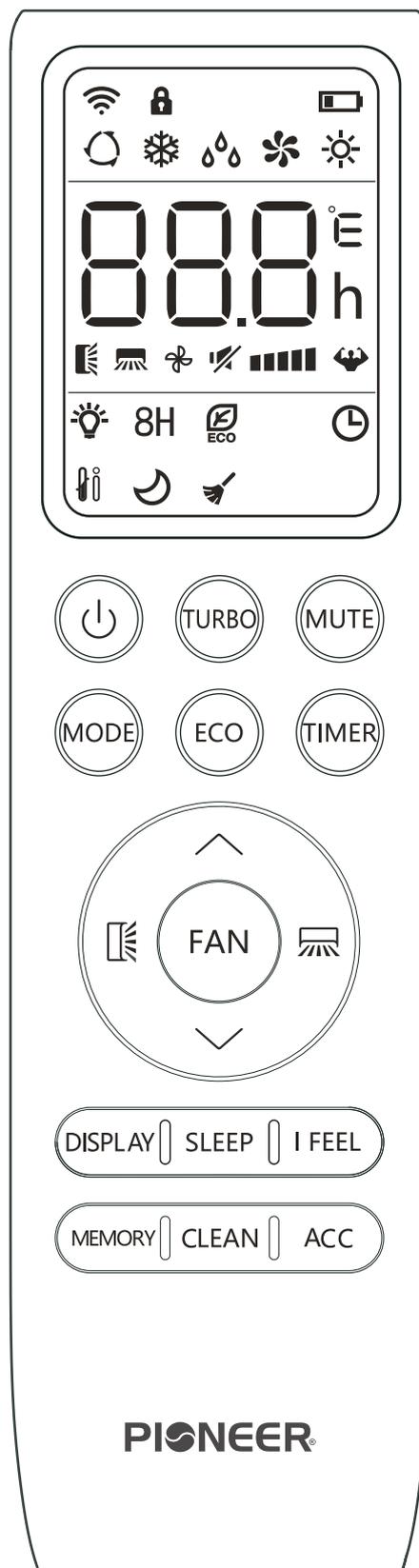
## Remote Buttons Overview

Button	Description
	Turn the air conditioner on or off
TURBO	Activate/deactivate the Turbo feature to allow the system to rapidly reach set temperatures
MUTE	Put the system into Silent mode
MODE	Select the mode of operation (Auto, Cool, Dry, Fan, and Heat modes)
ECO	Activate/deactivate the ECO feature
	Long press to activate the 46°F "Away from Home" freeze protection setting
TIMER	Configure the automatic on/off times
^	Increase set temperature and timing, as well as navigate the functional menu
v	Decrease set temperature and timing, as well as navigate the functional menu
FAN	Configure the fan speed (Auto, Low, Mid, and High)
	Activate/deactivate the up-down louver motor
	Activate/deactivate the left-right louver motor
DISPLAY	Turn the LED display on or off
SLEEP	Toggle the system's Sleep mode
I FEEL	Activate/deactivate the system's Follow Me mode
MEMORY	Recall saved temperature/mode/fan settings
CLEAN	Activate/deactivate Self-Clean mode
ACC	Reserved for future usage
[LOCK]	Hold MODE+TIMER for child-lock

 The display and some features of the remote controller may vary according to the model of the system.

 The shape and positions of the buttons and indicators may vary according to the model of the system, but the features and functionality would remain the same.

 The unit will confirm the successful reception of each button command with a beep.



# Unit Control

# 8

**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:** After finishing the installation, the temperature of the air inlet on the unit and the airflow throughout the room may vary. 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

## 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 either operate in Cooling, Heating, or Fan mode according to  $\Delta t$  -- the temperature difference between RT and ST is 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	$\Delta t < 30^{\circ}\text{F} (-1^{\circ}\text{C})$

# Unit Control

# 8

## Cooling Mode

1. Temperature Control: The temperature is 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  $RT-ST \geq 33^{\circ}F$  ( $1^{\circ}C$ ), the compressor starts up and the unit operates as customer preset.

2) The compressor stops operating when:

A.  $RT-ST \leq 27^{\circ}F$  ( $-3^{\circ}C$ ) and the compressor keeps operating for 2 minutes continuously or

B.  $RT-ST \leq 28^{\circ}F$  ( $-2^{\circ}C$ ) and the compressor operates in the lowest frequency for 5 minutes continuously or

C.  $RT-ST \leq 30^{\circ}F$  ( $-1^{\circ}C$ ) and the compressor operates in the lowest frequency for 10 minutes continuously.

3) Compressor Frequency Control: Based on the relation of RT and ST and the changing speed of RT.

4) The compressor also stops operating when the unit is:

A. Switched off.

B. Under protection.

C. Changed to Fan mode.

5) The compressor operates for 7 minutes minimally before being stopped by its programming in normal operation.

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

3. ODU Fan Motor Control:

1) When the unit is:

A. Switched off.

B. Under protection.

C. To the set temperature.

After the compressor stops, the fan motor will also stop operating according to the temperature of OPT and OAT. The maximum delay for the motor should be less than 160 seconds.

2) When turning the unit on in Cooling mode, the ODU fan motor will delay for 5 seconds after the compressor starts up.



# Unit Control

# 6

## Dry Mode

1. Temperature Control: 61-88°F (16-31°C).  
Fan Speed: Low.  
Vane Blade Position: As customer preset.
2. When the ODU fails 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.

## Heating Mode

1. Temperature Control: 61-88°F (16-31°C).
2. Compressor and Process Control:
  - 1) When  $ST-CRT \geq 33^{\circ}F$  ( $1^{\circ}C$ ), the compressor starts up and the unit operates as customer preset.
  - 2) The compressor stops operating when:
    - A.  $ST-CRT \leq 27^{\circ}F$  ( $-3^{\circ}C$ ) and the compressor keeps operating for 2 minutes continuously or
    - B.  $ST-CRT \leq 28^{\circ}F$  ( $-2^{\circ}C$ ) and the compressor operates in the lowest frequency for 5 minutes continuously or
    - C.  $ST-CRT \leq 30^{\circ}F$  ( $-1^{\circ}C$ ) and the compressor operates in the lowest frequency for 10 minutes continuously.
  - 3) 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 7 minutes minimally 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, it will be a 3-minute delay until the next procedure.
3. IDU Time Delay: When the compressor stops or the unit turns off while in Heating mode, the IDU fan motor will operate for a few more seconds to prevent overheating.

# Unit Control

# 6

## Heating Mode (Continued)

### 4. ODU Fan Motor Control

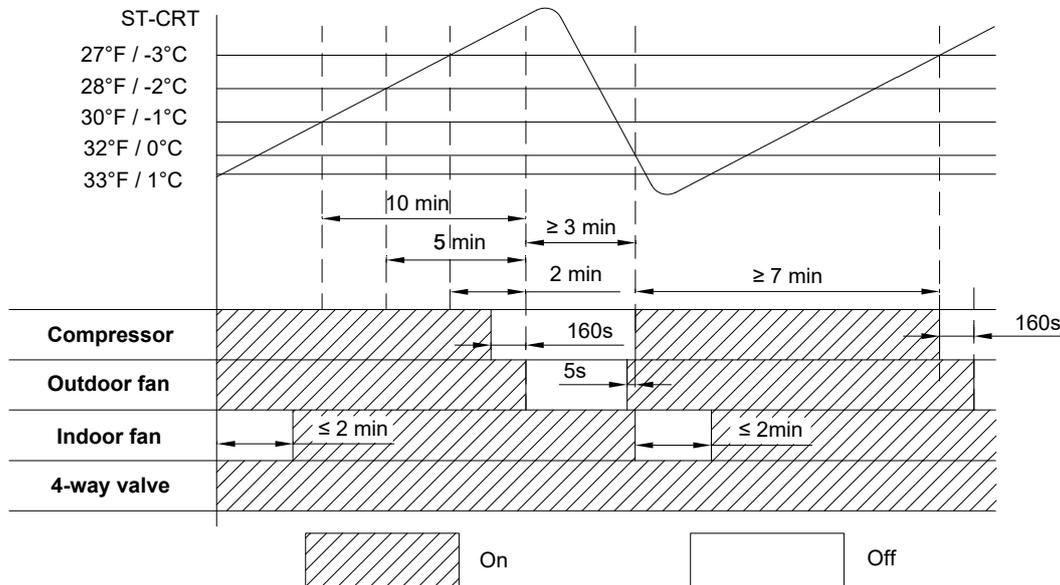
- 1) While the unit is:
  - A. Switched off.
  - B. Under protection.
  - C. To the set temperature.

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

- 2) When turning the unit on in Heating mode, the ODU fan motor will delay for 5 seconds after the compressor starts up.
- 3) In the defrosting process, the fan motor will delay operation for 48 seconds 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 turn on.
- 2) When Heating mode switches off or changes to other modes, the 4-way valve will turn off for a 2-minute delay after the compressor stops operating.
- 3) The unit stops operating due to any kind of protection, the 4-way valve will turn off for a 2-minute delay.
- 4) In the defrosting process, the 4-way valve will turn off for a 43-second delay after the compressor stops operating.
- 5) When defrosting finishes, the compressor stops operating and the 4-way valve will turn on after a 43-second delay.



# Unit Control

# 6

## Heating Mode (Continued)

### 6. Defrost

**Note:**

t1: The compressor continuous operation time.

t2: Unit operation first time going to defrost circle.

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

When the unit operates to:

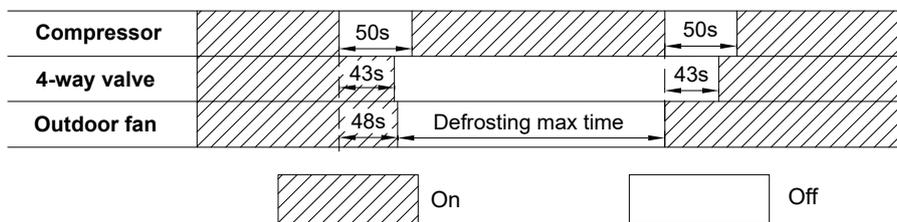
- A.  $t1 \geq t2$  or
- B.  $t3 \leq t1 < t2$   
and also the temperature (related to OAT and OPT) tested 3 minute continuously meets for defrosting.

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

2) Conditions for quitting defrosting:

- A. After defrosting for 60 seconds and  $OAT \geq 54^{\circ}F (12^{\circ}C)$  or
- B.  $OAT < 23^{\circ}F (-5^{\circ}C)$  and  $OPT \geq 7\sim 46^{\circ}F (-14\sim 8^{\circ}C)$  for 80 seconds continuously or
- C. Defrosting process runs for 10 minutes.

When the unit meets any condition, the defrosting process finishes.



3) Defrosting finishes: The compressor stops operating and restarts after a 50-second 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  $RT < 75^{\circ}F (24^{\circ}C)$ :

- A. If  $ITP > 88^{\circ}F (31^{\circ}C)$  while the compressor operates for 5 minutes, the fan motor will operate according to the preset fan speed.
- B. If  $IP T \leq 88^{\circ}F (31^{\circ}C)$ , the fan motor stops operating while the compressor operates within 2 minutes.
- C. If  $IP T \geq 81^{\circ}F (27^{\circ}C)$ , the fan motor operates in low speed for 2 minutes, then changes to the preset speed.

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

- A. Within 2 minutes after the compressor starts up and once  $IP T > 81^{\circ}F (27^{\circ}C)$ , the fan motor changes to the preset speed.
- B. After the compressor starts operating for 2 minutes, the fan motor changes to the preset speed directly.

# Unit Control

# 6

## Heating Mode (Continued)

### 2) Vane Blade Operation for Cold Air Prevention:

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

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

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

**B.** If the vane blade operates 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 that 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.

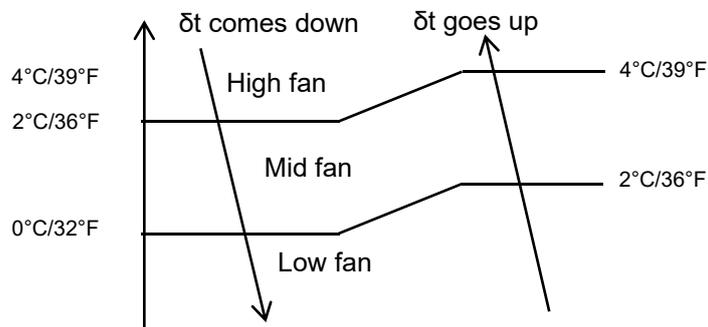
## Fan Mode

### 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 is always off.



# Unit Control

# 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 unit is turned off.
2. Press "Timer" on the remote control one time to enter the time setting.
3. Press "▲" or "▼" to set the start time for the unit.
4. Set other function as Mode, Fan Speed, Swing, etc.
5. Press "Timer" one time again to confirm the Time On setting.

### **Timer Off**

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

**Note:** If a selection is not input for the time setting within 10 seconds, the timer function will turn off automatically.

## Sleeping Mode

When the unit operates in Sleeping mode, the power supply and sleep lights will be on by default. The temperature display will turn off after 15 seconds. In this mode, the unit operates according to the Sleep Curve as designed. In Sleeping mode, the unit can operate 10 hours continuously. After, the unit will quit from this mode and operate as previous preset.

## Emergency Switch

When the emergency switch is pressed one time, Cooling mode is selected. If the switch is pressed again within 3 seconds, Heating mode is selected. If pressed one time again, the unit will turn 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 a function test.

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

## Auto-Restart Function

When the unit is operating in one mode, all of its operation data will be memorized into IC by the main PCB, such as the working mode, preset temperature, etc. If the power supply cuts off 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 minutes 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 8 seconds and the Auto-Restart function activates.

# Unit Control

# 6

## Protection

### 1. Overload Protection for Cooling or Dry Mode

#### 1) If:

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

#### 2) When $OPT \geq 131^{\circ}\text{F}$ ( $55^{\circ}\text{C}$ ), the compressor will be frequency limited/reduced for overload protection.

3) If the unit has entered overload stop-working protection six times consecutively, the protection can't be recovered unless the On/Off button is pressed. The unit will show a failure code. Once the compressor runs more than 6 minutes 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 switches off or changes 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.  $IPT \geq 144^{\circ}\text{F}$  ( $62^{\circ}\text{C}$ ), the unit stops operating for overload protection.
- B.  $IPT < 131^{\circ}\text{F}$  ( $55^{\circ}\text{C}$ ) and after the compressor stops for 3 minutes, the unit can be started.

#### 2) When $IPT \geq 131^{\circ}\text{F}$ ( $55^{\circ}\text{C}$ ), the compressor will be frequency limited/reduced for overload protection.

3) If the unit has entered overload stop-working protection six times consecutively, the protection can't be recovered unless the On/Off button is pressed. The unit will show a failure code. Once the compressor runs more than 6 minutes 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 switches off or changes 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 minutes, 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 six times consecutively, the protection can't be recovered unless the On/Off button is pressed. The unit will show a failure code. Once the compressor runs more than 6 minutes 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 switches off or changes to Fan mode.

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

# Unit Control

# 6

## Protection (Continued)

### 4. The Current Protection

- 1) If the unit's working current is more than limited current, the compressor will be frequency limited/reduced for over-current protection.
- 2) When the unit's working current is more than stopped current, the unit stops operating. The compressor must stop for 3 minutes for the unit to be recovered.
- 3) If the unit has entered over-current stop-working protection six times consecutively, the protection can't be recovered unless the On/Off button is pressed. Once the compressor runs more than 6 minutes continuously, the counter of the stop-working protection will be reset to zero, restarting the counting process.

### 5. IPM Overheating Protection

- 1) When IPM temperature  $\geq 189^{\circ}\text{F}$  ( $87^{\circ}\text{C}$ ), the compressor will be frequency limited/reduced for IPM over-temperature protection.
- 2) When  $\geq 203^{\circ}\text{F}$  ( $95^{\circ}\text{C}$ ), the unit stops operating for system protection.  
If  $< 189^{\circ}\text{F}$  ( $87^{\circ}\text{C}$ ) and after the compressor stops for 3 minutes, the unit can be started.
- 3) If the unit has entered IPM over-temperature stop-working protection six times consecutively, the protection can't be recovered unless the On/Off button is pressed. The unit will show a failure code. Once the compressor runs more than 6 minutes 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 switches off or changes to Fan mode.

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

## Complementary

### 1. Energy Saving (Eco)

Function effective in Cooling and Heating mode only.

In Cooling mode, the set temperature range is from  $79\text{-}88^{\circ}\text{F}$  ( $26\text{-}31^{\circ}\text{C}$ ). In Heating mode, the set temperature range is from  $61\text{-}77^{\circ}\text{F}$  ( $16\text{-}25^{\circ}\text{C}$ ).

### 2. Turbo

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

### 3. Communication Control

If the ODU PCB can't get signal feedback from the IDU for 2 minutes continuously, the 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 minutes.

## Calibration Test Mode

### 1. Cooling mode

2. Set temperature to  $86^{\circ}\text{F}$  ( $30^{\circ}\text{C}$ )

### 3. Mid-fan speed

Press the "ECO" button seven times consecutively within 8 seconds and the unit will change to Calibration Test mode. The buzzer sounds three times.

# Part II Installation & Maintenance

## Installation & Maintenance Notes

# 1

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.
- A distributor or qualified person must perform the installation and maintenance.
- A licensed technician must perform all electric work according to 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.

### **Electrical Safety Precautions**

1. Turn off the air conditioner's power supply before checking and 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 that the power plug is touchable.
4. Make sure each wiring terminal is connected firmly during installation and maintenance.
5. Adequately ground the unit. 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.

# Installation & Maintenance Notes

# 1

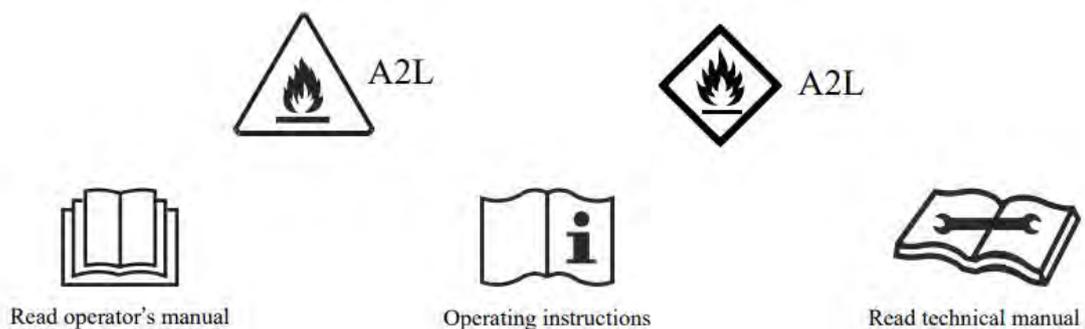
## Electrical Safety Precautions (Continued)

11. For systems 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 all 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.

## Fire Safety Precautions

### **Warning - Risk of fire due to the flammable refrigerant used**

- Trained service personnel must conduct the repairs.
- Do not puncture the refrigerant tubing.
- Dispose of the materials properly in accordance with federal or local regulations.
- Consult the repair manual/owner's guide before attempting to service this product. Follow all safety precautions.
- Follow handling instructions carefully in compliance with national regulations.



## 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 one 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.

# Installation & Maintenance Notes

# 1

## Installation Safety Precautions (Continued)

4. Wear a safety belt if the working height is above 7 feet (2 m).
5. Use equipped or appointed components during installation.
6. Make sure no foreign objects remain in the unit after finishing installation.  
**Note:** Improper installation may lead to fire hazards, explosions, electric shocks, or injuries.

## Unit Installation & Relocation Safety Precautions

### Warnings

1. When installing or relocating the unit, ensure that 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 to rise or the compressor to rupture, resulting in injury.
2. Do not charge the unit with refrigerant that does not comply with the nameplate or with unqualified refrigerant during installation or relocation. Otherwise, it may cause abnormal operations, wrong actions, mechanical malfunctions, or even a series of safety accidents.
3. When refrigerant needs to be recovered during relocating or repairing the unit, confirm that the unit is running in Cooling mode. Then fully close the valve at the high-pressure side (2-way valve). After 30-40 seconds, fully close the valve at the low-pressure side (3-way valve). Immediately stop the unit and disconnect the power.  
**Note:** The duration of refrigerant recover should not exceed 1 minute. 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. When installing the unit, ensure that the connecting pipe is securely attached before starting the compressor. 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 shock or fire.
8. Use the specified types of wires for electrical connections between the indoor and outdoor units. Firmly clamp the wires so its terminals receive no external stresses. Electric wires with insufficient capacity, wrong wire connections, or insecure wire terminals may cause electric shock or fire.

# R-454B Refrigerant

# 2

## Introduction to R-454B Refrigerant

The refrigerant used for this air conditioner is environmentally-friendly hydrocarbons R-454B. The two kinds of refrigerants are combustible and odorless. In addition, the refrigerants can burn and explode under certain conditions. However, there will be no risk of burning and explosion, if correctly utilizing the following table to install the air conditioner in a room with an appropriate area. Compared to ordinary refrigerants, R-454B refrigerant is environmentally friendly and does not destroy the ozone sphere. Its values of greenhouse effect are also very low.

## Installation Area Requirements for R-454B Air Conditioners

$$m_1 = (6m^3) \times LFL, m_2 = (52m^3) \times LFL, m_3 = (260m^3) \times LFL$$

When LFL is the lower-flammable limit is  $kg/m^3$ , R-454B LFL is  $0.296kg/m^3$ .

For appliances with a charge amount of  $m_1 < M < m_2$ :

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

Do not exceed  $M_{max} = SF \times LFL \times h^0 \times A$  (GG.3DV)

The required minimum floor area  $A_{min}$  to install an appliance with refrigerant charge  $M(kg)$  must be in

accordance with the following:  $A_{min} = (M / (2.5 \times (LFL)^{(5/4)} \times h^0)) ^2$

Not less than:  $A_{min} = M / (SF \times LFL \times h)$  (GG.4DV)

Where:

$M_{max}$  is the allowable maximum charge in a room (kg);

$M$  is the refrigerant charge amount in appliance (kg);

$A_{min}$  is the required minimum room area ( $m^2$ );

$A$  is the room area ( $m^2$ );

LFL is the lower-flammable limit ( $kg/m^3$ );

$h^0$  is the installation height of the appliance, in feet/meters for calculating  $M_{max}$  or  $A_{min}$  (5.9 feet / 1.8 m for wall mounted units)

**Table GG.1 - Maximum Charge (kg)**

Category	LFL $kg/m^3$ ( $kg/ft^3$ )	h <sup>0</sup> (m/ft)	Floor Area ( $m^2/ft^2$ ) Maximum Charge (kg)						
			4/43.06	7/75.35	10/107.64	15/161.46	20/215.28	30/322.92	50/538.2
R-454B	0.296/0.083	0.6/1.97	0.36	0.62	0.89	1.27	1.46	1.79	2.32
		1/3.28	0.59	1.04	1.48	2.11	2.44	2.99	3.86
		1.8/5.9	1.07	1.86	2.66	3.81	4.39	5.38	6.95
		2.2/7.22	1.3	2.28	3.26	4.65	5.37	6.58	8.49
		2.6/8.53	1.54	2.69	3.85	5.50	6.35	7.77	10.03
		3.0/9.84	1.78	3.11	4.44	6.34	7.32	8.97	11.58

# R-454B Refrigerant

# 2

## Installation Area Requirements for R-454B Air Conditioners (Continued)

Table GG.2 - Minimum Room Area (m<sup>2</sup>)

Category	LFL kg/m <sup>3</sup> (kg/ft <sup>3</sup> )	h0 (m/ft)	Charge Amount (M) (kg) Minimum Room Area (m <sup>2</sup> / ft <sup>2</sup> )						
			1.776kg	2.664kg	3.552kg	5.328kg	7.104kg	8.88kg	11.544kg
R454B	0.296/ 0.083		/	66.17	117.63	264.68	470.54	735.21	1242.51
		0.6/1.97	/	23.82	42.35	95.28	169.39	264.68	447.3
		1/3.28	/	10	13.33	29.41	52.28	81.69	138.06
		1.8/5.9	/	8.18	10.91	19.69	35	54.69	92.42
		2.2/7.22	/	6.92	9.23	14.10	25.06	39.15	66.17
		2.6/8.53	/	6.00	8.00	12.00	18.82	29.41	49.70
		3.0/9.84	/						

### Caution:

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

# R-454B Refrigerant

# 2

## Installation Safety

### Installation Safety Principles

#### Site Safety



Open Flames Prohibited



Ventilation Necessary

#### Operation Safety

Open Flames Prohibited



Mind static electricity



Must wear protective clothing and anti-static gloves



Don't use mobile phone

- Refrigerant Leak Detector
- Appropriate Installation Location



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

- Perform the installation in a well-ventilated location.
- When using R-454B refrigerant during installation or maintenance, ensure that the location is free from open fire, welding, smoking, drying oven, or any other goods with temperatures higher than 745°F/396°C.
- Appropriate anti-static measures, such as wearing anti-static clothing and gloves, are necessary when installing systems using R-454B refrigerant.
- 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 that the location is not near heat sources or a combustible/explosive environment.
- 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 on two sides.
- 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 minutes 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.

# R-454B Refrigerant

# 2

## **Installation Safety (Continued)**

### **1. Inspect the Area**

Before working on systems containing flammable refrigerants, safety checks are required to ensure the risk of ignition is minimized. The following precautions must be complied with prior to conducting repairs on the system.

### **2. Work Procedure**

To minimize the risk of flammable gas or vapor presence, conduct work using controlled procedures.

### **3. General Work Area**

Inform all maintenance staff and individuals working in the local area about the nature of the work being performed. Avoid working in confined spaces. Section off the area around the workspace. Ensure that the area is safe by controlling flammable materials.

### **4. Check for Refrigerant**

Check the area with an appropriate refrigerant detector before and during work to ensure that the technician is aware of potentially flammable atmospheres. Ensure that the leak detection equipment is suitable for flammable refrigerants, i.e. non-sparking, adequately sealed, or intrinsically safe.

### **5. Fire Extinguisher**

If conducting hot work on the refrigeration equipment or any associated parts is needed, appropriate fire extinguishing equipment must be available. Keep a dry powder or CO<sub>2</sub> fire extinguisher adjacent to the charging area.

### **6. No Ignition Sources**

Individuals carrying out work involving exposed pipework on a refrigerant system are prohibited from using any sources of ignition that may lead to a risk of fire or explosion. All possible ignition sources, such as cigarette smoking, must be performed at a sufficient distance from the installation or maintenance site. Before conducting work on the equipment, the surrounding area must be surveyed to ensure that there are no flammable hazards or ignition risks. No Smoking signs must be displayed.

### **7. Well-Ventilated Area**

Ensure that the area is open and well-ventilated before accessing the system or performing any work that generates heat. Ventilation must be maintained to a certain degree while work is being carried out. The ventilation should safely disperse any released refrigerant and expel it externally into the atmosphere.

### **8. Inspect the Refrigeration Equipment**

When changing electrical components, they must be fit-for-purpose and meet the correct specifications. Follow the manufacturer's maintenance and service guidelines at all times. If in doubt, consult the manufacturer's technical department for assistance.

For installations using flammable refrigerants, check the following:

- Ensure that the charge size is appropriate for the room in which the refrigerant-containing parts are installed.
- Confirm the ventilation machinery and outlets are operating adequately and not obstructed.
- If an indirect refrigerating circuit is being used, check the secondary circuit for the presence of refrigerant.
- Confirm the equipment markings are visible and legible. Correct markings and signs that are illegible.
- Install the refrigeration pipe or components in a position that minimizes the risk of corrosion from harmful substances, unless constructed of corrosion-resistant materials and suitably protected.

# R-454B Refrigerant

# 2

## Installation Safety (Continued)

### 9. Inspect the Electrical Devices

Repairing and maintaining electrical components must include initial safety checks and component inspections. If a fault exists that could compromise safety, then the electrical supply must not be connected to the circuit until the fault is resolved. If the fault cannot be immediately corrected but it is necessary to continue operation, a temporary solution must be implemented. If a temporary solution is implemented, it must be reported to the owner of the equipment, ensuring both parties are informed.

Initial safety checks must include the following:

--- Confirm the capacitors are discharged. Ensure this is done in a safe manner to avoid the possibility of sparking.

--- Ensure that no live electrical components and wiring are exposed while charging, recovering, or purging the system.

--- Confirm there is continuity of earth bonding.

## Special Tools:

Tool Name	Requirement(s) for Use
<b>Mini Vacuum Pump</b>	An explosion-proof vacuum pump that can ensure certain precision. Its vacuum degree should be lower than 10Pa.
<b>Filling Device</b>	A special explosion-proof filling device that can ensure certain precision. Its filling deviation should be less than 5g.
<b>Leak Detector</b>	Ensure it is calibrated regularly. Its annual leak rate should not exceed 10g.
<b>Concentration Detector</b>	<p><b>A)</b> 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%.</p> <p><b>B)</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%.</p> <p><b>C)</b> Ensure that the concentration detectors are calibrated regularly.</p> <p><b>D)</b> Check and confirm the functions before using the concentration detectors.</p>
<b>Pressure Gauge</b>	<p><b>A)</b> Ensure the pressure gauges are calibrated regularly.</p> <p><b>B)</b> Confirm the pressure gauge can be used for R-454B refrigerant.</p>
<b>Fire Extinguisher</b>	Carry fire extinguisher(s) during installation and maintenance. In the maintenance site, ensure that there are two or more kinds of dry powder, carbon dioxide, and foam fire extinguishers. The items must have eye-catching labels and be placed in stipulated positions.

# R-454B Refrigerant

# 2

## Maintenance

### 1. Inspections Before Maintenance

#### 1) Maintenance Environment

- Before operation, ensure that no leaked refrigerant is present in the room.
- Only operate in rooms meeting the area requirements on the nameplate.
- Ensure that the room maintains a continuous ventilation state.
- Restrict fires, welding, smoking, drying ovens, or any other goods with temperatures higher than 745° F/396°C (R-454B) from being in the room.
- Ensure that mobile phones or any electronic products containing radiation are powered off while in the room.
- Equip the maintenance area with a functioning drying powder or carbon dioxide fire extinguish.

#### 2) Maintenance Equipment

- Check whether the maintenance equipment is applicable for 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 that the air conditioner is in reliable ground connection.
- Ensure that the air conditioner's power supply is off. Before maintenance, turn off the power and discharge the capacitor power. If power supply is needed during maintenance, perform ongoing leak detections at the most dangerous position/point to avoid potential danger.
- Confirm that 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 that the area is well-ventilated.

# R-454B Refrigerant

# 2

## Maintenance (Continued)

### 4. Safety Principles During Maintenance

- During maintenance, ensure that 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 visiting service is necessary due to lacking spare parts during maintenance, return the air conditioner to its initial state. Ensure that the refrigerant system is in secure ground connection.
- When storing the cylinder in a vehicle or the maintenance site, ensure that 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 Location

- The maintenance location must be well-ventilated and ground level. The location must not be in a basement.
- Divide the maintenance location into welding and non-welding areas and label them clearly. Ensure that 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.

# R-454B Refrigerant

# 2

## Maintenance (Continued)

### 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 minutes.
- Ensure that there is no cross contamination among different refrigerants when using the refrigerant filling device. The total length, including the refrigerant pipeline, must be as short as possible in order to reduce the residual refrigerant inside the pipeline.
- Vertically place the refrigerant storage tanks.
- Ensure that 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 that the maintenance will not damage or reduce the safety protection grade of the original system.

### 7. In-Maintenance Welding

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

### 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, turn off the unit's power before opening the sealing cover. When power supply is needed, perform ongoing leak detection at the most dangerous positions.
- It is necessary to note that the maintenance of electrical components will not affect the replacement of protective cover.
- Ensure that the sealing function is not damaged after maintenance. Ensure that 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.

# R-454B Refrigerant

# 2

## Warning

Before doing the trial operation after finishing the maintenance, use a practical leak detector to inspect the leakage and reliability of the ground connection. This is required to ensure that there is a reliable ground connection and no refrigerant leakage. Separately place the refrigerant storage tanks in a well-ventilated location 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 location. 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.

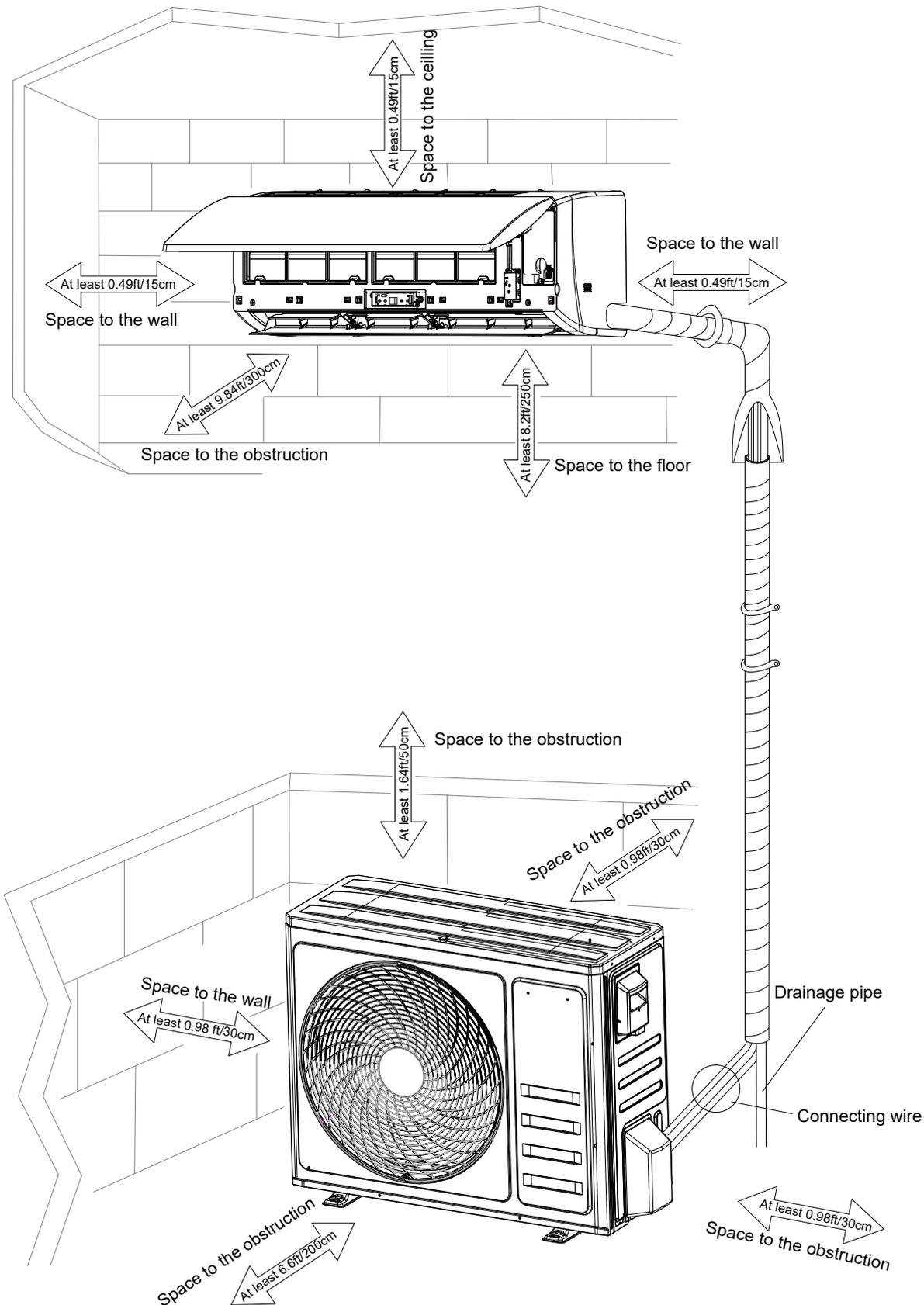
Use these suggestions if a large amount of combustible refrigerant leaks:

- 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 at least 66 feet (20 m) from the location and make an alarm call. Set the emergency area and prohibit irrelevant personnel and vehicles from approaching.
- The professional firefighters should wear anti-static clothing to handle the emergency on the site. The firefighters should 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 detection. Do not clear the alarm until the concentration of refrigerant is zero.

# 3

## Installation

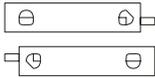
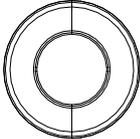
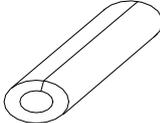
### Installation Dimensions Diagram



# Installation

# 3

## Accessories

<p>Remote controller</p> 	<p>Remote controller supporter</p> 	<p>Batteries</p> 	<p>Vinyl tape</p> 
<p>Drain hose</p> 	<p>Hole cover</p> 	<p>Screw</p> 	<p>Insulation material</p> 

## 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			

# Installation

# 3

## Position

### Indoor Unit

- Install the unit level on a strong wall that is not subject to vibrations.
- Do not obstruct the inlet and outlet ports. The air should be able to reach across the room.
- Do not install the unit near a source of heat, steam, or flammable gas.
- Do not install the unit in a location that is too windy or dusty.
- Do not install the unit in a location 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 in a location where it is easy to drain the condensed water.
- Check the machine operation regularly and leave the necessary spaces, as shown in the Installation Dimensions Diagram.
- Install the unit in a location where the filter can be easily accessible.
- Do not install the unit in a corridor or communal area.
- Install the unit at a height of at least 8.2 feet (2.5 m) from the ground.

### Outdoor Unit

- Do not install the unit near sources of heat, steam, or flammable gas.
- Do not install the unit in a location where people often pass. Select a place where the air discharge and operating sound level will not disturb the neighbors.
- Do not install the unit in a location that is too windy or dusty.
- Avoid installing the unit in a location where it will be exposed to direct sunlight. If needed, use protection that will not interfere with the air flow.
- Leave spaces for the air to circulate freely, as shown in the Installation Dimensions Diagram.
- Install the unit in a safe and solid place.
- If the unit is subject to vibration, place rubber gaskets onto the feet of the unit.

## Electricity & Wiring

1. Follow the electric safety regulations when installing the unit.
2. Use qualified power supply circuits and air switches, according to the local safety regulations.
3. Ensure that the power supply matches with the system's requirements. Unstable power supply or incorrect wiring may result in electric shock, fire, 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 <sup>2</sup> /in <sup>2</sup> )
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

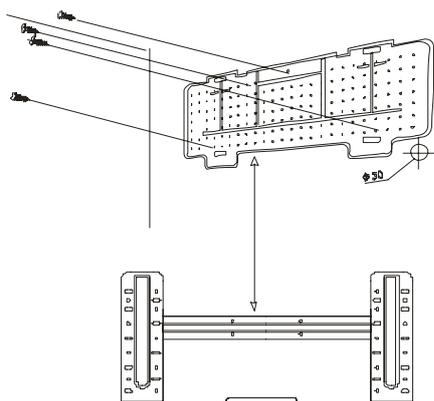
# 3

## Installation

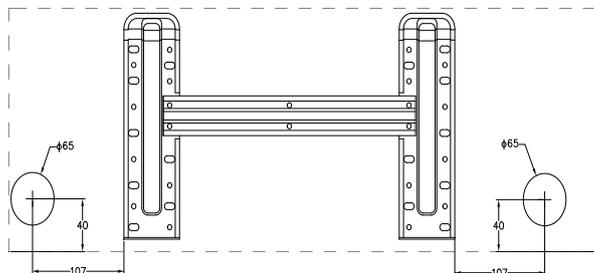
### IDU Installation

#### Installation of the Mounting Plate

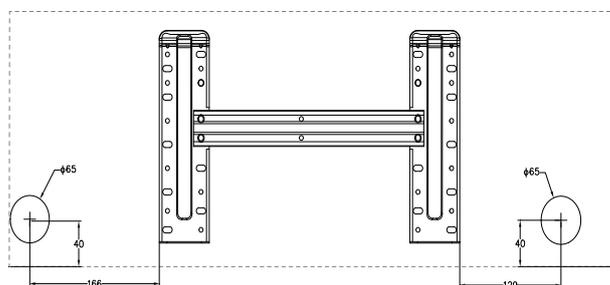
1. Using a level, place the mounting plate in a perfect square position vertically and horizontally.
2. Drill 1.3 inch (33 mm) deep holes in the wall to fix the plate.
3. Insert the plastic anchors into the hole.
4. Fix the mounting plate by using the provided tapping screws.
5. Check that the mounting plate is correctly fixed.



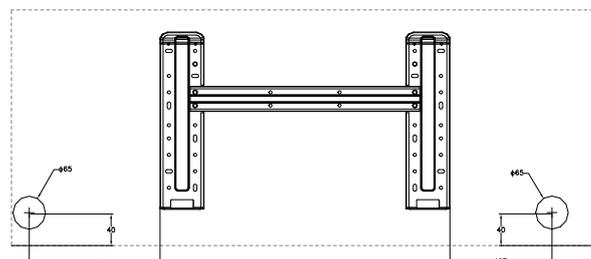
9K



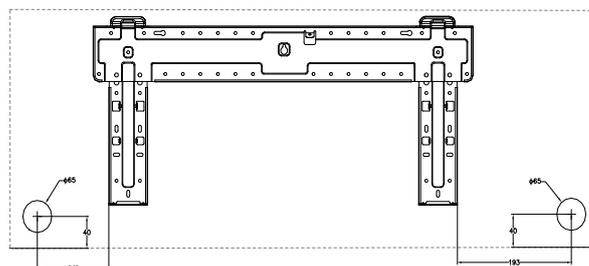
12K



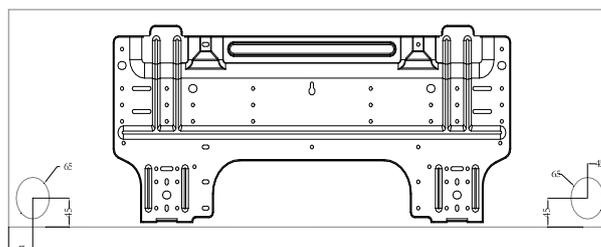
18K



24K



30K/36K



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

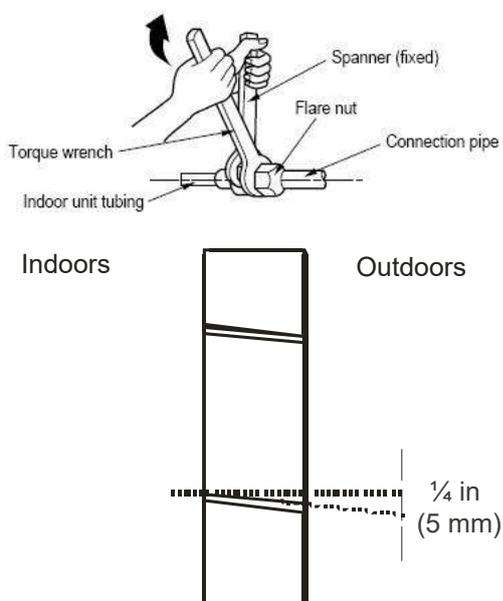
# Installation

# 3

## IDU Installation (Continued)

### 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.

### Electrical Connections --- Indoor Unit

1. Lift the front panel.
2. Take off the cover, as indicated in the illustration, 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.

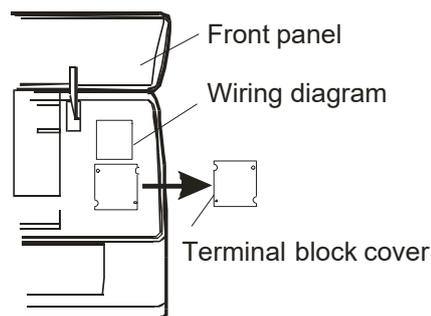
4. Connect the cable wires to the screw terminals by following the numbering. Use a wire size suitable for the electric power input (see the nameplate on the unit) and according to all current national safety code requirements.

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.

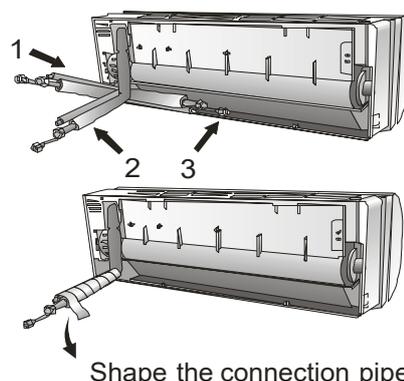
7. Ensure an efficient earth connection.

8. If the power cable is damaged, it must be replaced by an authorized Service Center.



### ★ Refrigerant Piping Connection

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



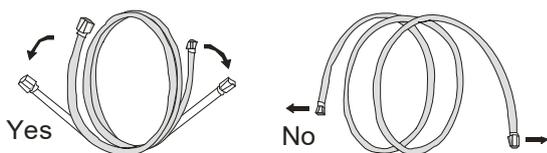
# Installation

# 3

## IDU Installation (Continued)

### Connect the Pipes

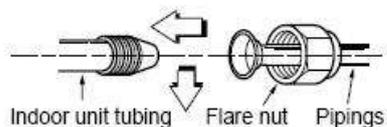
- Do not remove the cap from the pipe until connecting it, avoiding dampness or dirt from entering.
- If the pipe is bent or pulled too often, it will become stiff. Do not bend the pipe more than three times at one point.
- When extending the rolled pipe, straighten the pipe by unwinding it gently as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



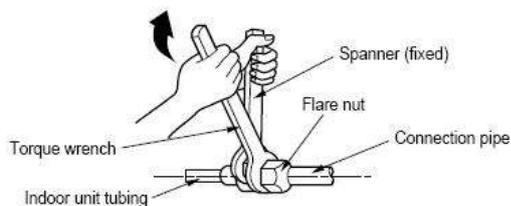
Extending the rolled pipe

### 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.



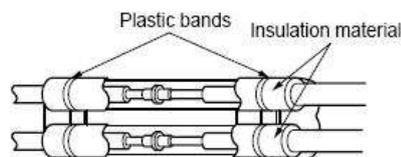
3. Tighten the connections by using two wrenches working in opposite directions.



4. When extending the drain hose for the indoor unit, install the drain pipe.

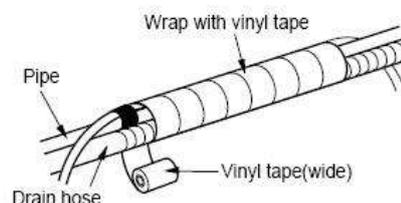
### Wrap the Insulation Material Around the Connecting Portion

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.



# Installation

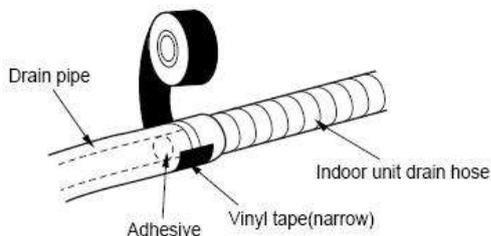
# 3

## IDU Installation (Continued)

### Indoor Unit Condensed Water Drainage

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

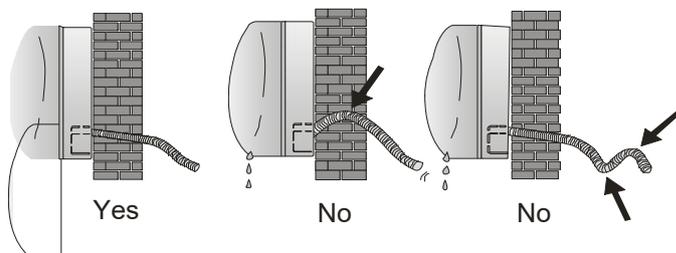
1. Place the drain hose below the piping, taking care not to create siphons.
2. The drain hose must slant downwards to aid drainage.
3. Do not bend the drain hose or leave it protruding or twisted. Do not put the end of it in water. If an extension is connected to the drain hose, ensure that it is lagged 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)
	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)

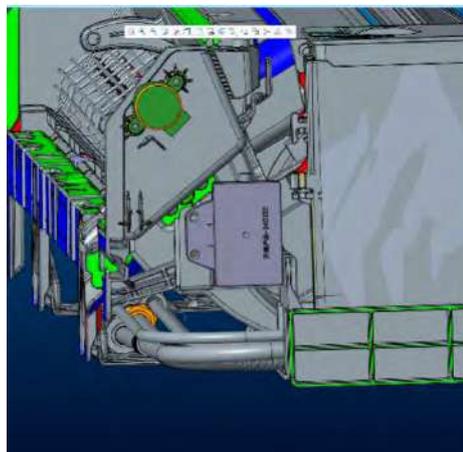
6. Press to join the pipe connection to the base.



### Refrigerant Detector Installation (Optional)

The refrigerant detector is an optional device installed in the indoor unit. The location to install it is shown below. The refrigerant detector is mounted on the power cord plate and fixed with two screws (ST4.2×13). Parts such as the center frame needs to be disassembled when installing it. PCB connection port is CN30.

For refrigerant detector installation, refer to the IDU Disassembly section of this manual.



# Installation

## 3

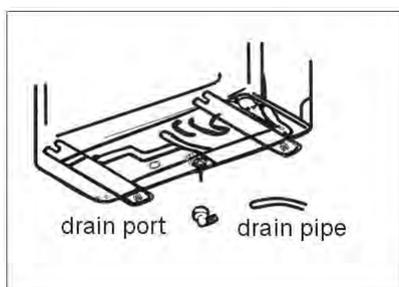
### ODU Installation

- 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.
- Install the unit following the national regulations.

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

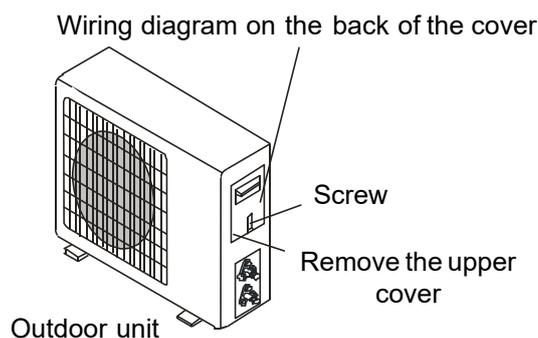
The condensed water and ice formed in the outdoor unit during heating operation can be drained away through the drain pipe.

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 drain pipe. Ensure that the water is draining in a suitable place.



### **Electronic Connections**

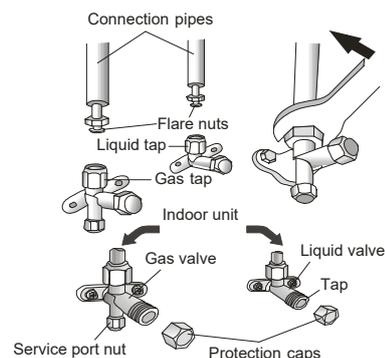
1. Remove the cover.
2. Connect the cable wires to the terminal board using the same numbering as in the indoor unit.
3. For the electrical connections, see the wiring diagram on the back of the cover.
4. Fasten the cables with a cable-clamp.
5. Ensure an efficient earth connection.
6. Replace the covers.



### **Connect 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.



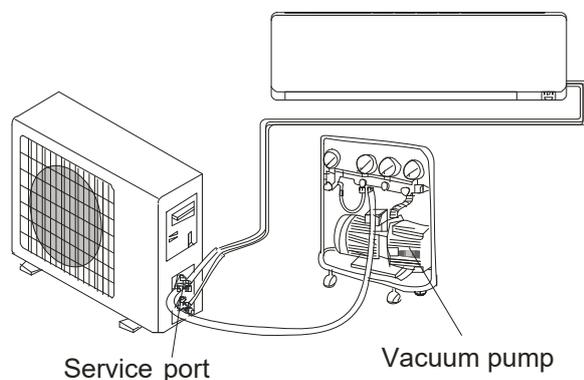
# Installation

# 3

## Vacuum & 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 a compressor malfunction.
- 2) Open the piezometer and conduct the operation for 10-15 minutes to check if the piezometer's pressure remains in  $-0.1\text{Mpa}$ .
- 3) Close the vacuum pump and maintain this status for 1-2 minutes to check if the pressure of piezometer remains in  $-0.1\text{Mpa}$ . If the pressure decreases, there may be leakage.
- 4) Remove the piezometer, then open the valve cores of the 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 minutes. If there are air bubbles coming out of this position, there's a leakage.

## Final Test

### 1. Preparation of Test Operation

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

### 2. Method of Test Operation

- Press the On/Off button on the remote controller to start the operation.
- Press the Mode button, then select either Auto, Cool, Dry, Fan, or Heat mode to check whether the operation is normal. If the ambient temperature is lower than  $61^{\circ}\text{F}$  ( $16^{\circ}\text{C}$ ), the system can't start in Cooling mode.

# Troubleshooting

# 4

## Failure Codes

Code	Reason	Remark
E0	IDU and ODU communication failure	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, etc.
E5	IDU / ODU mismatched failure (specially performance test on the production line)	/
E6	IDU PG fan motor / DC fan motor abnormal operation (IDU failure)	Fan motor, fan blade, and PCB
E7	ODU ambient temperature sensor failure	ODU ambient sensor and ODU PCB
E8	ODU discharge temperature sensor failure	ODU discharge sensor and ODU PCB
E9	IPM / Compressor driving control abnormal	ODU PCB, compressor, etc.
EA	ODU current test circuit failure	ODU PCB broken?
Eb	The communication abnormal of main PCB and display board (IDU failure)	Display board and main PCB
EE	ODU EEPROM failure	1. ODU PCB broken? 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

# Troubleshooting

# 4

## Failure Codes (Continued)

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
CL	Filter duty remind	Clean the air filter, then cut off the power supply again
Fd	Refrigerant Detector Failure	Check the troubleshooting for details

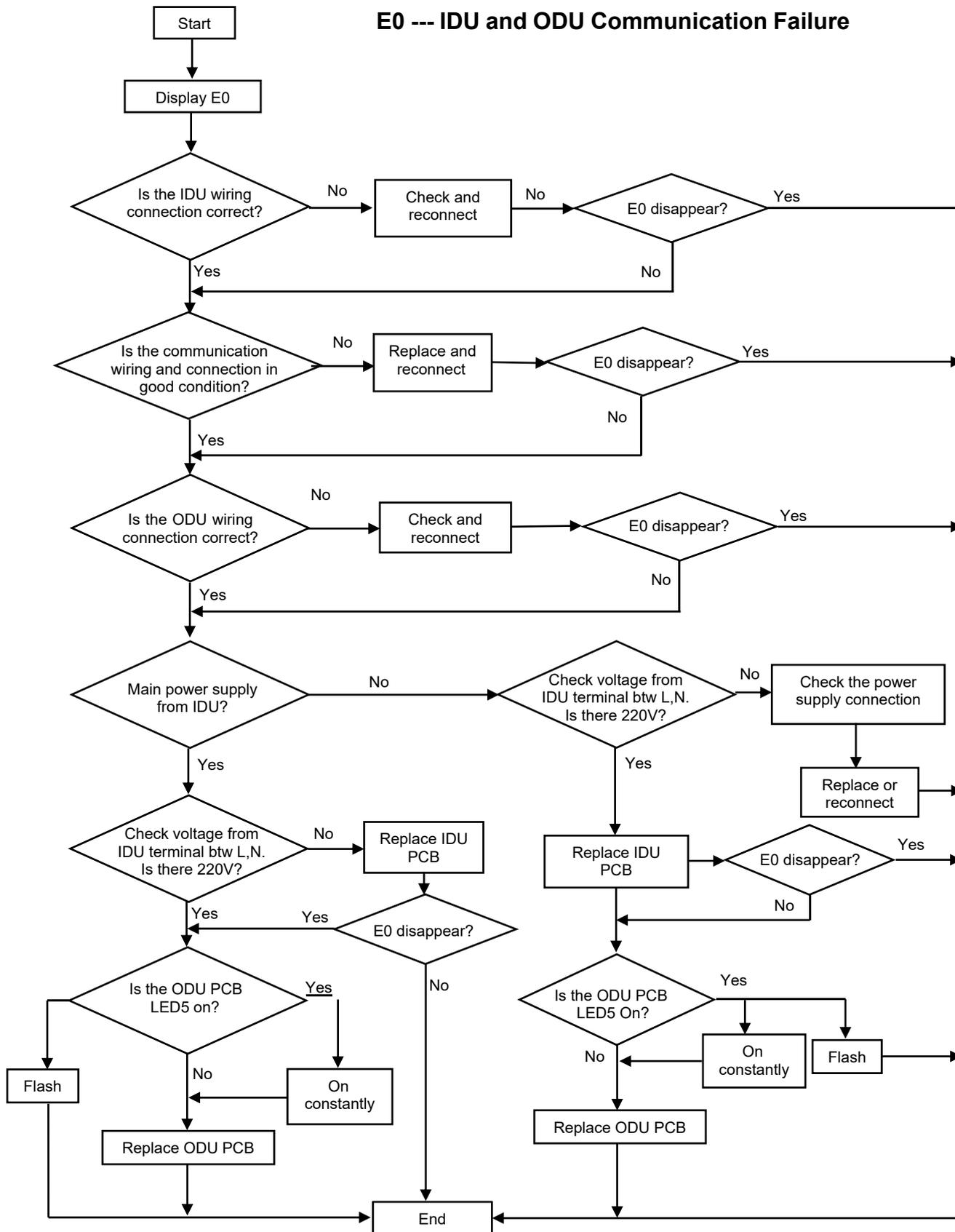
### **Note: Remote Controller Failure Code Querying Function**

As shown in the table above, some of the codes (Fb~bj) require pressing the remote control for inspection. To inspect special failures codes, press the "ECO" button eight times consecutively in 8 seconds, as well as the buzzer BIBI two times.

# Troubleshooting

# 4

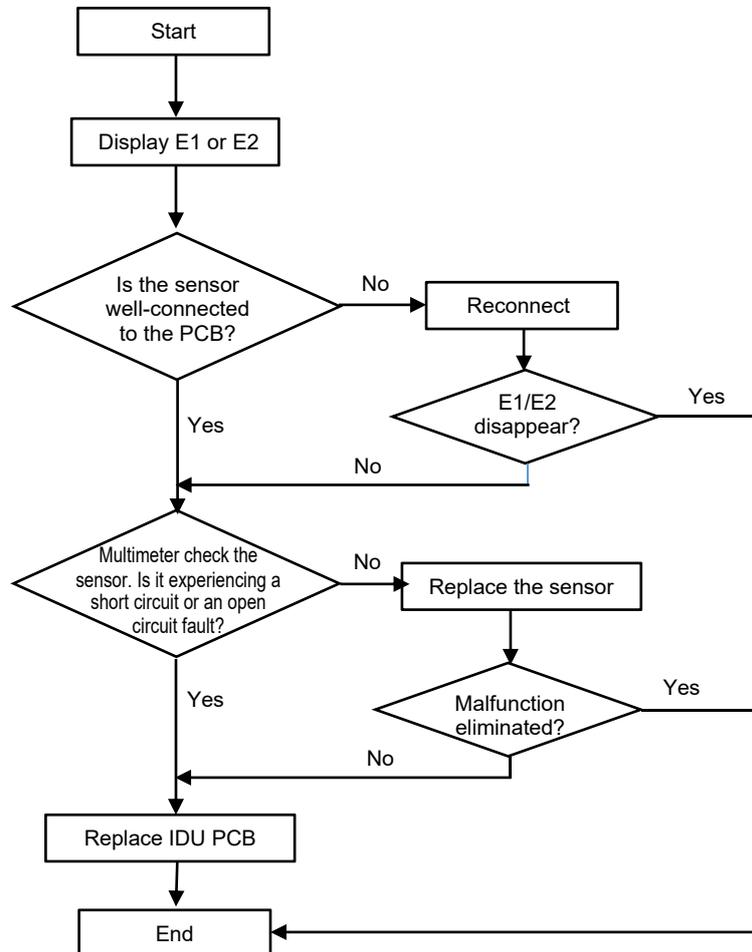
## E0 --- IDU and ODU Communication Failure



# Troubleshooting

# 4

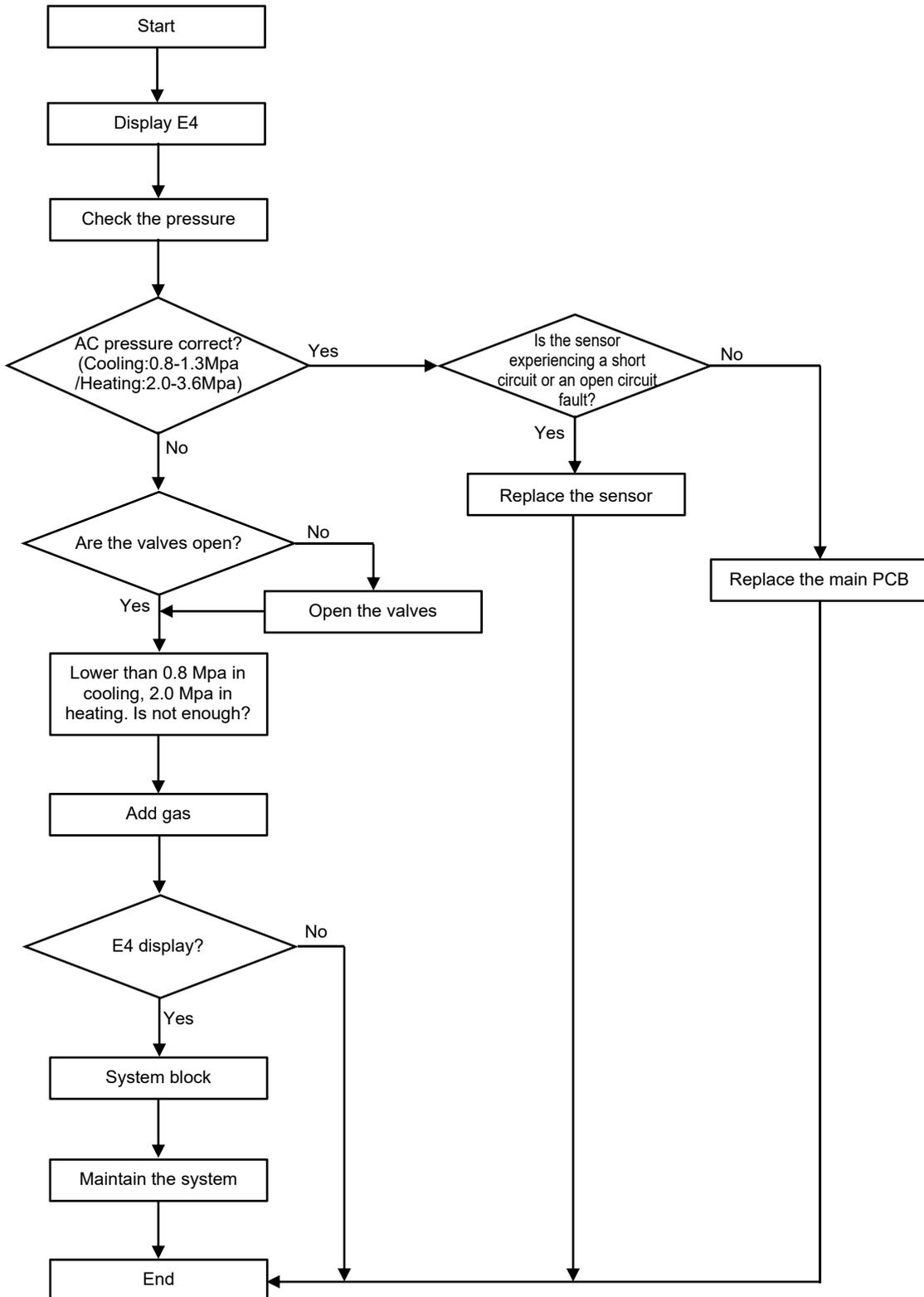
## E1, E2 --- IDU Room Temperature Sensor Failure and/or Coil Temperature Sensor Failure



# Troubleshooting

# 4

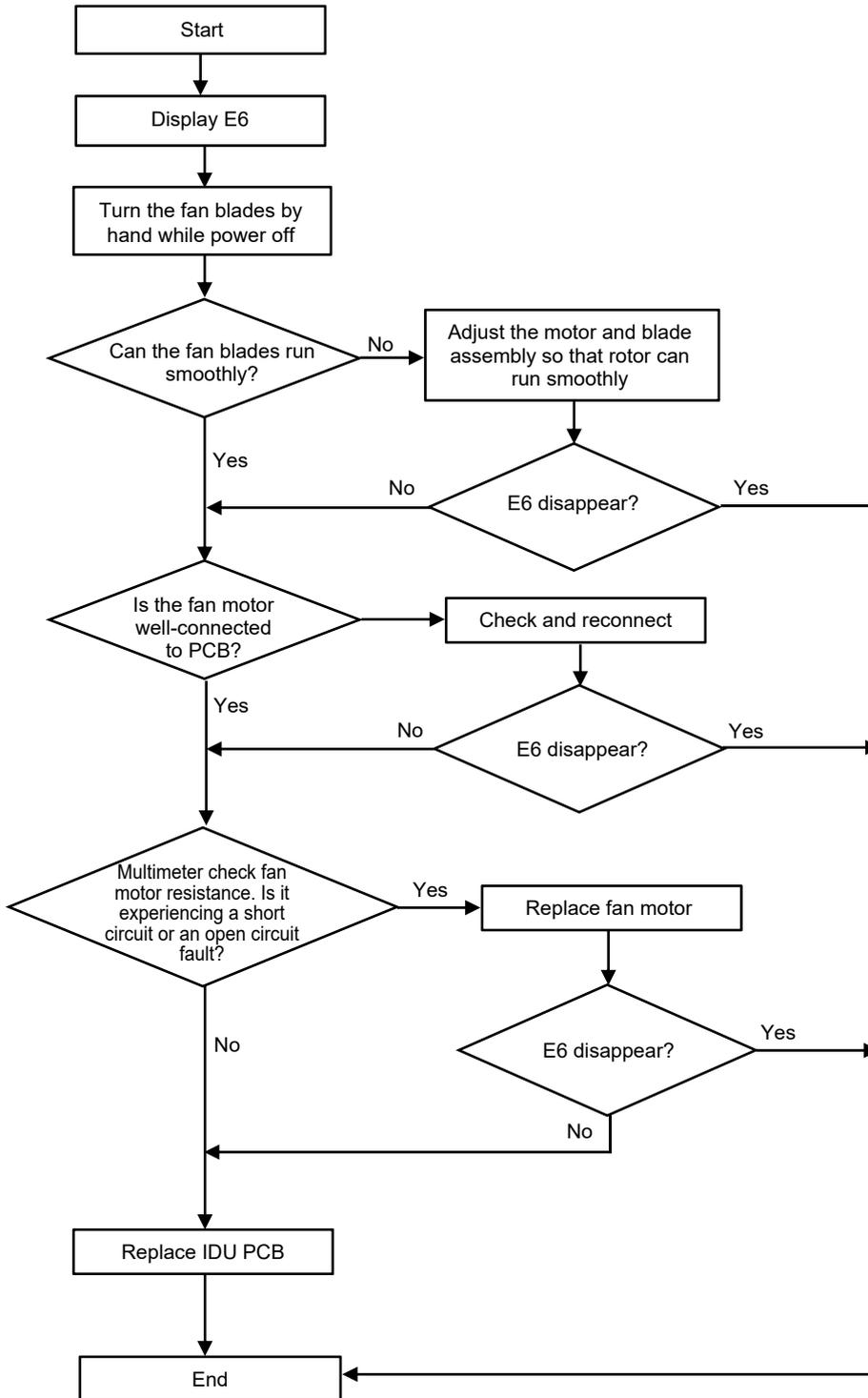
## E4 --- AC Cooling System Abnormal (Not Enough Gas)



# 4

## Troubleshooting

### E6 --- IDU Ventilation Failure (PG & DC Fan Motor Only)

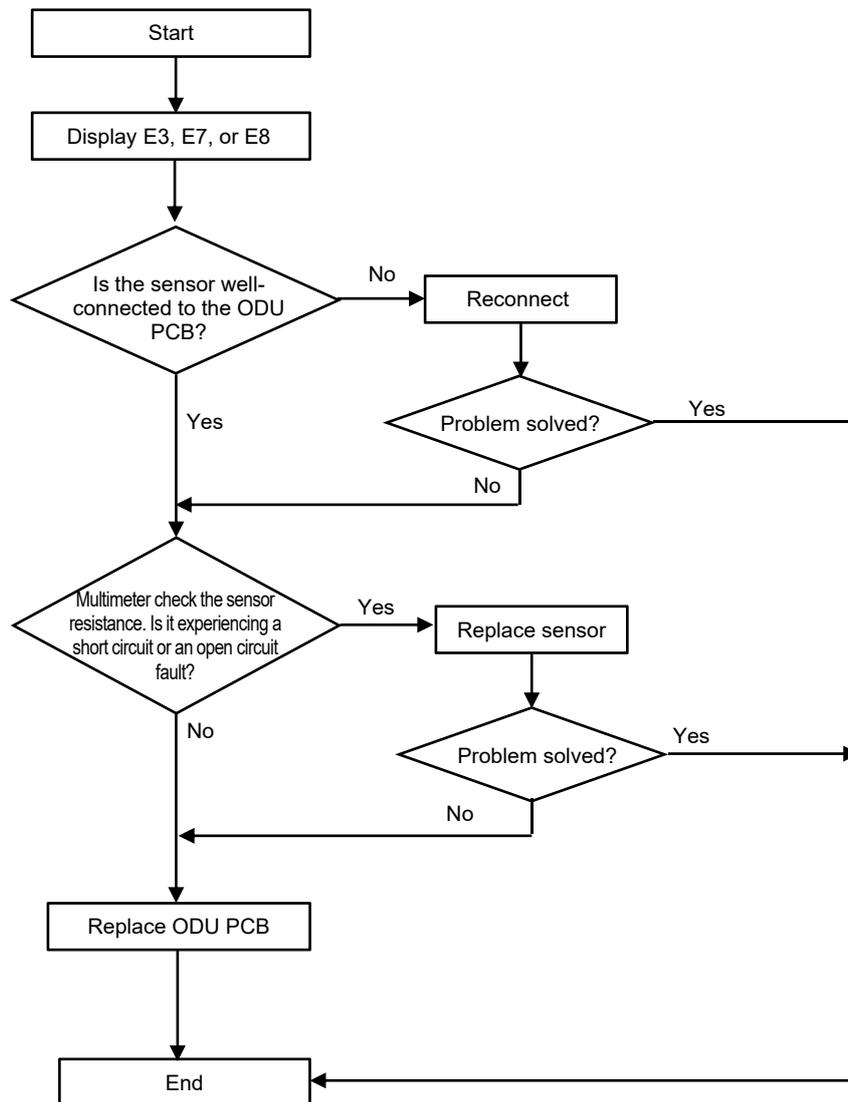


# Troubleshooting

# 4

## E3, E7, or E8 --- ODU Coil Temperature Sensor Failure, Ambient Temperature Sensor Failure, 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 turn off. When the sensor resistance recovers, the unit reverts to standby. The customer can turn on the unit directly.

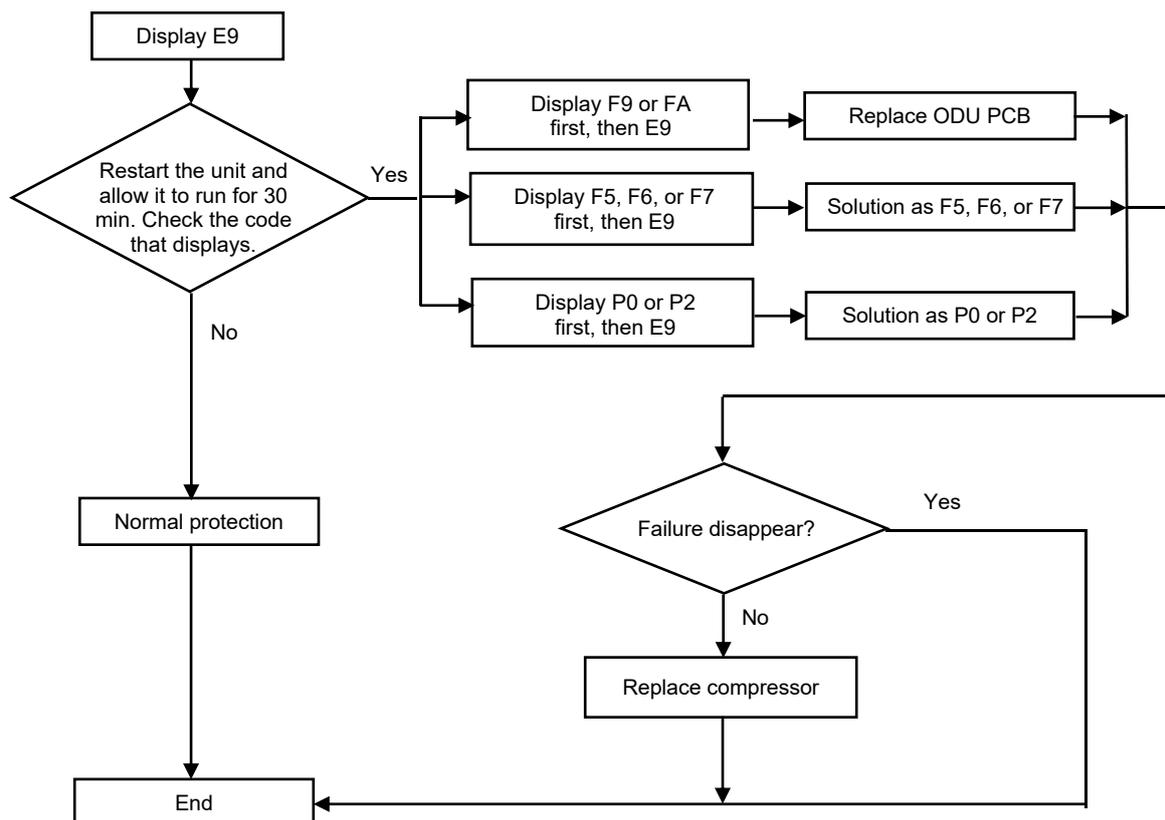


# Troubleshooting

# 4

## E9 --- ODU IPM/Compressor Drive Fault

If the unit stops operating for IPM protection six 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

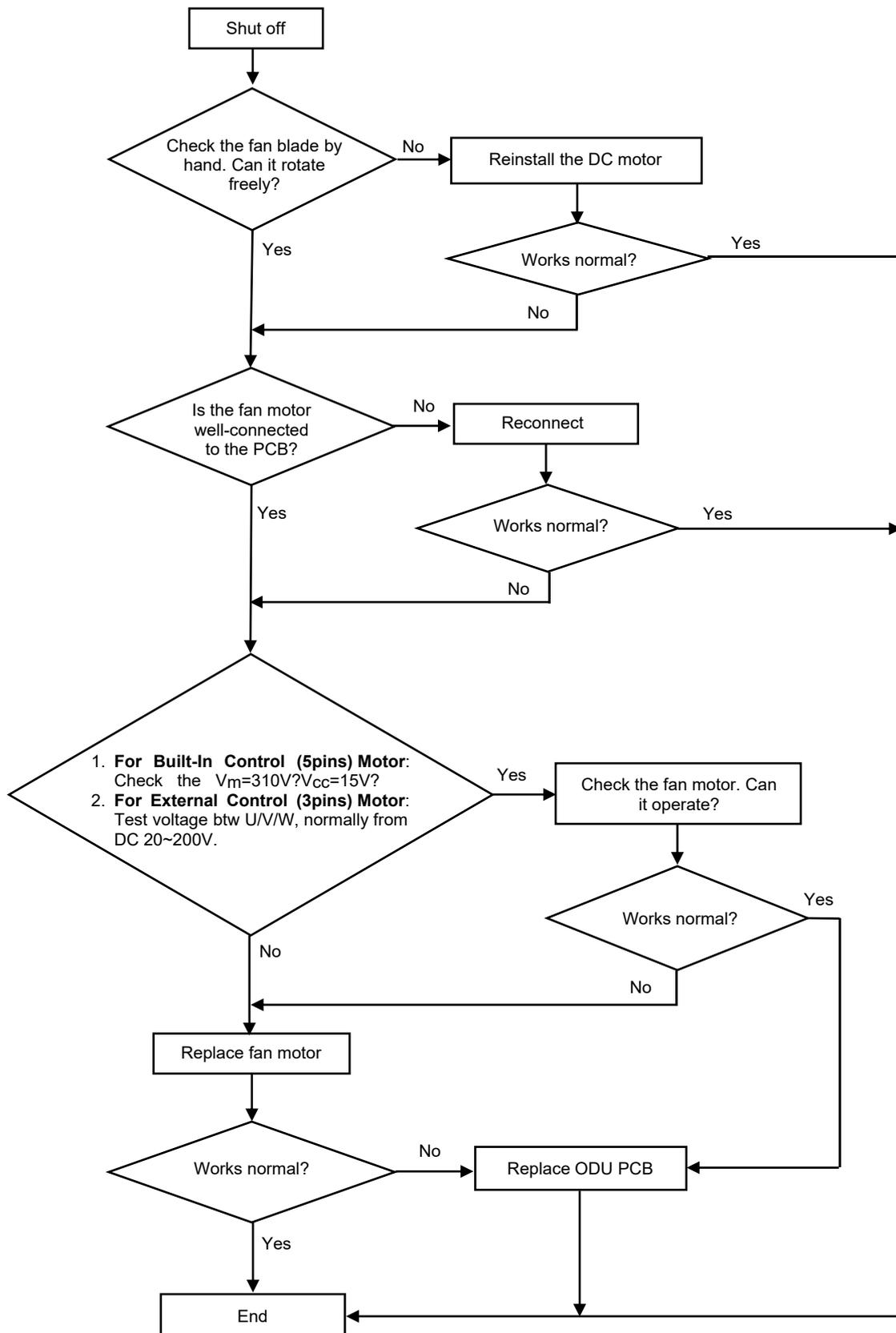
**Reason:** The compressor phase-current test circuit failure.

**Solution:** Replace the ODU PCB.

# Troubleshooting

# 4

## EF --- ODU DC Fan Motor Failure

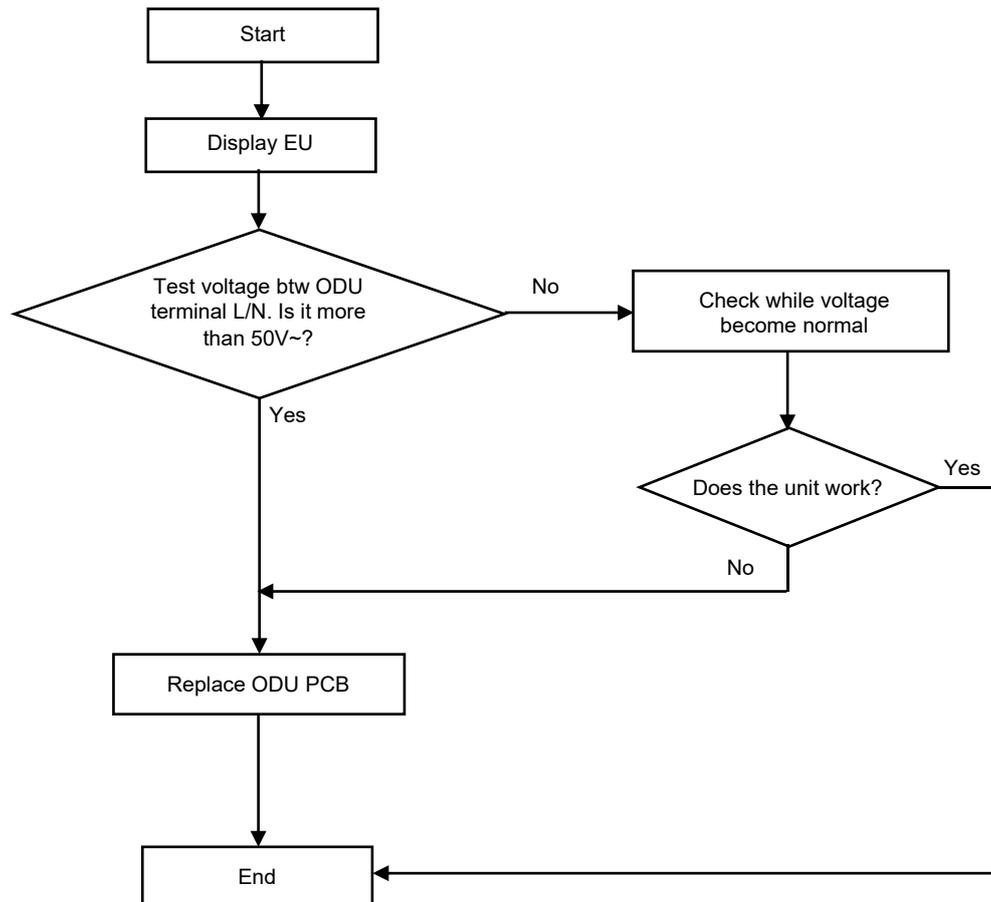


# Troubleshooting

# 4

## EU --- ODU Voltage Test Sensor Failure

After the power relay operates, if the tested effective voltage is less than 50V for 3 seconds continuously, the unit will display the "EU" error code.

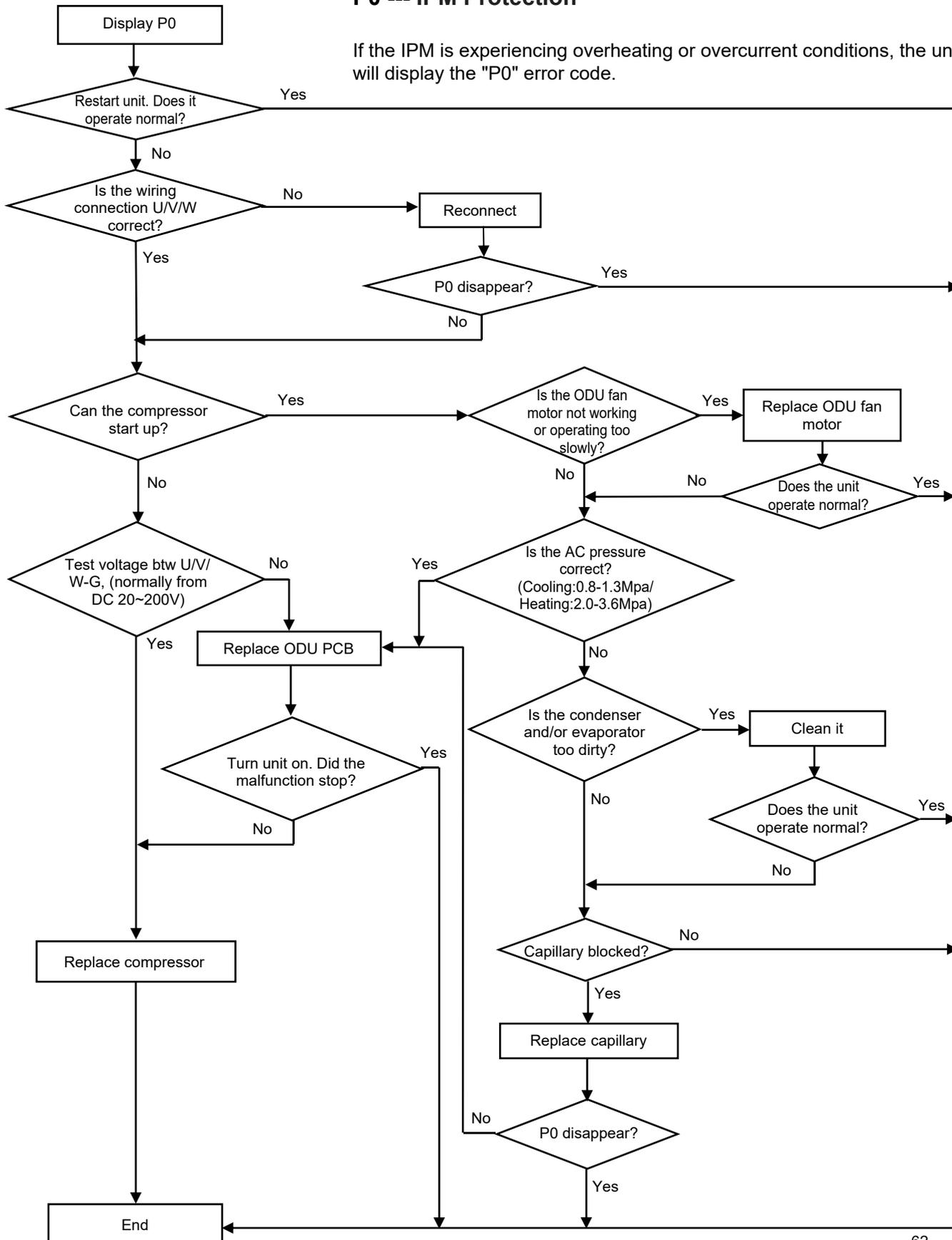


# Troubleshooting

# 4

## P0 --- IPM Protection

If the IPM is experiencing overheating or overcurrent conditions, the unit will display the "P0" error code.

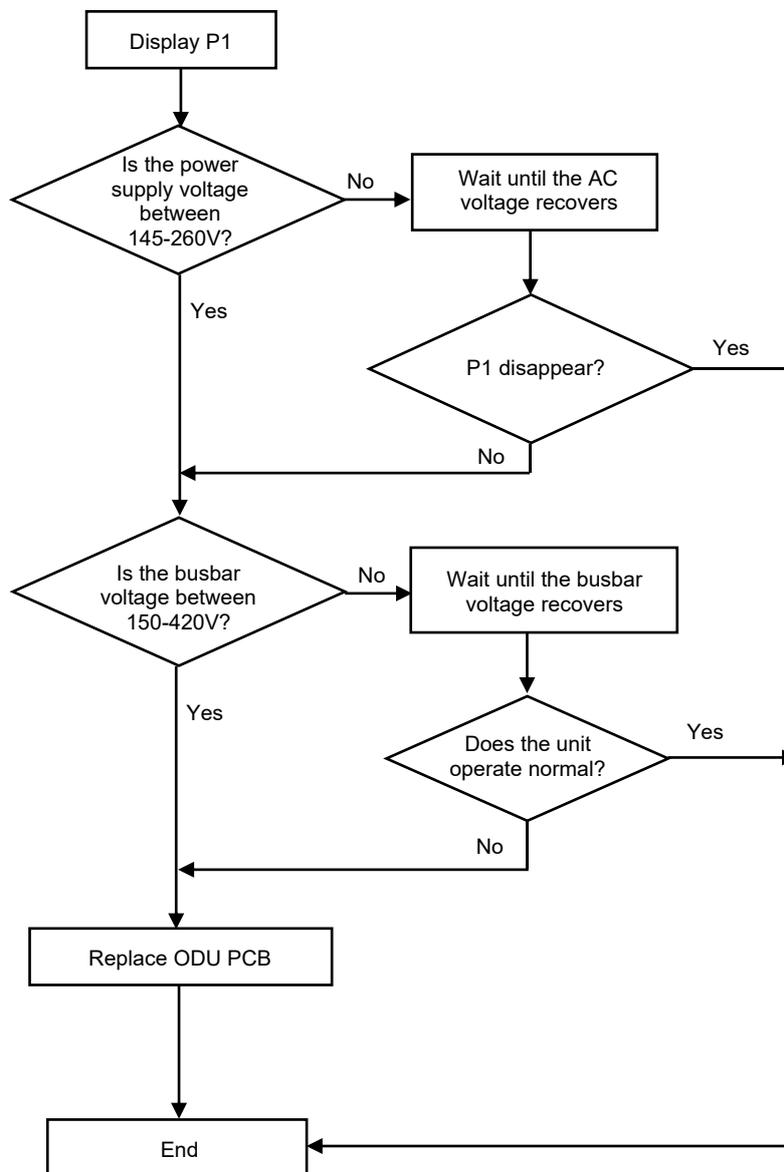


# Troubleshooting

# 4

## P1 --- Over/Under-Voltage Protection

1. Test voltage between L and N. When the power supply  $V > AC260V$  or  $V < AC150V$ , the unit 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 ODU PCB. When DC busbar voltage  $V > DC420V$  or  $V < DC150V$ , the unit will recover back to the previous status while  $DC190V < V < DC410V$ .



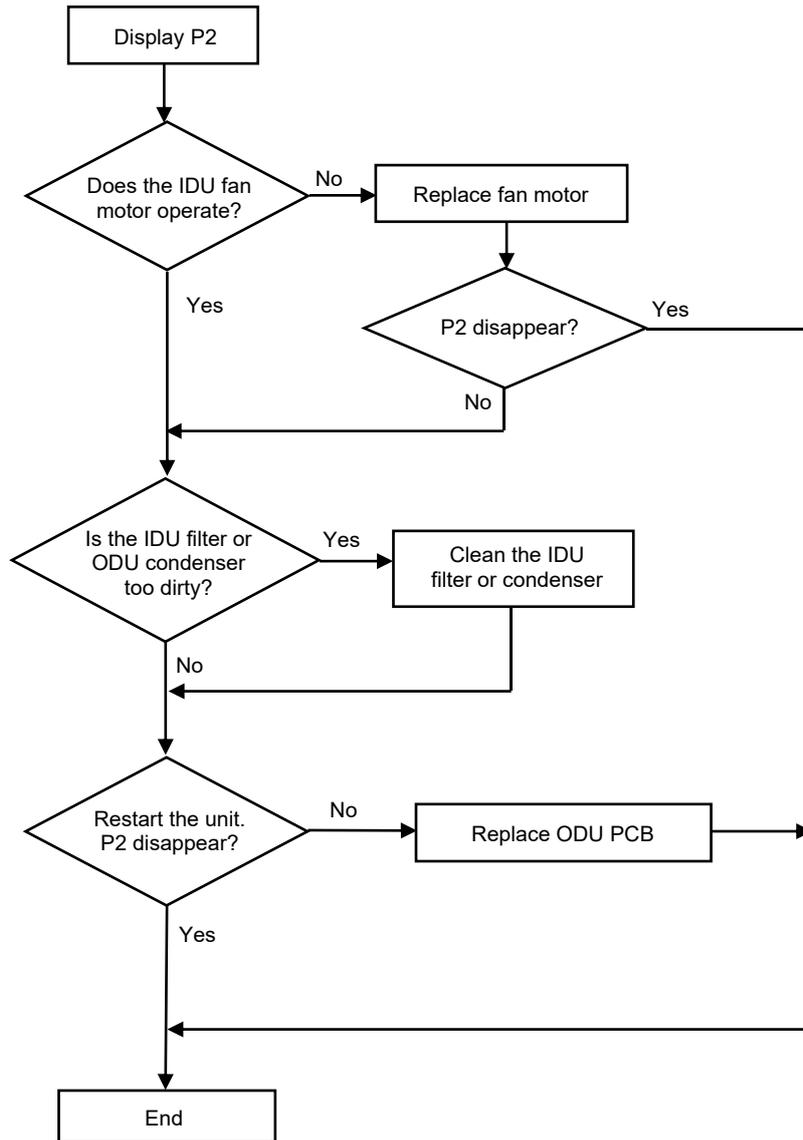
# Troubleshooting

# 4

## P2 --- Over-Current Protection

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

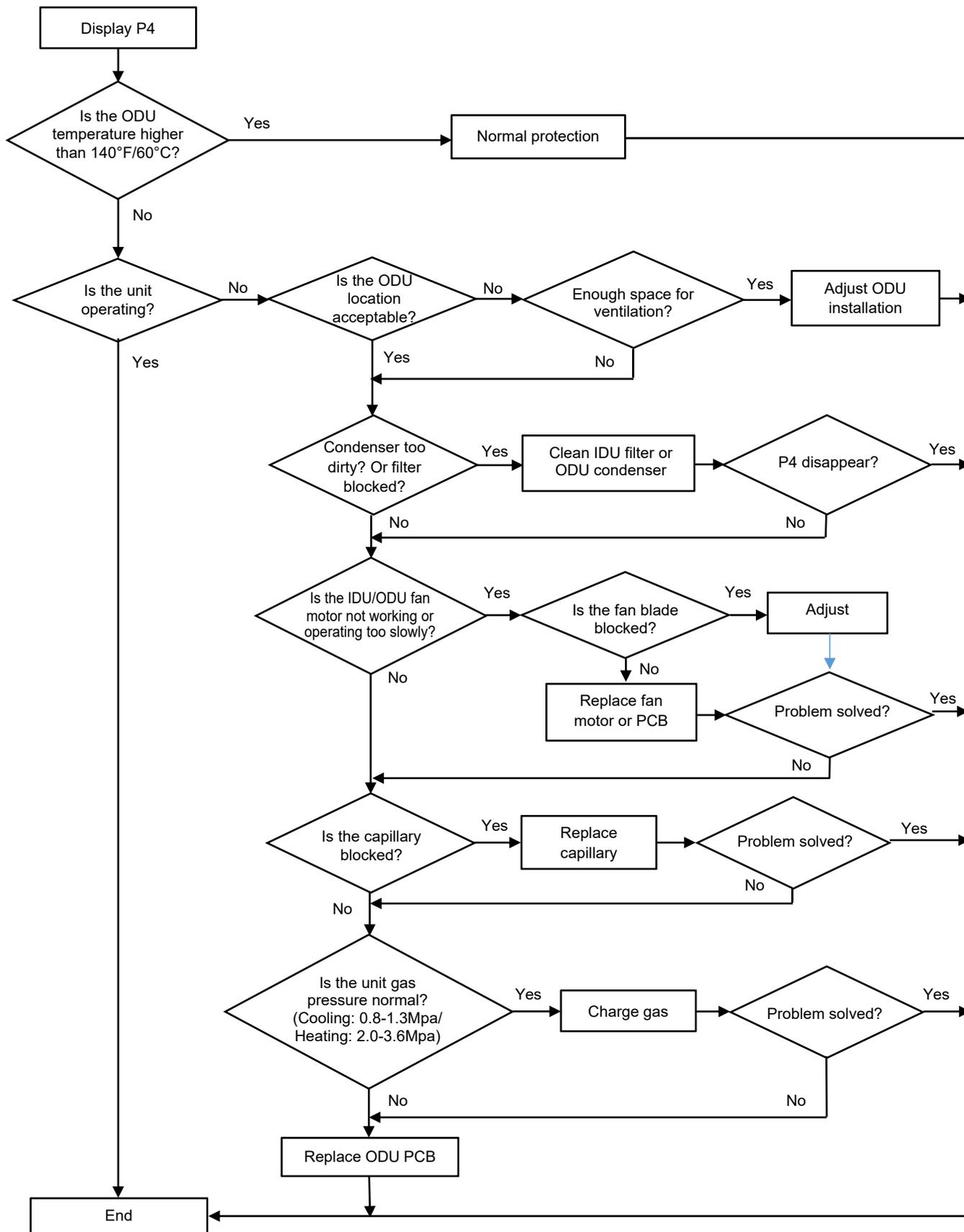
**Note:** For different models, the  $I_{max}$  has different values.



# 4

## Troubleshooting

### P4 --- ODU Discharge Temperature Overheating Protection

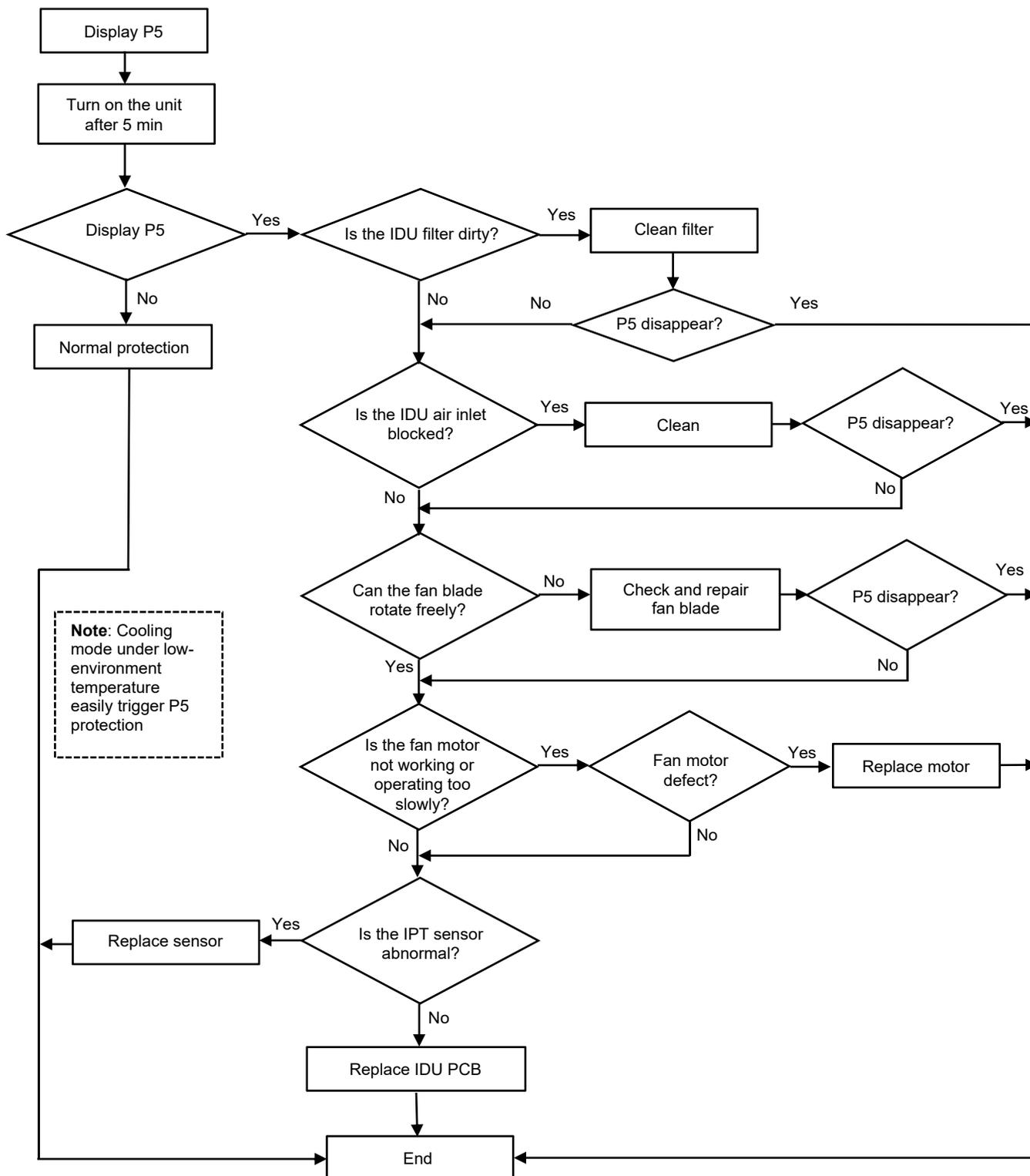


# 4

## Troubleshooting

### P5 --- Sub-Cooling Protection in Cooling/Dry Mode

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

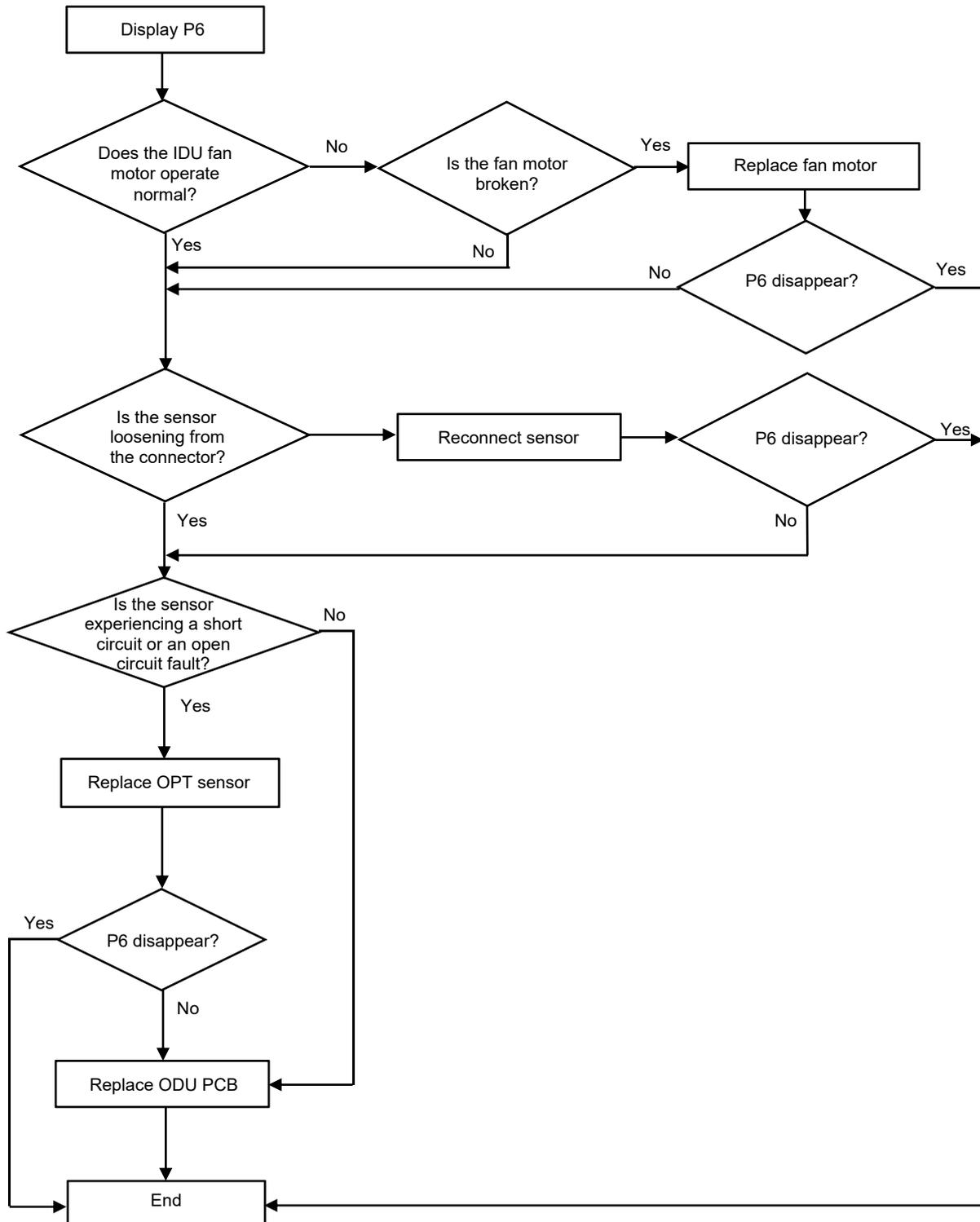


# 4

## Troubleshooting

### P6 --- Overheating Protection in Cooling Mode

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

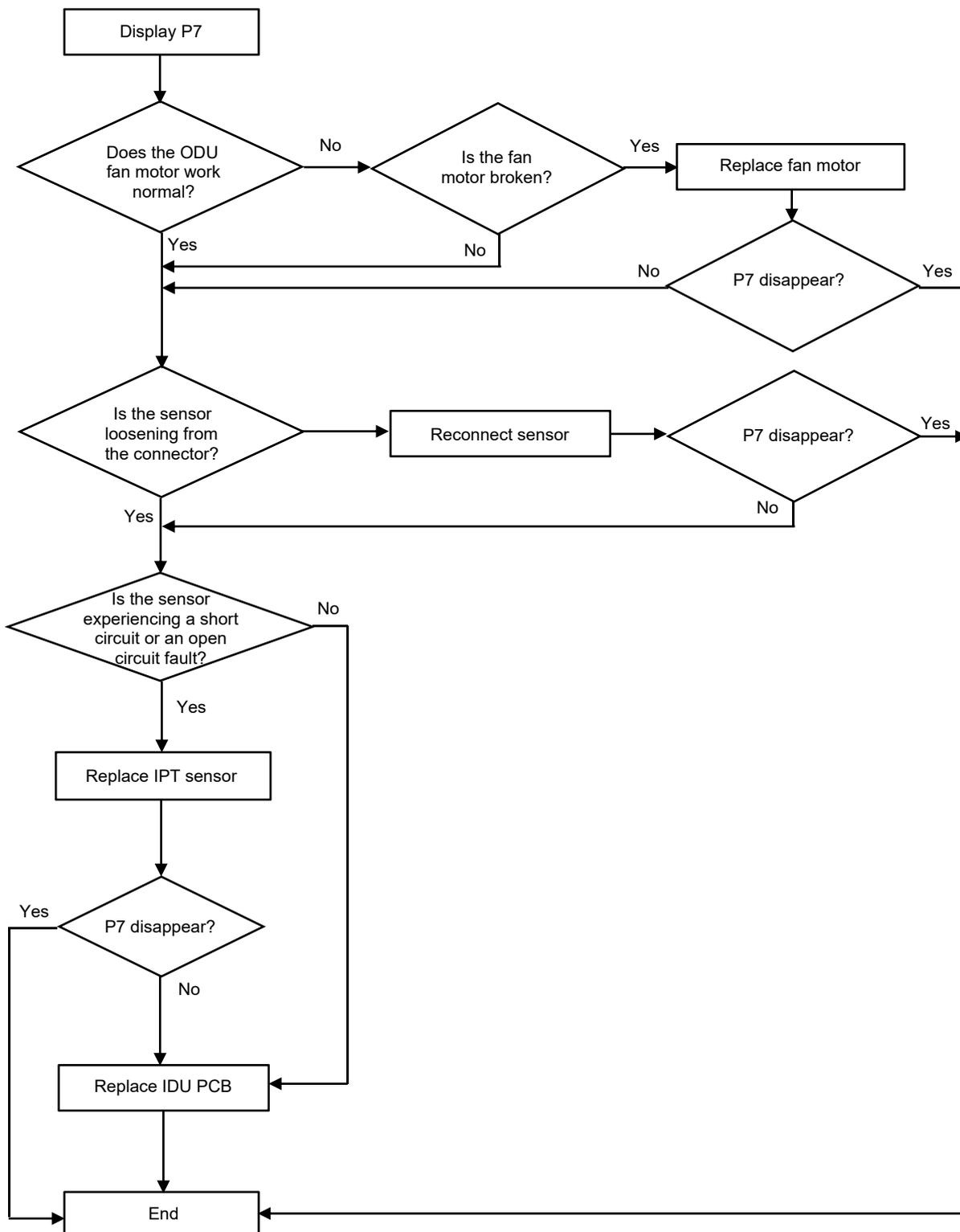


# Troubleshooting



## P7 --- Overheating Protection in Heating Mode

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



# 4

## Troubleshooting

### P8 --- Outdoor Over-Temperature/Under-Temperature Protection

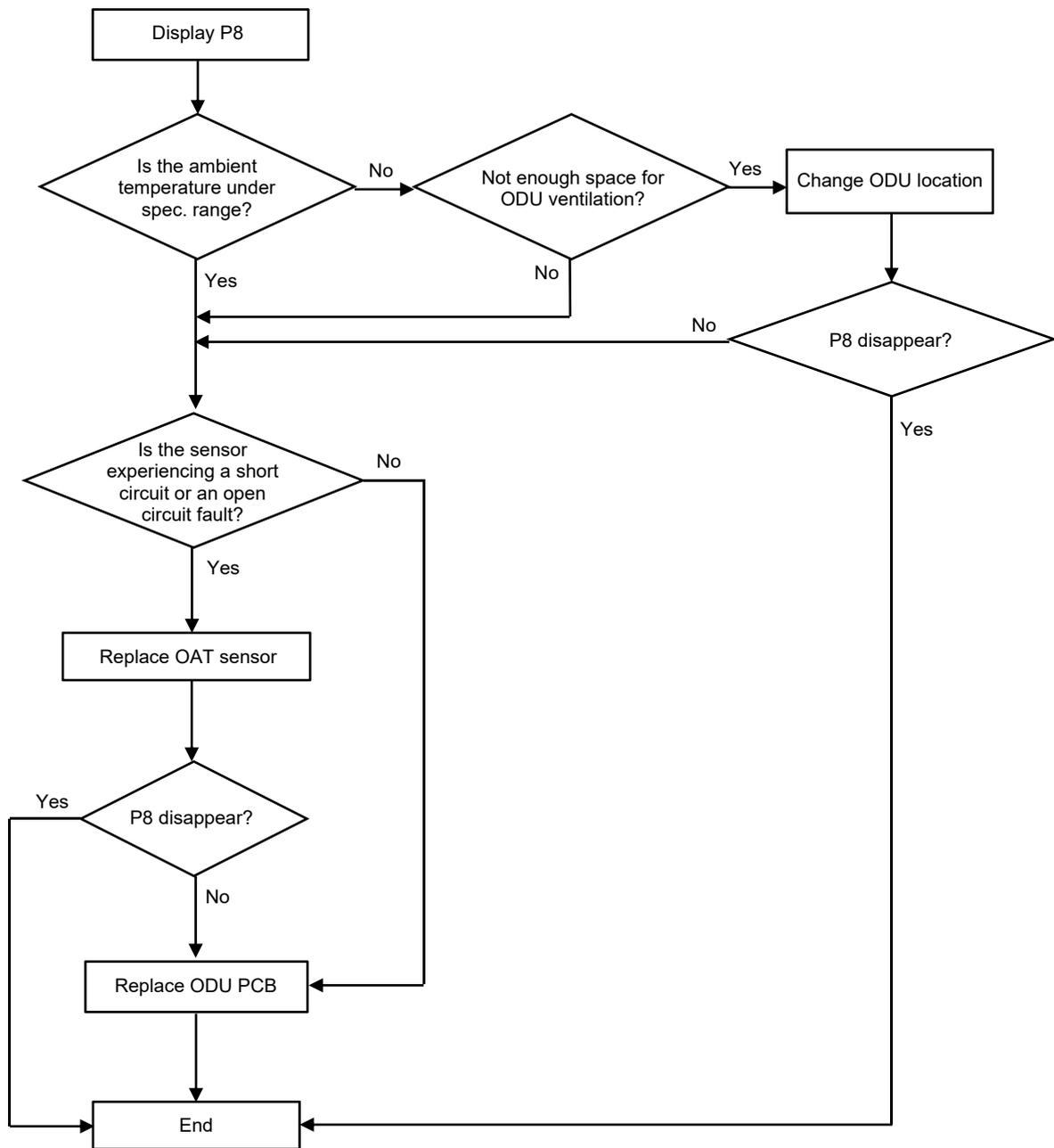
If the system experiences the following environment temperatures, the compressor will stop operating. After a 3-minute delay, the IDU will display the "P8" error code.

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

2. **In Heating mode:**

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

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



# Troubleshooting

## 4

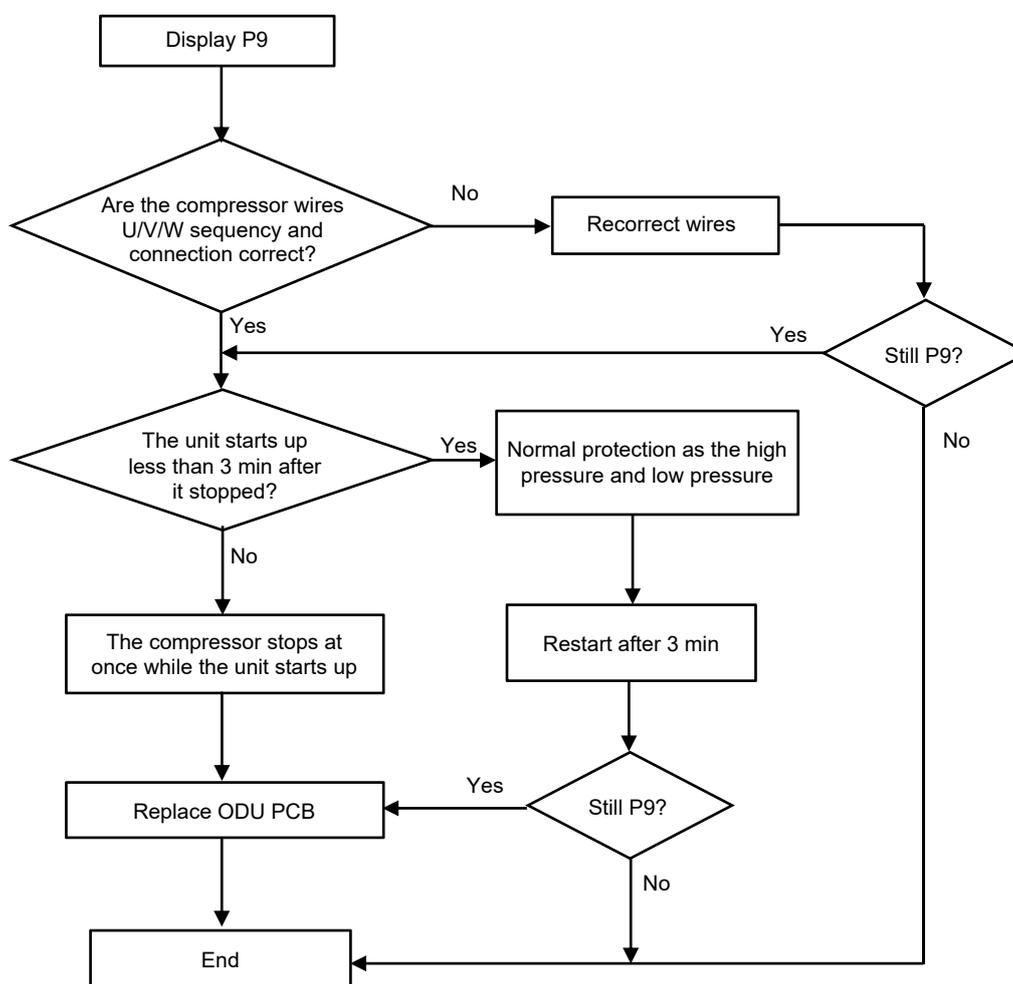
### P9 --- Compressor Driving Protection (Compressor Load Abnormal)

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

1. 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 six times continuously. If it still can't operate normal, then the unit will display the error code again.

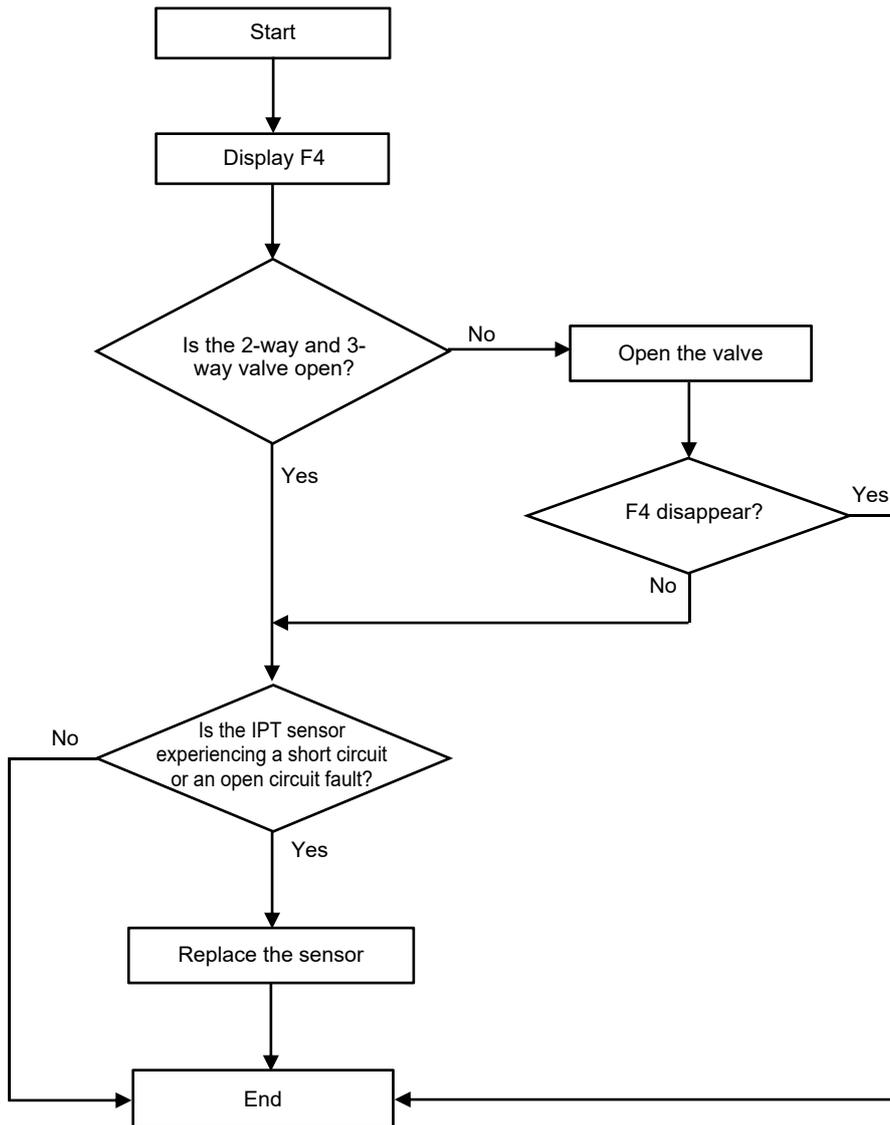


# Troubleshooting

# 4

## 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.

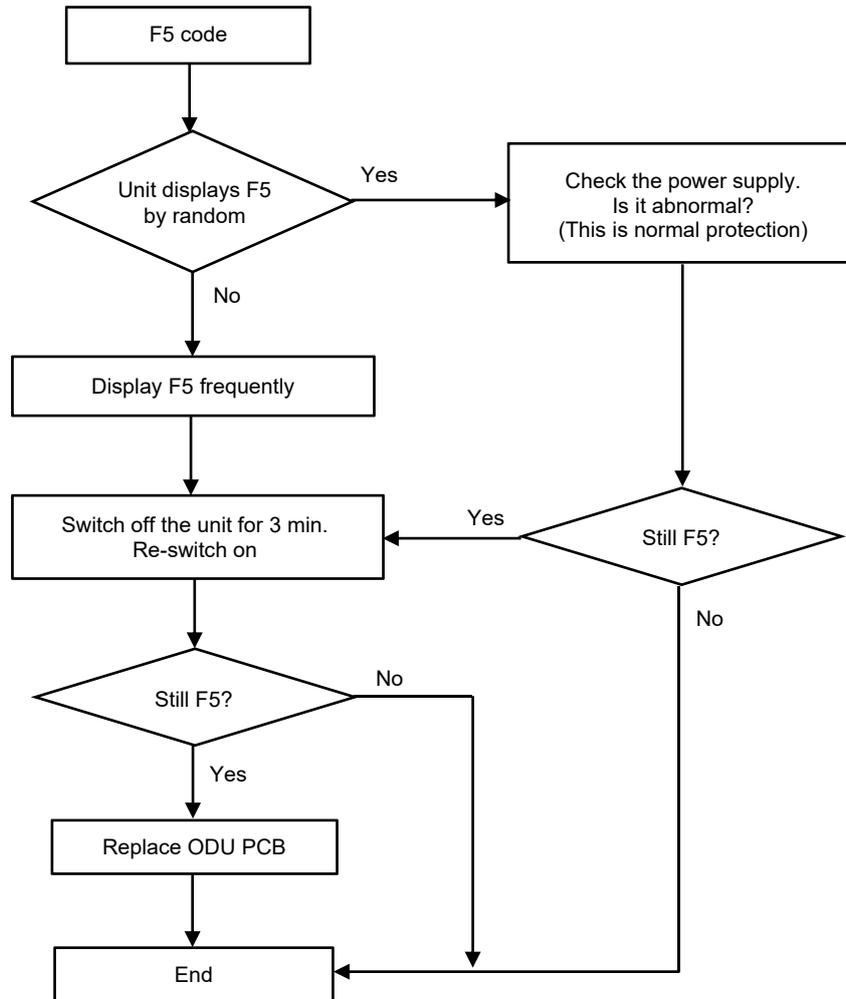


# Troubleshooting

# 4

## F5 --- PFC Protection

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

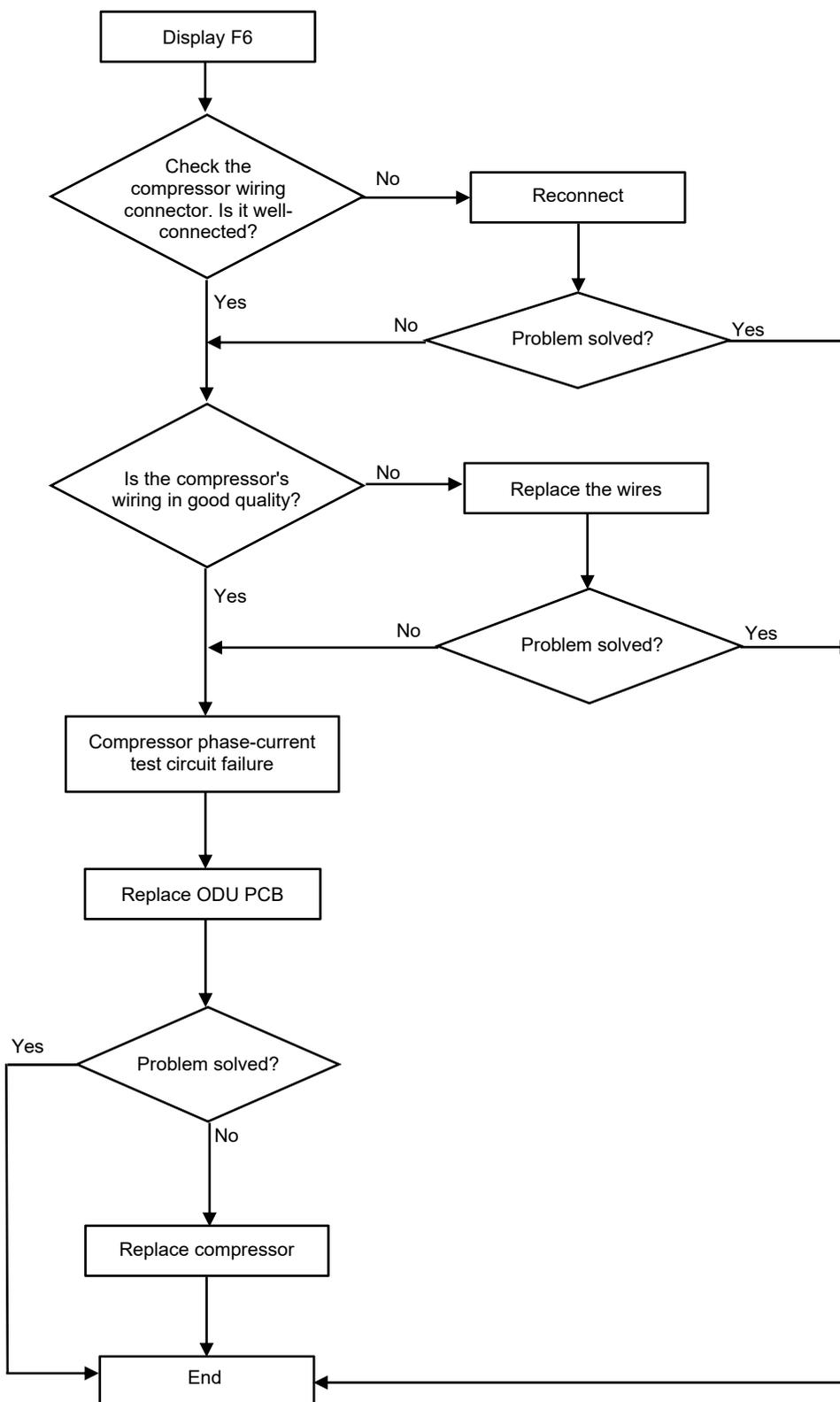


# Troubleshooting

## 4

### F6 --- Compressor Lack of Phase / Anti-Phase Protection

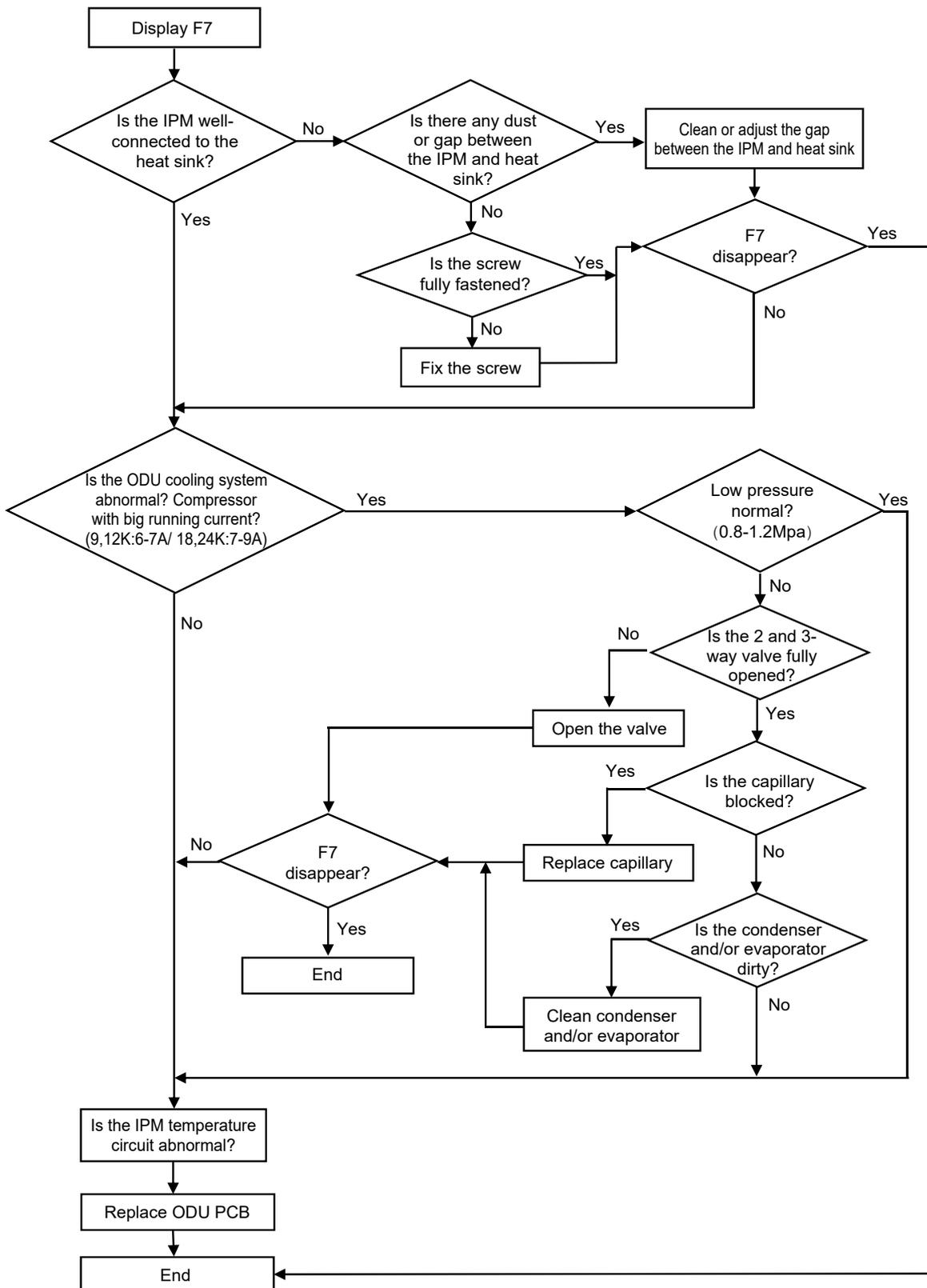
If the ODU PCB can't test one or even three phases of the compressor's current, the unit will undergo anti-phase protection and display the "F6" error code.



# Troubleshooting 4

## 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.

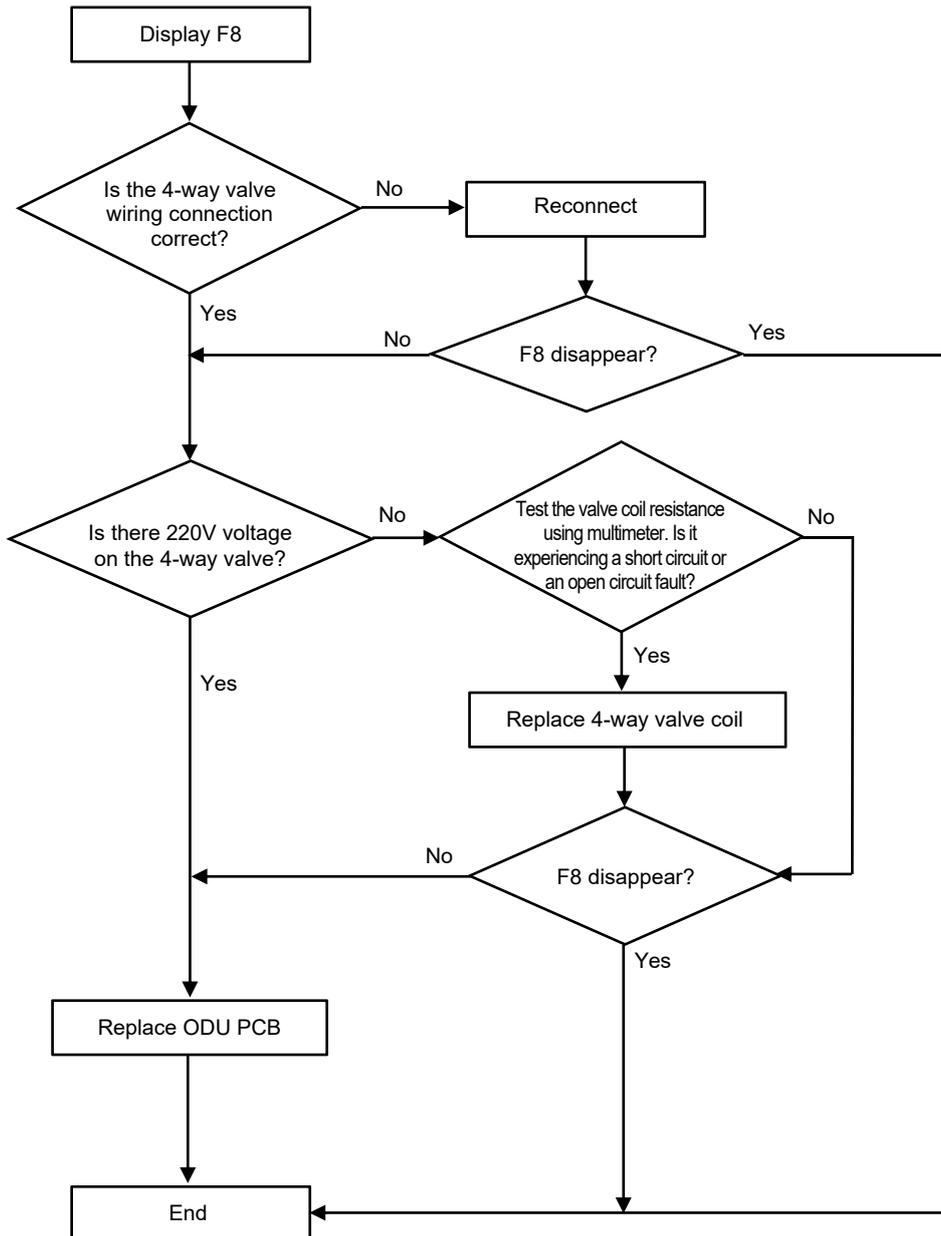


# Troubleshooting

# 4

## F8 --- 4-Way Valve 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 minutes, the unit will display the "F8" error code.

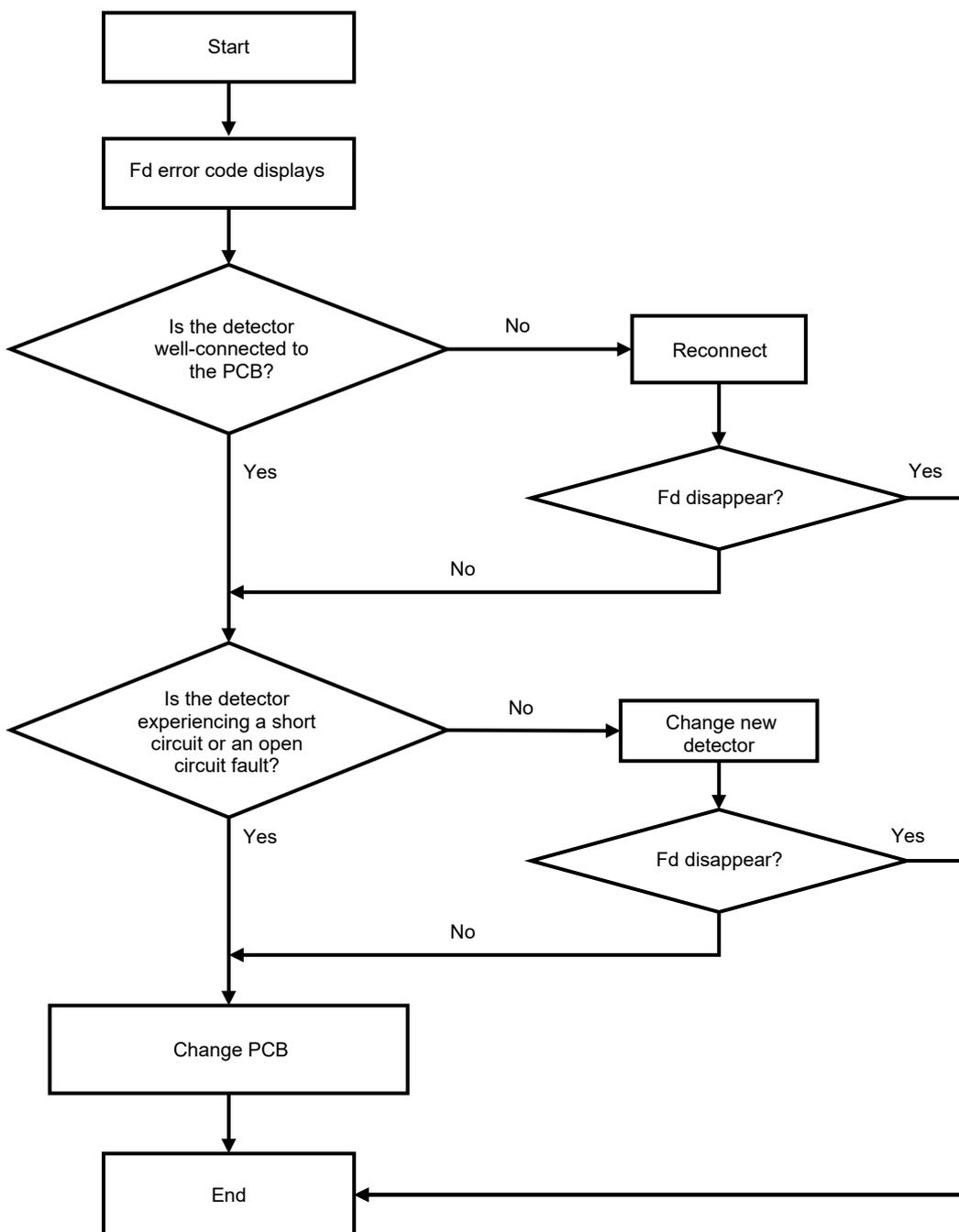


# Troubleshooting

# 4

## Fd --- Refrigerant Detector Failure

If the system has detected a refrigerant leakage, the unit will display the "Fd" error code. Turn off the unit immediately and contact a professional to check for the leakage point.

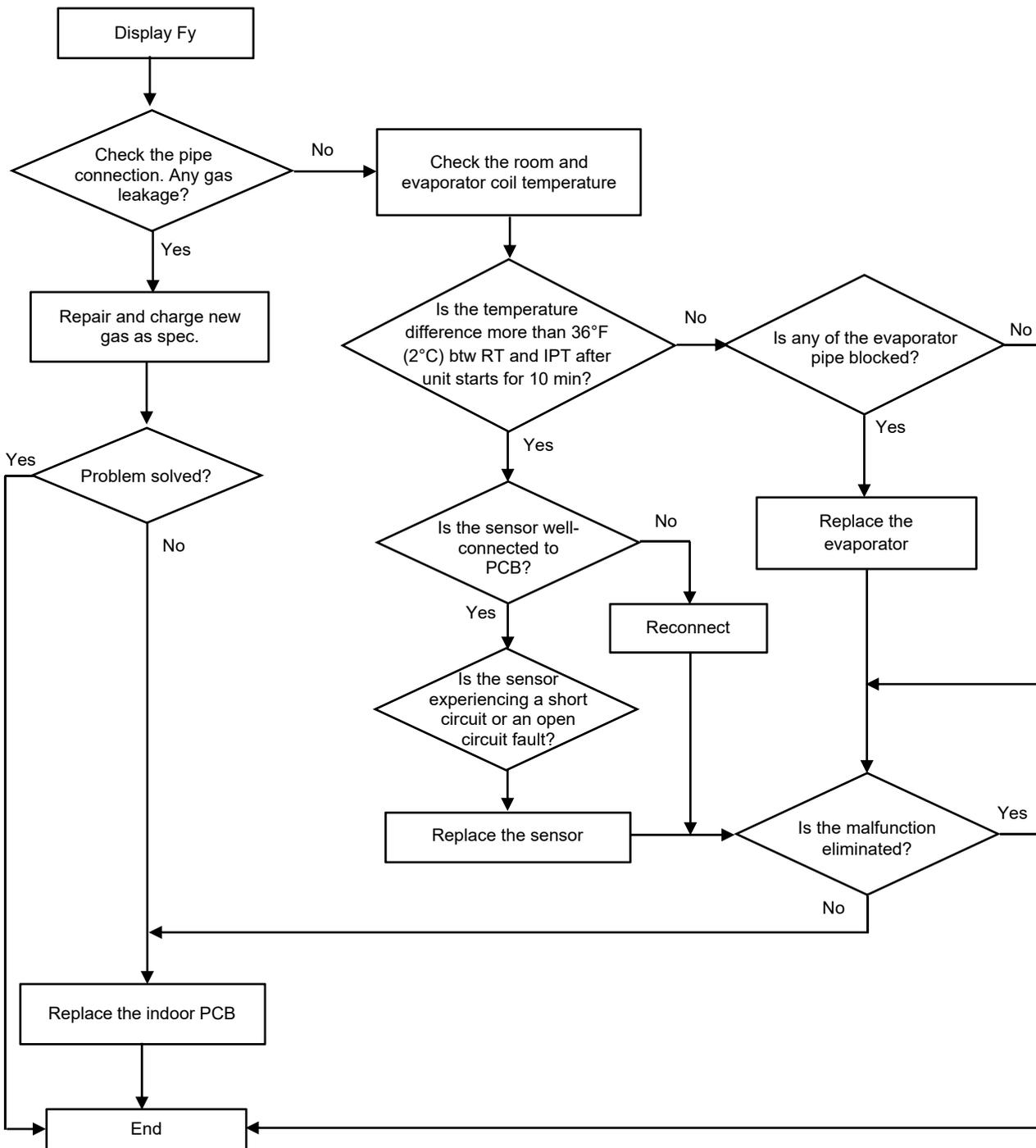


# Troubleshooting

# 4

## Fy --- Gas Leakage Protection

After the compressor operates at high frequency for 9 minutes, 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.

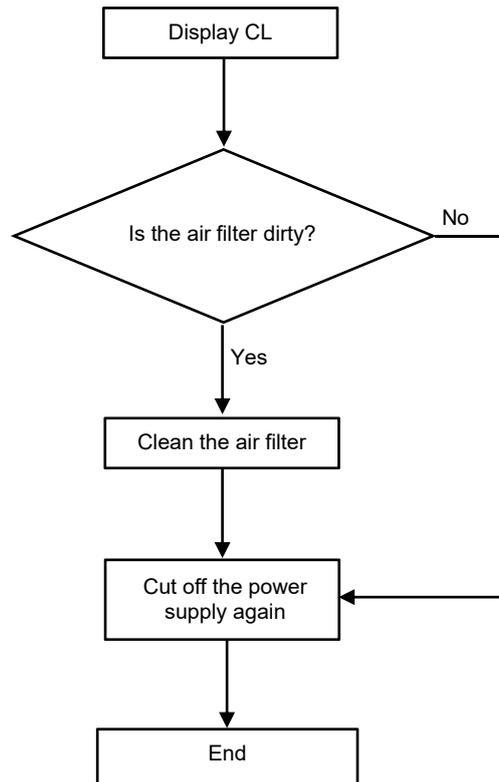


# Troubleshooting

# 4

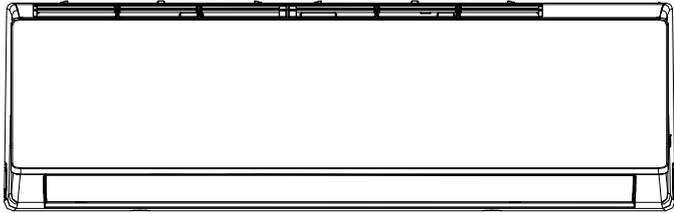
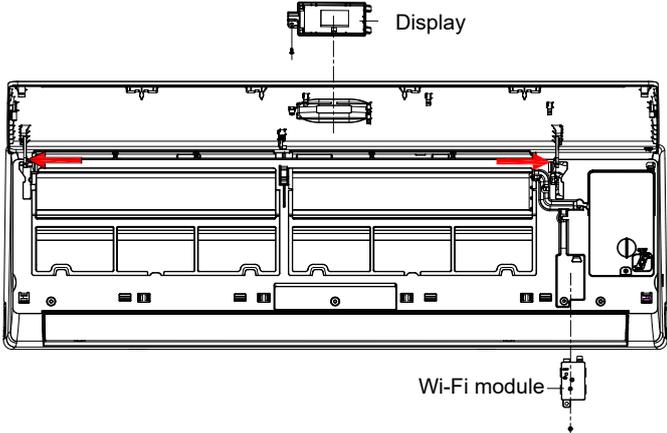
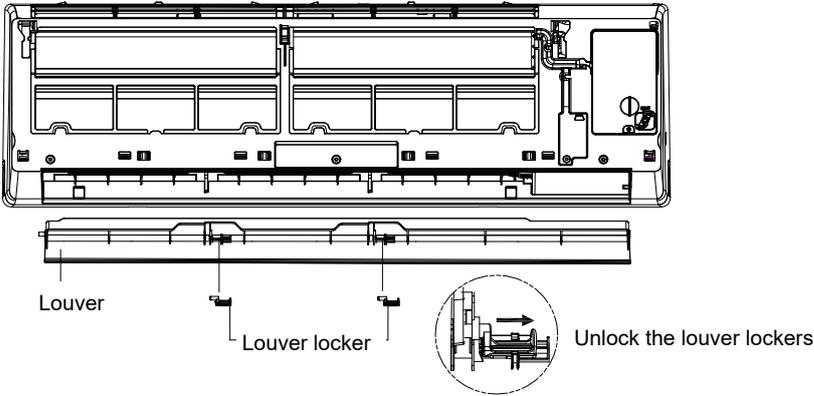
## CL --- Duty Caution

Air filter duty, the unit operation cumulative time 500 hours. The controller will confirm the filter is dirty by displaying the "CL" error code.



# Indoor Unit Disassembly

# 5

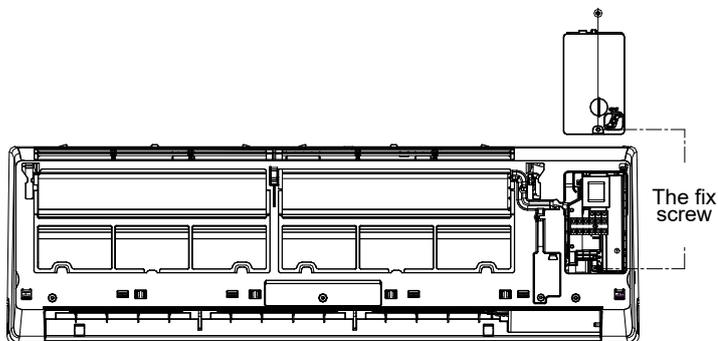
Steps	Reference Photo
<p><b>Before disassembly</b></p>	
<p><b>1. Disassemble the front panel, display board, and Wi-Fi module</b></p>	
<p><b>A.</b> Open front panel.</p> <p><b>B.</b> Remove 1 screw, then take the display box out from the panel.</p> <p><b>C.</b> Release the panel axis, which is shown in red arrows, out from middle frame and take the panel out.</p> <p><b>D.</b> Unscrew and remove the Wi-Fi module from the middle frame.</p>	
<p><b>2. Remove the louver</b></p>	
<p>Unlock the louver lockers (clip). Bend the louver slightly by hand and remove it from the middle frame and stepping motor.</p>	

# Indoor Unit Disassembly

# 5

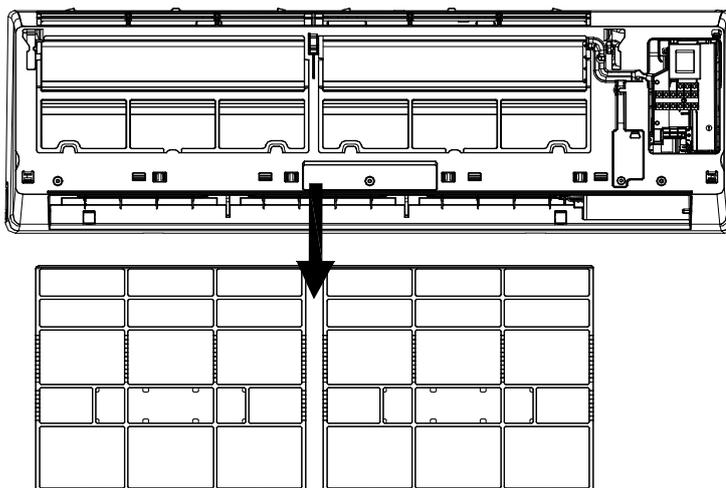
## 3. Remove the electric control box cover

Unfix 1 screw on the electric box cover, then remove the cover.



## 4. Remove the filter

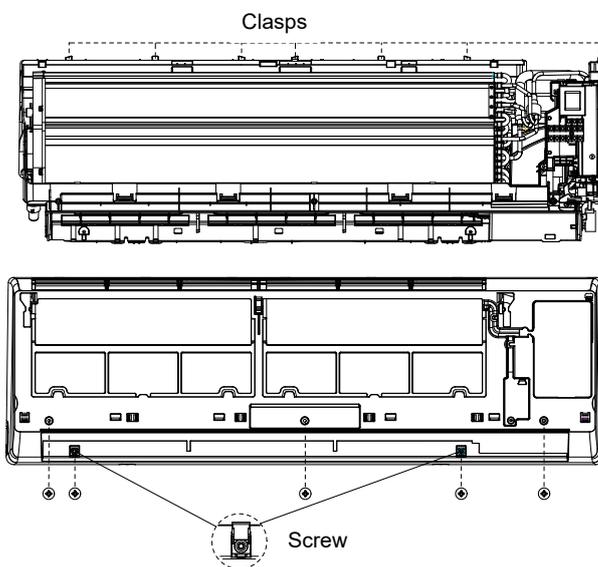
Push the filter upwards a little. Then take it out from the unit.



## 5. Disassemble the middle frame

**A.** Open the screw cover and unfix the screw with a cross screwdriver.

**B.** Remove the middle frame by loosening the clasps of the unit base. Take the frame out.



# Indoor Unit Disassembly

# 5

## 6. Disassemble the electric control box

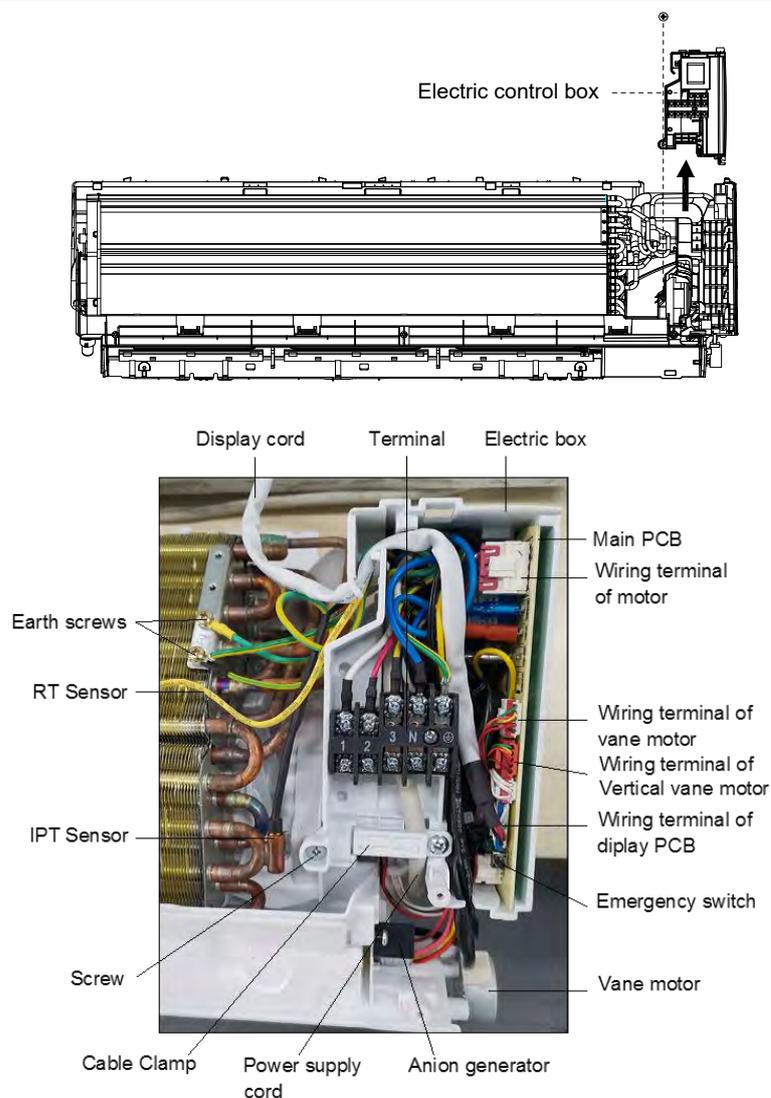
**A.** Remove the RT and IPT from the evaporator.

**B.** Unscrew all the earth ground wirings on the evaporator.

**C.** Take all the connectors out from the PCB.

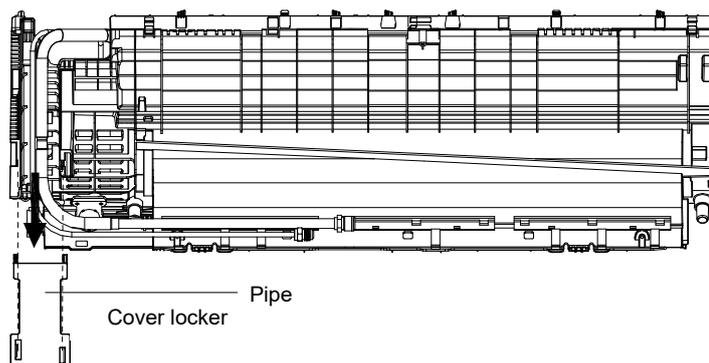
**D.** Unfix 1 screw from the control box of the unit base frame. Remove the control box out from the unit.

**Note:** The picture on the right is for reference only. The wiring connection for the exact model may be slightly different.



## 7. Remove the pipe cover

Loosen the lower edge of the pipe cover from the base frame, then remove the cover from the unit.

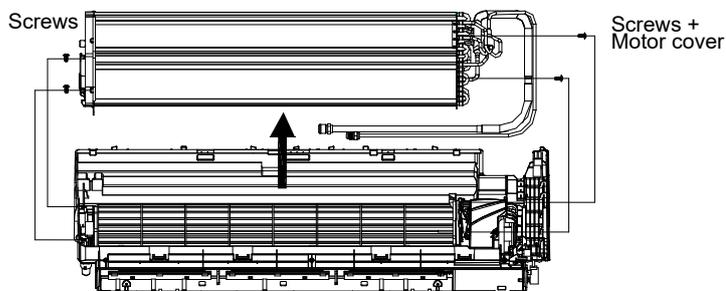


# Indoor Unit Disassembly

# 5

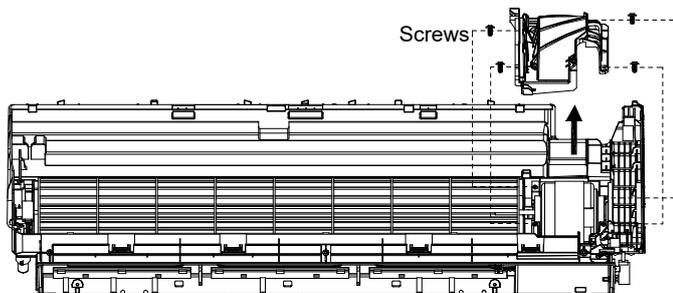
## 8. Disassemble the evaporator

- A.** Unfix 2 screws on the left side.
- B.** Unfix 2 screws on the right side of the motor cover/right support plate.
- C.** Take the evaporator out from the unit by uplifting the input/output pipes slightly.



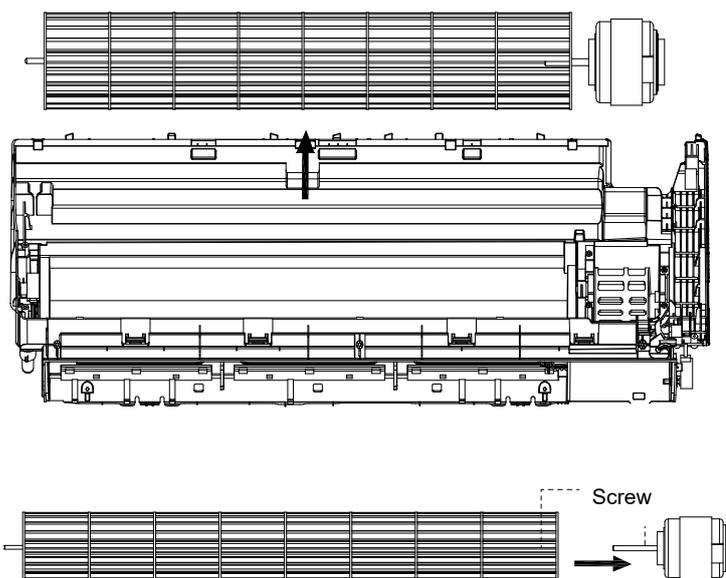
## 9. Remove the motor cover

Unfix 4 screws on the motor cover of the base frame.



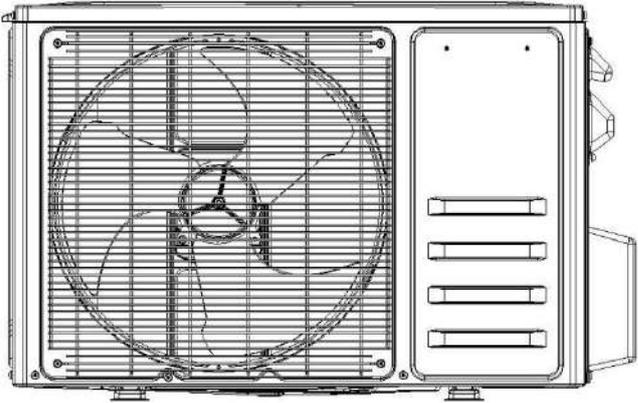
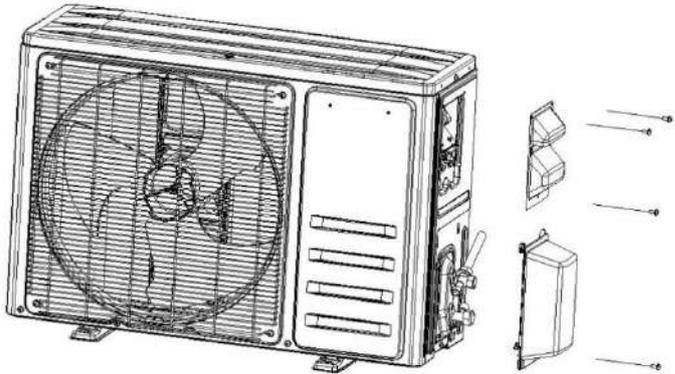
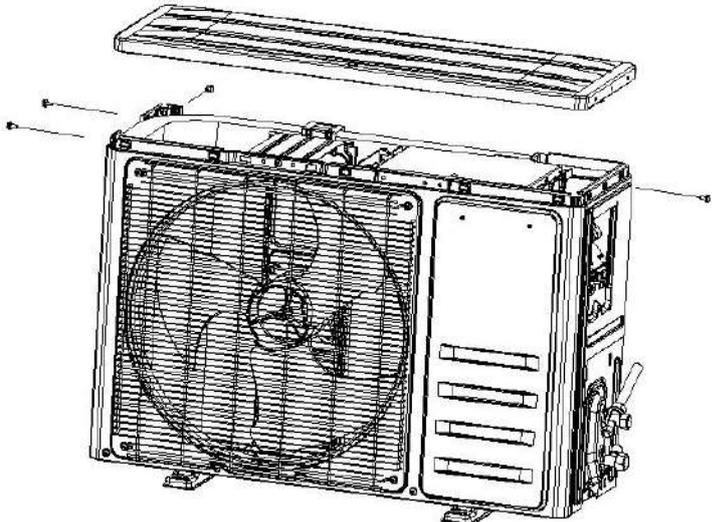
## 10. Disassemble the fan motor and fan blade

- A.** Lift the fan blade and fan motor. Take the base frame out.
- B.** Unfix 1 screw on the axis of fan motor, then separate the fan blade and fan motor.



6

# Outdoor Unit Disassembly

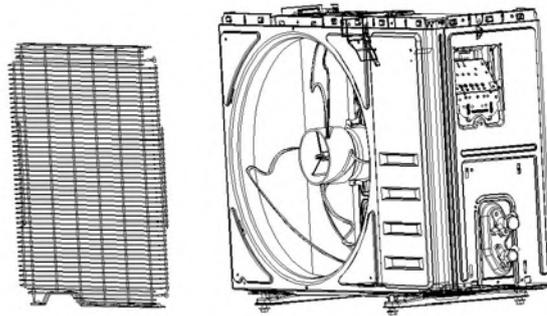
Step	Reference Photo
<p><b>Before disassembly</b></p>	
<p><b>1. Remove the PCB cover, valve cover, and top cover</b></p>	
<p><b>A</b></p> <p>1). Unfix 1 screw on the PCB cover, then remove the cover from the unit.</p> <p>2). Unfix 1 screw on the valve cover, then take it out.</p>	
<p><b>B</b></p> <p>Unfix the screws on the top/left/right plates, then take the top cover off.</p>	

# Outdoor Unit Disassembly

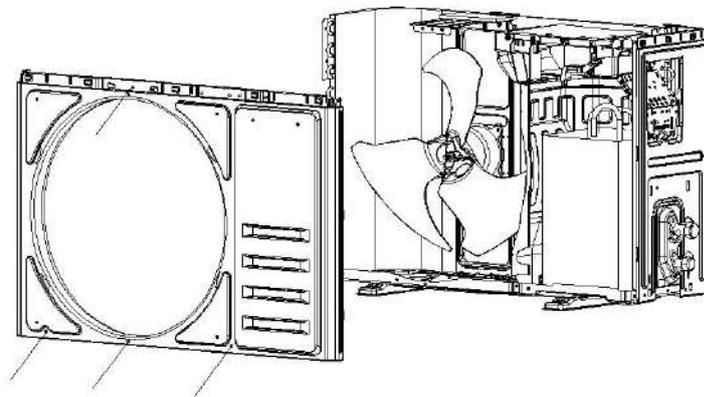
# 6

## 2. Disassemble the fan guard and front panel

**A** Remove the grille screws from the front panel, then take out the grille.



**B** Separate the ODU middle plate and base plate. Lift the front panel so it can be taken out from the unit.



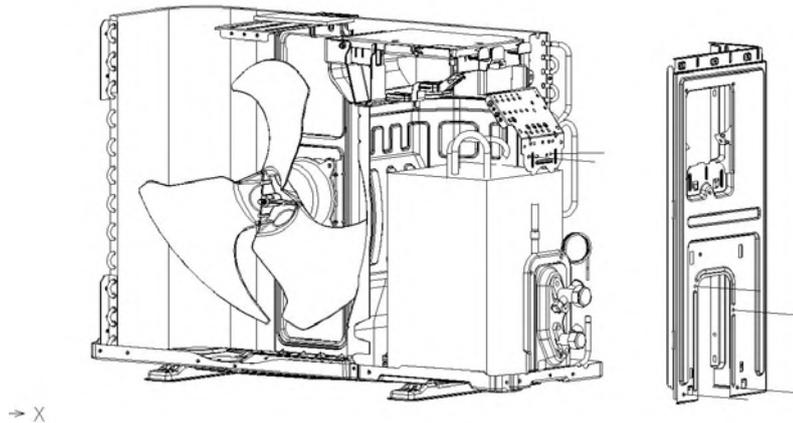
# Outdoor Unit Disassembly

# 6

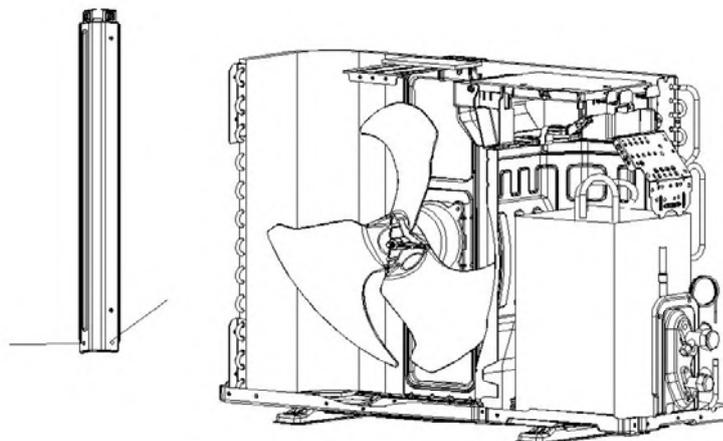
## 3. Disassemble the left and right plate

**A**

Unfix 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 the left plate out.

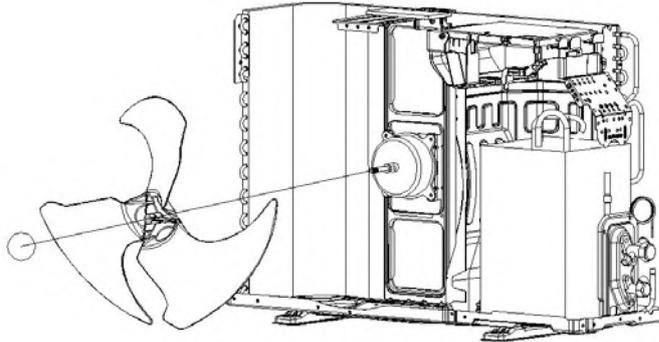


# Outdoor Unit Disassembly

# 6

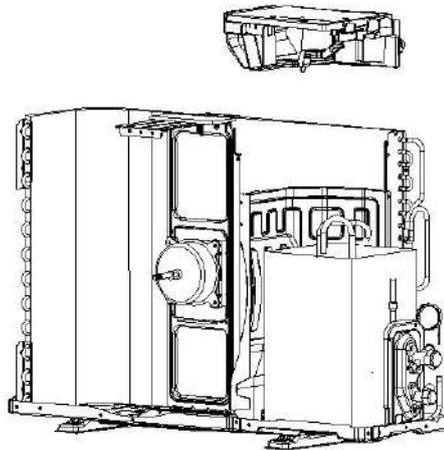
## 4. Disassemble the axis fan blade

- A** Unscrew the fan blade nut. Remove the blade.



## 5. Disassemble the electric box

- A** Unfix the screws on the electric box and motor supporter, etc. Loosen the wiring clamp, then take the control box out.

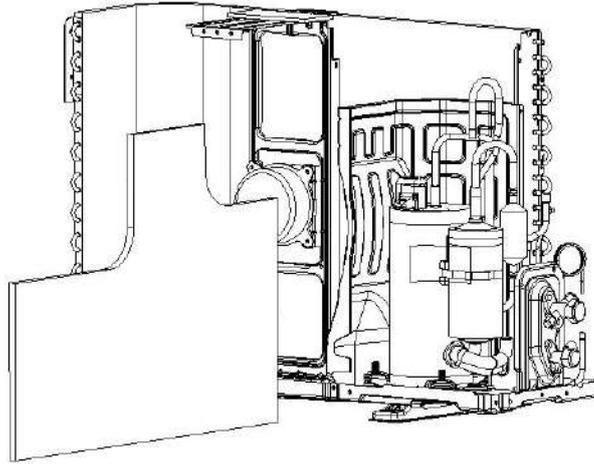


# Outdoor Unit Disassembly

# 6

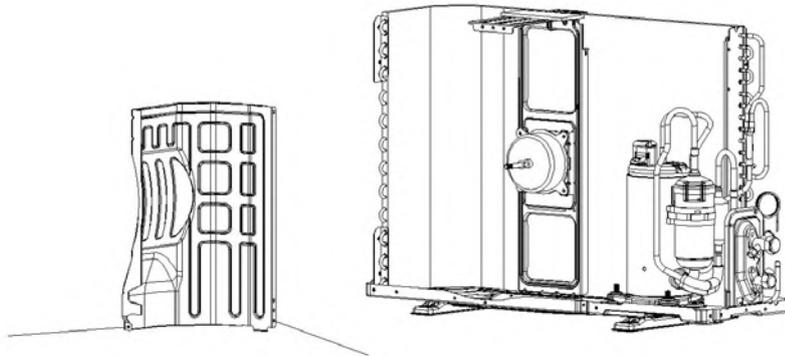
## 6. Remove the noise cotton

**A** Take the cotton out.



## 7. Disassemble the separate plate

**A** Unfix the screw on the separate plate and unit, then take it out.



# Outdoor Unit Disassembly

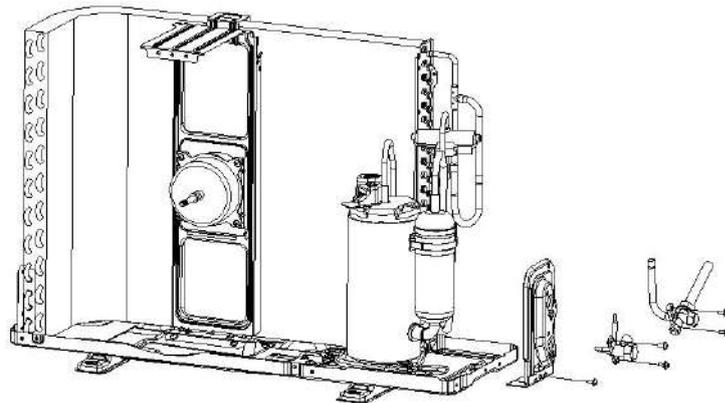
# 6

## 8. Disassemble the 2-way and 3-way valve

**A** Unfix the screws on the valve plate and base. Take the 2-way and 3-way valve out by welding.

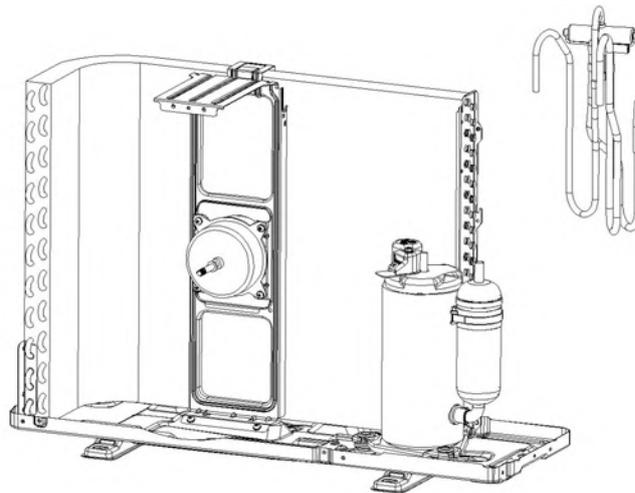
**Note:**

- 1). Welding can only occur while there is no gas in the unit.
- 2). Pay attention to the fire to prevent any injury.



## 9. Disassemble the 4-way valve assembly

**A** Remove the 4-way valve from the system by welding. Ensure there is no damage to the compressor, nameplate, etc.



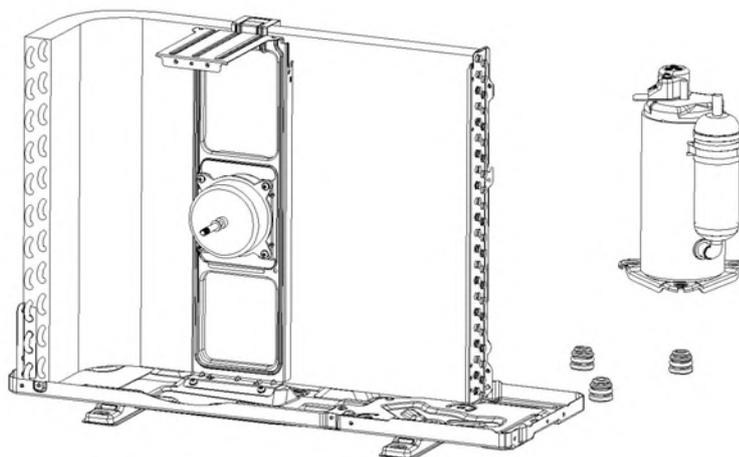
# Outdoor Unit Disassembly

# 6

## 10. Disassemble the compressor

**A**

Unscrew the nuts and remove the compressor.

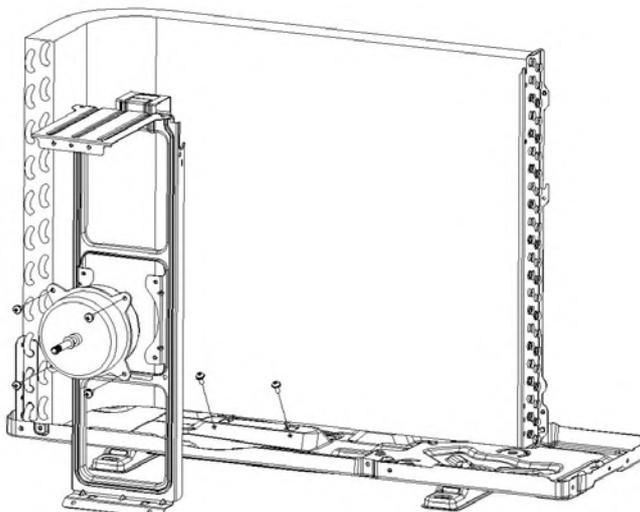


## 11. Remove the fan motor and fan supporter

**A**

Unfix the screws on the fan motor and supporter, then remove the supporter of the base plate.

**Note:** Pay attention to the motor wiring. It can't be taken out by force.



# Appendix

# A

## Appendix 1 Comparison Table of Celsius-Fahrenheit Temperature

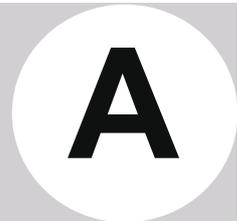
Fahrenheit Display Temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit Display Temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit Display Temperature (°F)	Fahrenheit (°F)	Celsius (°C)
61	60.8	16	69/70	69.8	21	78/79	78.8	26
62/63	62.6	17	71/72	71.6	22	80/81	80.6	27
64/65	64.4	18	73/74	73.4	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 & Gas Charging

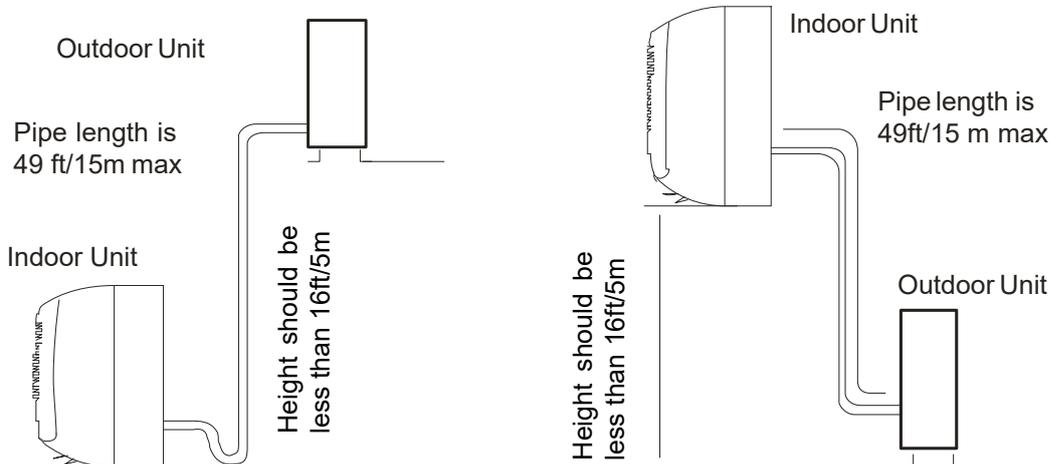
Size and length of the connecting pipes for installation.

Model	Pipe Size (inch)	
	Liquid	Gas
WYT009GLSI20RL	0.25	0.375
WYT009ALSI20RL	0.25	0.375
WYT012GLSI20RL	0.25	0.375
WYT012ALSI20RL	0.25	0.375
WYT018GLSI20RL	0.25	0.375
WYT024GLSI20RL	0.25	0.5
WYT030GLSI20RL WYT036GLSI20RL	0.25	0.625

# Appendix



## Appendix 2 Pipe Length & Gas Charging (Continued)



Mode	Standard Length (ft/m)	Refrigerant Piping Max. Length (ft/m) A	Additional Refrigerant Charging: $Xg = B * (A - 5m) B$
WYT009GLSI20RL	25 ft / 7.5 m	49 ft / 15 m	10g/m(0.11oz/ft)
WYT009ALSI20RL	25 ft / 7.5 m	49 ft / 15 m	10g/m(0.11oz/ft)
WYT012GLSI20RL	25 ft / 7.5 m	49 ft / 15 m	10g/m(0.11oz/ft)
WYT012ALSI20RL	25 ft / 7.5 m	49 ft / 15 m	10g/m(0.11oz/ft)
WYT018GLSI20RL	25 ft / 7.5 m	49 ft / 15 m	10g/m(0.11oz/ft)
WYT024GLSI20RL	25 ft / 7.5 m	49 ft / 15 m	10g/m(0.11oz/ft)
WYT030GLSI20RL WYT036GLSI20RL	25 ft / 7.5 m	49 ft / 15 m	10g/m(0.11oz/ft)

# Appendix

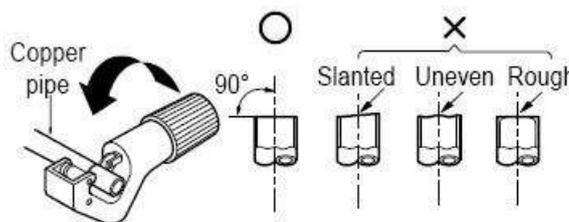
# A

## Appendix 3 Pipes Flaring

Main cause for gas leakages is due to defects in flaring work. Carry out the correct flaring work with the following procedure:

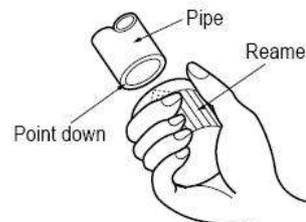
### A. Cut the Pipes and Cable

- 1) Use the piping kit accessory or 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 feet (1.5 m) 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.

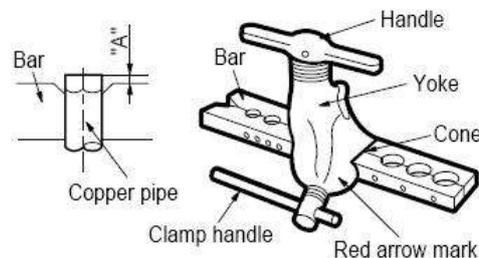


### C. Flaring Work

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

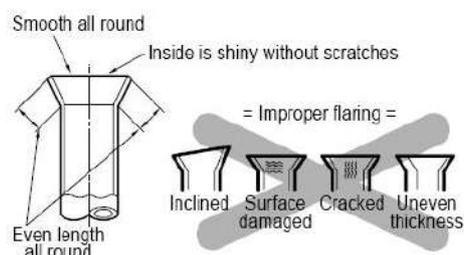
Outside Diameter		A
inch	mm	inch / mm
1/4	ø6.35	0.04~0.06 in (1.0~1.3 mm)
3/8	ø9.52	0.03~0.04 in (0.8~1.0 mm)
1/2	ø12.7	0.02~0.03 in (0.5~0.8 mm)
5/8	ø15.88	0.02~0.03 in (0.5~0.8 mm)

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



# Appendix

# A

## Appendix 4 Thermistor Temperature Characteristics

### 1). Indoor and outdoor units 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°F/-30°C	63.513	4.628	59°F/15°C	7.447	2.968	140°F/60°C	1.464	1.115
-20°F/-29°C	60.135	4.609	61°F/16°C	7.148	2.918	142°F/61°C	1.418	1.088
-18°F/-28°C	56.956	4.589	63°F/17°C	6.863	2.868	144°F/62°C	1.374	1.061
-17°F/-27°C	53.963	4.568	64°F/18°C	6.591	2.819	145°F/63°C	1.331	1.035
-15°F/-26°C	51.144	4.547	66°F/19°C	6.332	2.769	147°F/64°C	1.290	1.009
-13°F/-25°C	48.488	4.524	68°F/20°C	6.084	2.720	149°F/65°C	1.250	0.984
-11°F/-24°C	45.985	4.501	70°F/21°C	5.847	2.671	151°F/66°C	1.212	0.960
-9°F/-23°C	43.627	4.477	72°F/22°C	5.621	2.621	153°F/67°C	1.175	0.936
-8°F/-22°C	41.403	4.452	73°F/23°C	5.404	2.572	154°F/68°C	1.139	0.913
-6°F/-21°C	39.305	4.426	75°F/24°C	5.198	2.524	156°F/69°C	1.105	0.890
-4°F/-20°C	37.326	4.399	77°F/25°C	5.000	2.475	158°F/70°C	1.072	0.868
-2°F/-19°C	35.458	4.371	79°F/26°C	4.811	2.427	160°F/71°C	1.040	0.847
0°F/-18°C	33.695	4.343	81°F/27°C	4.630	2.379	162°F/72°C	1.009	0.825
1°F/-17°C	32.030	4.313	82°F/28°C	4.457	2.332	163°F/73°C	0.979	0.805
3°F/-16°C	30.458	4.283	84°F/29°C	4.292	2.285	165°F/74°C	0.950	0.785
5°F/-15°C	28.972	4.252	86°F/30°C	4.133	2.238	167°F/75°C	0.922	0.765
7°F/-14°C	27.567	4.219	88°F/31°C	3.981	2.192	169°F/76°C	0.895	0.746
9°F/-13°C	26.239	4.186	90°F/32°C	3.836	2.146	171°F/77°C	0.869	0.728
10°F/-12°C	24.984	4.152	91°F/33°C	3.697	2.101	172°F/78°C	0.843	0.710
12°F/-11°C	23.795	4.117	93°F/34°C	3.563	2.057	174°F/79°C	0.819	0.692
14°F/-10°C	22.671	4.082	95°F/35°C	3.435	2.012	176°F/80°C	0.795	0.675
16°F/-9°C	21.606	4.045	97°F/36°C	3.313	1.969	178°F/81°C	0.773	0.658
18°F/-8°C	20.598	4.008	99°F/37°C	3.195	1.926	180°F/82°C	0.751	0.641
19°F/-7°C	19.644	3.969	100°F/38°C	3.082	1.883	181°F/83°C	0.729	0.625
21°F/-6°C	18.732	3.930	102°F/39°C	2.974	1.842	183°F/84°C	0.709	0.610
23°F/-5°C	17.881	3.890	104°F/40°C	2.870	1.800	185°F/85°C	0.689	0.595
25°F/-4°C	17.068	3.850	106°F/41°C	2.770	1.760	187°F/86°C	0.669	0.580

# Appendix

# A

## Appendix 4 Thermistor Temperature Characteristics (Continued)

### 1). Indoor and outdoor units exchange temperature and outside air temperature sensor temperature characteristics (Continued)

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
27°F/-3°C	16.297	3.808	108°F/42°C	2.674	1.720	189°F/87°C	0.651	0.566
28°F/-2°C	15.565	3.766	109°F/43°C	2.583	1.681	190°F/88°C	0.633	0.552
30°F/-1°C	14.871	3.723	111°F/44°C	2.494	1.642	192°F/89°C	0.615	0.538
32°F/0°C	14.212	3.680	113°F/45°C	2.410	1.604	194°F/90°C	0.598	0.525
34°F/1°C	13.586	3.635	115°F/46°C	2.328	1.567	196°F/91°C	0.582	0.512
36°F/2°C	12.991	3.590	117°F/47°C	2.250	1.530	198°F/92°C	0.566	0.499
37°F/3°C	12.426	3.545	118°F/48°C	2.174	1.495	199°F/93°C	0.550	0.487
39°F/4°C	11.889	3.499	120°F/49°C	2.102	1.459	201°F/94°C	0.535	0.475
41°F/5°C	11.378	3.452	122°F/50°C	2.032	1.425	203°F/95°C	0.521	0.463
43°F/6°C	10.893	3.406	124°F/51°C	1.965	1.391	205°F/96°C	0.507	0.452
45°F/7°C	10.431	3.358	126°F/52°C	1.901	1.357	207°F/97°C	0.493	0.441
46°F/8°C	9.991	3.310	127°F/53°C	1.839	1.325	208°F/98°C	0.480	0.430
48°F/9°C	9.573	3.262	129°F/54°C	1.779	1.293	210°F/99°C	0.467	0.419
50°F/10°C	9.174	3.214	131°F/55°C	1.721	1.262	212°F/100°C	0.455	0.409
52°F/11°C	8.795	3.165	133°F/56°C	1.666	1.231			
54°F/12°C	8.433	3.116	135°F/57°C	1.613	1.201			
55°F/13°C	8.089	3.067	136°F/58°C	1.561	1.172			
57°F/14°C	7.760	3.017	138°F/59°C	1.512	1.143			

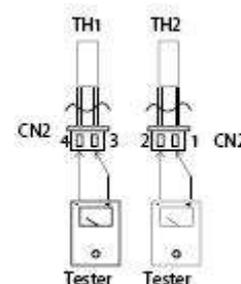
R—Resistance

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 resistance, disconnect the connectors as shown above.



# Appendix

# A

## Appendix 4 Thermistor Temperature Characteristics (Continued)

### 2). 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°F/-30°C	283.3	322.9	367.7	75°F/24°C	19.36	20.89	22.52	172°F/78°C	2.563	2.654	2.745
-20°F/-29°C	267.4	304.4	346.3	77°F/25°C	18.55	20	21.54	174°F/79°C	2.481	2.567	2.654
-18°F/-28°C	252.5	287.1	307.4	79°F/26°C	17.77	19.14	20.6	176°F/80°C	2.402	2.484	2.567
-17°F/-27°C	238.5	270.9	307.4	81°F/27°C	17.03	18.32	19.7	178°F/81°C	2.327	2.404	2.483
-15°F/-26°C	225.4	255.7	289.8	82°F/28°C	16.32	17.55	18.85	180°F/82°C	2.254	2.327	2.401
-13°F/-25°C	213.1	241.4	273.3	84°F/29°C	15.65	16.81	18.04	181°F/83°C	2.183	2.253	2.323
-11°F/-24°C	201.5	228	257.9	86°F/30°C	15	16.1	17.27	183°F/84°C	2.115	2.182	2.248
-9°F/-23°C	190.6	215.5	243.4	88°F/31°C	14.39	15.43	16.54	185°F/85°C	2.05	2.113	2.176
-8°F/-22°C	180.3	203.6	229.8	90°F/32°C	13.81	14.79	15.34	187°F/86°C	1.985	2.047	2.109
-6°F/-21°C	170.7	192.5	217	91°F/33°C	13.25	14.18	15.17	189°F/87°C	1.922	1.983	2.045
-4°F/-20°C	161.6	182.1	205	93°F/34°C	12.72	13.6	14.54	190°F/88°C	1.861	1.922	1.983
-2°F/-19°C	153.1	172.3	193.7	95°F/35°C	12.21	13.05	13.93	192°F/89°C	1.802	1.862	1.923
0°F/-18°C	145	163.1	183.2	97°F/36°C	11.72	12.52	13.36	194°F/90°C	1.746	1.805	1.865
1°F/-17°C	137.5	154.4	173.2	99°F/37°C	11.26	12.01	12.81	196°F/91°C	1.692	1.75	1.809
3°F/-16°C	130.3	146.2	163.9	100°F/38°C	10.82	11.53	12.29	198°F/92°C	1.639	1.697	1.755
5°F/-15°C	123.6	138.5	155.1	102°F/39°C	10.29	11.07	11.78	199°F/93°C	1.589	1.646	1.703
7°F/-14°C	117.3	131.3	146.8	104°F/40°C	9.986	10.63	11.31	201°F/94°C	1.54	1.596	1.653
9°F/-13°C	111.3	124.4	139	106°F/41°C	9.6	10.21	10.85	203°F/95°C	1.493	1.549	1.604
10°F/-12°C	105.6	118	131.7	108°F/42°C	9.231	9.813	10.42	205°F/96°C	1.448	1.502	1.558
12°F/-11°C	100.3	111.9	124.7	109°F/43°C	8.878	9.43	10	207°F/97°C	1.404	1.458	1.512
14°F/-10°C	95.24	106.2	118.2	111°F/44°C	8.54	9.064	9.612	208°F/98°C	1.362	1.415	1.469
16°F/-9°C	90.49	100.8	112.1	113°F/45°C	8.217	8.714	9.233	210°F/99°C	1.321	1.373	1.426
18°F/-8°C	85.99	95.68	106.3	115°F/46°C	7.908	8.38	8.872	212°F/100°C	1.284	1.335	1.387
19°F/-7°C	81.75	90.86	100.8	117°F/47°C	7.612	8.06	8.526	214°F/101°C	1.245	1.296	1.348
21°F/-6°C	77.74	86.31	95.74	118°F/48°C	7.328	7.754	8.196	216°F/102°C	1.209	1.258	1.309
23°F/-5°C	73.94	82.01	90.88	120°F/49°C	7.057	7.461	7.88	217°F/103°C	1.173	1.222	1.272
25°F/-4°C	70.35	77.95	86.29	122°F/50°C	6.797	7.18	7.578	219°F/104°C	1.139	1.187	1.236
27°F/-3°C	66.96	74.11	81.96	124°F/51°C	6.548	6.912	7.289	221°F/105°C	1.105	1.153	1.202

# Appendix

# A

## Appendix 4 Thermistor Temperature Characteristics (Continued)

### 2). Outdoor Unit Discharge Sensor Temperature Characteristics (Continued)

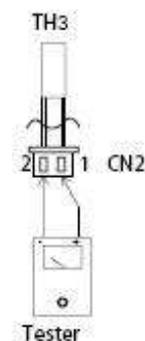
Temp. (°F/°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)	Temp. (°F/°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)	Temp. (°F/°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)
28°F/-2°C	63.74	70.48	77.87	126°F/52°C	6.309	6.655	7.013	223°F/106°C	1.073	1.12	1.168
30°F/-1°C	60.69	67.05	74	127°F/53°C	6.08	6.409	6.748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

R—Resistance

Resistance at 77°F (25°C):20 kΩ

**TH3:** Outdoor unit discharge pipe sensor

Before measuring 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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