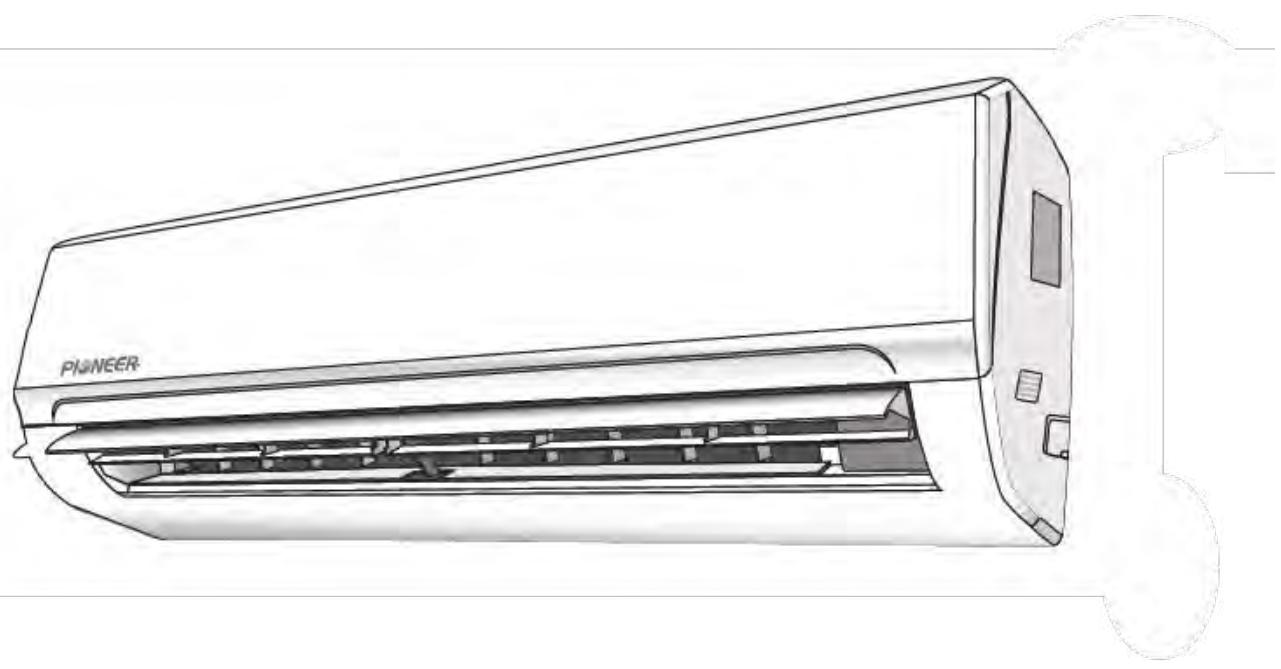


WYT-17 Inverter Series Service Manual



Models:

WYT012ALUI17RL WYT012GLUI17RL
WYT018GLUI17RL WYT024GLUI17RL
WYT036GLUI17RL

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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.

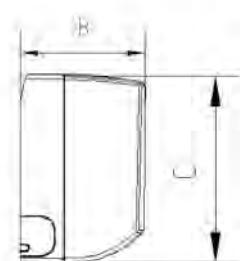
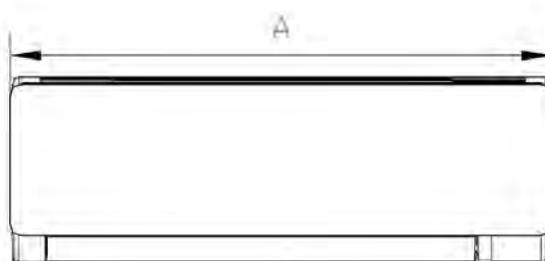
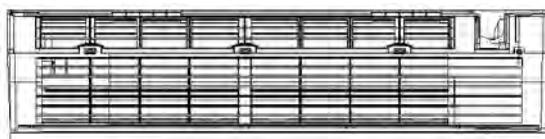
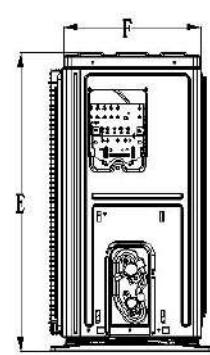
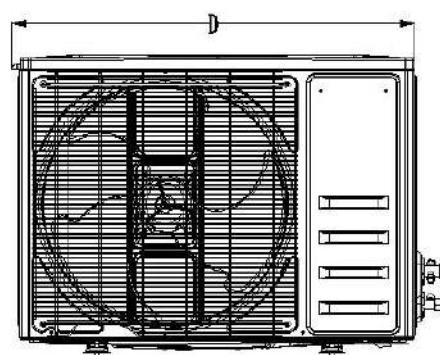
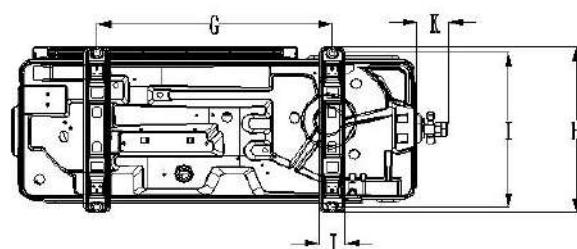
The information, specifications, and parameters are subject to change due to technical modifications or improvements without any prior notice. The accurate specifications are presented on the nameplate label.

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

Indoor Unit:**Outdoor Unit:**

Product Dimensions

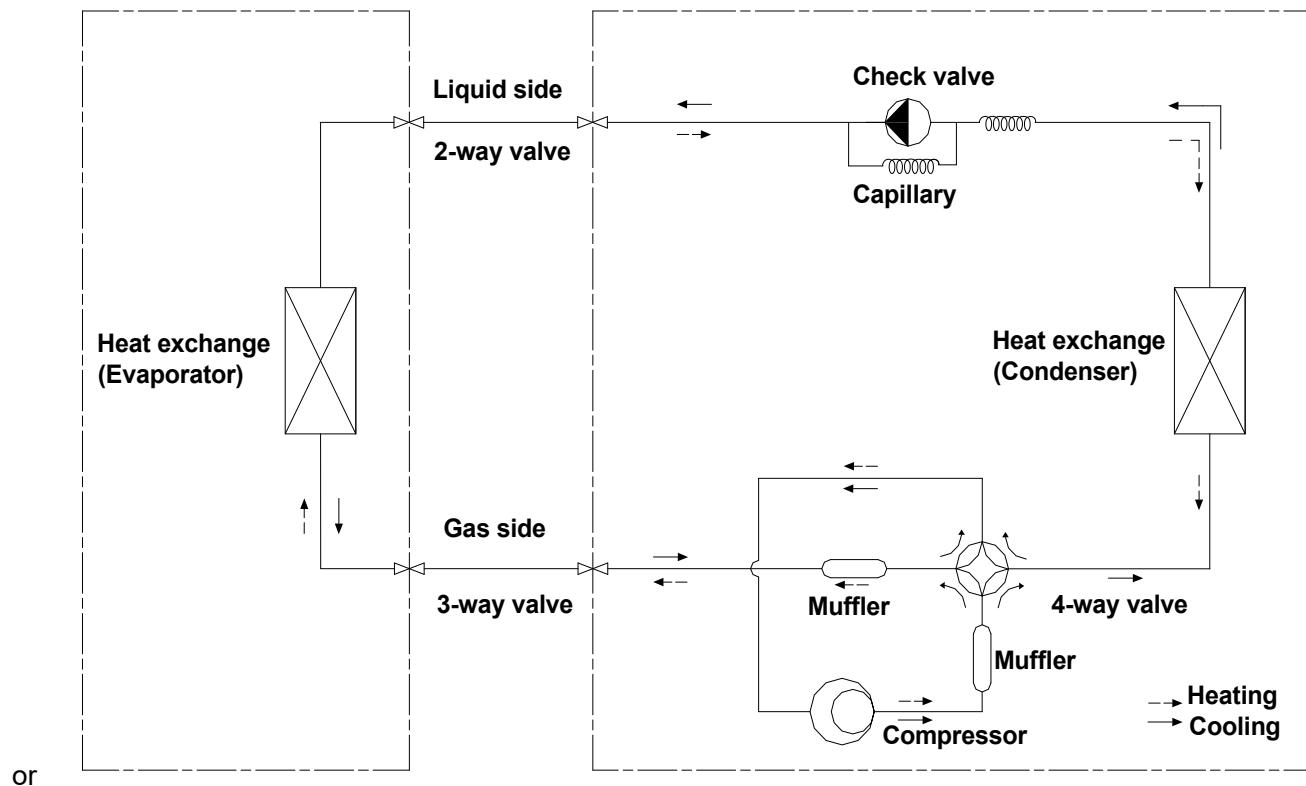
2

Model	Indoor Unit (mm/inch)			Outdoor Unit (mm/inch)							
	A	B	C	D	E	F	G	H	I	J	K
WYT012ALUI17RL	777	205	250	712	498	234	415	291	225	48.5	52
	30 $\frac{5}{8}$	8 $\frac{1}{8}$	9 $\frac{7}{8}$	28	19 $\frac{5}{8}$	9 $\frac{1}{4}$	16 $\frac{3}{8}$	11 $\frac{1}{2}$	8 $\frac{7}{8}$	1 $\frac{7}{8}$	2
WYT012GLUI17RL	777	205	250	712	498	234	415	291	225	48.5	52
	30 $\frac{5}{8}$	8 $\frac{1}{8}$	9 $\frac{7}{8}$	28	19 $\frac{5}{8}$	9 $\frac{1}{4}$	16 $\frac{3}{8}$	11 $\frac{1}{2}$	8 $\frac{7}{8}$	1 $\frac{7}{8}$	2
WYT018GLUI17RL	910	205	292	726	549	252	433.8	305	278	48	52
	35 $\frac{5}{8}$	8 $\frac{1}{8}$	11 $\frac{1}{2}$	28 $\frac{3}{4}$	21 $\frac{5}{8}$	9 $\frac{7}{8}$	17 $\frac{1}{8}$	12	11	1 $\frac{7}{8}$	2
WYT024GLUI17RL	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 $\frac{1}{4}$
WYT036GLUI17RL	1186	340	268	910	803	359	607	421	390	60	63
	46 $\frac{3}{4}$	13 $\frac{3}{8}$	10 $\frac{1}{2}$	35 $\frac{5}{8}$	31 $\frac{5}{8}$	14 $\frac{1}{8}$	23 $\frac{7}{8}$	16 $\frac{5}{8}$	15 $\frac{3}{8}$	2 $\frac{3}{8}$	2 $\frac{1}{2}$

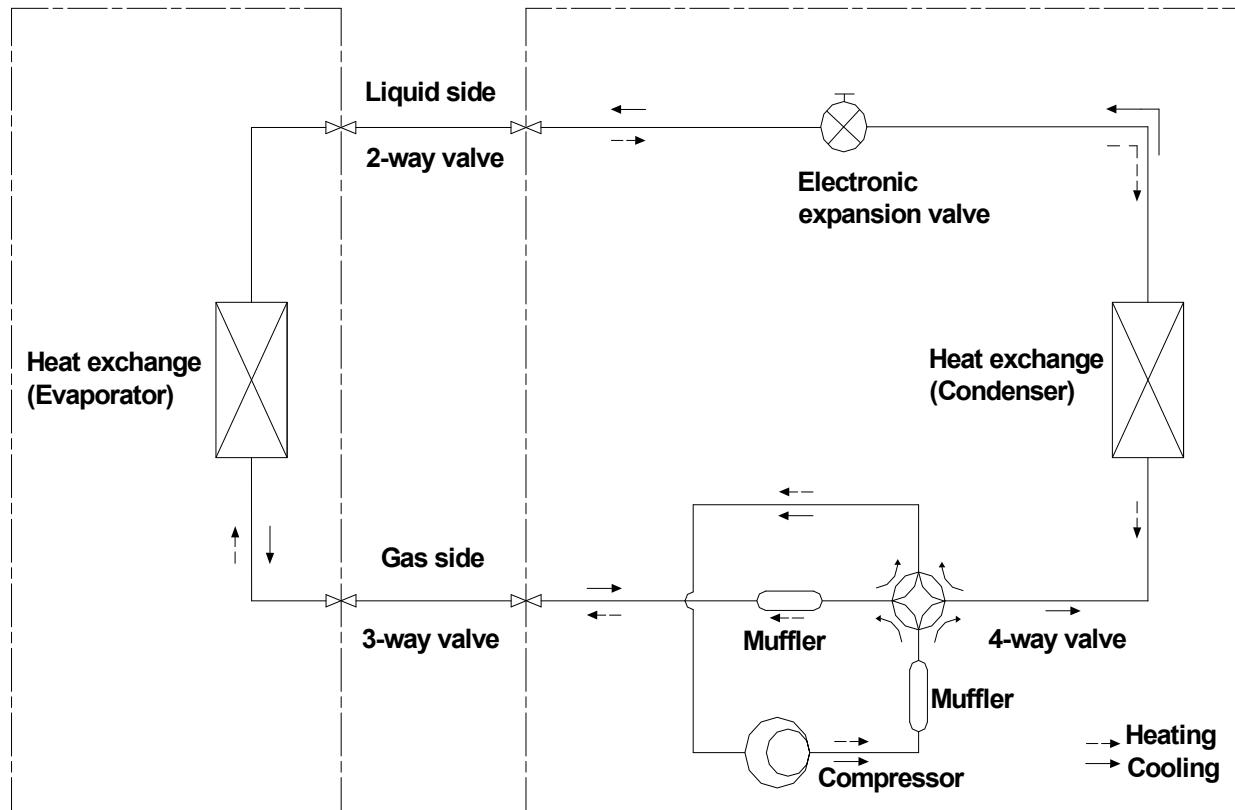
Refrigeration Cycle Diagrams

3

Heat pump



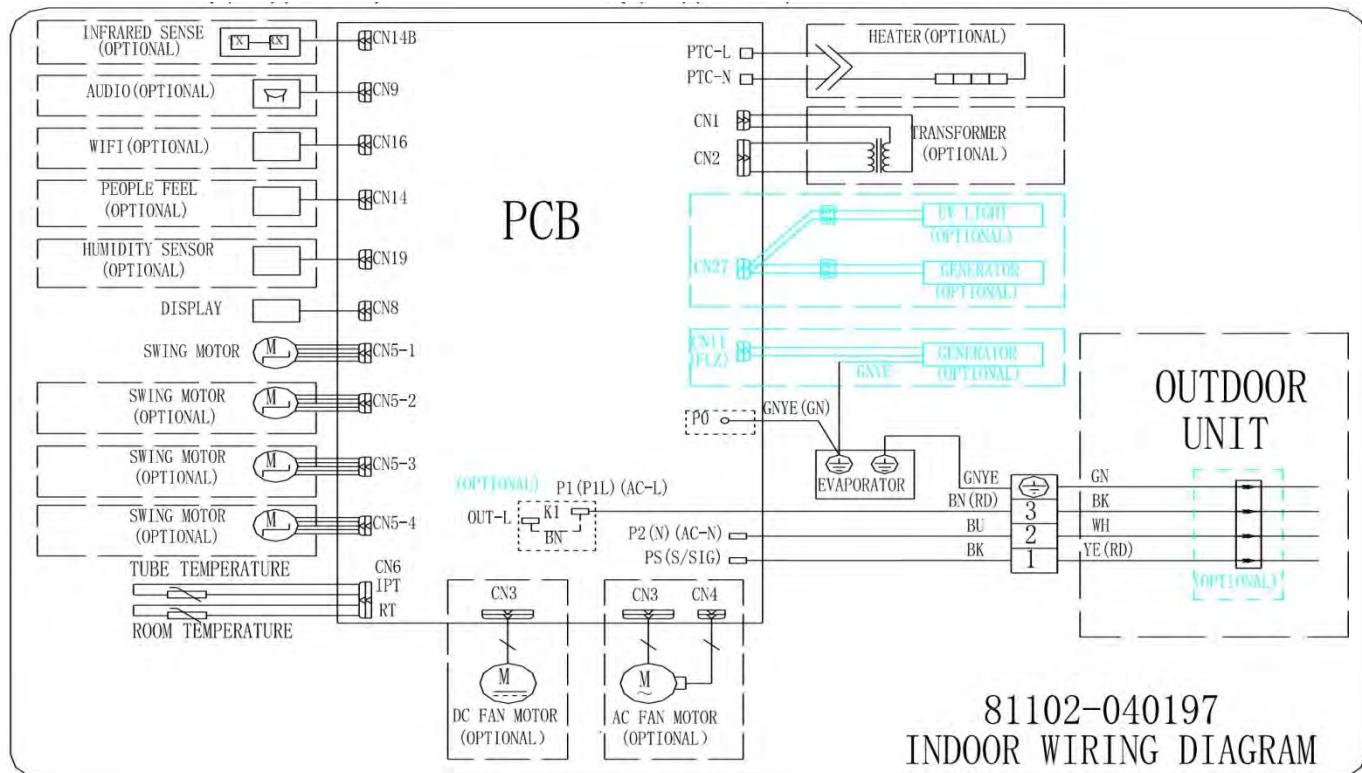
or



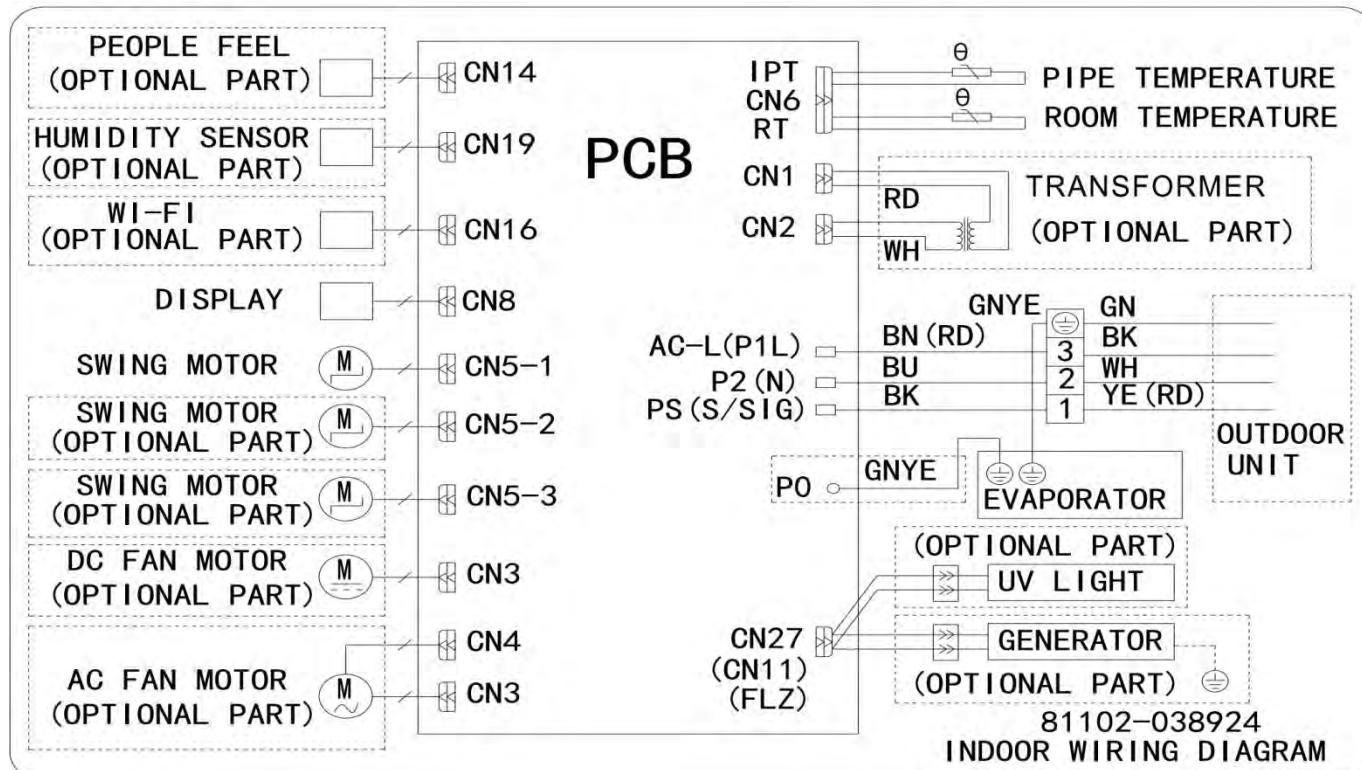
Wiring Diagrams

4

Indoor Units: WT012ALUI17HLD | WT012GLUI17HLD | WT018GLUI17HLD | WT024GLUI17HLD



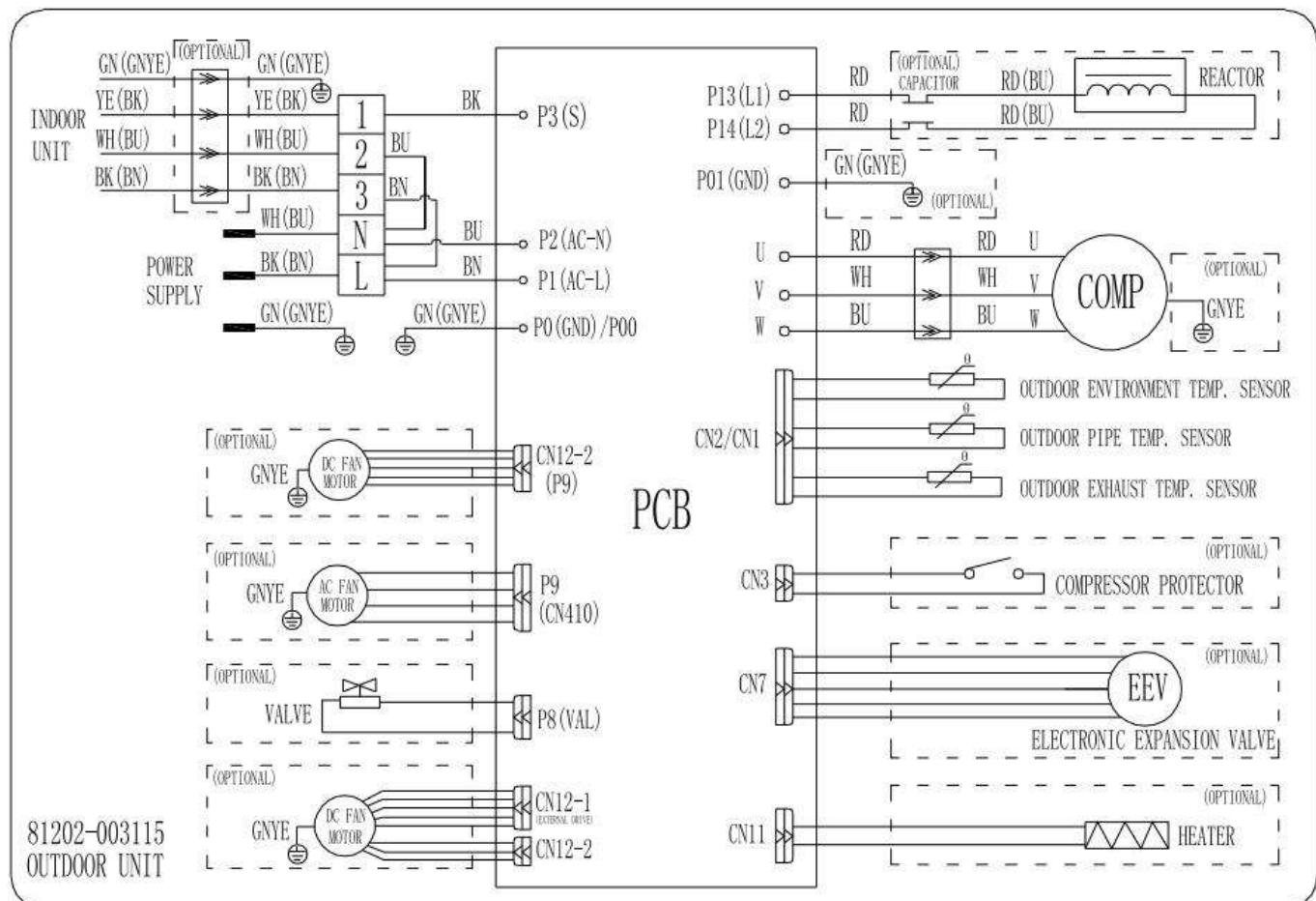
Indoor Unit: WT036GLUI17HLD



Wiring Diagrams

4

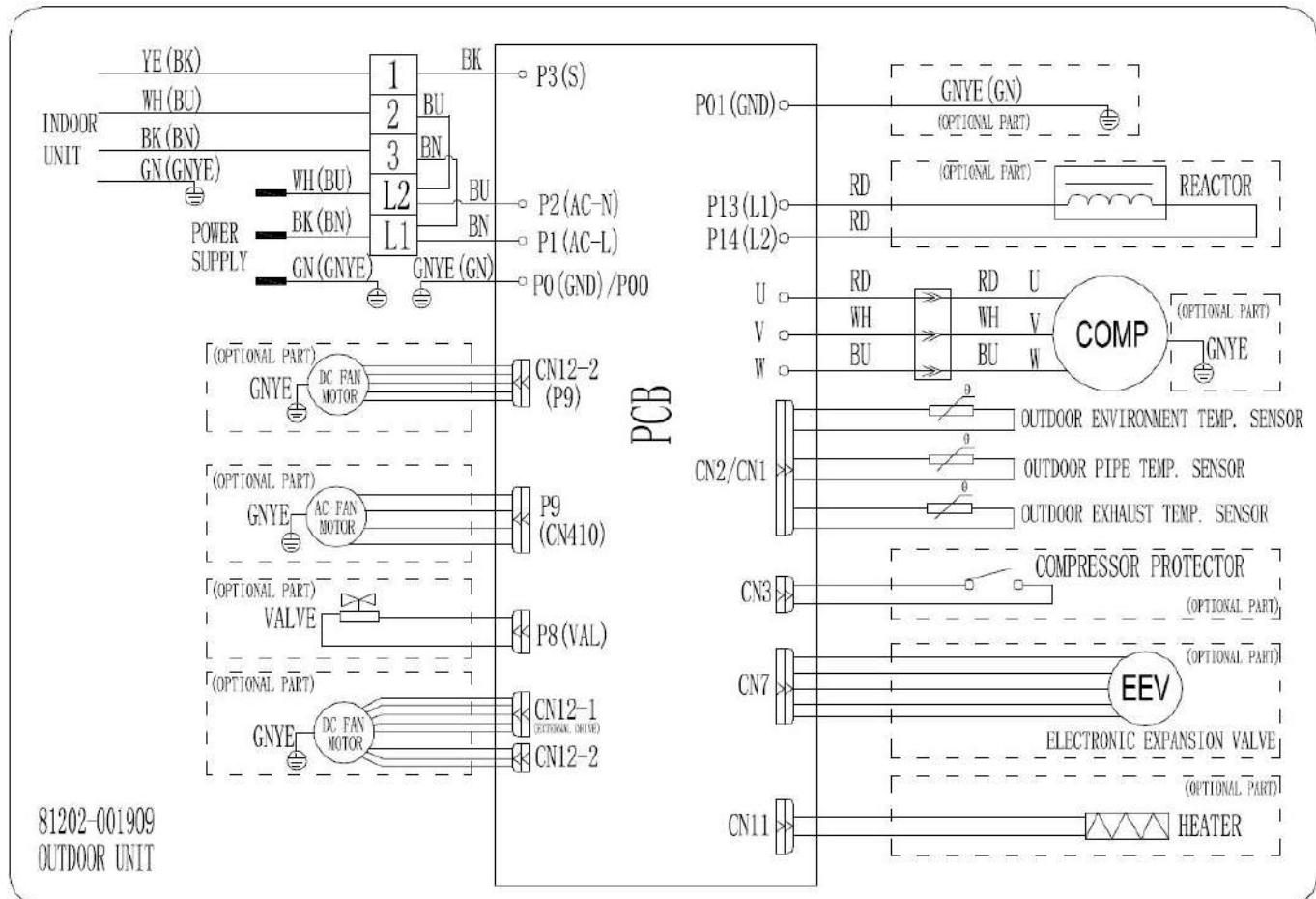
Outdoor Unit: YN012ALUI17RPD



Wiring Diagrams

4

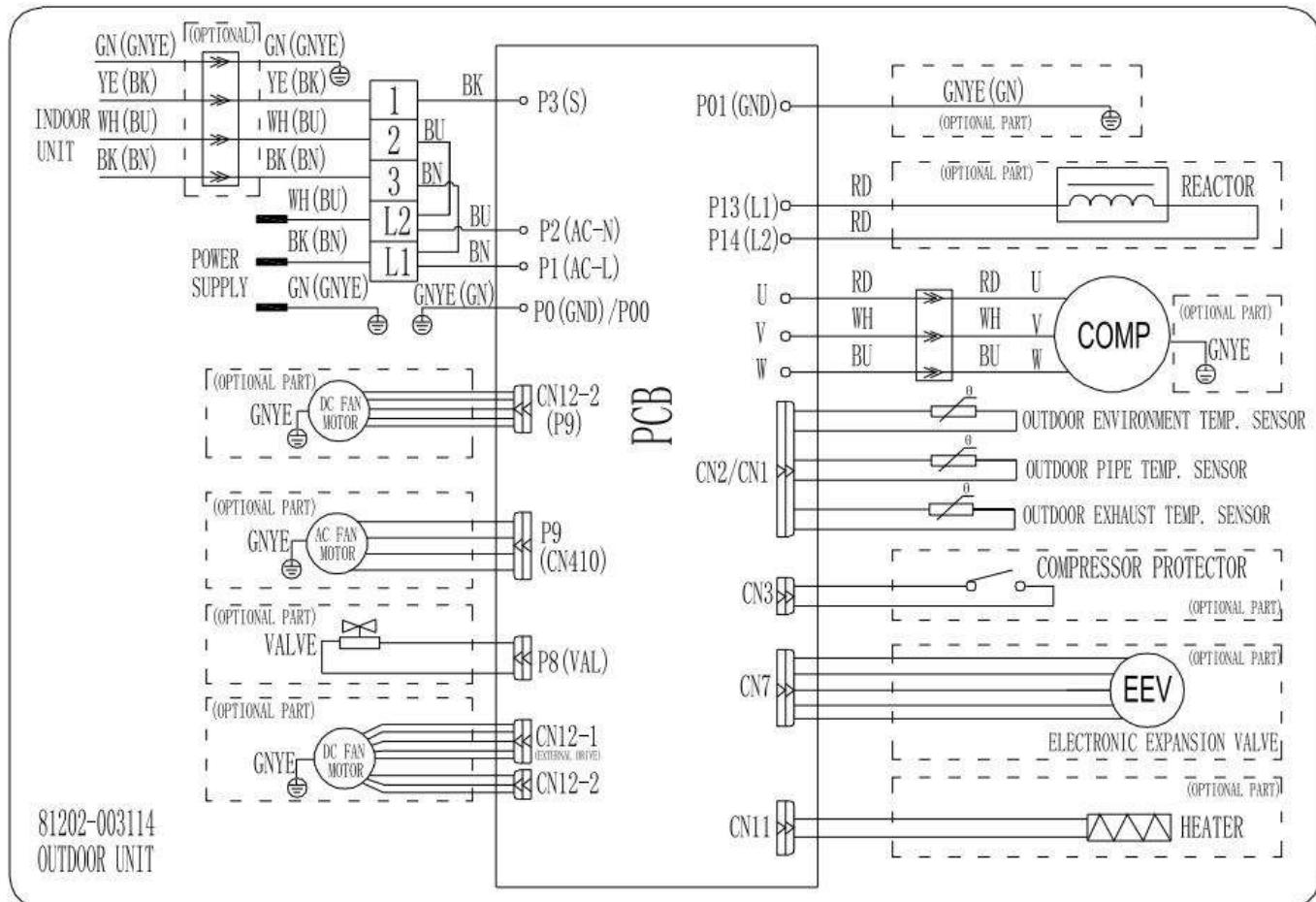
Outdoor Units: YN012GLUI17RPD | YN018GLUI17RPD | YN024GLUI17RPD



Wiring Diagrams

4

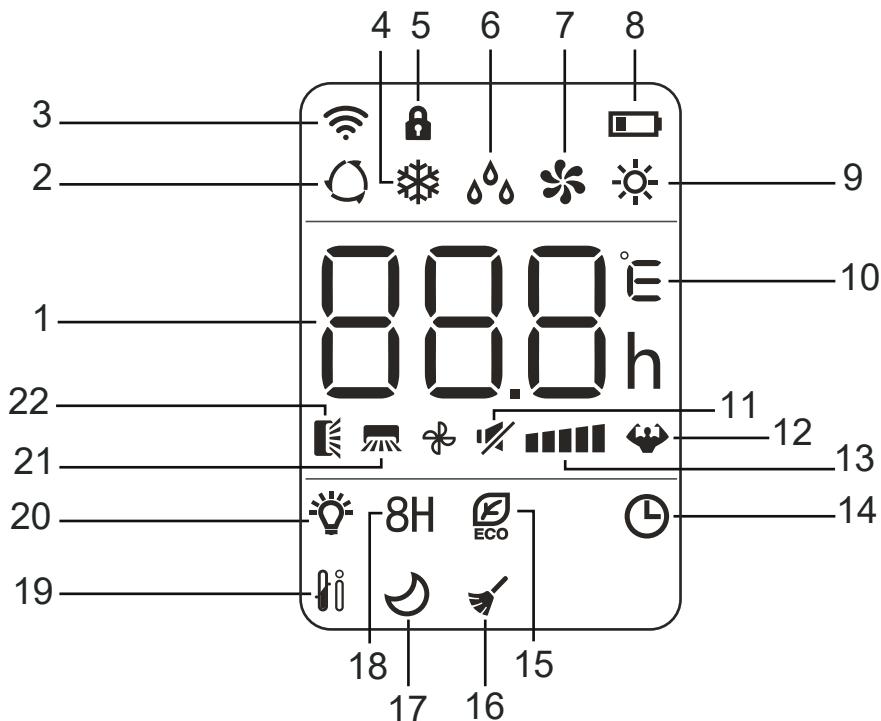
Outdoor Unit: YN036GLUI17RPD



Remote Controller

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Remote Controller LED Screen & Icons



No.	Icon	Description
1	88	Temperature indicator
2	○	Auto mode
3	Wi-Fi	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	⾵	Fan speed
14	🕒	Timer active indicator
15	leaf ECO	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

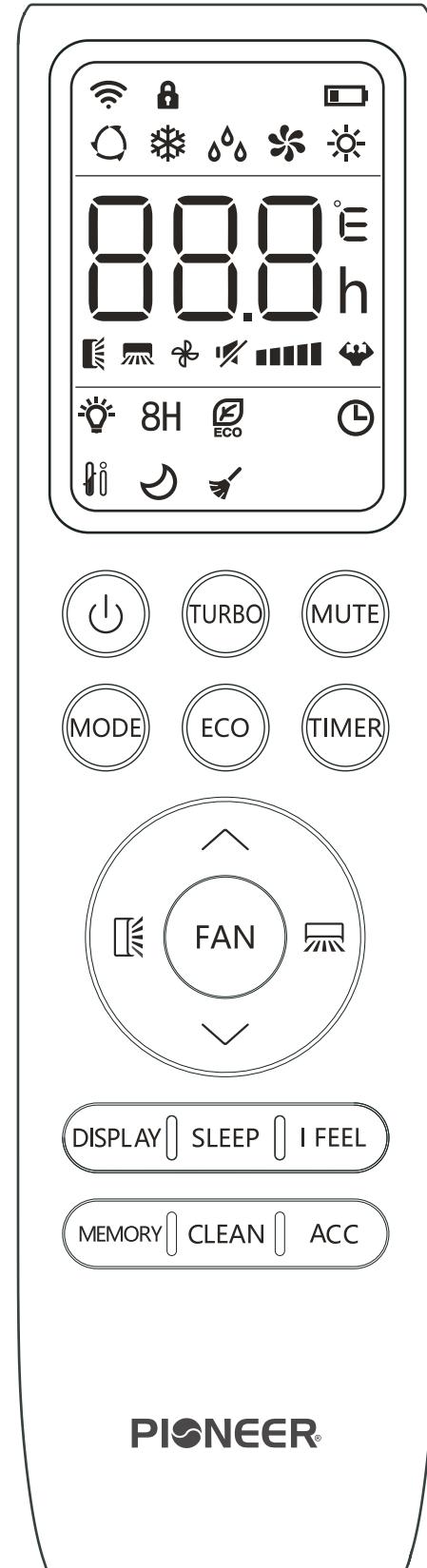
The illustrations in this manual are strictly for explanatory purposes. The actual display and some functions of the remote controller may vary according to the manual purchased.

Remote Controller

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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
▼	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.

PIONEER

Unit Control

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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 Δt -- the temperature difference between RT and ST is shown in the table:

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

Unit Control

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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

Cooling Mode (Continued)

4. When the ODU fails or stops for protection, the IDU operates as preset.

5. Anti-Frosting Protection:

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

1) Frequency Slowly Increasing (FSI):

If 43°F (6°C) \leq IPT $<$ 45°F (7°C), the frequency increasing rate is 1Hz/60s, slowly increasing the operation speed. When IPT \geq 45°F (7°C), the unit quits from protection.

2) Frequency Limitation:

If 41°F (5°C) \leq IPT $<$ 43°F (6°C), the compressor frequency is restricted to increase.

3) Normal Frequency Decreasing (NFD):

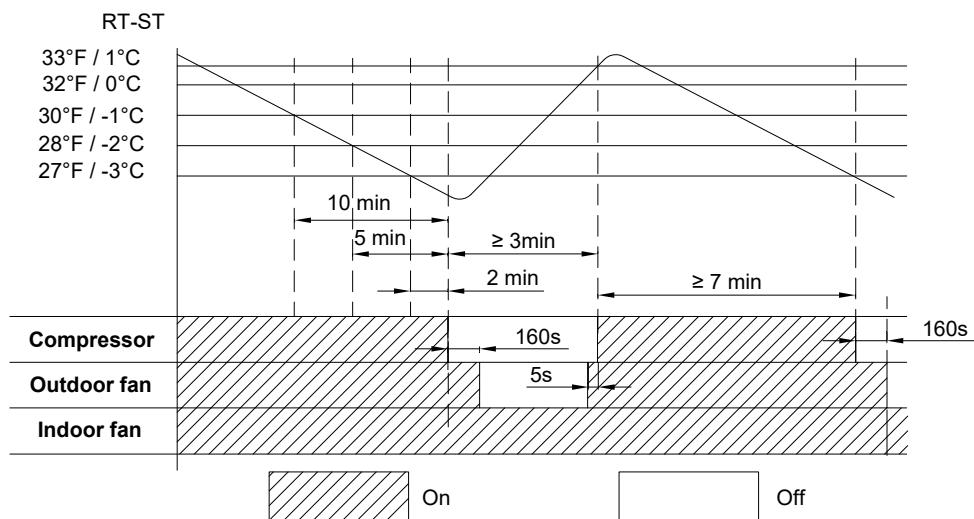
If 37°F (3°C) \leq IPT $<$ 39°F (4°C), the frequency decreasing rate is 8Hz/90s until reaching the lower frequency limit.

4) Fast Frequency Decreasing (FFD):

If 36°F (2°C) \leq IPT $<$ 37°F (3°C), the frequency decreasing rate is 16Hz/90s until reaching the lower frequency limit.

5) The unit stops:

- A. When IPT $<$ 34°F (1°C) for 3 minutes continuously, the unit stops operating for anti-defrosting protection.
- B. When IPT $>$ 43°F (6°C) and the unit has stopped for 3 minutes, the unit can recover for operation.



Unit Control

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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

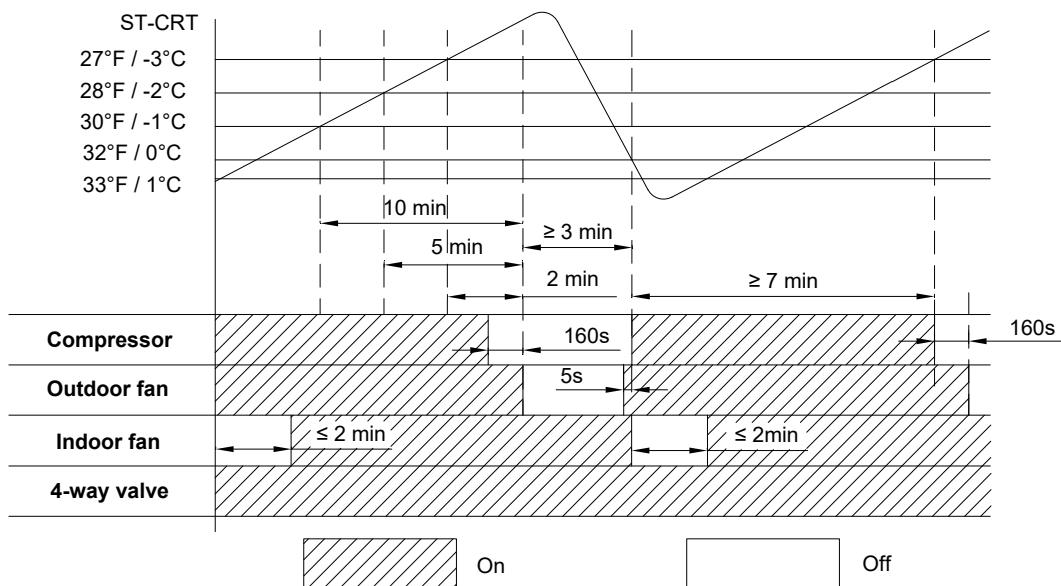
1) In Cooling/Dry/Fan mode, the 4-way valve will be off. When the unit switches to Heating mode, the 4-way valve will turn on.

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 $OPT \leq 37^{\circ}\text{F}$ (3°C), the unit starts to count the time for t3.

When the unit operates to:

A. $t1 \geq t2$ or
B. $t3 \leq t1 < t2$

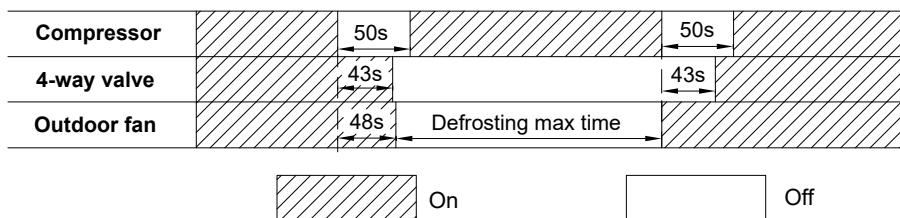
and also the temperature (related to OAT and OPT) tested 3 minute continuously meets for defrosting.

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 $OAT \geq 54^{\circ}\text{F}$ (12°C) or
B. $OAT < 23^{\circ}\text{F}$ (-5°C) and $OPT \geq 7\text{--}46^{\circ}\text{F}$ ($-14\text{--}8^{\circ}\text{C}$) 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 $RT < 75^{\circ}\text{F}$ (24°C):

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

B. If $ITP \leq 88^{\circ}\text{F}$ (31°C), the fan motor stops operating while the compressor operates within 2 minutes.

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

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

A. Within 2 minutes after the compressor starts up and once $ITP > 81^{\circ}\text{F}$ (27°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

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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.

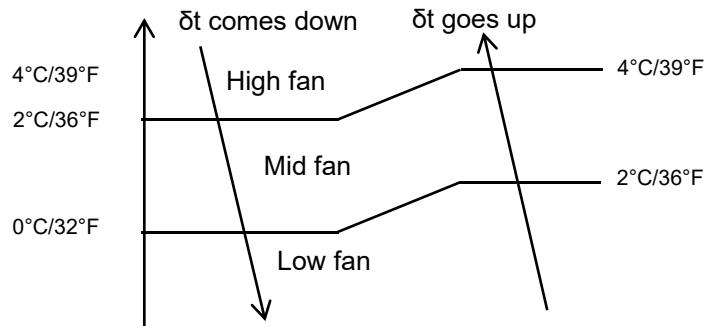
Fan Mode

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

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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

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Protection

1. Overload Protection for Cooling or Dry Mode

1) If:

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

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

3) If the unit has entered overload stop-working protection 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°F (62°C), the unit stops operating for overload protection.
- B. IPT $<$ 131°F (55°C) and after the compressor stops for 3 minutes, the unit can be started.

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

3) If the unit has entered overload stop-working protection 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°F (115°C), the unit stops operating for over-temperature protection. While ODT $<$ 212°F (100°C) and after the compressor stops for 3 minutes, the unit can be started.

2) If ODT \geq 212°F (100°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°C), the compressor will be frequency limited/reduced for IPM over-temperature protection.
- 2) When $\geq 203^{\circ}\text{F}$ (95°C), the unit stops operating for system protection. If $< 189^{\circ}\text{F}$ (87°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°F (30°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.



Read operator's manual



Operating instructions



Read technical manual

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 the 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-32 Refrigerant

2

Introduction to R-32 Refrigerant

The refrigerant used for this air conditioner is environmentally-friendly hydrocarbons R-32. 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-32 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-32 Air Conditioners

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

When LFL is the lower-flammable limit in kg/m³, R-32 LFL is 0.306kg/m³.

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

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

The required minimum floor area A_{min} to install an appliance with refrigerant charge $M(kg)$ must be in accordance with the following: $A_{min} = (M / (2.5 \times (LFL)^{(5/4)} \times h^0))^{2/3}$

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 (m²);

A is the room area (m²);

LFL is the lower-flammable limit (kg/m³);

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)	h ₀ (m)	Floor Area (m ²)						
			4	7	10	15	20	30	50
R-32	0.306	0.6	0.68	0.9	1.08	1.32	1.53	1.87	2.41
		1	1.14	1.51	1.8	2.2	2.54	3.12	4.02
		1.8	2.05	2.71	3.24	3.97	4.58	5.61	7.254
		2.2	2.5	3.31	3.96	4.85	5.6	6.86	8.85

Table GG.2 - Minimum Room Area (m²)

Category	LFL (kg/m ³)	h ₀ (m)	Charge Amount (M) (kg)						
			Minimum Room Area (m ²)						
R-32	0.306		1.224kg	1.836kg	2.448kg	3.672kg	4.896kg	6.12kg	7.956kg
		0.6	/	29	51	116	206	321	543
		1	/	10	19	42	74	116	196
		1.8	/	3	6	13	23	36	60
		2.2	/	2	4	9	15	24	40

R-32 Refrigerant

2

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.

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



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

- Refrigerant Leak Detector
- Appropriate Installation Location



R-32 Refrigerant

2

Installation Safety (Continued)

Caution:

- Perform the installation in a well-ventilated location.
- When using R-290 or R-32 refrigerants during installation or maintenance, ensure that the location is free from open fires, welding, smoking, drying ovens, or any other goods with temperatures higher than 698°F/370°C (R-290) or 1,018°F/548°C (R-32).
- Appropriate anti-static measures, such as wearing anti-static clothing and gloves, are necessary when installing systems using R-290 or R-32 refrigerants.
- Select a location where the indoor and outdoor units' air inlets and outlets are unobstructed. Ensure that 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-32 Refrigerant

2

Special Tools:

Tool Name	Requirement(s) for Use
Mini Vacuum Pump	An explosion-proof vacuum pump that can ensure certain precision. Its vacuum degree should be lower than 10Pa.
Filling Device	A special explosion-proof filling device that can ensure certain precision. Its filling deviation should be less than 5g.
Leak Detector	Ensure that it is calibrated regularly. Its annual leak rate should not exceed 10g.
Concentration Detector	<p>A) Equip the maintenance site with a fixed-type combustible refrigerant concentration detector. Connect the detector to a safeguard alarm system. Its error must not exceed 5%.</p> <p>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>C) Ensure that the concentration detectors are calibrated regularly.</p> <p>D) Check and confirm the functions before using the concentration detectors.</p>
Pressure Gauge	<p>A) Ensure that the pressure gauges are calibrated regularly.</p> <p>B) Confirm the pressure gauge can be used for R-32 refrigerant.</p>
Fire Extinguisher	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.

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 1,018°F/548°C 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.

R-32 Refrigerant

2

Maintenance (Continued)

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.

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.

R-32 Refrigerant

2

Maintenance (Continued)

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.

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.

R-32 Refrigerant

2

Maintenance (Continued)

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.

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.

R-32 Refrigerant

2

Maintenance (Continued)

9. Emergency Accident Handling (Continued)

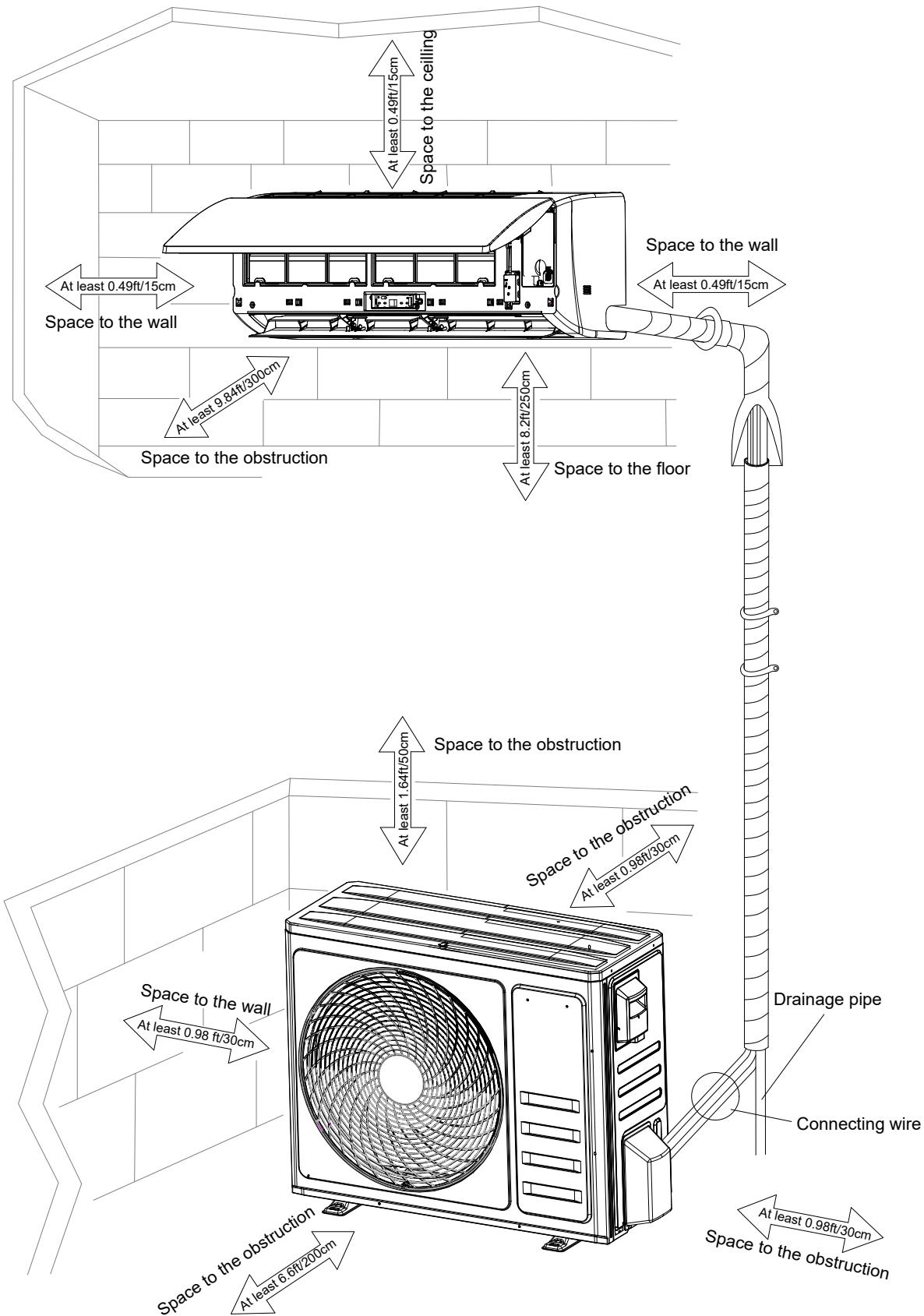
Use these suggestions if a large amount of combustible refrigerant leaks:

- 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.

Installation

3

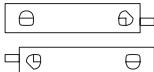
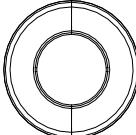
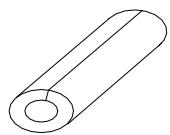
Installation Dimensions Diagram



Installation

3

Accessories

Remote controller 	Remote controller supporter 	Batteries 	Vinyl tape 
Drain hose 	Hole cover 	Screw 	Insulation material 

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 ² /in ²)
5	0.75/0.0012
10	1.0/0.0016
13	1.5/0.0023
18	1.6/0.0025
25	2.0/0.0031
30	2.5/0.0039

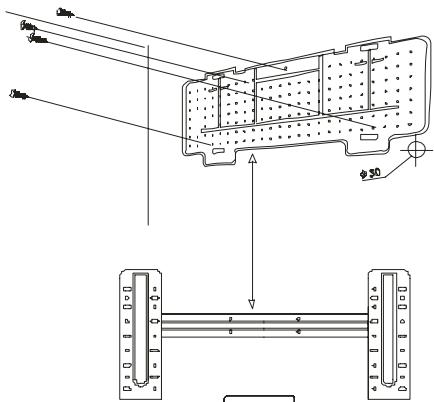
Installation

3

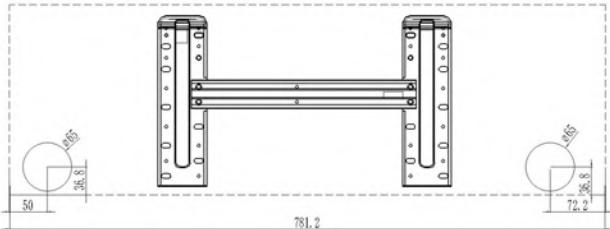
IDU Installation

Installation of the Mounting Plate

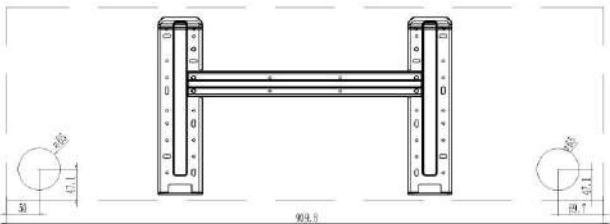
1. Using a level, place the mounting plate in a perfect square position vertically and horizontally.
2. Drill 1.3 inch (33 mm) deep holes in the wall to fix the plate.
3. Insert the plastic anchors into the hole.
4. Fix the mounting plate by using the provided tapping screws.
5. Check that the mounting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



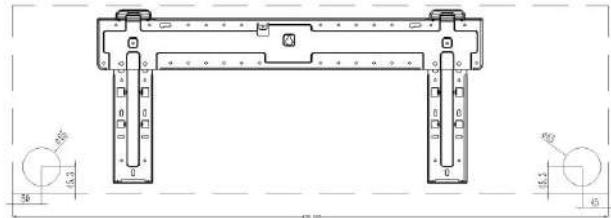
12K (770X)



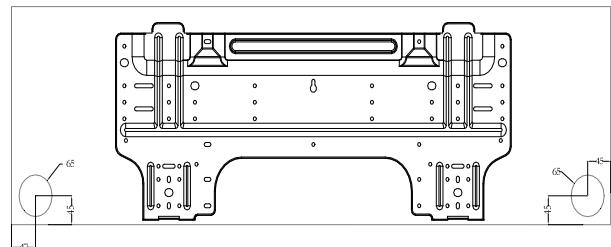
18K (900X)



24K (1010X)



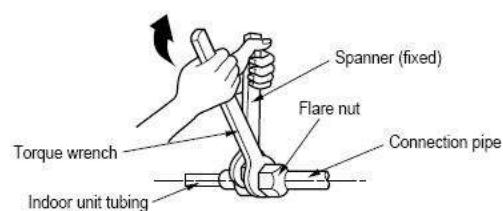
36K (1186X)



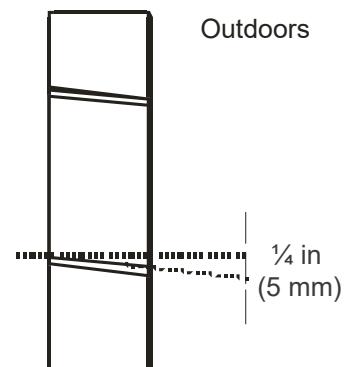
Note: The shape of the mounting plate may be different from the one above. However, the installation method is similar.

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.



Indoors



Installation

3

IDU Installation (Continued)

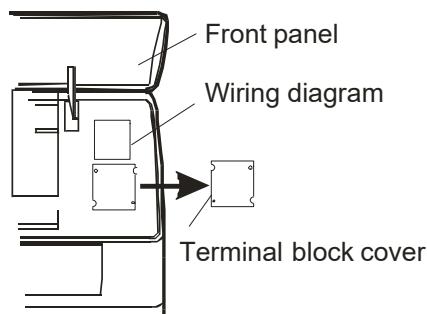
Drill a Hole in the Wall for the Piping (Continued)

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.

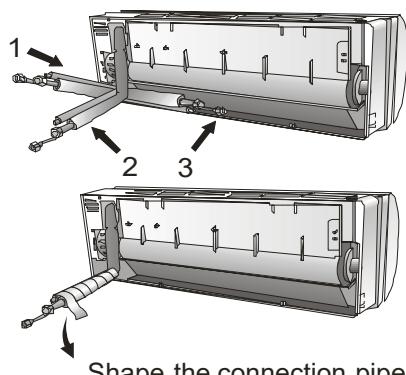
Electrical Connections --- Indoor unit

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.



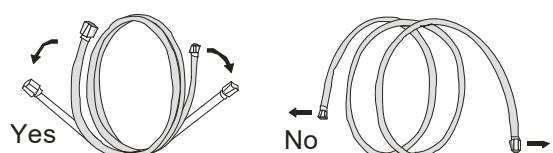
★ Refrigerant Piping Connection

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.



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

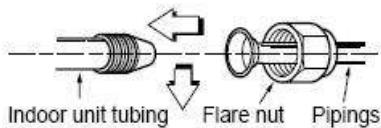
Installation

3

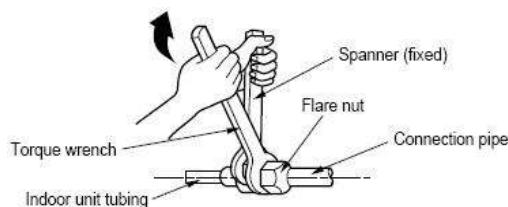
IDU Installation (Continued)

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 flange at the extreme end of the connection pipe.



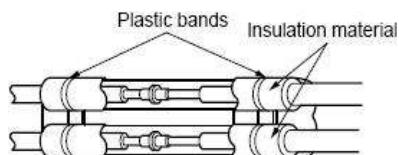
3. Tighten the connections by using two wrenches working in opposite directions.



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

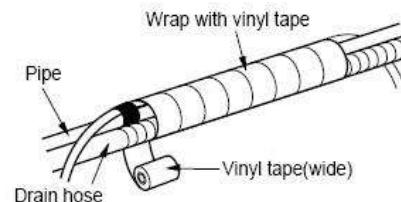
Wrap the Insulation Material Around the Connecting Portion

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.

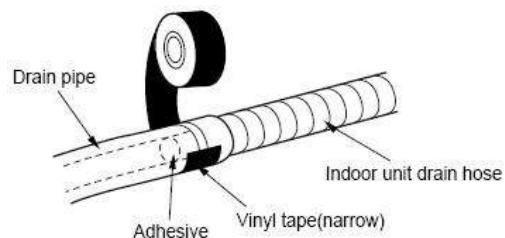
3. Bundle the piping and drain hose together by wrapping them with vinyl tape. Ensure the tape covers the entire range within which they fit into the rear piping housing section.



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.



Installation

3

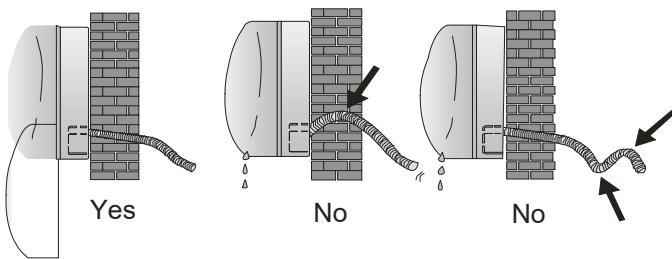
IDU Installation (Continued)

Indoor Unit Condensed Water Drainage (Continued)

5. Insert the pipe connection into the relative slot.

Capacity (Btu/h)	Pipe Size (Torque)	
	Gas	Liquid
7/9/12K	3/8" (31-35N.m)	1/4" (15-20N.m)
18K	3/8" (31-35N.m)	1/4" (15-20N.m)
24K	1/2" (45-50N.m)	1/4" (15-20N.m)

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



Installation

3

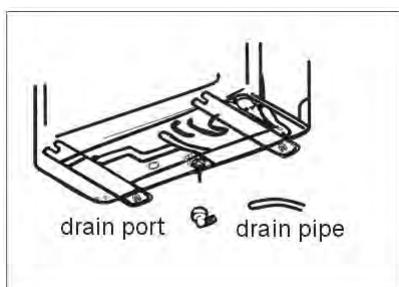
ODU Installation

- 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.

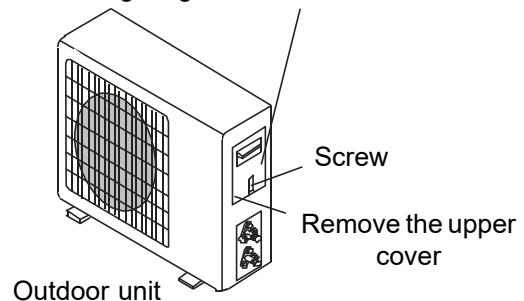
1. Fasten the drain port in the 1 inch (25mm) hole placed in the part of the unit as shown in the picture.
2. Connect the drain port and drain pipe. Ensure that the water is draining in a suitable place.



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.

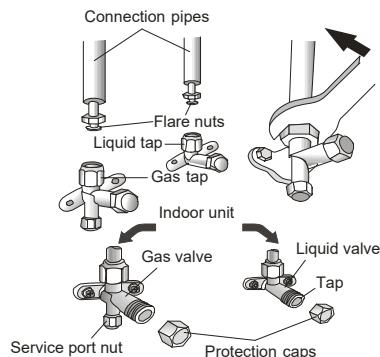
Wiring diagram on the back of the cover



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

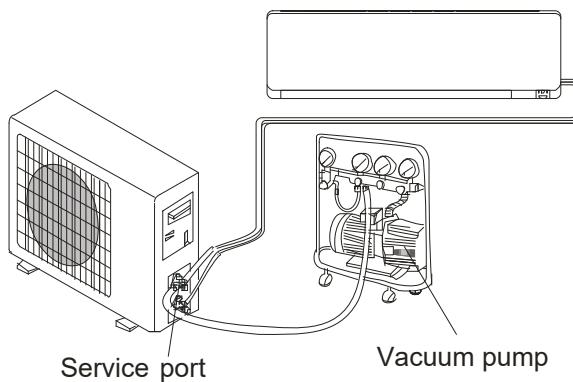
1) After connecting the indoor and outdoor units, bleed the air and humidity from the refrigerant circuit by using a vacuum pump. Air and humidity left inside the refrigerant circuit can cause a compressor malfunction.

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

3) Close the vacuum pump and maintain this status for 1-2 minutes to check if the pressure of piezometer remains in -0.1Mpa. 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°F (16°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)

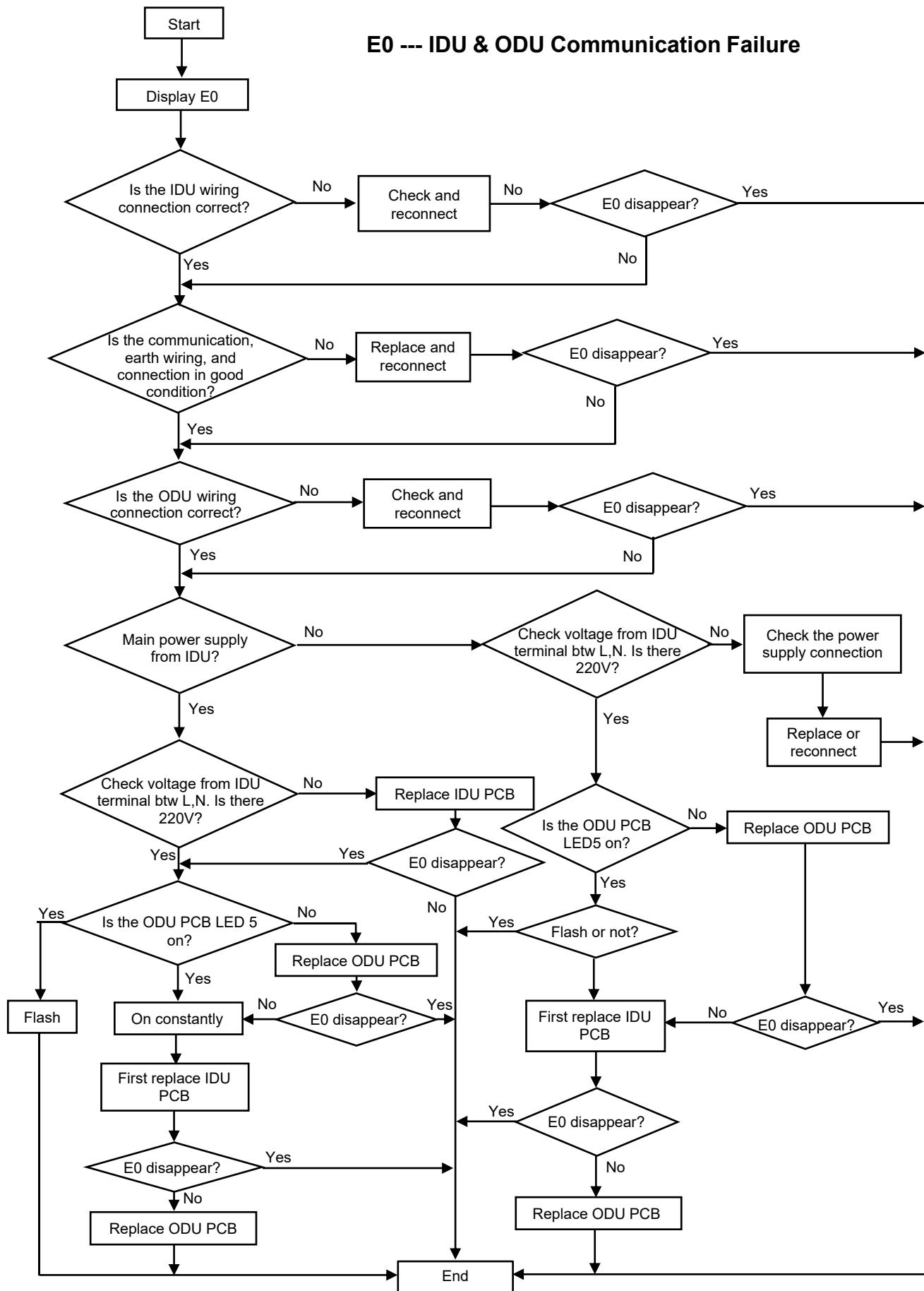
F2	Discharge temperature sensor failure protection	Check the troubleshooting for details
F3	ODU coil temperature failure protection	Check the troubleshooting for details
F4	Cooling system gas flow abnormal protection	Check the troubleshooting for details
F5	PFC protection	Check the troubleshooting for 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 failure codes, press the "ECO" button eight times consecutively in 8 seconds, as well as the buzzer BIBI two times.

Troubleshooting

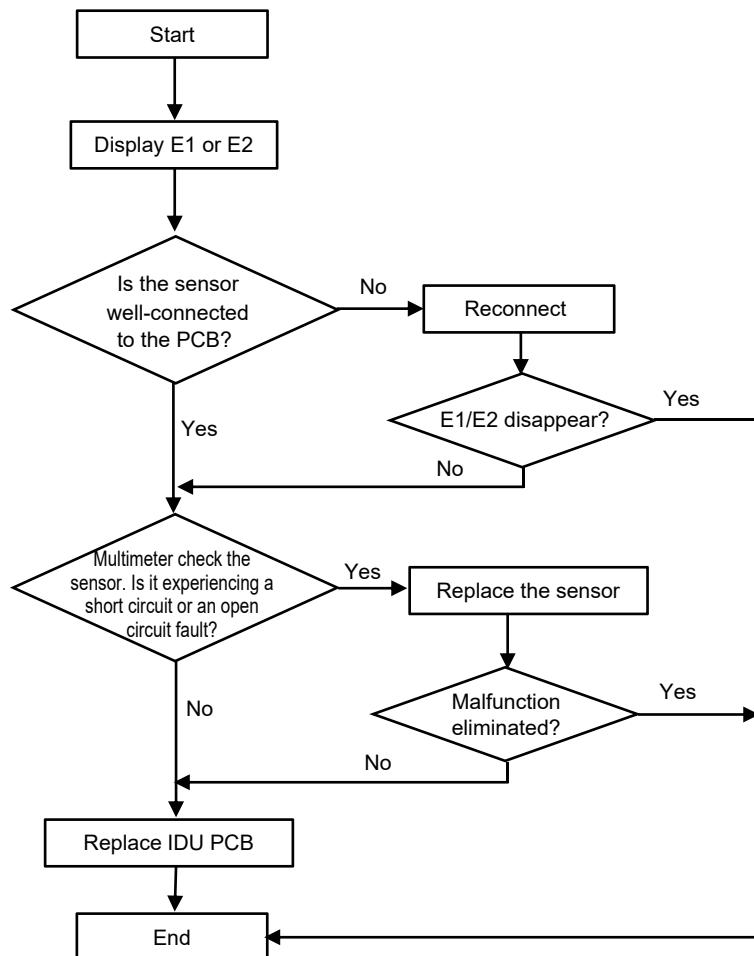
4



Troubleshooting

4

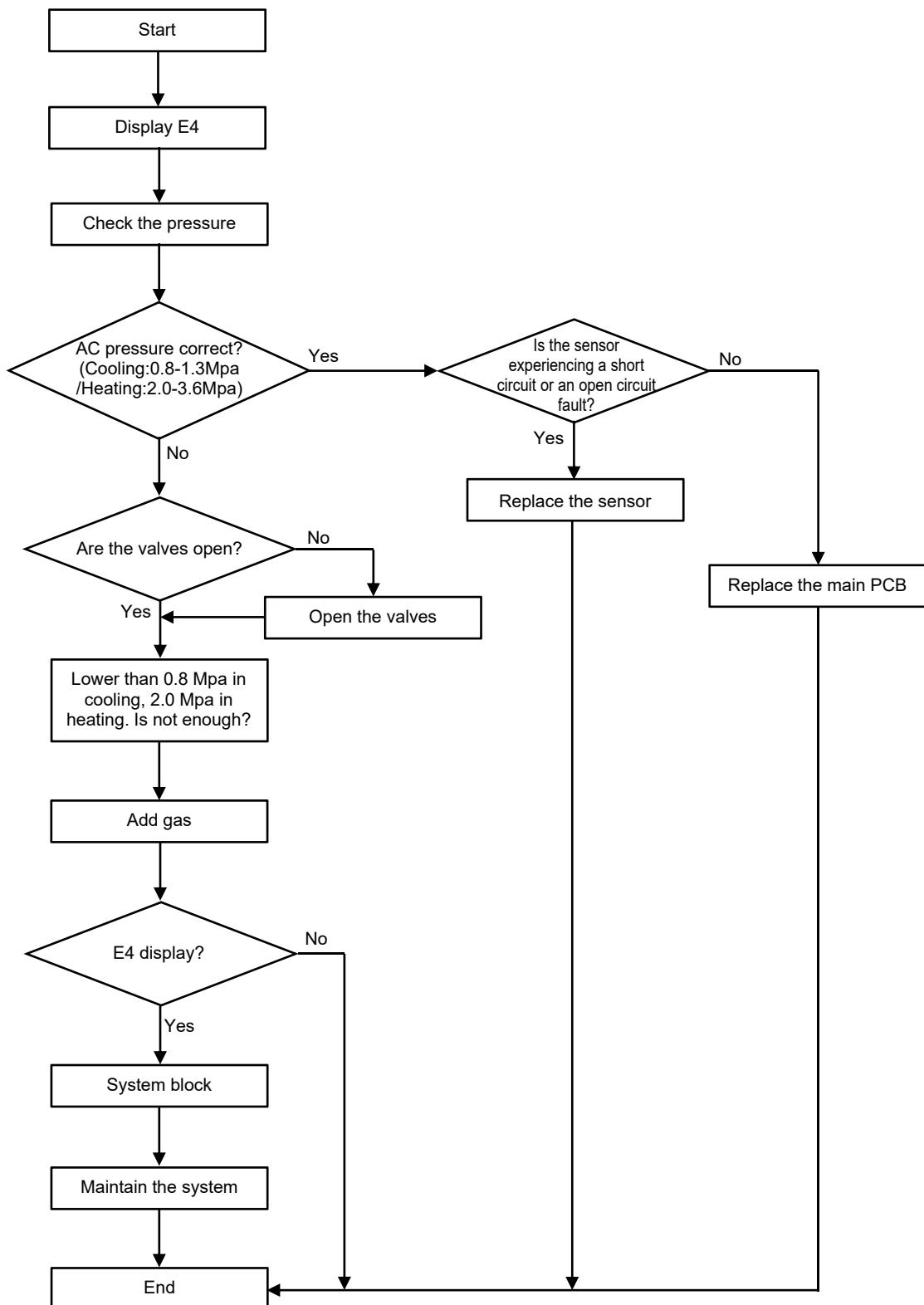
E1, E2 --- IDU Room Temperature Sensor Failure and/or Coil Temperature Sensor Failure



Troubleshooting

4

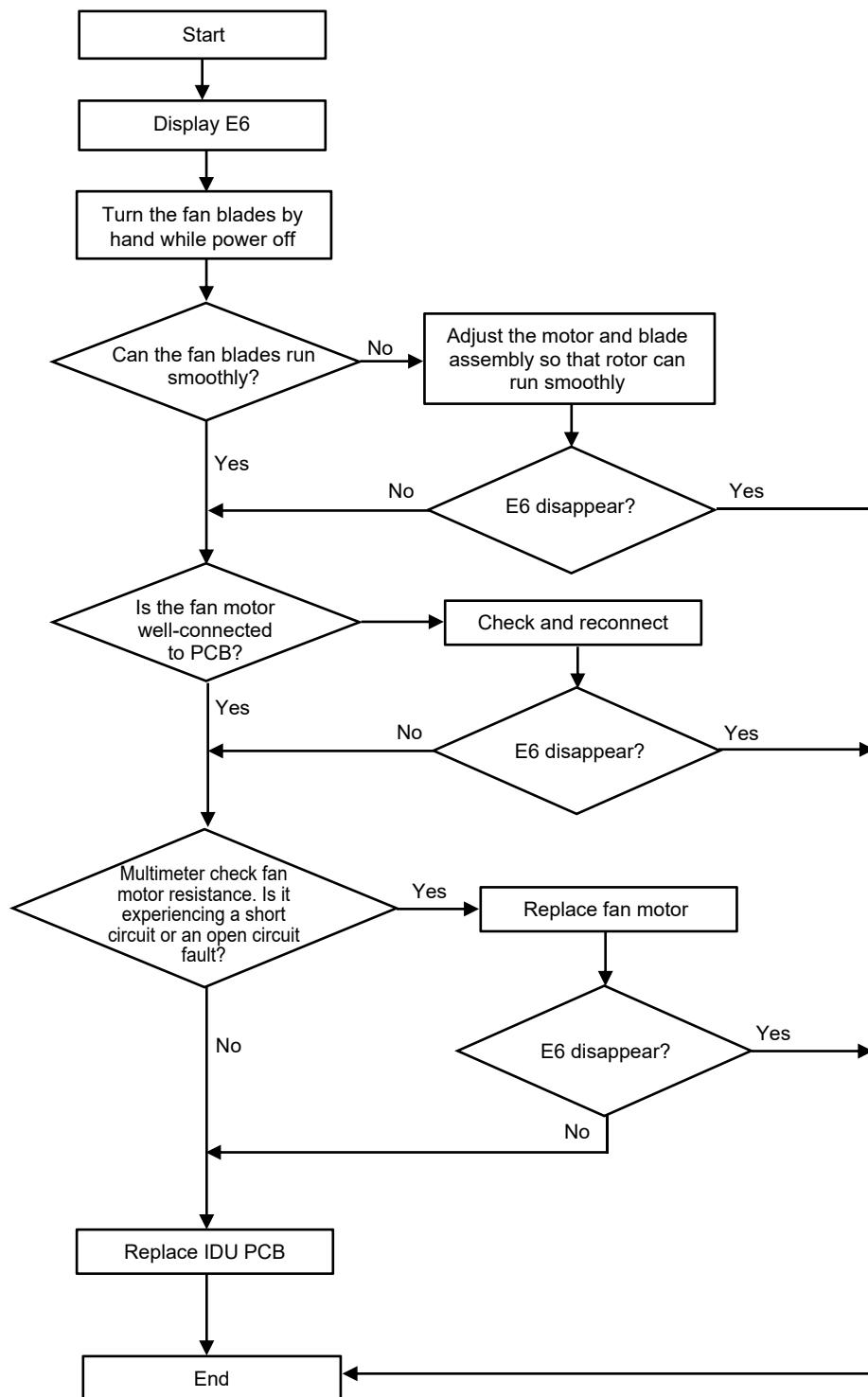
E4 --- AC Cooling System Abnormal (Not Enough Gas)



Troubleshooting

4

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

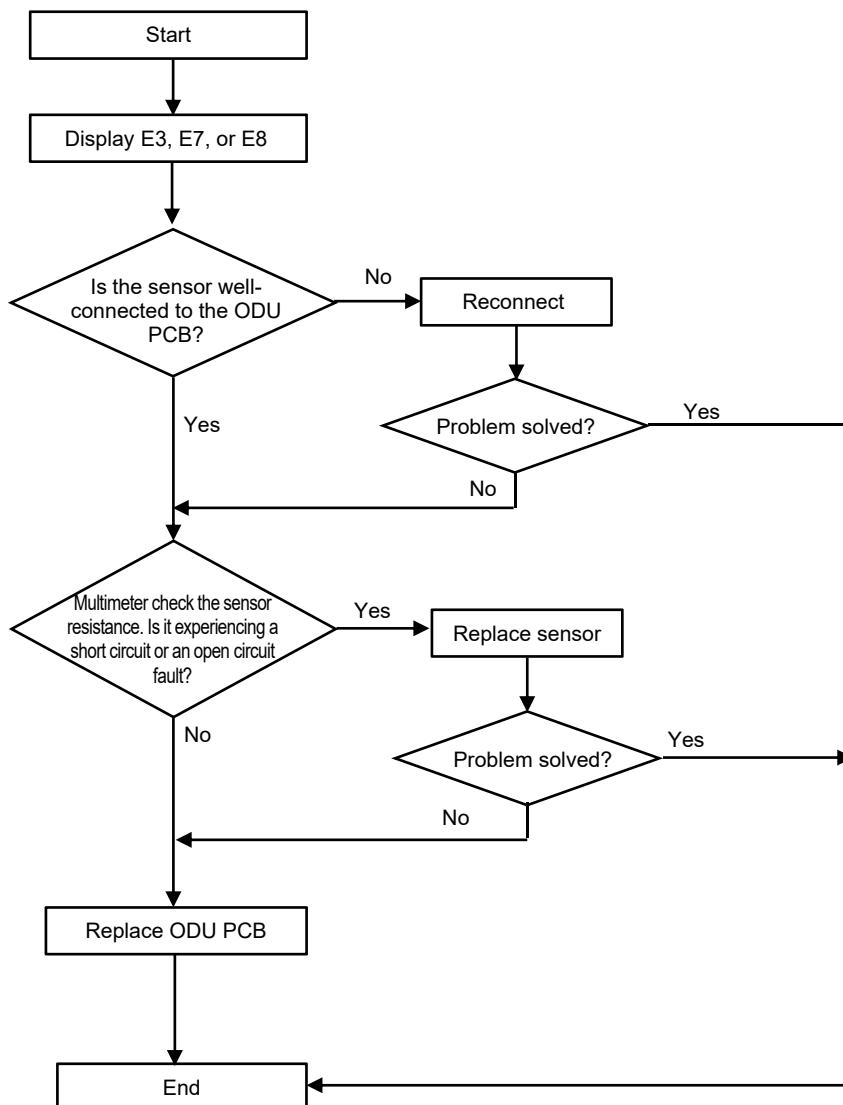


Troubleshooting

4

E3, E7, or E8 --- ODU Coil Temperature Sensor Failure, Ambient Temperature Sensor Failure, or Discharge Temperature Sensor Failure

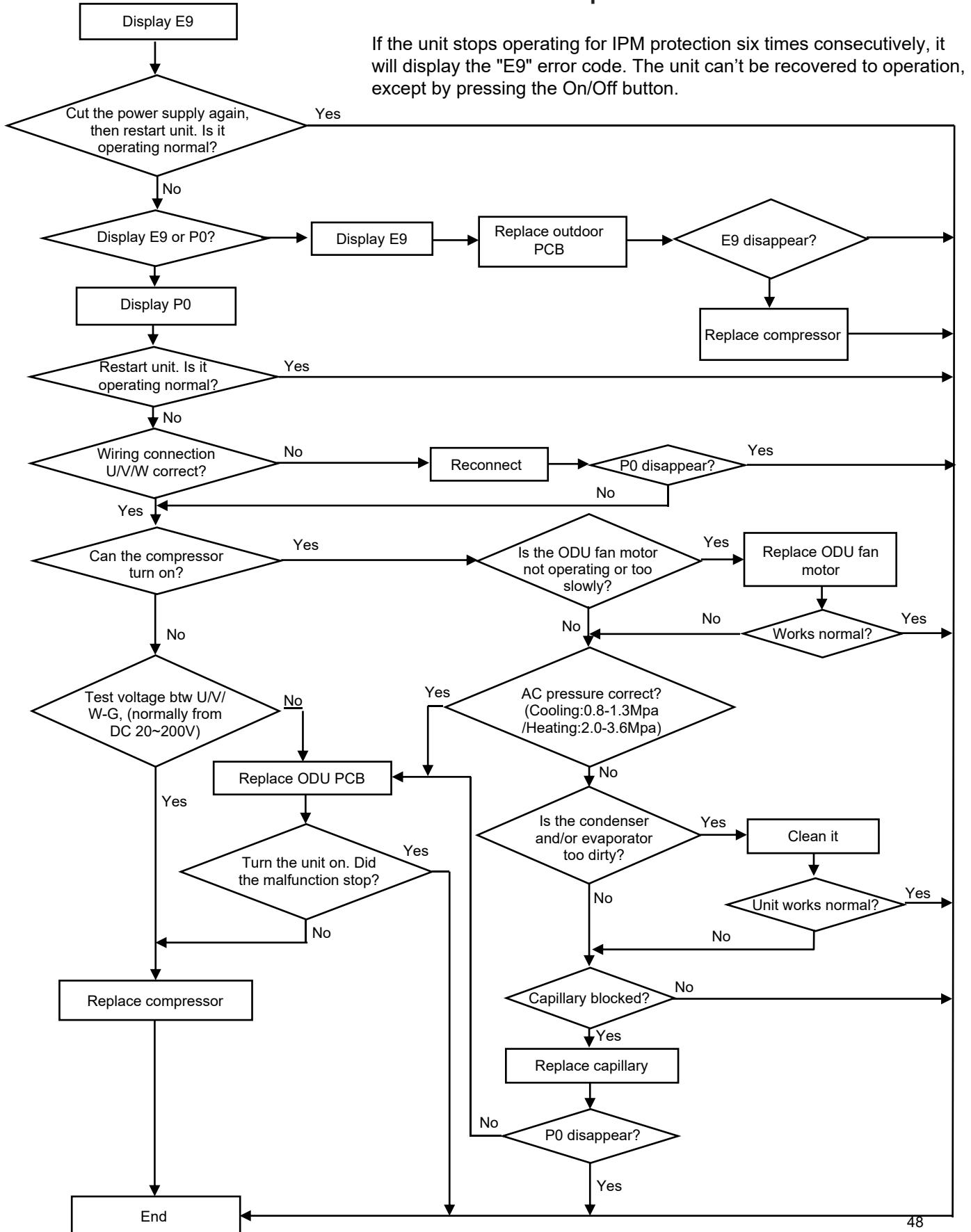
If any of the sensors resistances experience a short circuit or an open circuit fault, the unit will display error codes as "E3", "E7", or "E8". The IDU and ODU turn off. When the sensor resistance recovers, the unit reverts to standby. The customer can turn on the unit directly.



Troubleshooting

4

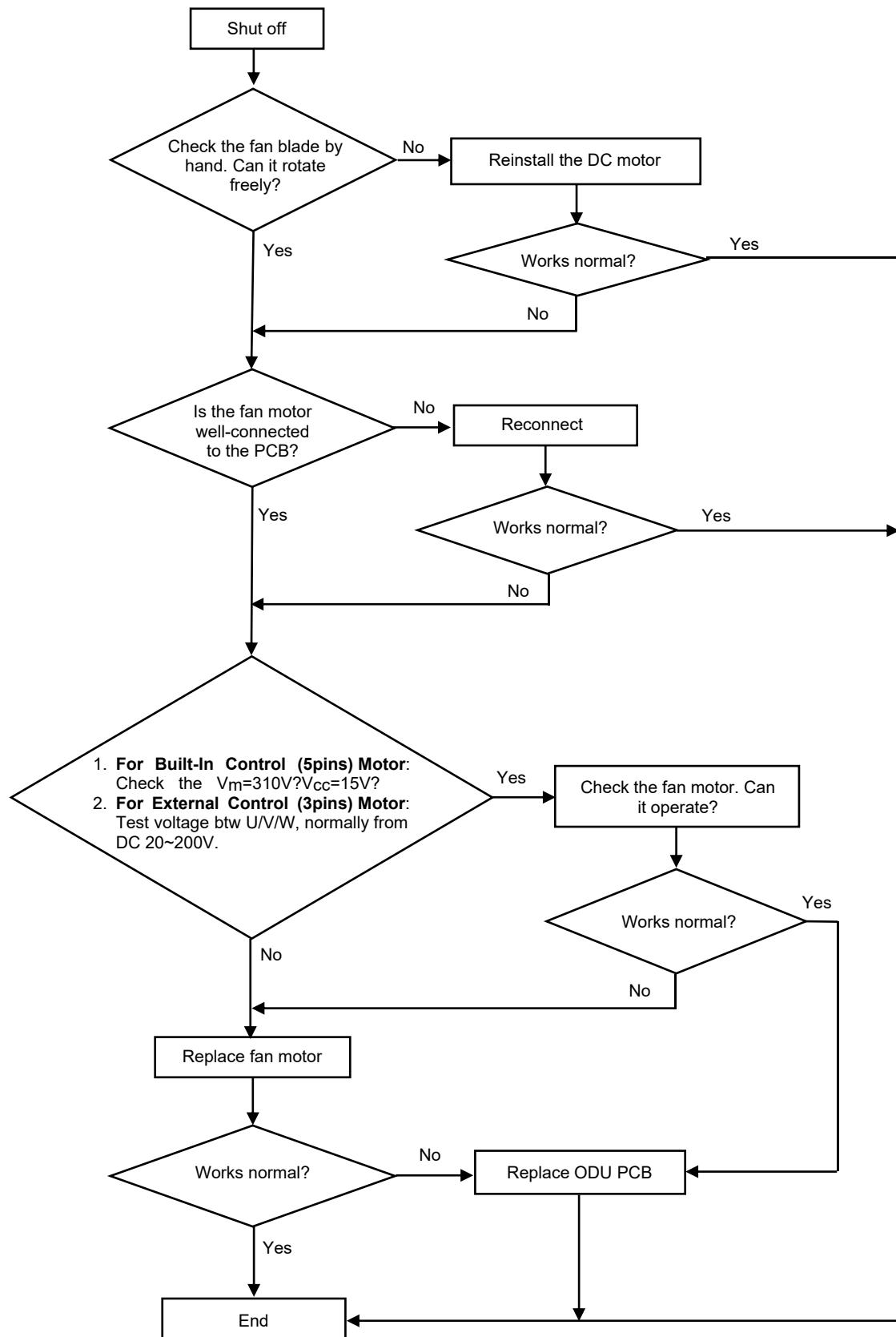
E9 --- ODU IPM /Compressor Drive Fault



Troubleshooting

4

EF --- ODU DC Fan Motor Failure

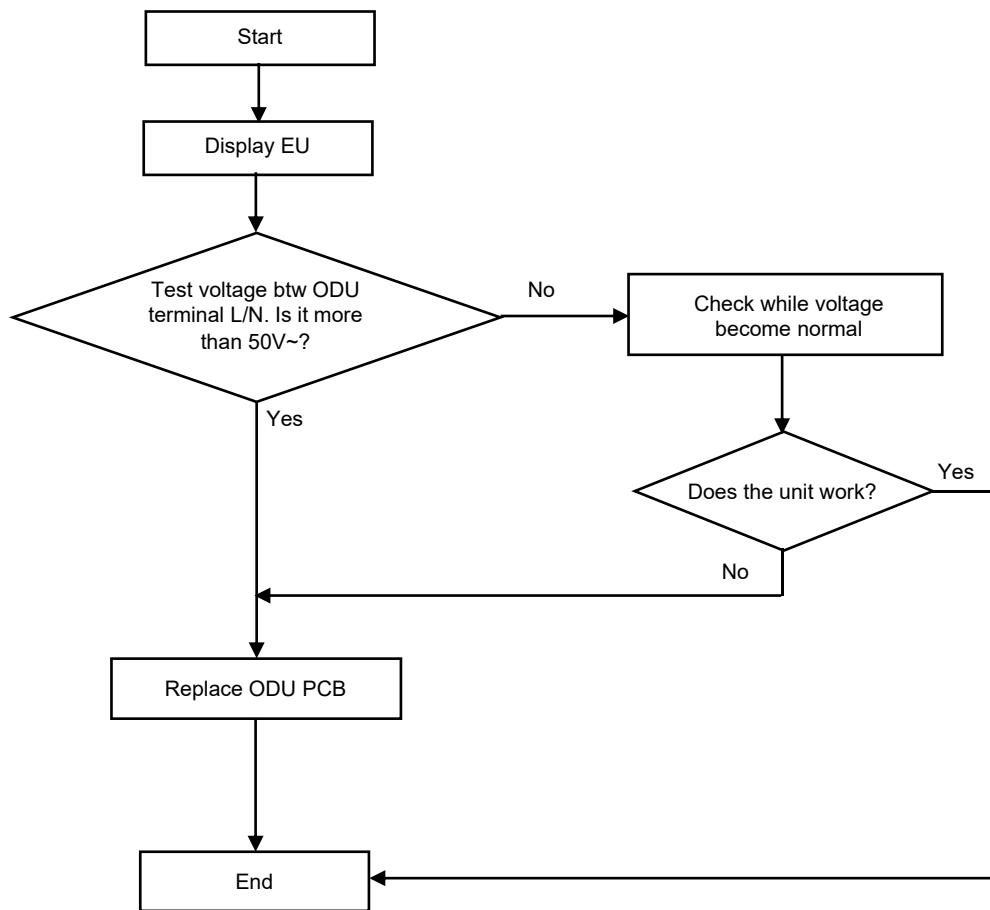


Troubleshooting

4

EU --- ODU Voltage Test Sensor Failure

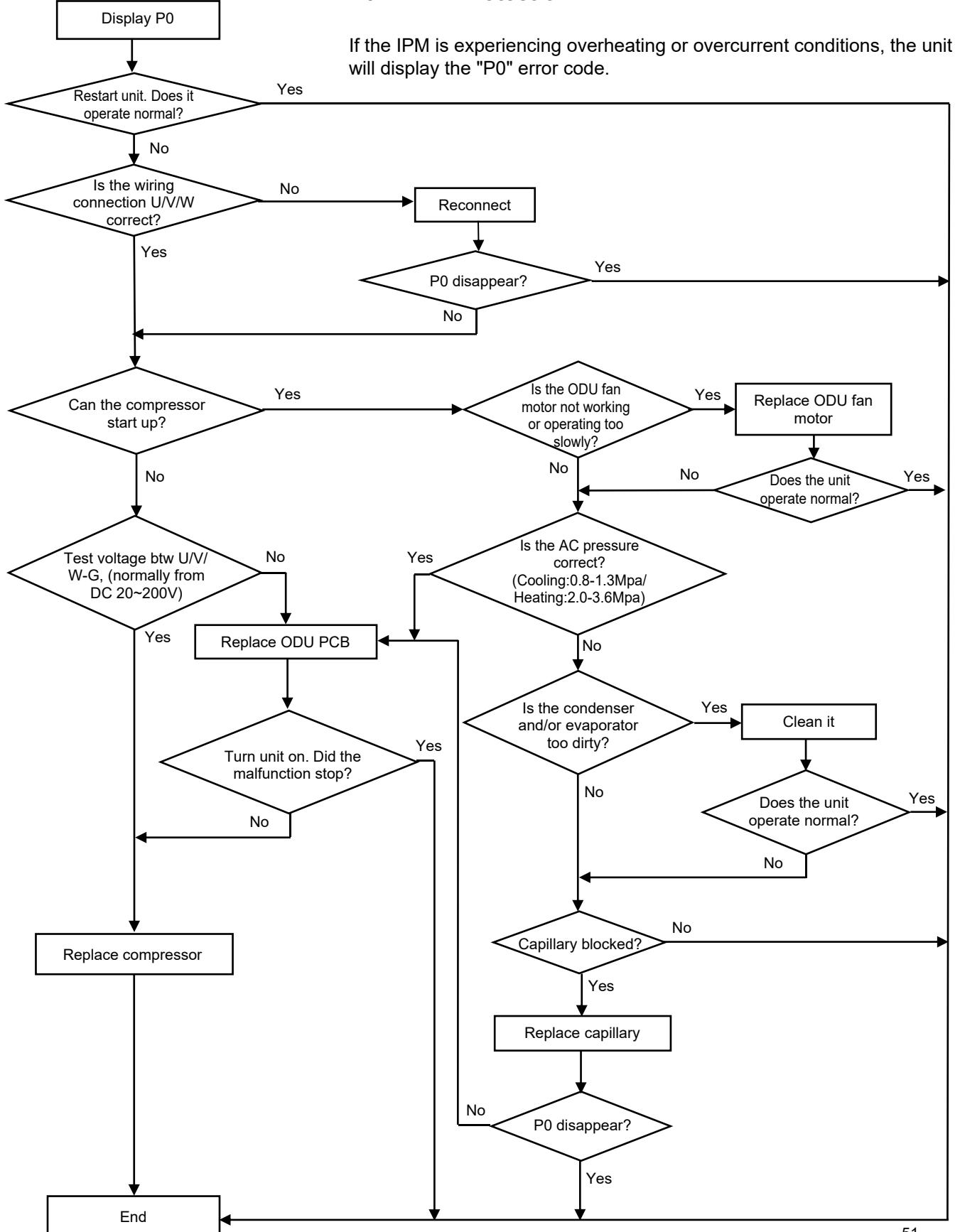
After the power relay operates, if the tested effective voltage is less than 50V for 3 seconds continuously, the unit will display the "EU" error code.



Troubleshooting

4

P0 --- IPM Protection

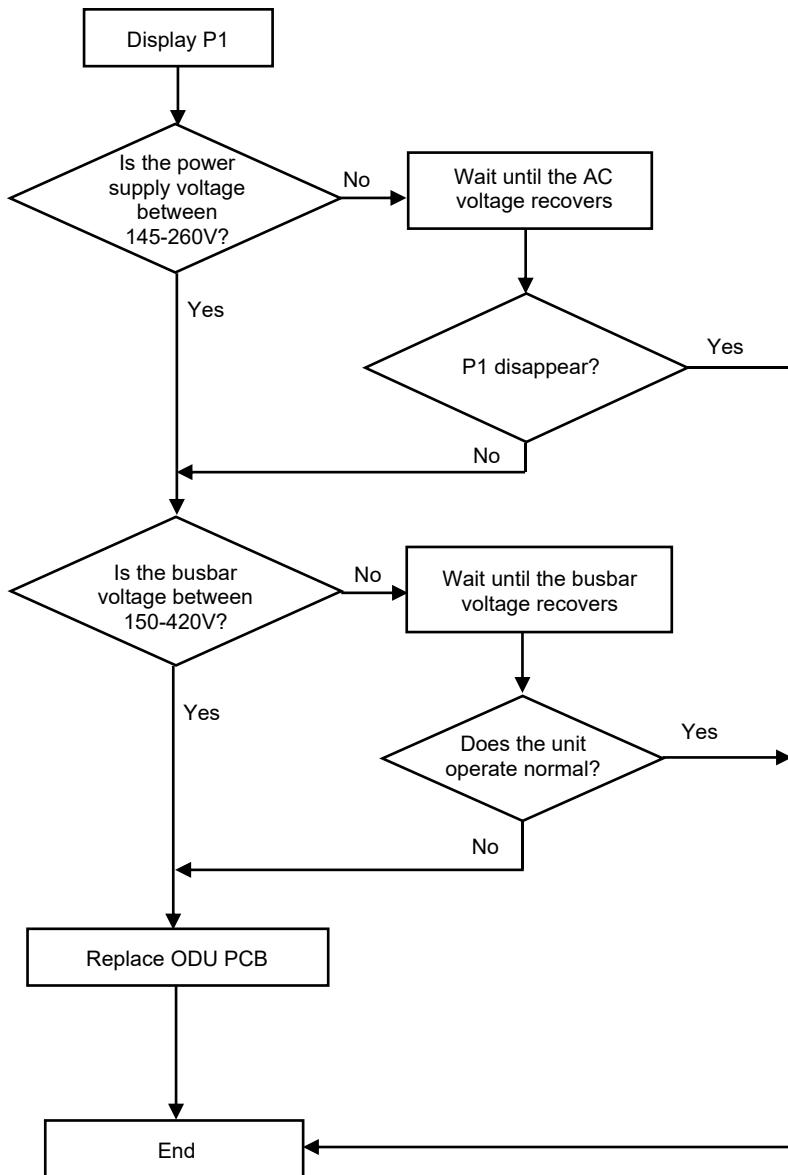


Troubleshooting

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 $DC190V < V < DC410V$.



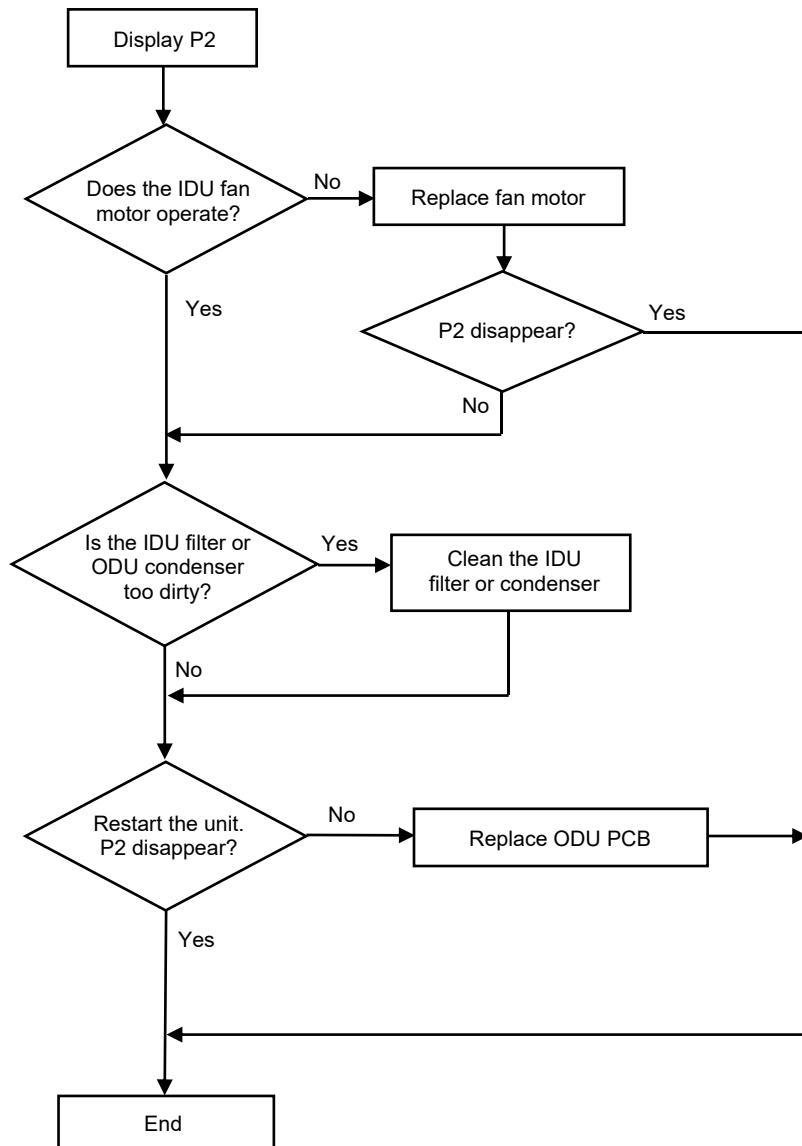
Troubleshooting

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.

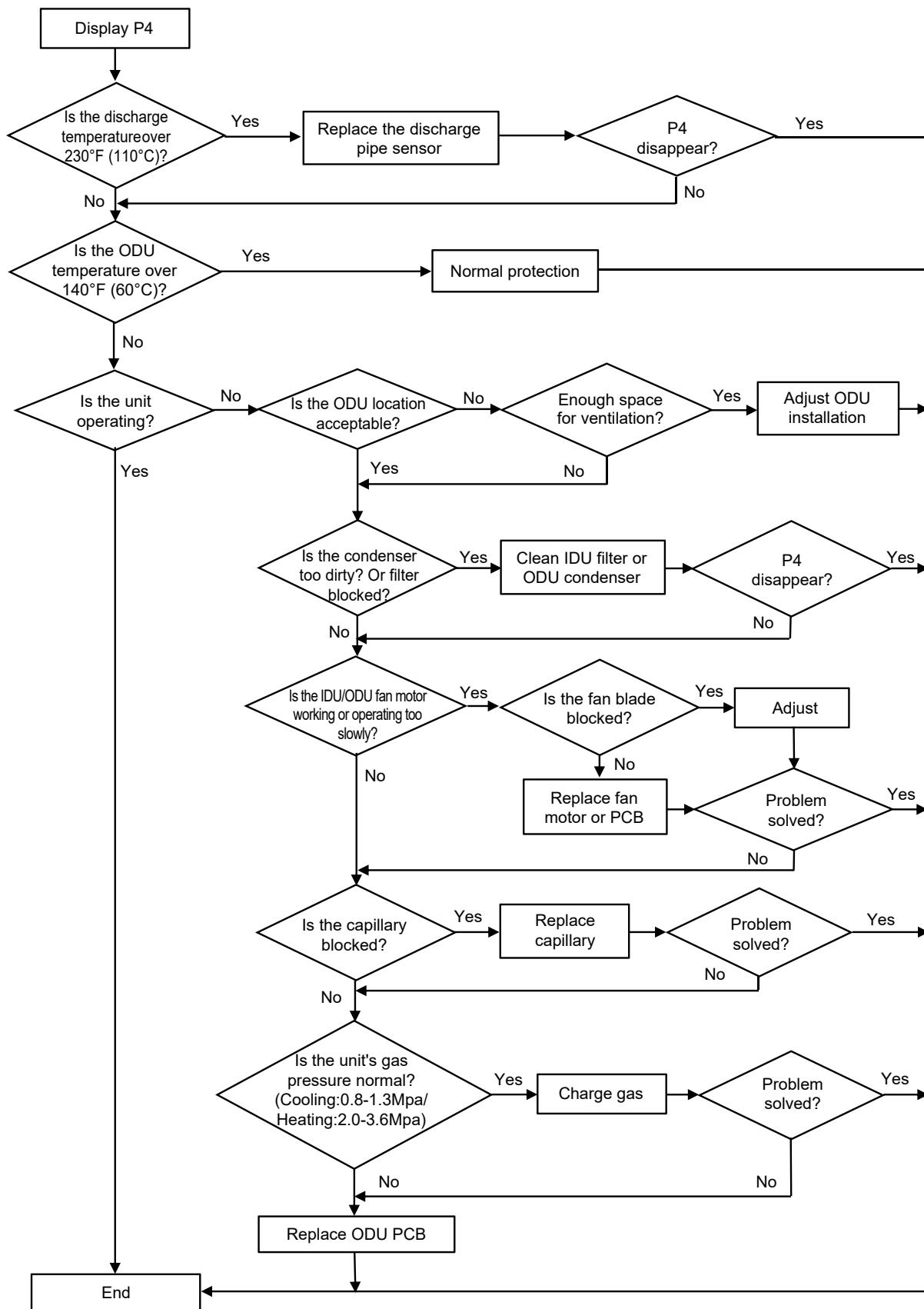
Note: For different models, the I_{max} has different values.



Troubleshooting

4

P4 --- ODU Discharge Temperature Overheating Protection

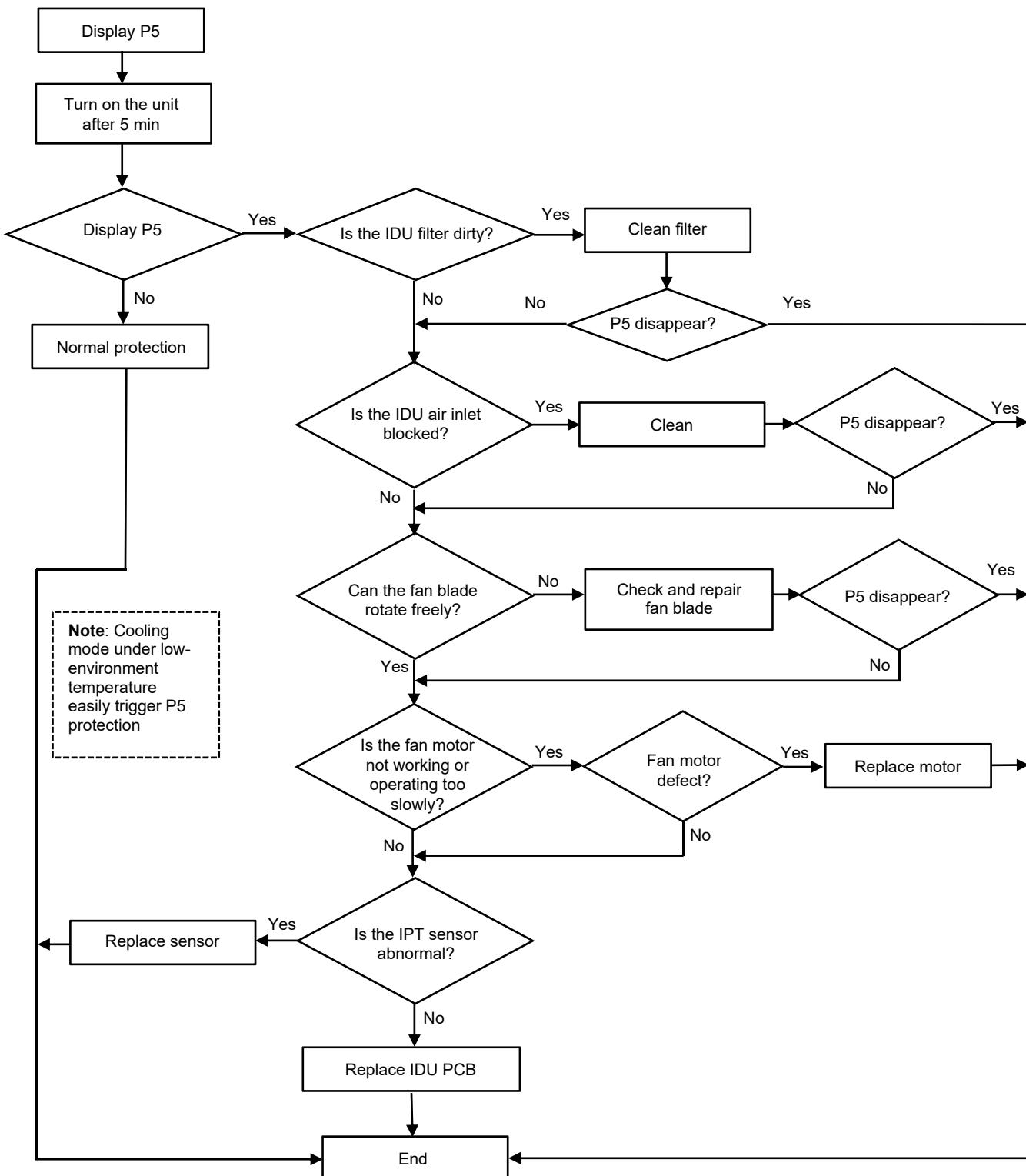


Troubleshooting

4

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.

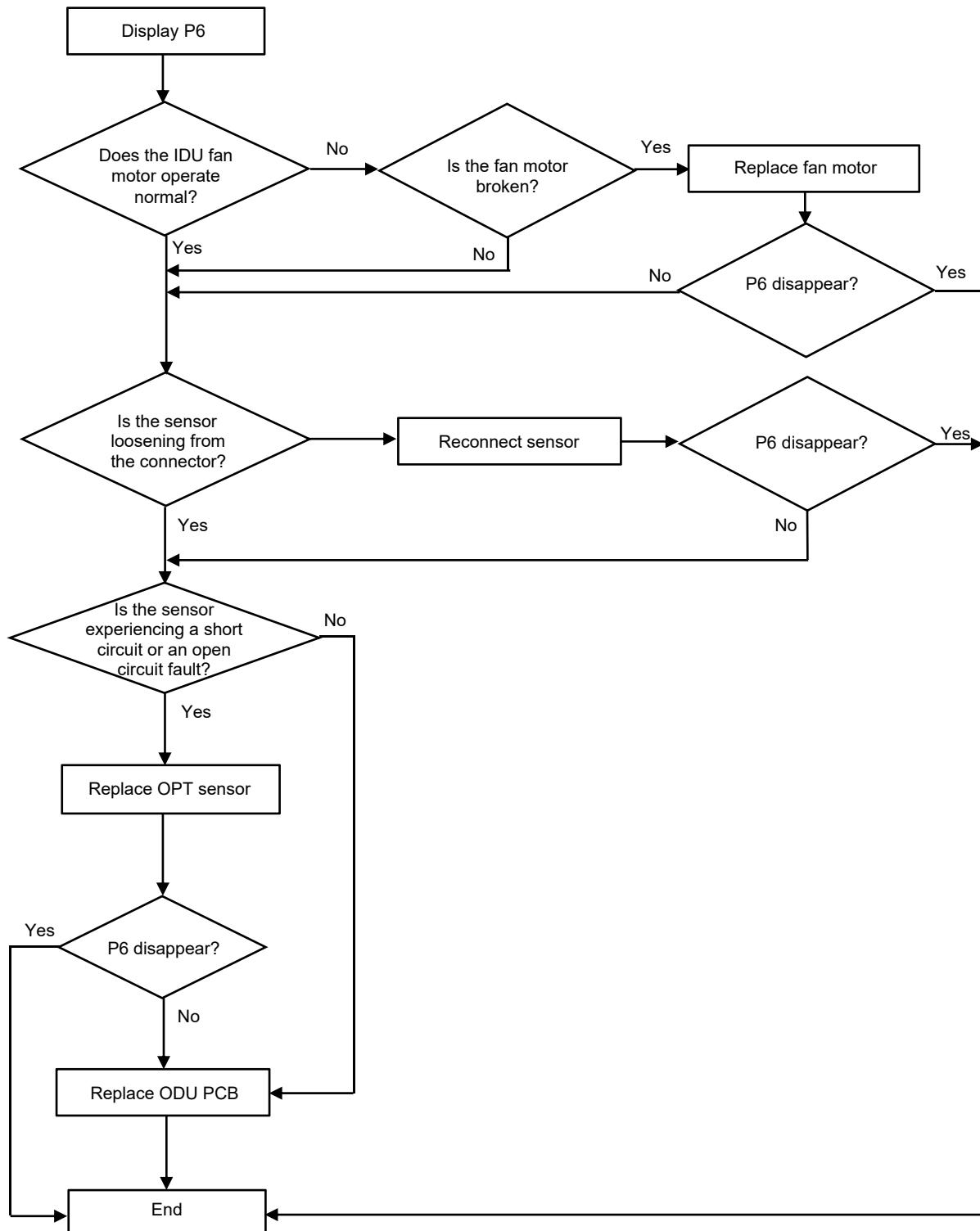


Troubleshooting

4

P6 --- Overheating Protection in Cooling Mode

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

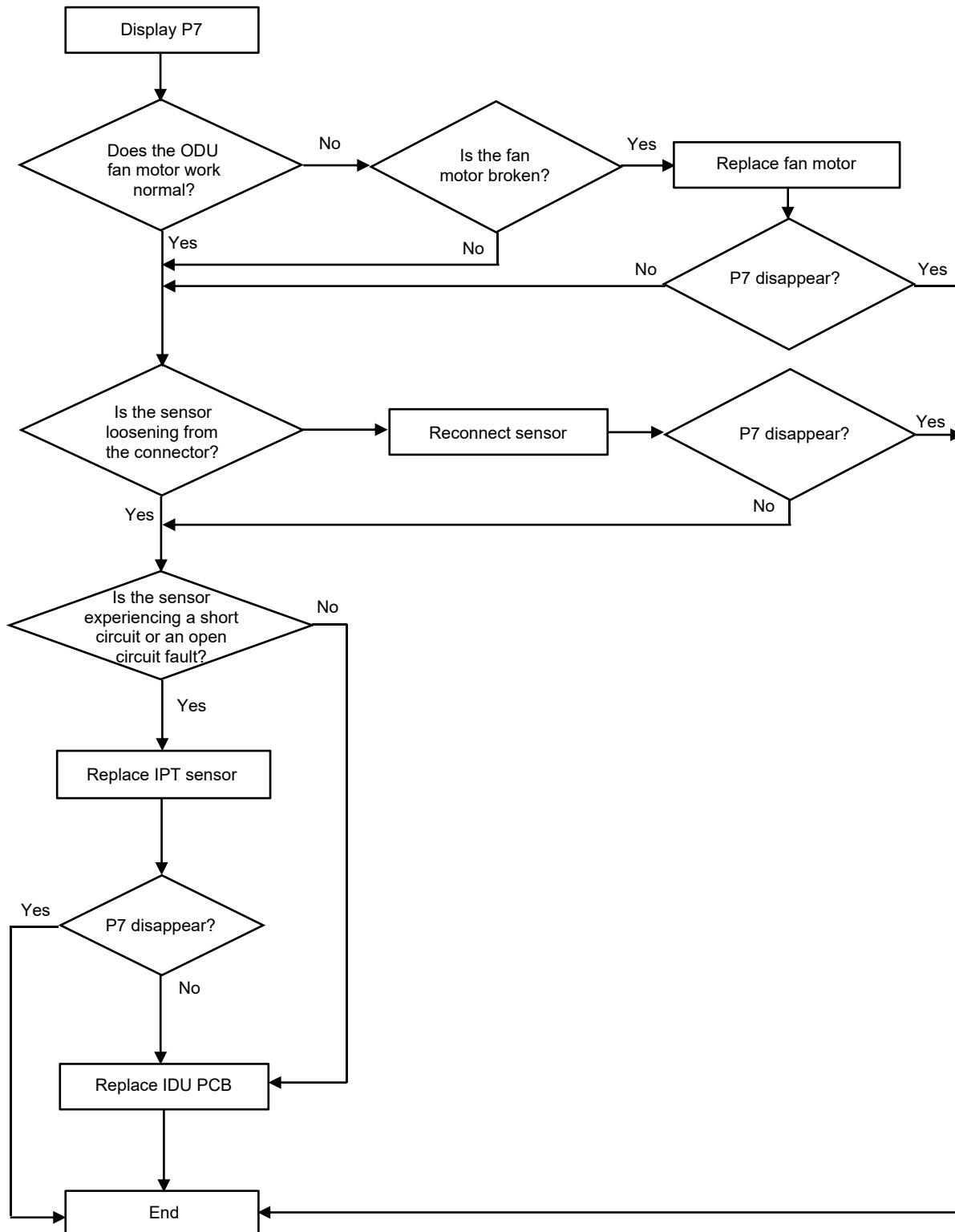


Troubleshooting

4

P7 --- Overheating Protection in Heating Mode

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



Troubleshooting

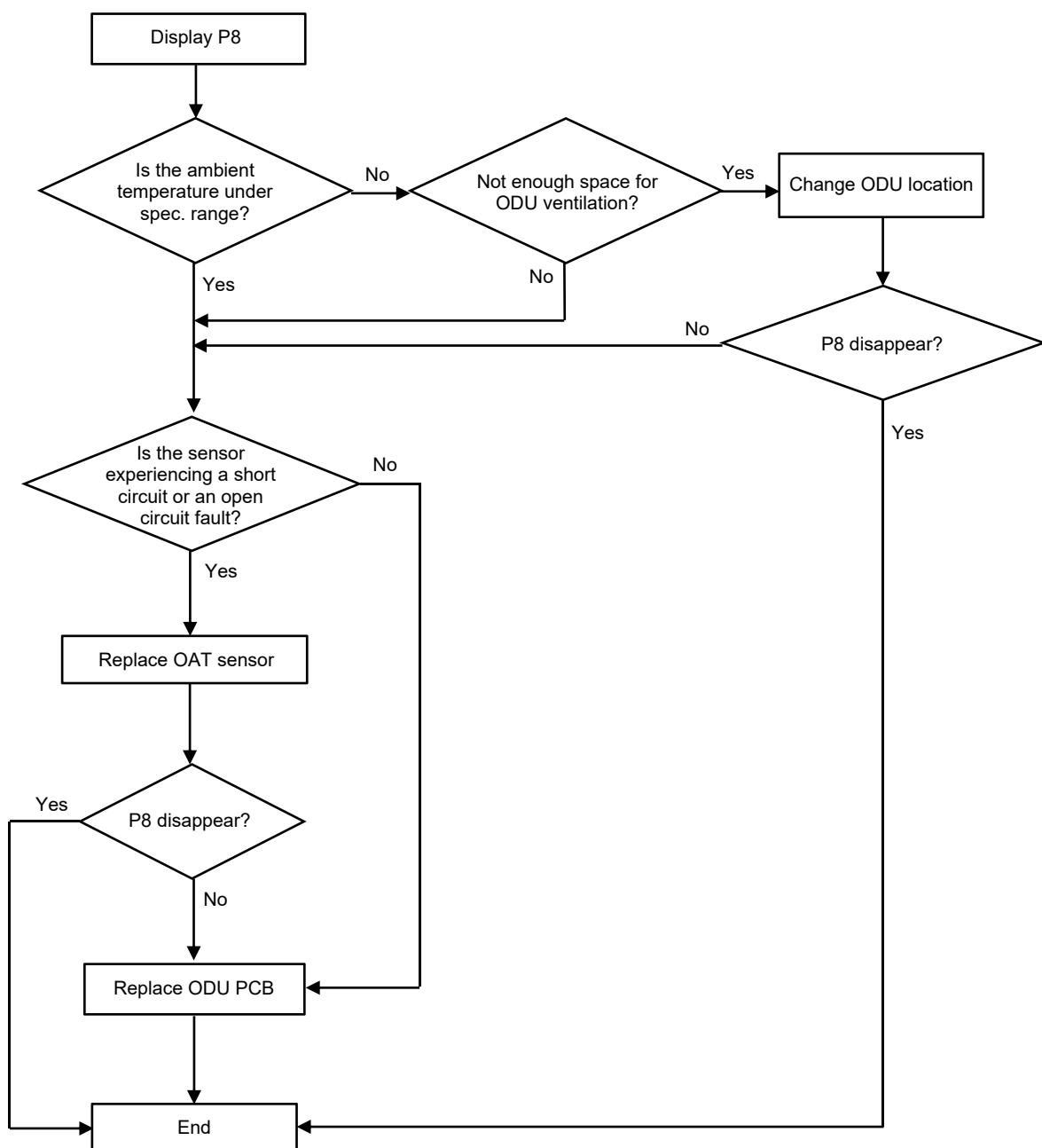
4

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°F (-20°C) or OAT > 145°F (63°C)
2. **In Heating mode:**

- a. OAT \geq 104°F (40°C)
- b. 86°F (30°C) $<$ OAT \leq 104°F (40°C) and RT > 95°F (35°C)



Troubleshooting

4

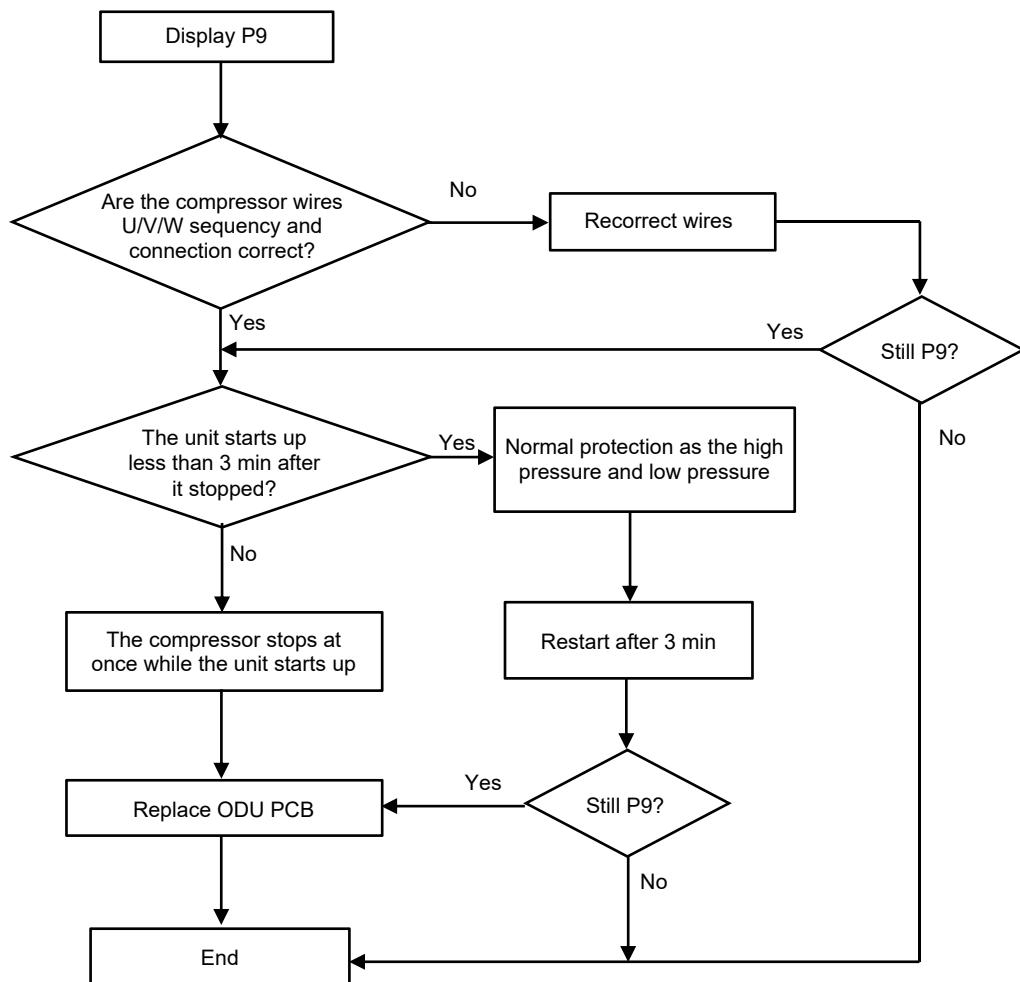
P9 --- Compressor Driving Protection (Compressor Load Abnormal)

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.

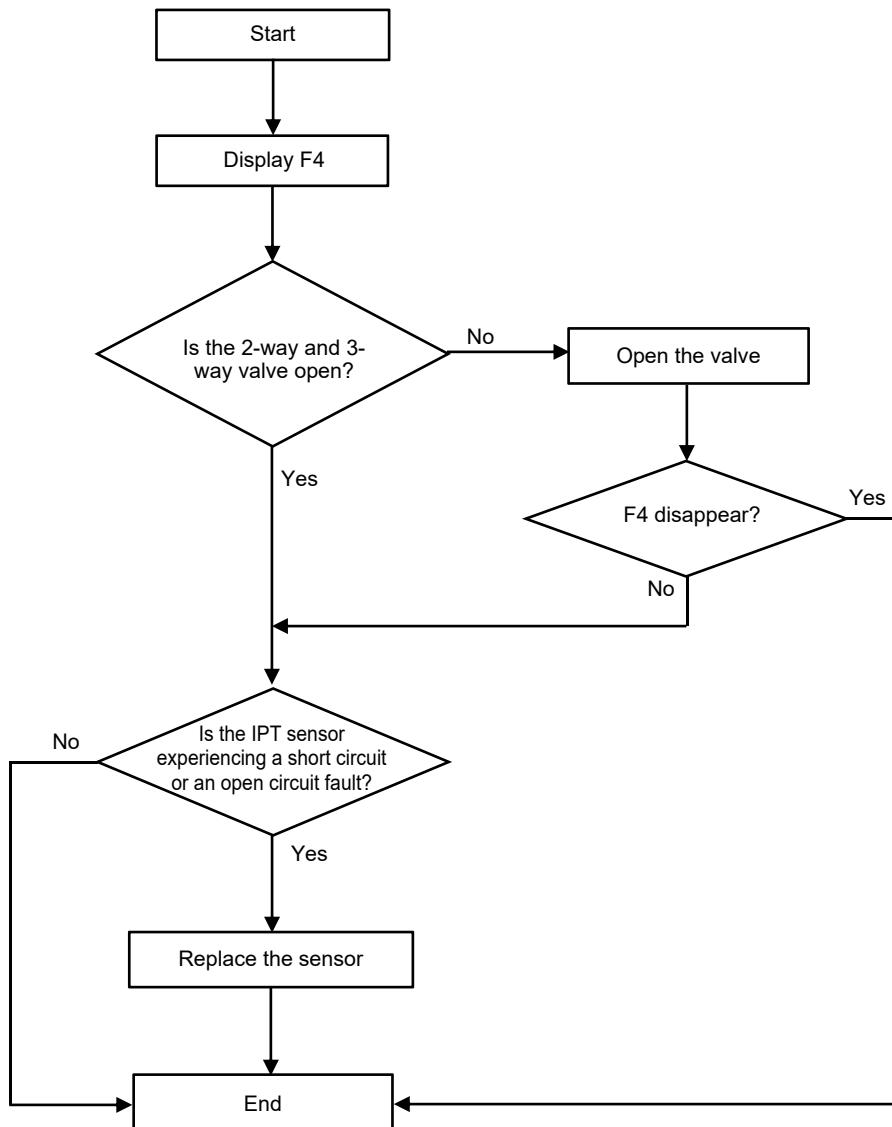


Troubleshooting

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.

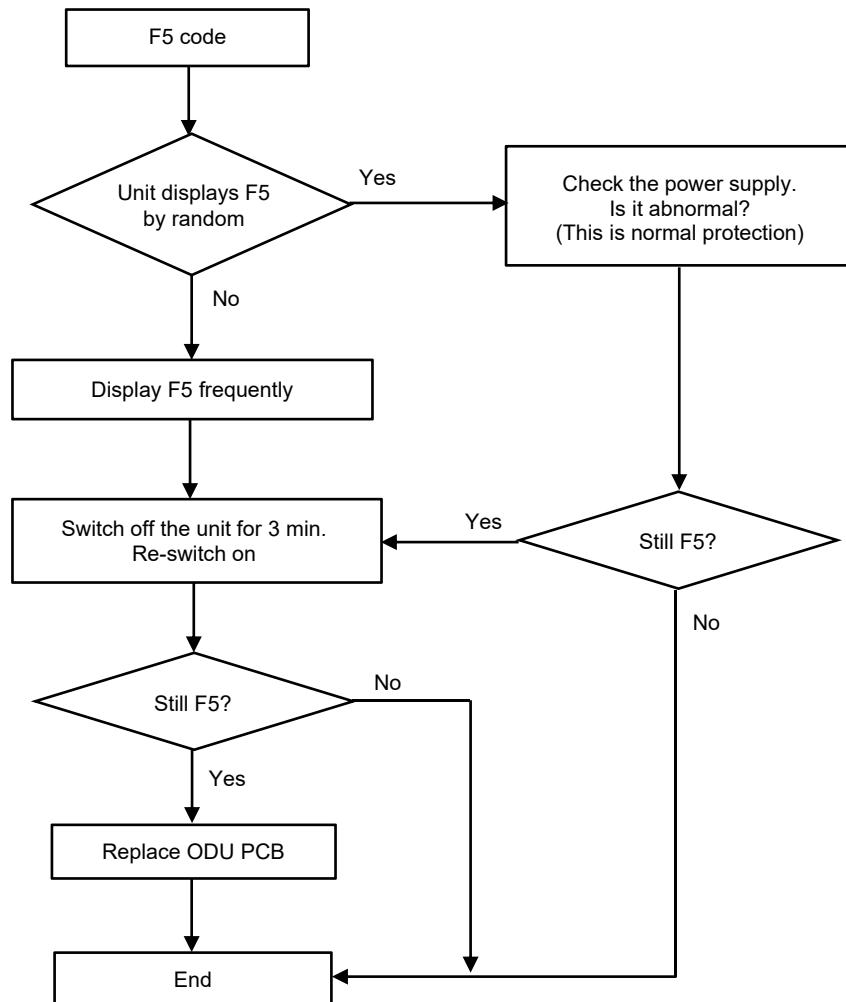


Troubleshooting

4

F5 --- PFC Protection

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

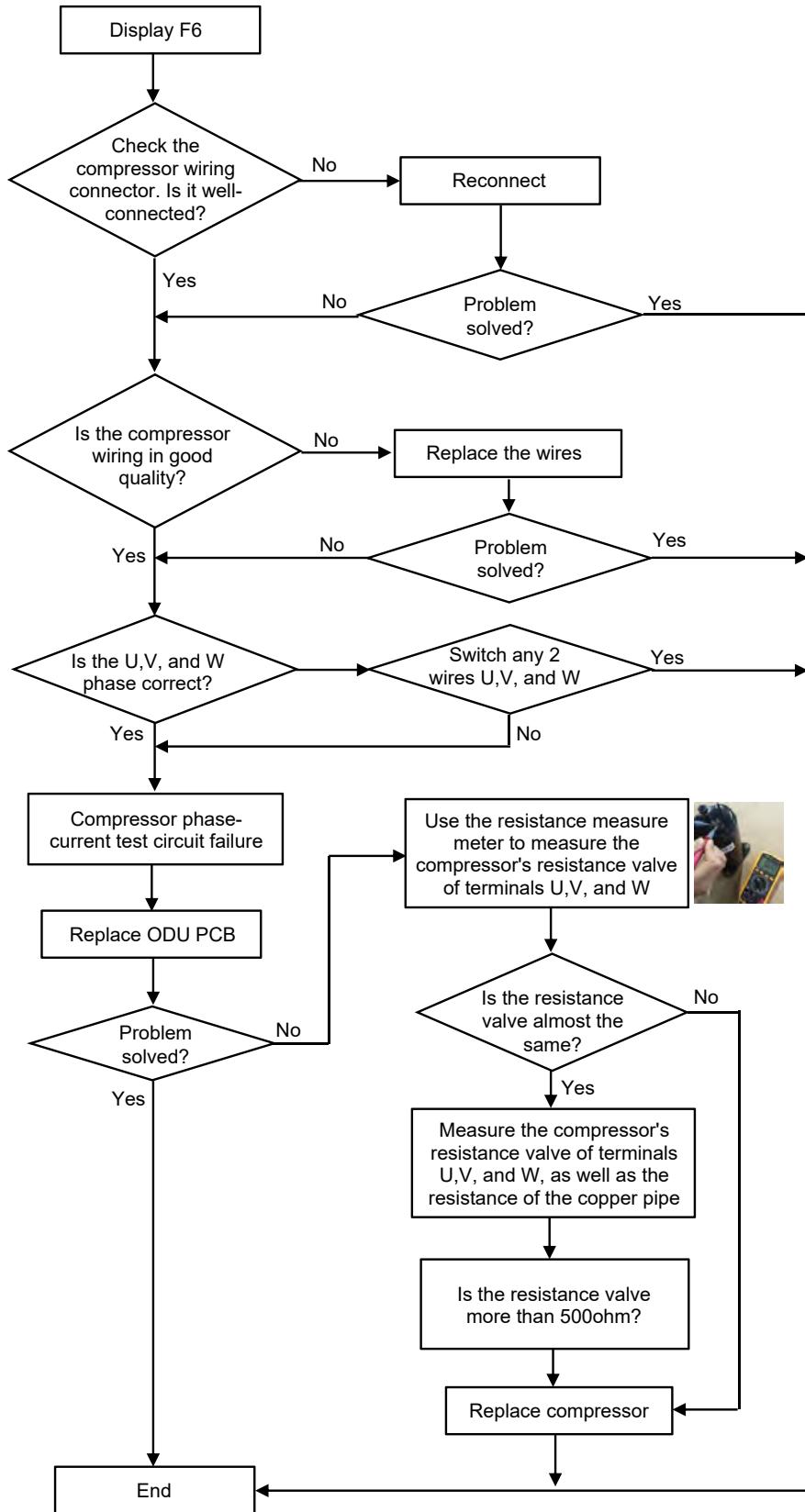


Troubleshooting

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.

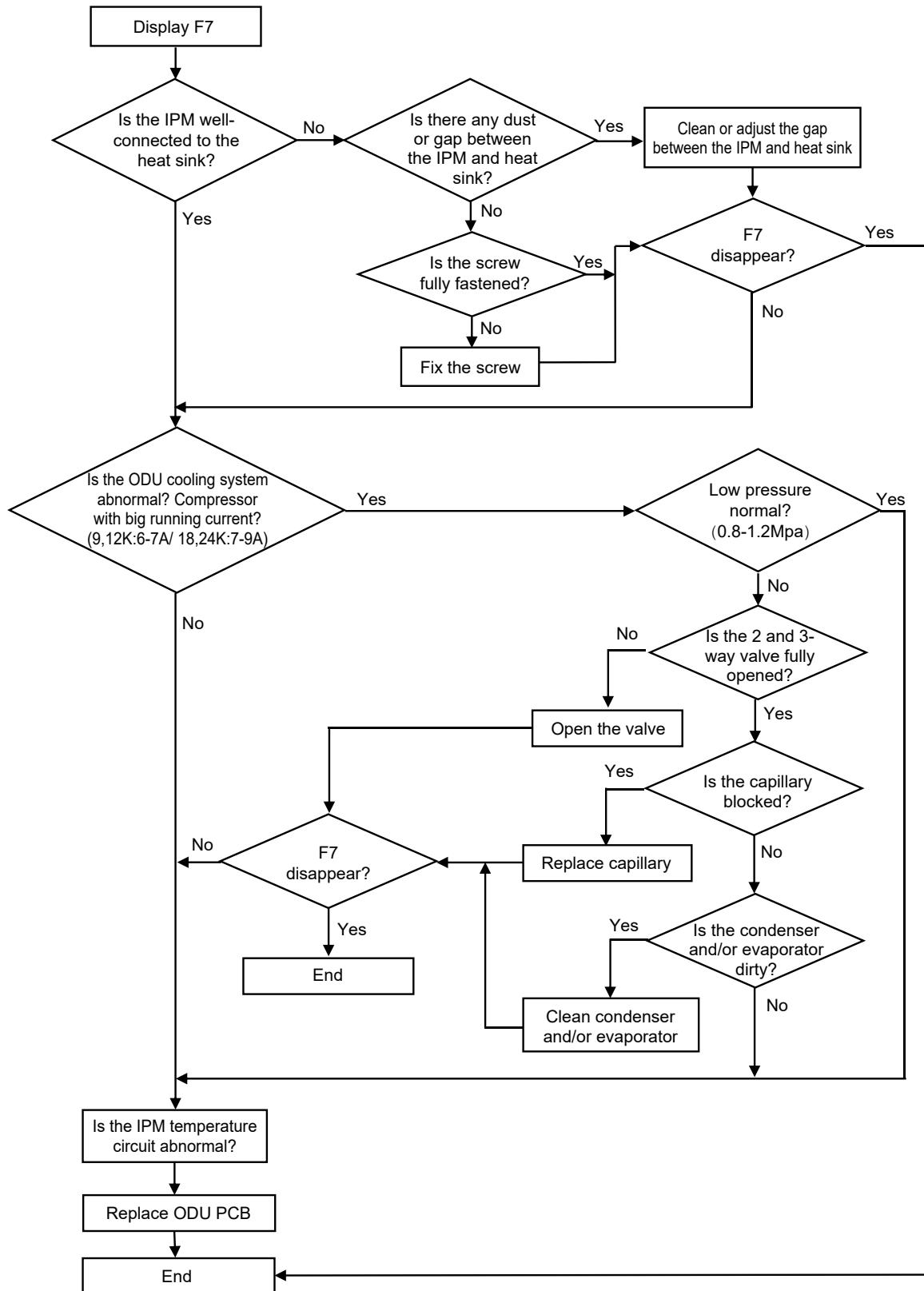


Troubleshooting

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.

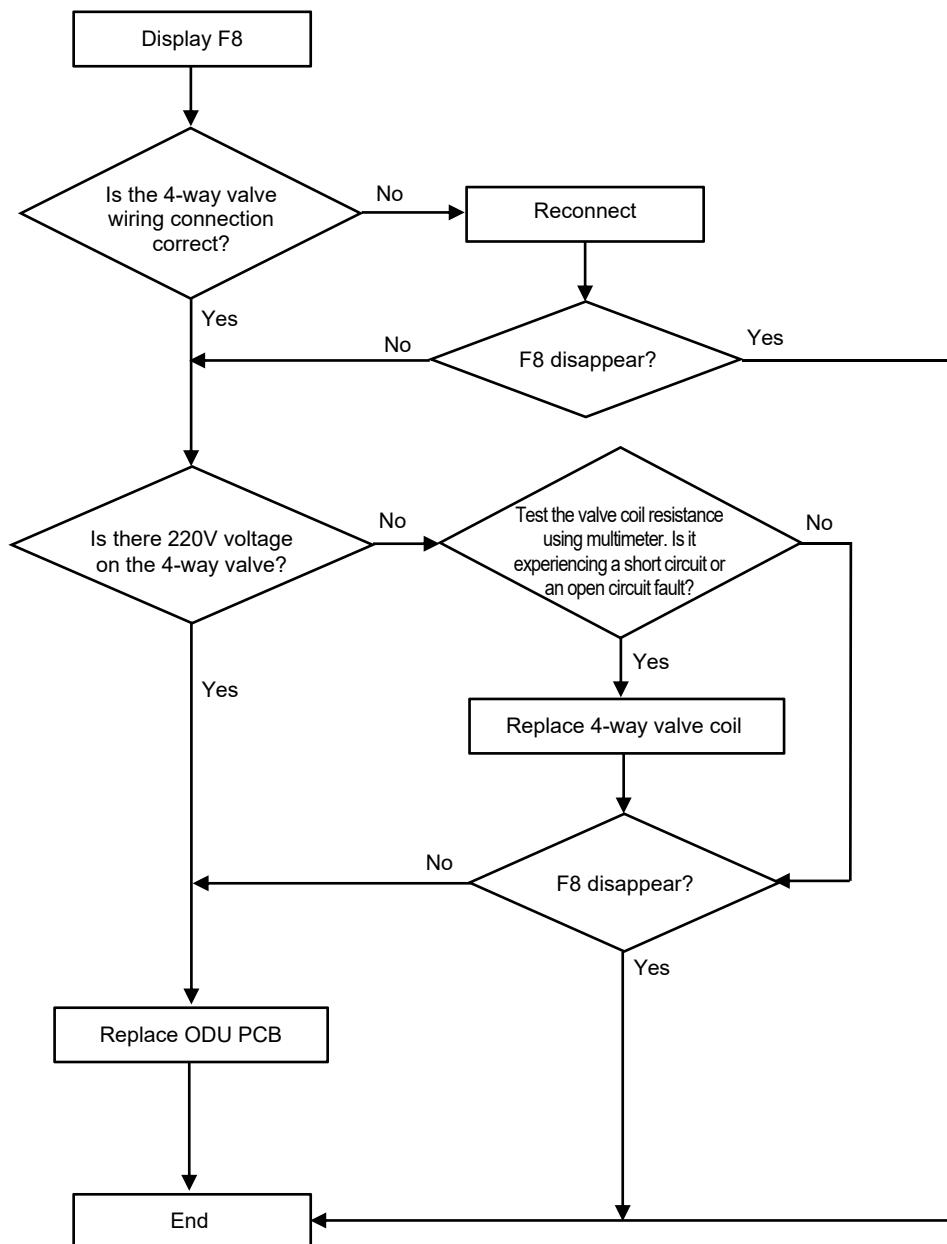


Troubleshooting

4

F8 --- 4-Way Value Reversing Abnormal

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

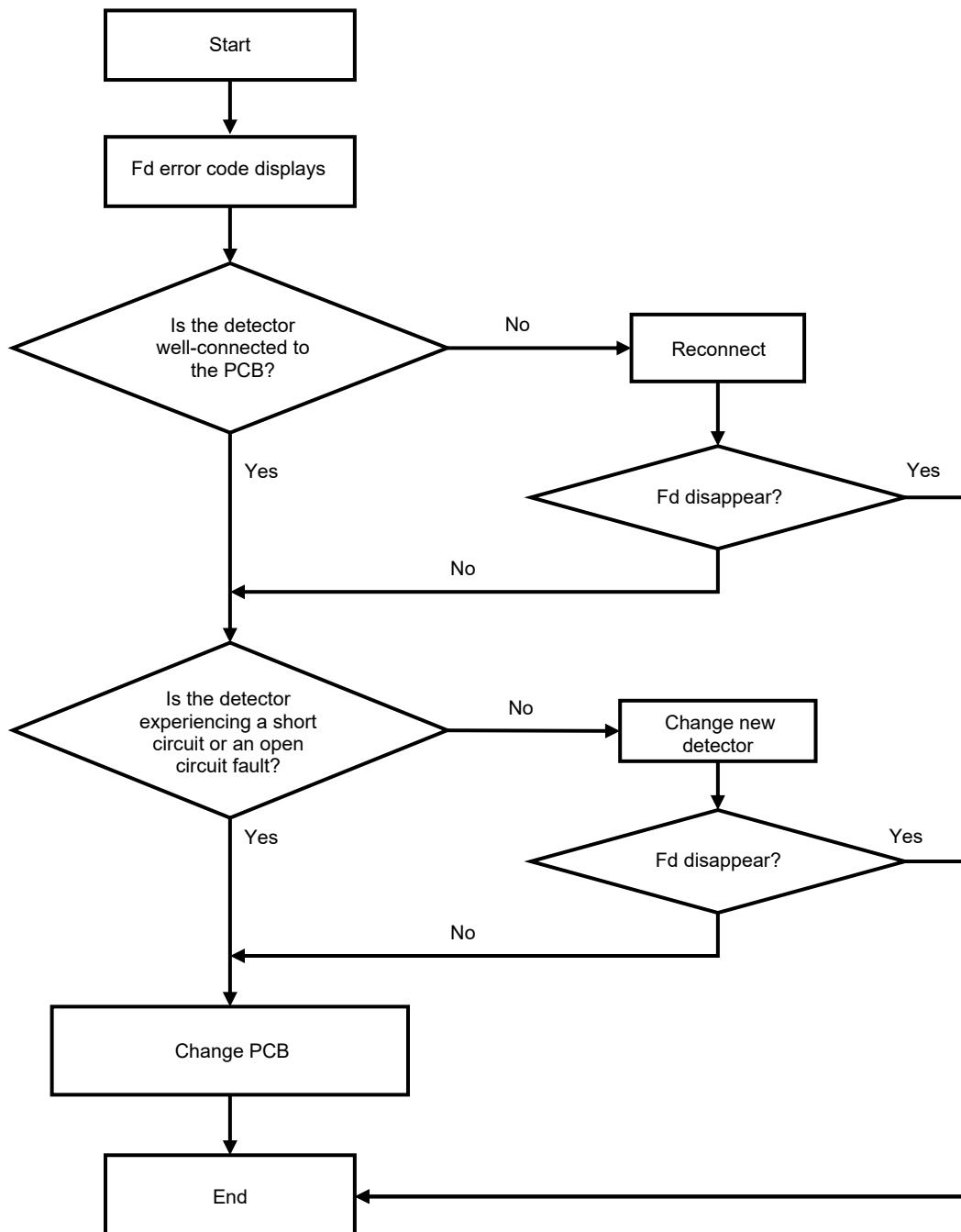


Troubleshooting

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.

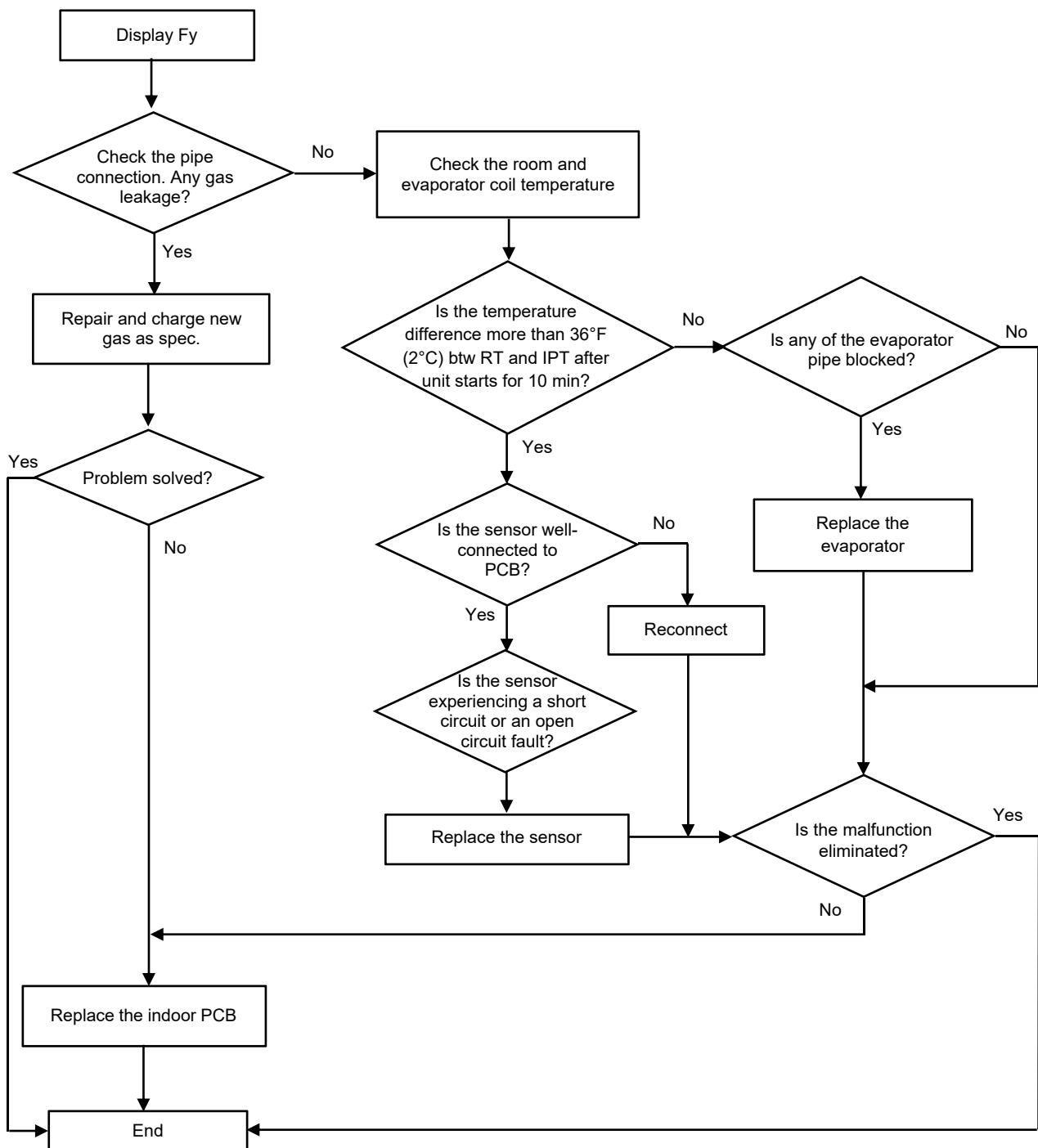


Troubleshooting

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.

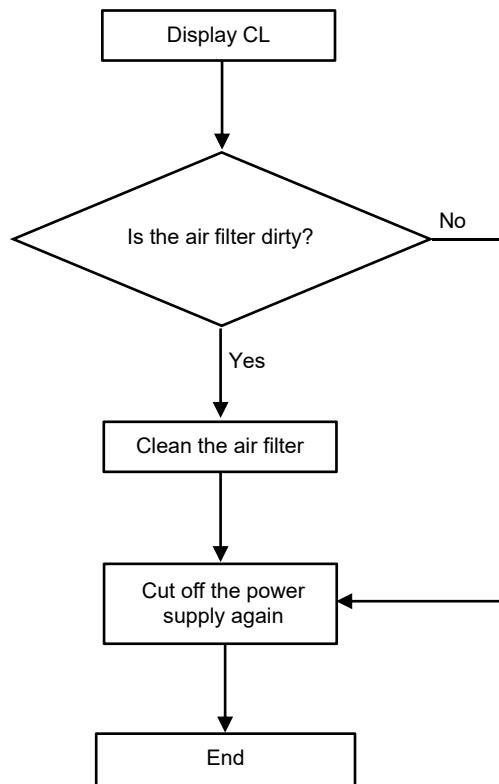


Troubleshooting

4

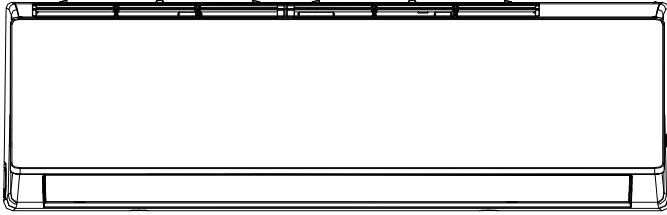
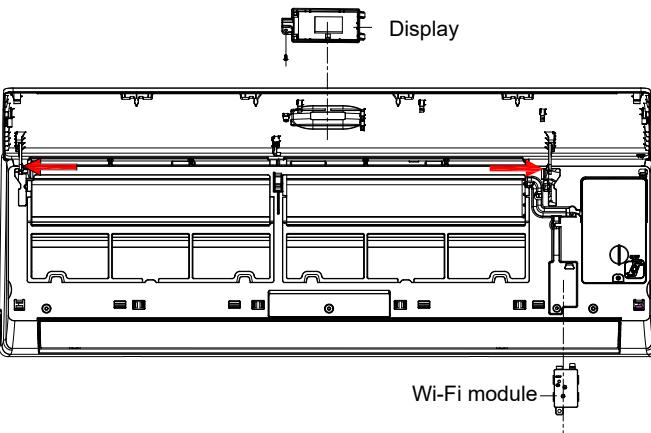
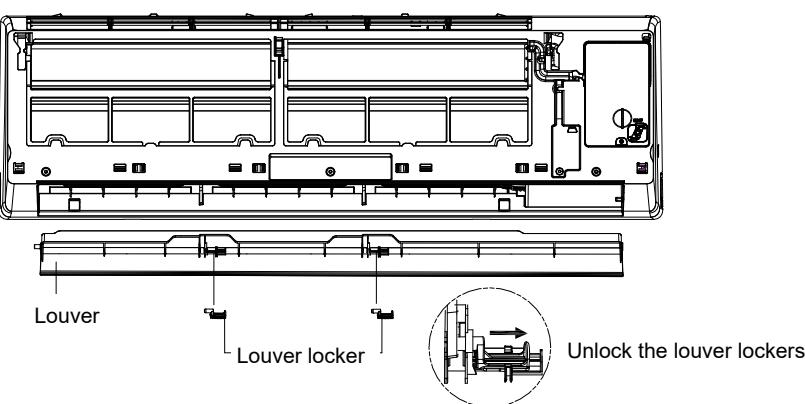
CL --- Duty Caution

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

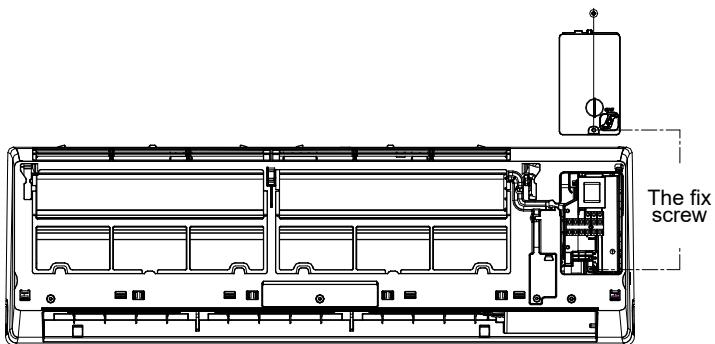
Steps	Reference Photo
Before disassembly	
1. Disassemble the front panel, display board, and Wi-Fi module	<p>A. Open front panel.</p> <p>B. Remove 1 screw, then take the display box out from the panel.</p> <p>C. Release the panel axis, which is shown in red arrows, out from middle frame and take the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

5

Indoor Unit Disassembly

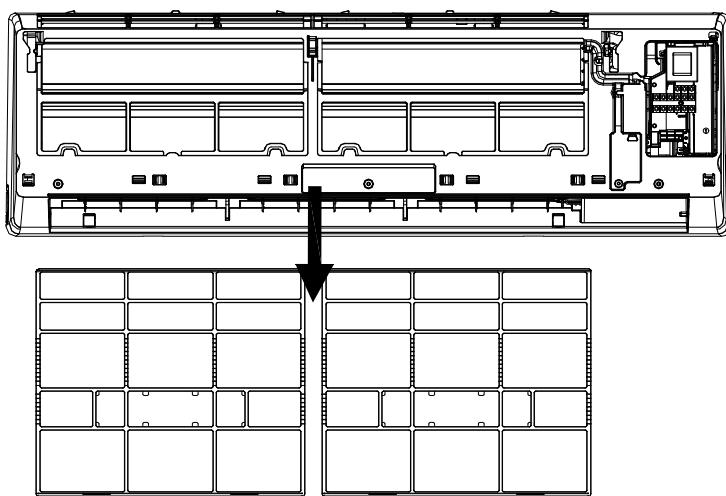
3. Remove the electric control box cover

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



4. Remove the filter

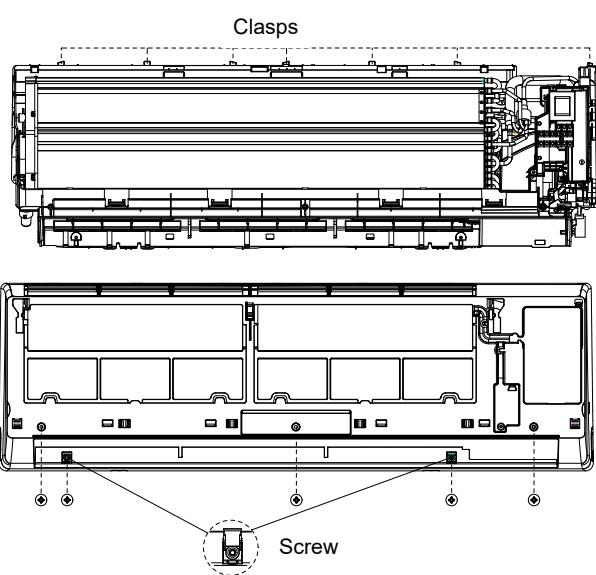
Push the filter upwards a little. Then take it out from the unit.



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.



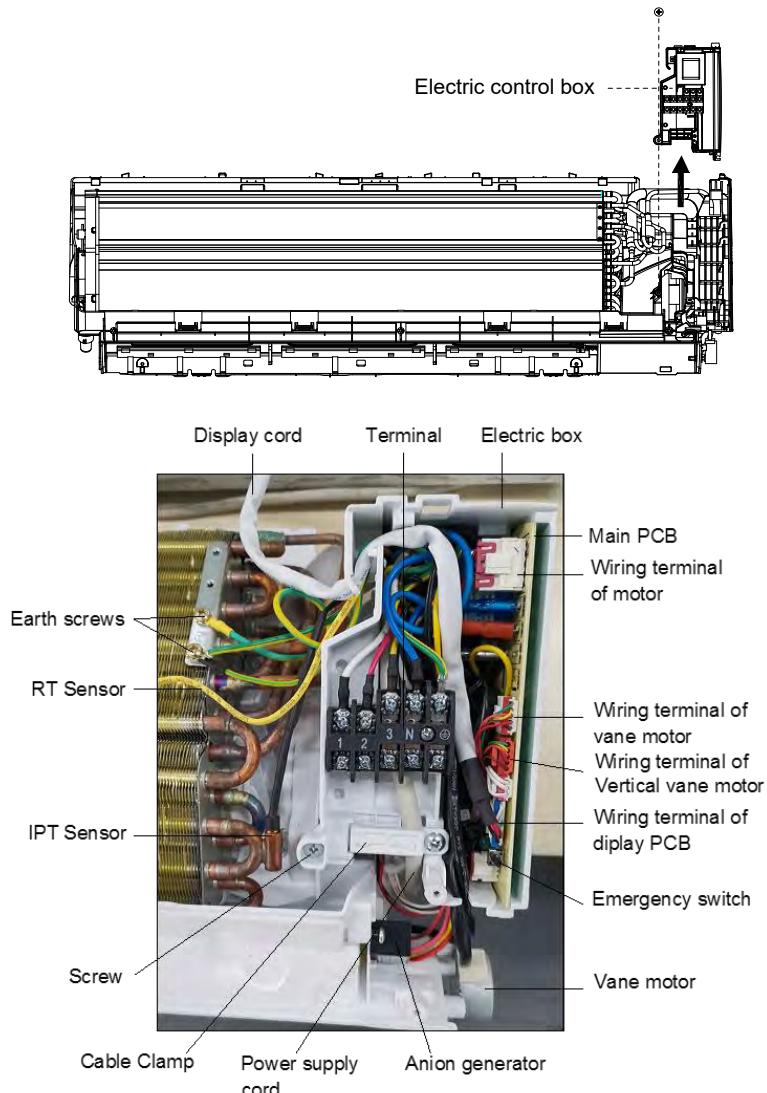
Indoor Unit Disassembly

5

6. Disassemble the electric control box

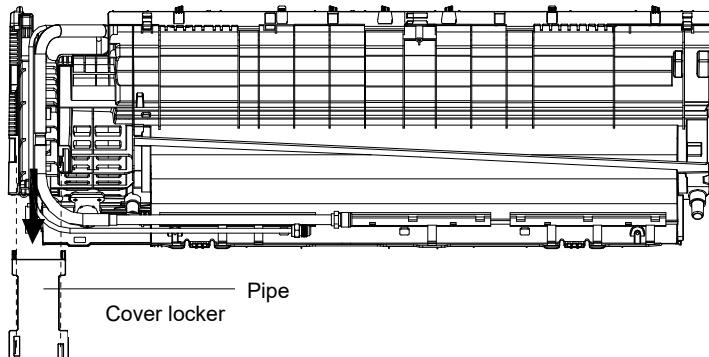
- A. Remove the RT and IPT sensors from the evaporator.
- B. Unscrew all the earth ground wirings on the evaporator.
- C. Take all the connectors out from the PCB.
- D. Unfix 1 screw from the control box of the unit base frame. Remove the control box out from the unit.

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.

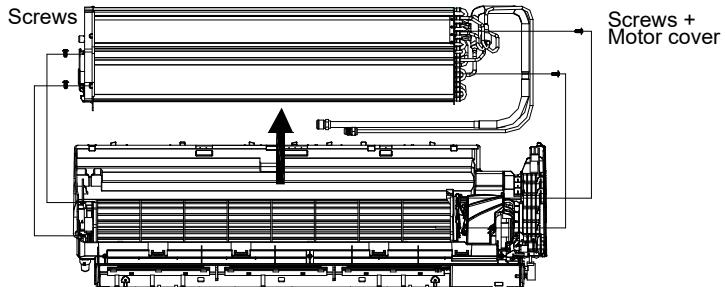


Indoor Unit Disassembly

5

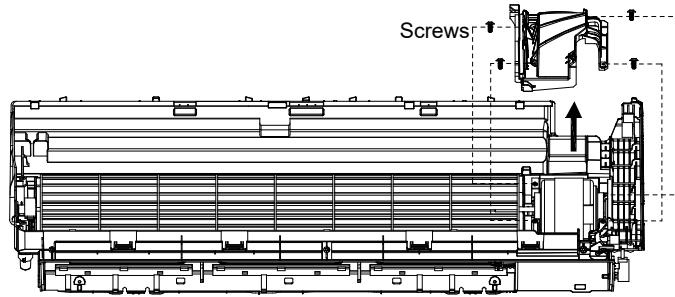
8. Disassemble the evaporator

- 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.



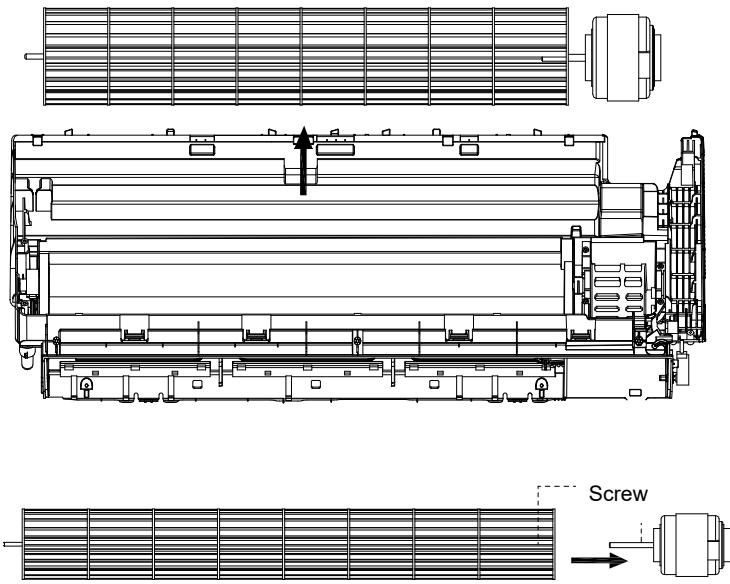
9. Remove the motor cover

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



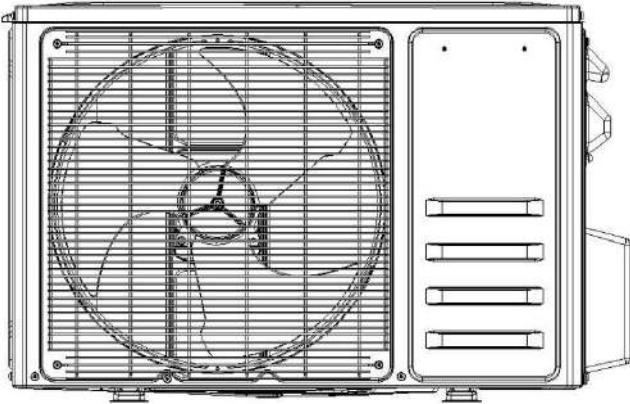
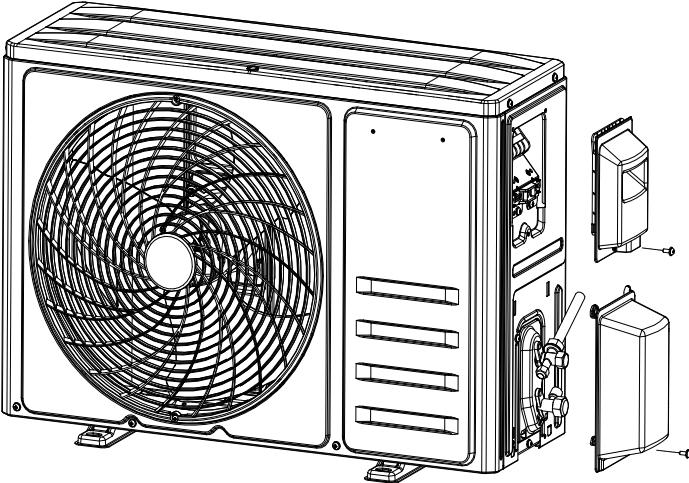
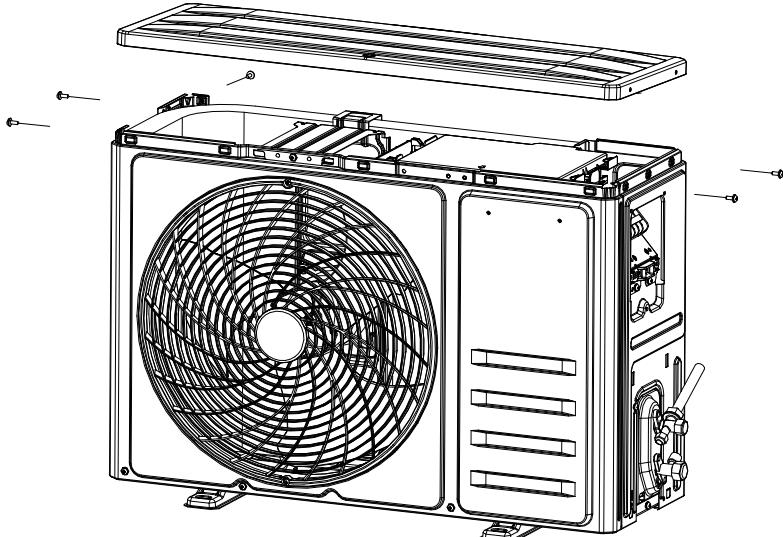
10. Disassemble the fan motor and fan blade

- 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.



Outdoor Unit Disassembly

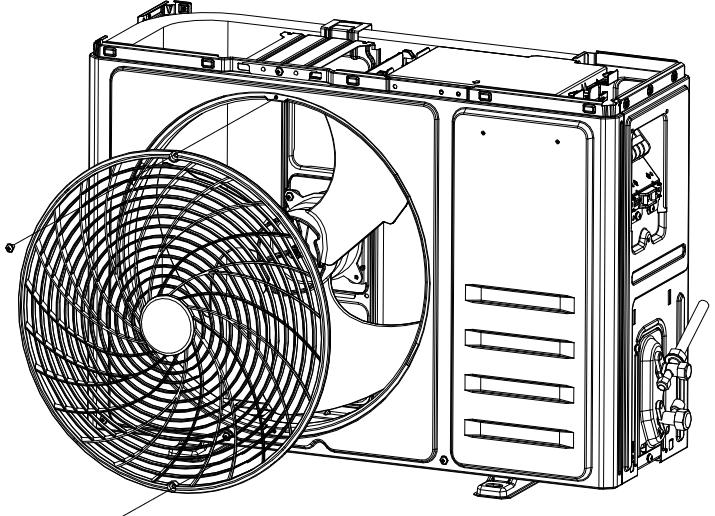
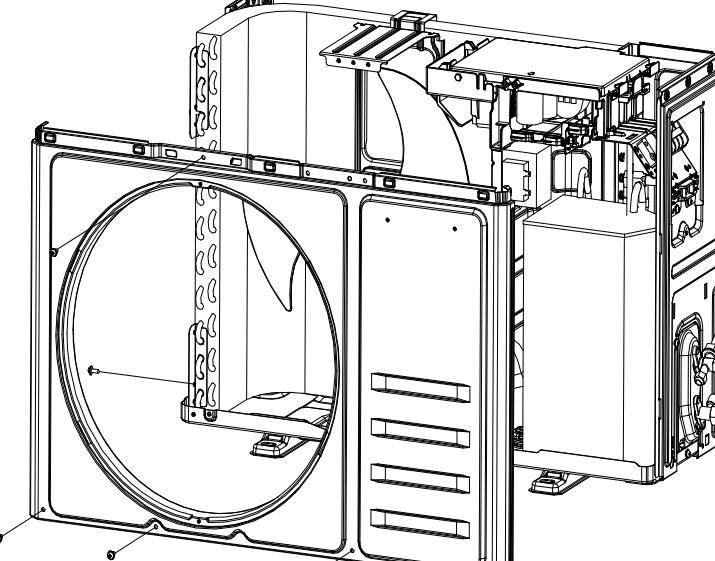
6

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

Outdoor Unit Disassembly

6

2. Disassemble the fan guard and front panel

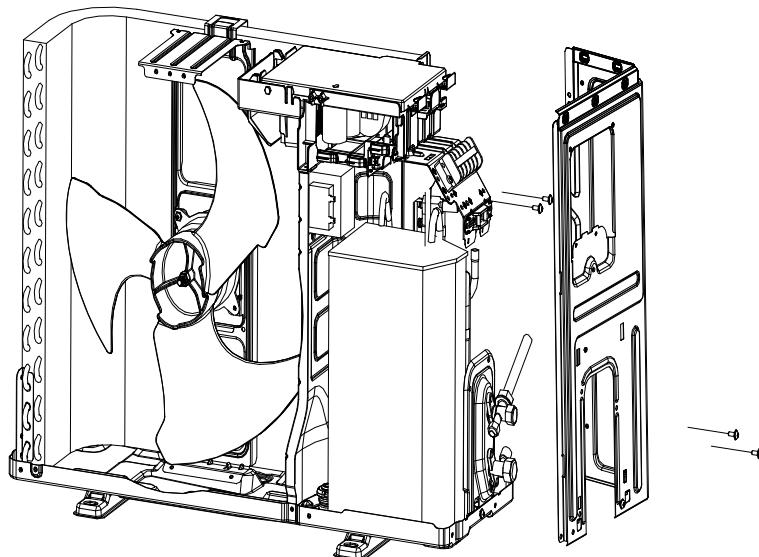
A Remove the grille screws from the front panel, then take out the grille.	
B Separate the ODU middle plate and base plate. Lift the front panel so it can be taken out from the unit.	

Outdoor Unit Disassembly

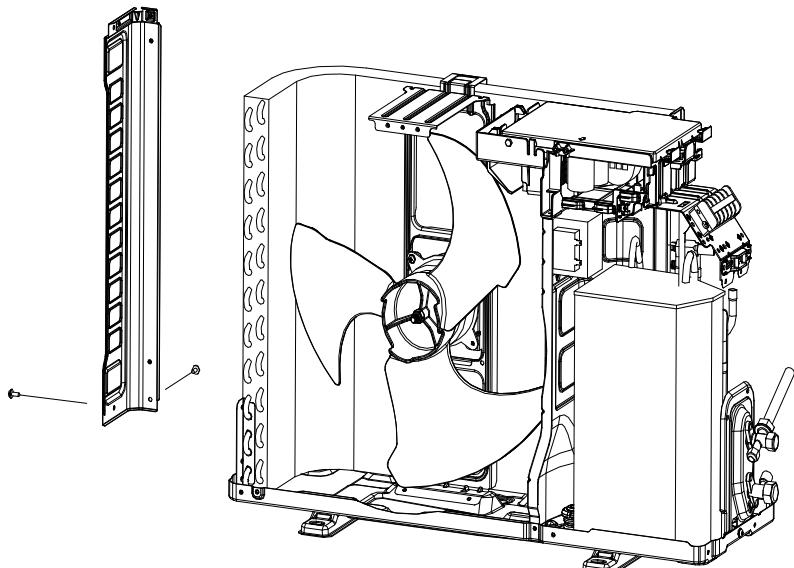
6

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.

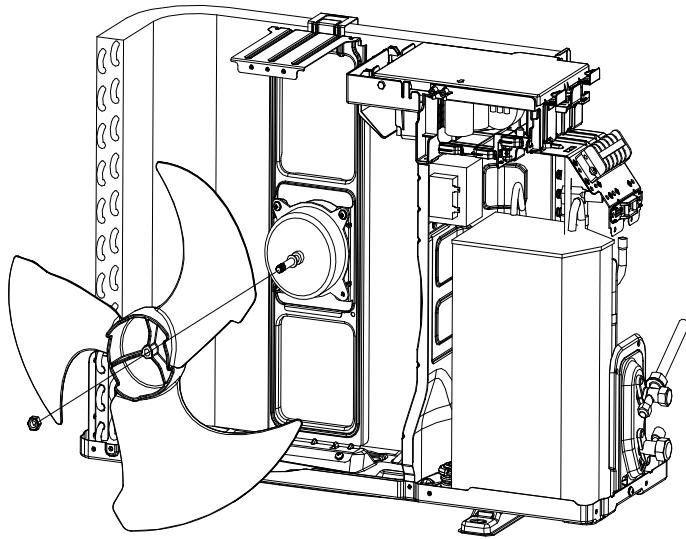


Outdoor Unit Disassembly

6

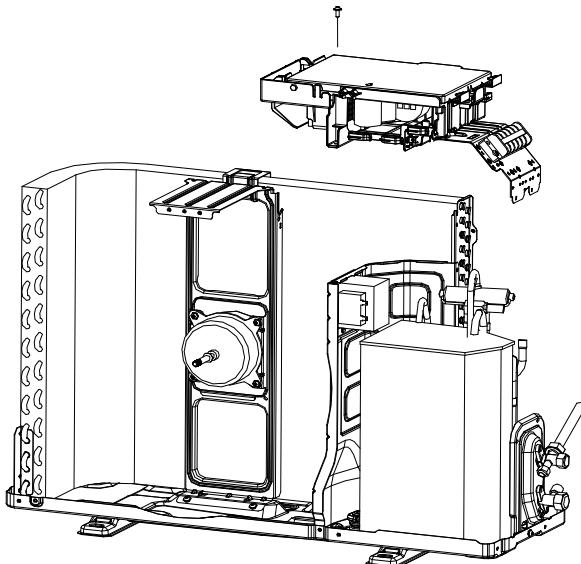
4. Disassemble the axis fan blade

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.
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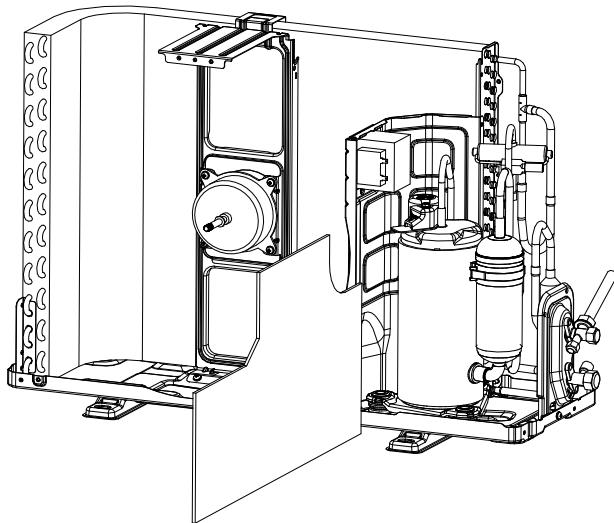


Outdoor Unit Disassembly

6

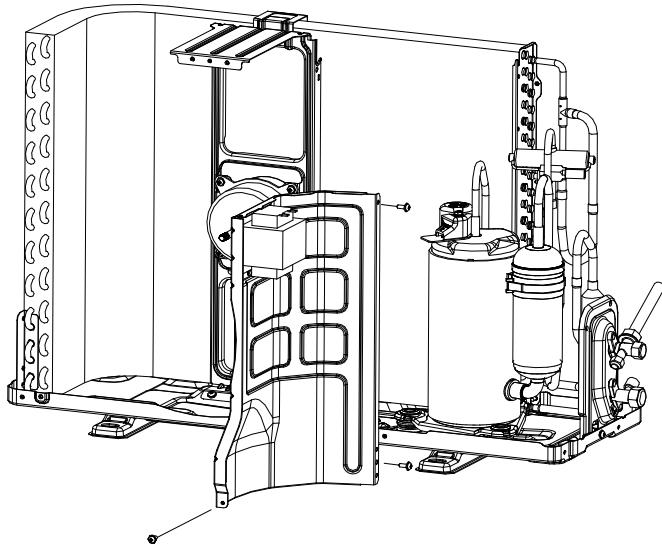
6. Remove the noise cotton

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

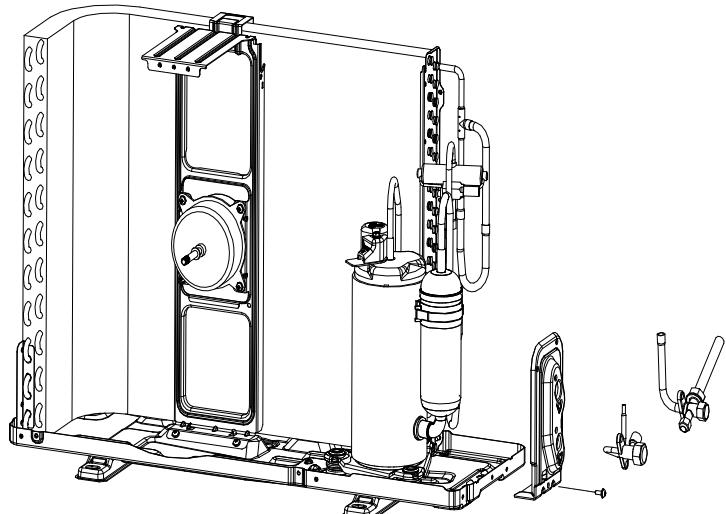
8. Disassemble the 2-way and 3-way valve

A

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

Note:

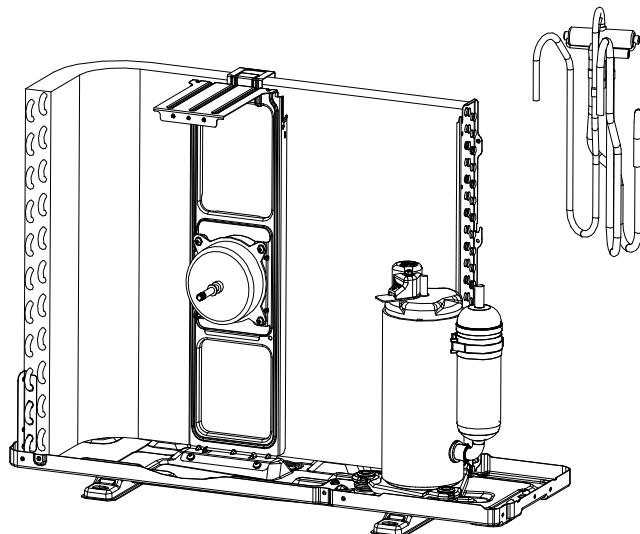
- 1). Welding can only occur while there is no gas in the unit.
- 2). Pay attention to the fire to prevent any injury.



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.

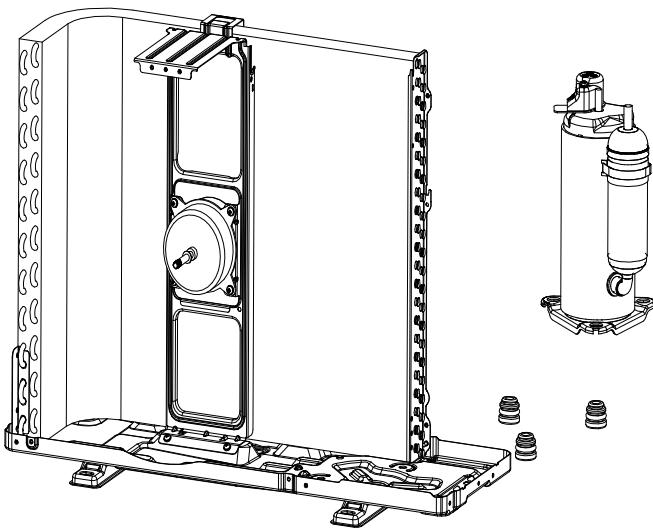


Outdoor Unit Disassembly

6

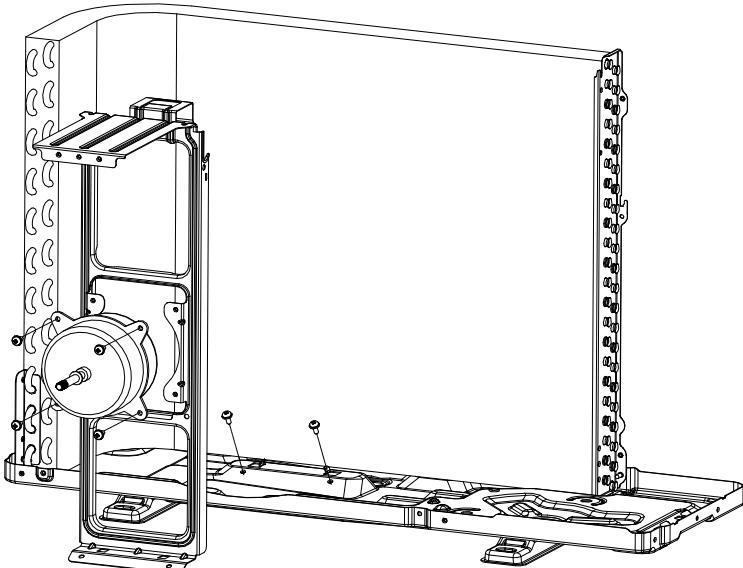
10. Disassemble the compressor

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.
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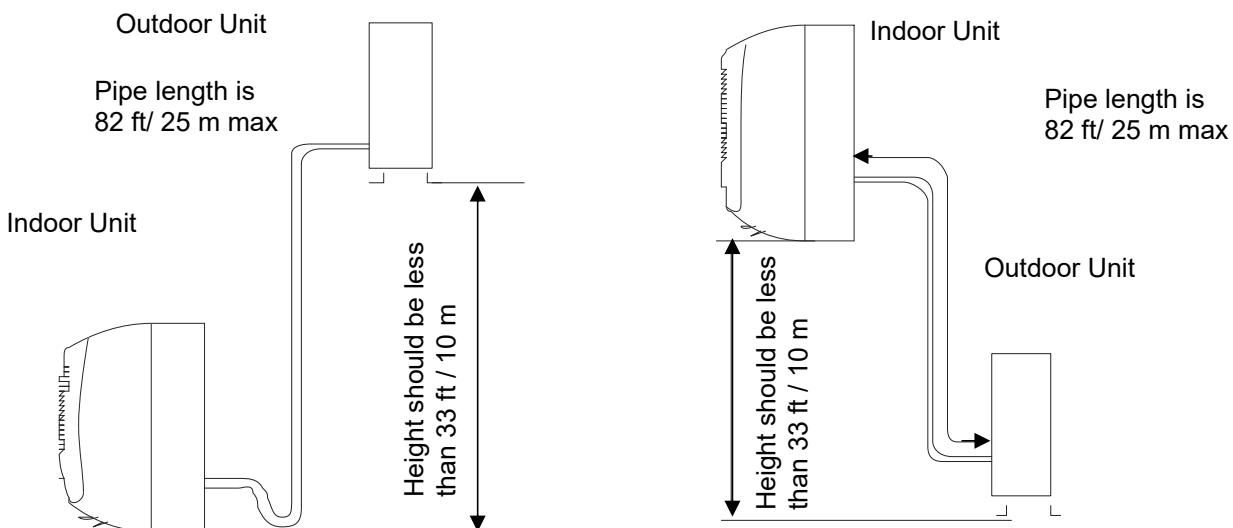
Appendix

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



Mode	Standard Length (ft/m)	Refrigerant Piping Max Length (ft/m) A	Additional Refrigerant Charging: $Xg = B * (A - 5m)$ B
9K	16 ft / 5 m	82 ft / 25 m	20g/m
12K	16 ft / 5 m	82 ft / 25 m	20g/m
18K	16 ft / 5 m	82 ft / 25 m	30g/m
24K	16 ft / 5 m	82 ft / 25 m	30g/m
30K	16 ft / 5 m	82 ft / 25 m	30g/m
36K	16 ft / 5 m	82 ft / 25 m	30g/m

Appendix

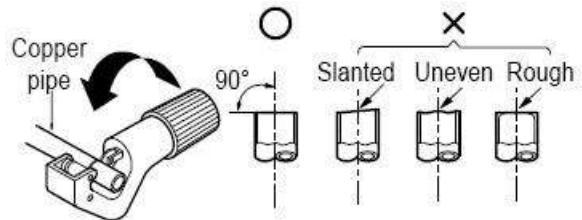
A

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:

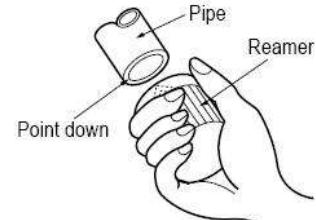
A. Cut the Pipes and Cable

- 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.

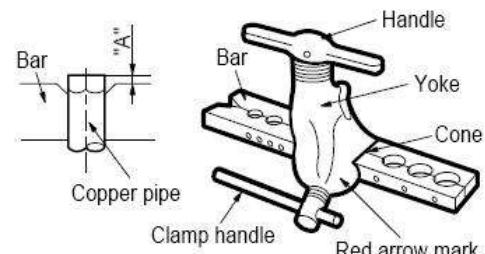


C. Flaring Work

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

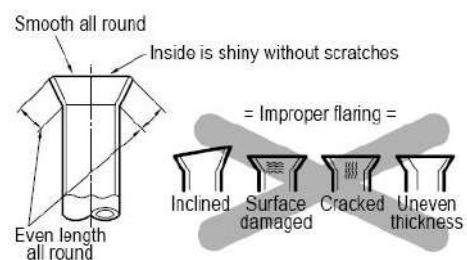
Outside Diameter		A
inch	mm	inch / mm
1/4	ø6.35	0.04~0.06 in (1.0~1.3 mm)
3/8	ø9.52	0.03~0.04 in (0.8~1.0 mm)
1/2	ø12.7	0.02~0.03 in (0.5~0.8 mm)
5/8	ø15.88	0.02~0.03 in (0.5~0.8 mm)

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

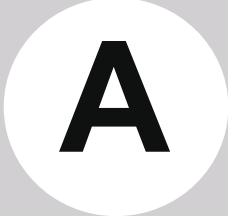


D. Check

- 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

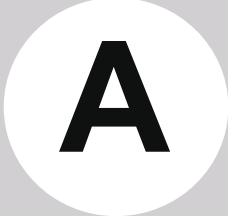


Appendix 4 Thermistor Temperature Characteristics

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

Temp. (°F/°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)	Temp. (°F/°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)	Temp. (°F/°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)
-22/-30	60.343	64.104	68.080	70/21	5.716	5.846	5.977	162/72	0.974	1.010	1.047
-20/-29	57.157	60.666	64.375	72/22	5.498	5.620	5.742	163/73	0.944	0.980	1.016
-18/-28	54.139	57.413	60.870	73/23	5.290	5.404	5.518	165/74	0.917	0.952	0.988
-17/-27	51.301	54.355	57.579	75/24	5.091	5.198	5.305	167/75	0.890	0.924	0.959
-15/-26	48.630	51.480	54.487	77/25	4.900	5.000	5.100	169/76	0.864	0.897	0.931
-13/-25	46.115	48.776	51.582	79/26	4.713	4.811	4.909	171/77	0.839	0.871	0.904
-11/-24	43.748	46.232	48.850	81/27	4.533	4.630	4.727	172/78	0.814	0.846	0.879
-9/-23	41.517	43.836	46.279	82/28	4.362	4.457	4.552	174/79	0.791	0.822	0.854
-8/-22	39.415	41.581	43.861	84/29	4.199	4.292	4.386	176/80	0.769	0.799	0.830
-6/-21	37.432	39.456	41.585	86/30	4.042	4.133	4.225	178/81	0.746	0.776	0.807
-4/-20	35.581	37.473	39.462	88/31	3.892	3.982	4.072	180/82	0.725	0.754	0.784
-2/-19	33.798	35.565	37.421	90/32	3.748	3.836	3.925	181/83	0.705	0.733	0.762
0/-18	32.134	33.785	35.519	91/33	3.611	3.697	3.784	183/84	0.685	0.713	0.742
1/-17	30.561	32.105	33.725	93/34	3.479	3.564	3.649	185/85	0.666	0.693	0.721
3/-16	29.077	30.520	32.033	95/35	3.353	3.436	3.520	187/86	0.647	0.674	0.701
5/-15	27.673	29.023	30.437	97/36	3.232	3.313	3.395	189/87	0.629	0.655	0.682
7/-14	26.347	27.609	28.931	99/37	3.116	3.195	3.275	190/88	0.613	0.638	0.664
9/-13	25.092	26.273	27.508	100/38	3.004	3.082	3.161	192/89	0.595	0.620	0.646
10/-12	23.905	25.010	26.165	102/39		2.974	3.051	194/90	0.580	0.604	0.629
12/-11	22.782	23.816	24.896	104/40	2.795	2.870	2.946	196/91	0.563	0.587	0.611
14/-10	21.720	22.687	23.697	106/41	2.697	2.770	2.844	198/92	0.549	0.572	0.596
16/-9	20.713	21.618	22.562	108/42	2.604	2.675	2.748	199/93	0.534	0.557	0.580
18/-8	19.759	20.607	21.490	109/43	2.513	2.583	2.654	201/94	0.520	0.542	0.565
19/-7	18.855	19.649		111/44	2.426	2.494	2.564	203/95	0.506	0.528	0.550
21/-6	17.999	18.742	19.515	113/45	2.343	2.410	2.478	205/96	0.493	0.514	0.536
23/-5	17.187	17.883	18.606	115/46	2.263	2.328	2.395	207/97	0.480	0.501	0.522
25/-4	16.416	17.068	17.745	117/47	2.186	2.250	2.315	208/98	0.468	0.488	0.509
27/-3	15.685	16.296	16.930	118/48	2.111	2.174	2.238	210/99	0.456	0.476	0.497

Appendix



Appendix 4 Thermistor Temperature Characteristics (Continued)

1). Indoor and outdoor units exchange temperature and outside air temperature 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/-2	14.991	15.563	16.156	120/49	2.041	2.102	2.164	212/100	0.444	0.464	0.484
30/-1	14.332	14.868	15.423	122/50	1.972	2.032	2.093	214/101	0.433	0.452	0.472
32/0	13.766	14.270	14.792	124/51	1.906	1.965	2.025	216/102	0.422	0.441	0.460
34/1	13.111	13.582	14.069	126/52	1.844	1.901	1.959	217/103	0.412	0.430	0.449
36/2	12.546	12.987	13.443	127/53	1.783	1.839	1.896	219/104	0.401	0.419	0.437
37/3	12.008	12.422	12.849	129/54	1.724	1.779	1.835	221/105	0.391	0.409	0.427
39/4	11.497	11.885	12.284	131/55	1.668	1.721	1.776	223/106	0.381	0.399	0.416
41/5	11.012	11.375	11.749	133/56	1.614	1.666	1.719	225/107	0.372	0.388	0.406
43/6	10.548	10.889	11.239	135/57	1.562	1.613	1.665	226/108	0.362	0.379	0.395
45/7	10.109	10.428	10.756	136/58	1.512	1.562	1.613	228/109	0.353	0.369	0.386
46/8	9.689	9.988	10.295	138/59	1.463	1.512	1.562	230/110	0.344	0.360	0.376
48/9	9.289	9.570	9.858	140/60	1.417	1.465	1.514	232/111	0.335	0.351	0.367
50/10	8.909	9.172	9.441	142/61	1.372	1.419	1.467	234/112	0.327	0.342	0.357
52/11	8.545	8.792	9.044	144/62	1.328	1.374	1.421	235/113	0.319	0.333	0.349
54/12	8.199	8.431	8.667	145/63	1.287	1.332	1.378	237/114	0.311	0.325	0.340
55/13	7.870	8.087	8.308	147/64	1.247	1.291	1.336	239/115	0.303	0.317	0.332
57/14	7.554	7.758	7.965	149/65	1.208	1.251	1.295	241/116	0.296	0.309	0.324
59/15	7.254	7.445	7.639	151/66	1.171	1.213	1.256	243/117	0.288	0.302	0.315
61/16	6.968	7.147	7.329	153/67	1.135	1.176	1.218	244/118	0.281	0.294	0.308
63/17	6.694	6.862	7.032	154/68	1.100	1.140	1.181	246/119	0.274	0.287	0.301
64/18	6.433	6.590	6.749	156/69	1.067	1.106	1.146	248/120	0.268	0.280	0.293
66/19	6.183	6.331	6.480	158/70	1.035	1.073	1.112				
68/20	5.945	6.083	6.223	160/71	1.004	1.041	1.079				

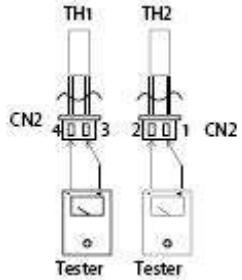
Appendix

A

Appendix 4 Thermistor Temperature Characteristics (Continued)

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.

2). Outdoor Unit Discharge Sensor Temperature Characteristics

Temp. (°F/°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)	Temp. (°F/°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)	Temp. (°F/°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)
-22/-30	288.879	337.780	386.68	73/23	20.114	21.847	23.579	169/76	2.733	2.835	2.937
-20/-29	272.641	318.219	263.797	75/24	19.263	20.900	22.538	171/77	2.646	2.742	2.839
-18/-28	257.401	299.897	342.392	77/25	18.453	20.000	21.547	172/78	2.561	2.653	2.745
-17/-27	243.09*2	282.727	322.363	79/26	17.681	19.143	20.605	174/79	2.480	2.567	2.654
-15/-26	299.654	266.633	303.613	81/27	16.945	18.327	19.710	176/80	2.401	2.484	2.567
-13/-25	217.028	251.541	286.054	82/28	16.243	17.551	18.858	178/81	2.326	2.404	2.483
-11/-24	205.162	237.383	269.604	84/29	15.575	16.811	18.047	180/82	2.183	2.253	2.324
-9/-23	194.005	224.097	254.188	86/30	14.937	16.106	17.275	181/83	2.183	2.253	2.324
-8/-22	183.513	211.625	239.736	88/31	14.328	15.434	16.541	183/84	2.115	2.182	2.249
-6/-21	173.642	199.912	226.181	90/32	13.748	14.794	15.841	185/85	2.050	2.113	2.176
-4/-20	164.353	188.909	213.465	91/33	13.194	14.184	15.175	187/86	1.984	2.047	2.109
-2/-19	155.608	178.569	201.530	93/34	12.665	13.602	14.540	189/87	1.921	1.983	2.045
0/-18	147.373	168.850	190.326	95/35	12.160	13.048	13.935	190/88	1.860	1.921	1.982
1/-17	139.616	159.710	179.803	97/36	11.678	12.518	13.358	192/89	1.801	1.862	1.922
3/-16	132.307	151.112	169.917	99/37	11.217	12.013	12.809	194/90	1.744	1.804	1.864
5/-15	125.417	143.022	160.627	100/38	10.777	11.531	12.248	196/91	1.690	1.749	1.808
7/-14	118.921	135.407	151.893	102/39	10.357	11.071	11.784	198/92	1.637	1.695	1.754
9/-13	112.794	128.236	143.679	104/40	9.955	10.631	11.307	199/93	1.586	1.644	1.701
10/-12	107.014	121.483	135.952	106/41	9.571	10.211	10.852	201/94	1.537	1.594	1.651
12/-11	101.559	115.120	128.680	108/42	9.203	9.810	10.417	203/95	1.490	1.546	1.602
14/-10	96.410	109.123	121.836	109/43	8.852	9.427	10.002	205/96	1.444	1.500	1.555
16/-9	91.548	103.469	115.391	111/44	8.516	9.061	9.606	207/97	1.400	1.455	1.509
18/-8	86.956	98.138	109.320	113/45	8.194	8.711	9.228	208/98	1.358	1.412	1.465
19/-7	82.617	93.108	103.600	115/46	7.886	8.376	8.866	210/99	1.317	1.370	1.423
21/-6	78.516	88.362	98.209	117/47	7.591	8.056	8.520	212/100	1.277	1.329	1.382
23/-5	74.640	83.883	93.126	118/48	7.309	7.750	8.190	214/101	1.239	1.290	1.342
25/-4	70.974	79.653	88.332	120/49	7.039	7.750	8.190	216/102	1.202	1.253	1.303
27/-3	67.507	75.659	83.810	122/50	6.780	7.176	7.572	217/103	1.166	1.216	1.266
28/-2	64.227	71.885	79.543	124/51	6.532	6.908	7.283	219/104	1.132	1.181	1.230

Appendix

A

Appendix 4 Thermistor Temperature Characteristics (Continued)

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

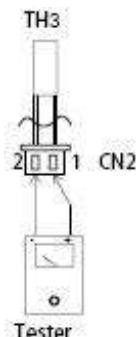
Temp. (°F/°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)	Temp. (°F/°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)	Temp. (°F/°C)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)
30/-1	61.123	68.319	75.515	126/52	6.294	6.650	7.007	221/105	1.099	1.147	1.195
32/0	58.184	64.948	71.712	127/53	6.066	6.404	6.743	223/106	1.066	1.114	1.162
34/1	55.402	61.761	68.120	129/54	5.847	6.168	6.489	225/107	1.035	1.082	1.129
36/2	52.766	58.746	64.726	131/55	5.638	5.942	6.247	226/108	1.005	1.051	1.098
37/3	50.269	55.894	61.519	133/56	5.437	5.726	6.015	228/109	0.976	1.022	1.067
39/4	47.903	53.195	58.488	135/57	5.244	5.518	5.793	230/110	0.948	0.993	1.038
41/5	45.661	50.641	55.621	136/58	5.059	5.319	5.580	232/111	0.921	0.965	1.009
43/6	43.543	48.222	52.910	138/59	4.882	5.129	5.376	234/112	0.895	0.938	0.981
45/7	41.517	45.931	50.345	140/60	4.711	4.946	5.180	235/113	0.869	0.912	0.955
46/8	39.604	43.761	47.917	142/61	4.548	4.770	4.993	237/114	0.845	0.887	0.929
48/9	37.789	41.704	45.619	144/62	4.39	4.602	4.813	239/115	0.821	0.862	0.904
50/10	36.066	39.755	43.443	145/63	4.240	4.440	4.641	241/116	0.798	0.839	0.879
52/11	34.431	37.907	41.383	147/64	4.094	4.285	4.475	243/117	0.776	0.816	0.856
54/12	32.787	36.154	39.430	149/65	3.955	4.136	4.317	244/118	0.754	0.794	0.833
55/13	31.403	34.491	37.580	151/66	3.821	3.993	4.164	246/119	0.733	0.772	0.811
57/14	30.001	32.914	35.826	153/67	3.693	3.855	4.018	248/120	0.713	0.751	0.789
59/15	28.670	31.417	34.163	154/68	3.569	3.723	3.878	250/121	0.694	0.731	0.769
61/16	27.404	29.995	32.586	156/69	3.450	3.596	3.743	252/122	0.675	0.712	0.749
63/17	26.200	28.645	31.090	158/70	3.335	3.475	3.614	253/123	0.657	0.693	0.729
64/18	25.056	27.363	29.671	160/71	3.225	3.357	3.490	255/124	0.639	0.675	0.710
66/19	23.967	26.145	28.324	162/72	3.119	3.245	3.370	257/125	0.622	0.657	0.692
68/20	22.931	24.988	27.044	163/73	3.017	3.136	3.225				
70/21	21.946	23.888	25.830	165/74	2.919	3.032	3.145				
72/22	21.007	22.842	24.676	167/75	2.824	2.932	3.093				

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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