Multi Inverter Air Conditioner

Service Manual

Models:

YN020GLSI24M2G **YN030GLSI24M3G**

YN040GLSI24M4G **YN050GLSI24M5G**

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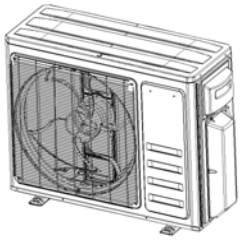
1. Technical Information

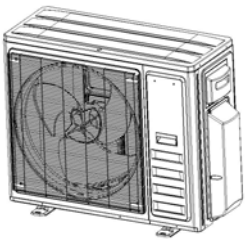
1.1 Summary

Outdoor Unit

YN020GLSI24M2G



YN040GLSI24M4G



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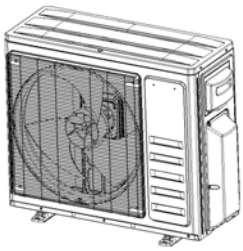

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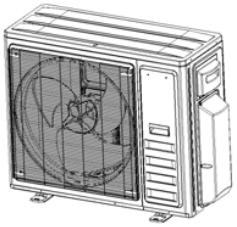
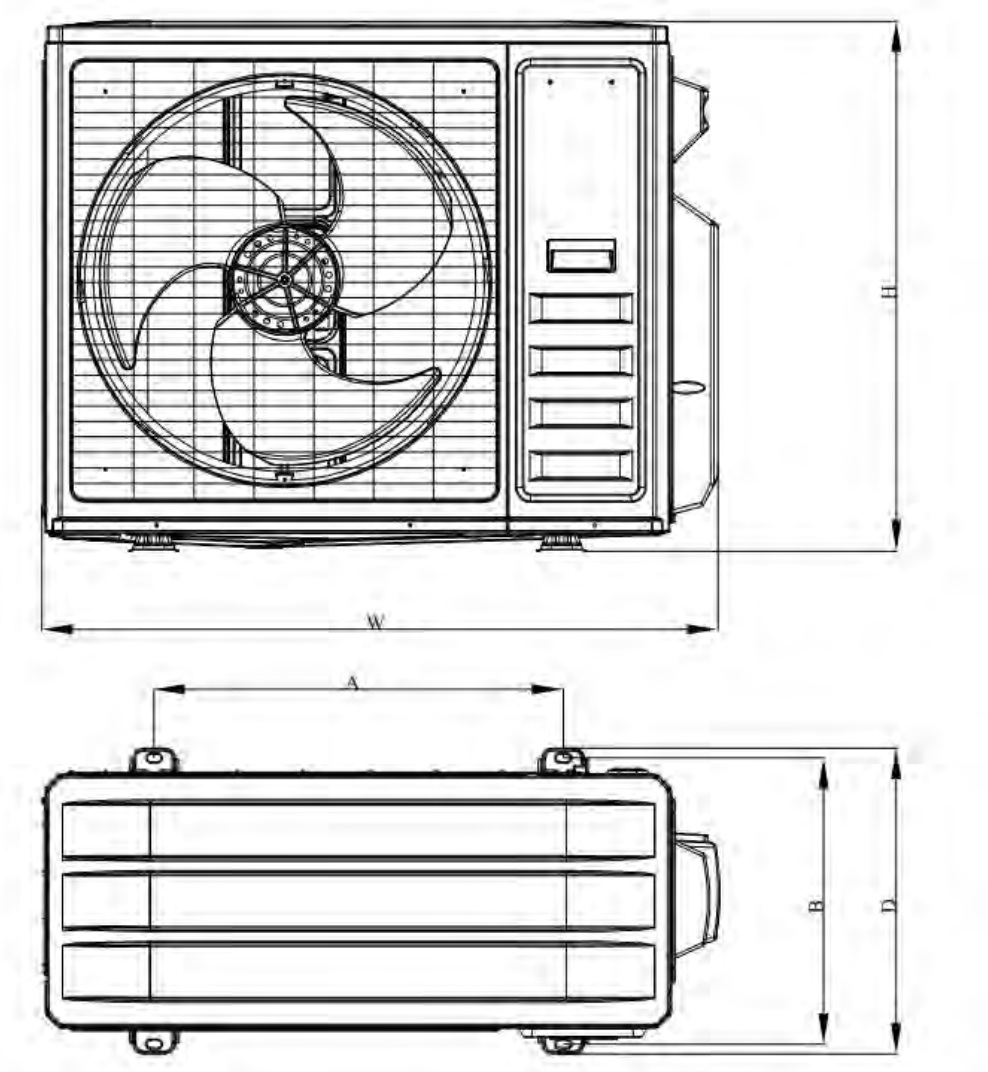


2. Unit Dimensions

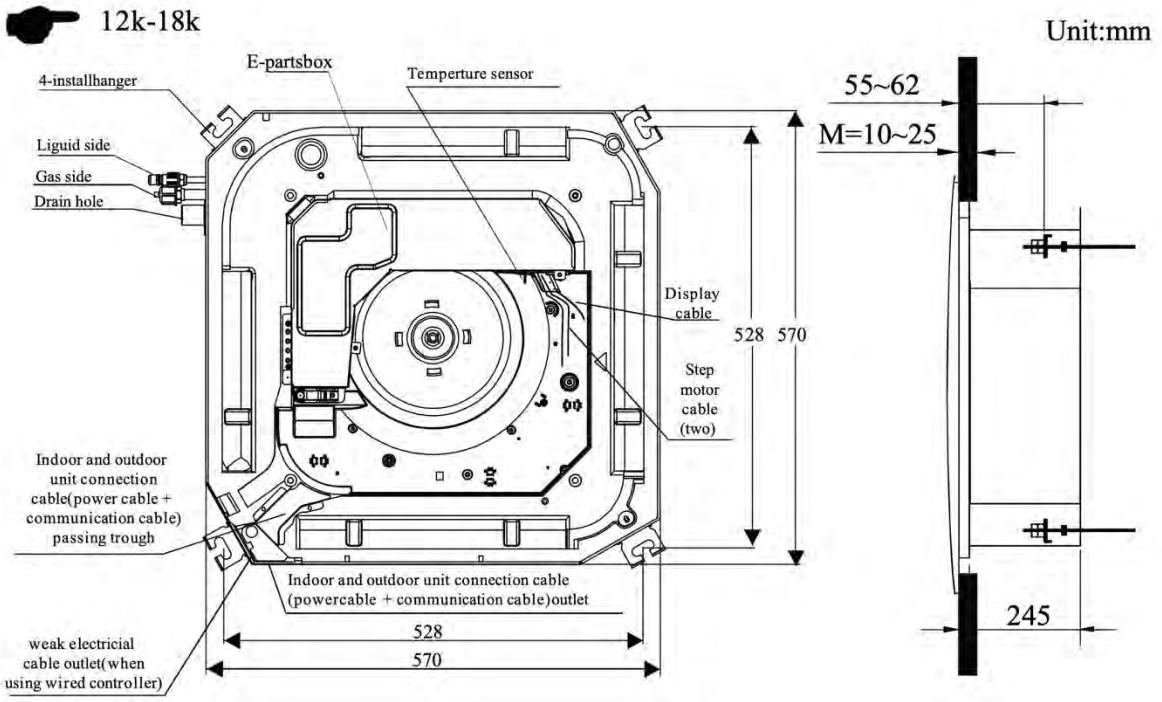
2.1 ODU Dimensions

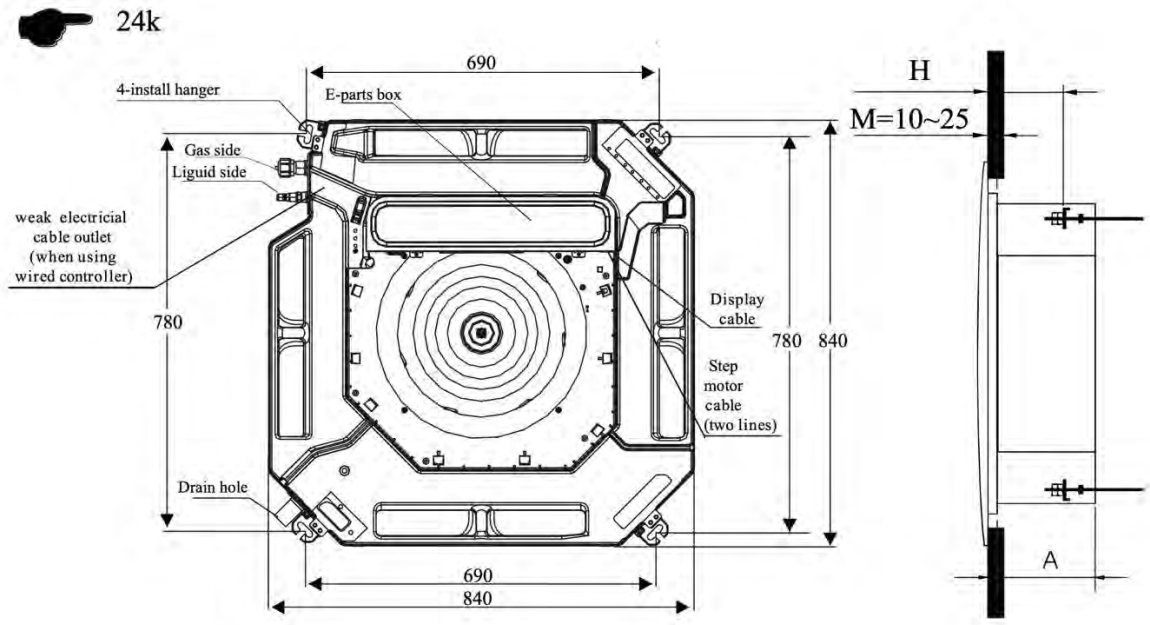


Outdoor Model	Outdoor Unit Dimensions inch (mm)	Mounting Dimensions inch (mm)	
	W x H x D	A	B
YN020GLSI24M2G	36½ x 27½ x 14¾ (927 x 699 x 375)	23⅛ (586)	13¾ (348)
YN030GLSI24M3G	38¾ x 31¾ x 16¼ (984 x 804 x 412)	23⅞ (607)	15⅜ (390)
YN040GLSI24M4G	43⅛ x 33¾ x 19⅜ (1,094 x 858 x 494)	26 (660)	18¼ (462)
YN050GLSI24M5G			

2.2 IDU Dimensions

Cassette



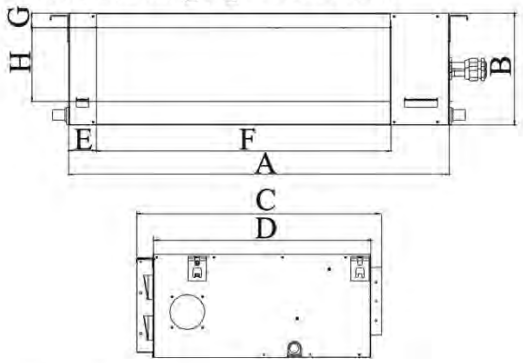


Dimensions **Unit: inch (mm)**

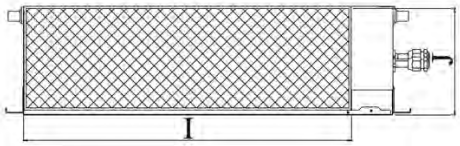
Model	A	H
9-18K	9⅝ (245)	5⅛ - 5¼ (130-135)
24K	9⅝ (245)	5⅛ - 5¼ (130-135)

Ductable Concealed

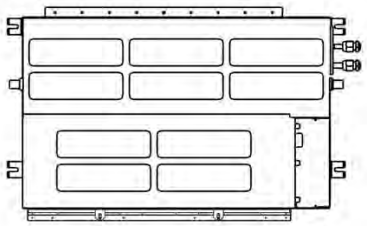
1.The positioning of elling hole,indoor unit and hanging screw bolts.



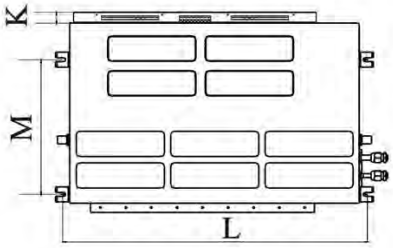
Air inlet size



Position size of descensional ventilation opening.



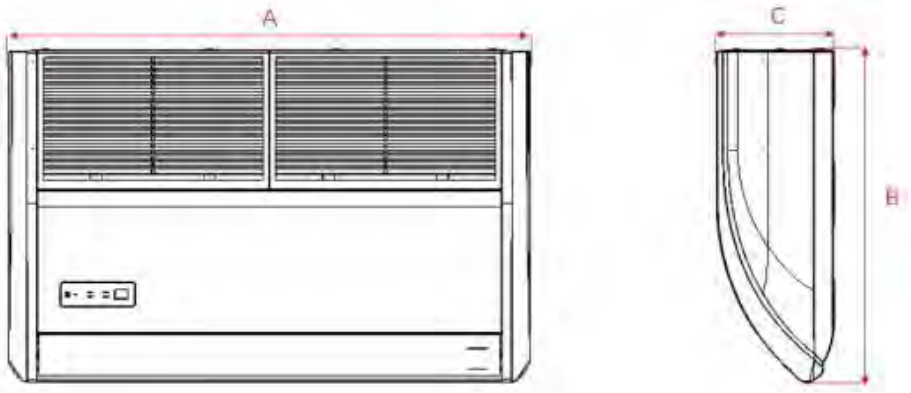
Size of mounted hook



Unit: inch (mm)

Model	Outline Dimension				Air Outlet Opening Size				Air Return Opening Size			Mounted Lug Size	
	A	B	C	D	E	F	G	H	I	J	K	L	M
9~12K	27⅝ (700)	7⅞ (200)	19¼ (490)	17¾ (450)	1¾ (45)	20⅛ (510)	¾ (17)	5½ (140)	23⅝ (600)	7⅜ (187)	1⅜ (35)	29⅛ (738)	11¾ (298)
18K	36¼ (920)	7⅞ (200)	19¼ (490)	17¾ (450)	1¾ (45)	28¾ (730)	¾ (17)	5½ (140)	32¼ (820)	7⅜ (187)	1⅜ (35)	37¾ (958)	11¾ (298)
24K	43¼ (1100)	7⅞ (200)	19¼ (490)	17¾ (450)	1⅛ (27)	36⅝ (930)	¾ (17)	5½ (140)	40⅝ (1030)	7¼ (183)	1⅜ (35)	37¾ (960)	14⅜ (365)

Floor-Ceiling Flex

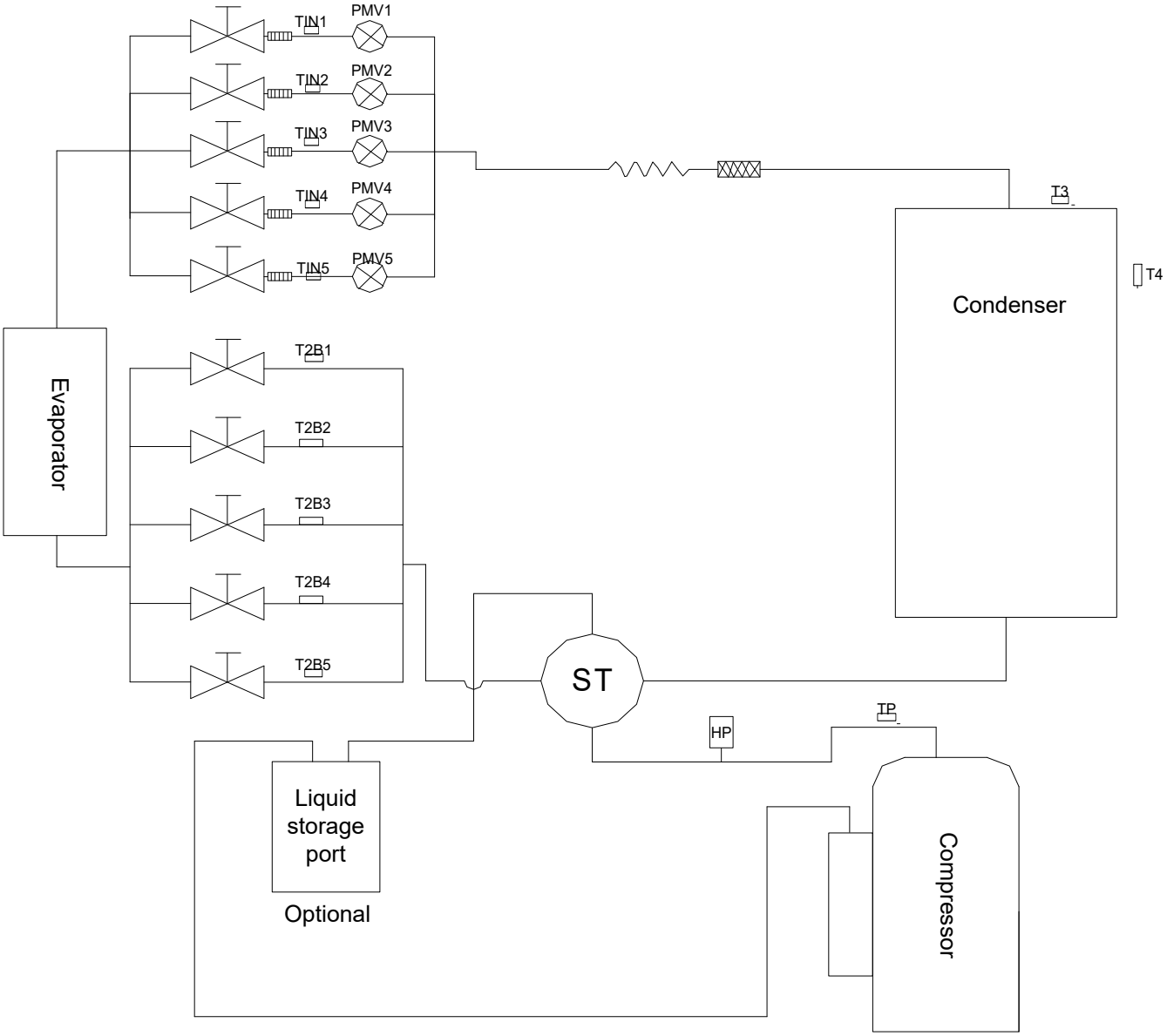


Unit: inch (mm)

Model	Indoor Unit		
	A	B	C
18K	41½ (1053)	26⅝ (675)	9¼ (235)
24K	41½ (1053)	26⅝ (675)	9¼ (235)

3. Refrigerant System Diagram

The schematic diagram of the Free Match Series Inverter Heat Pump System:
Reference: YN050GLSI24M5G

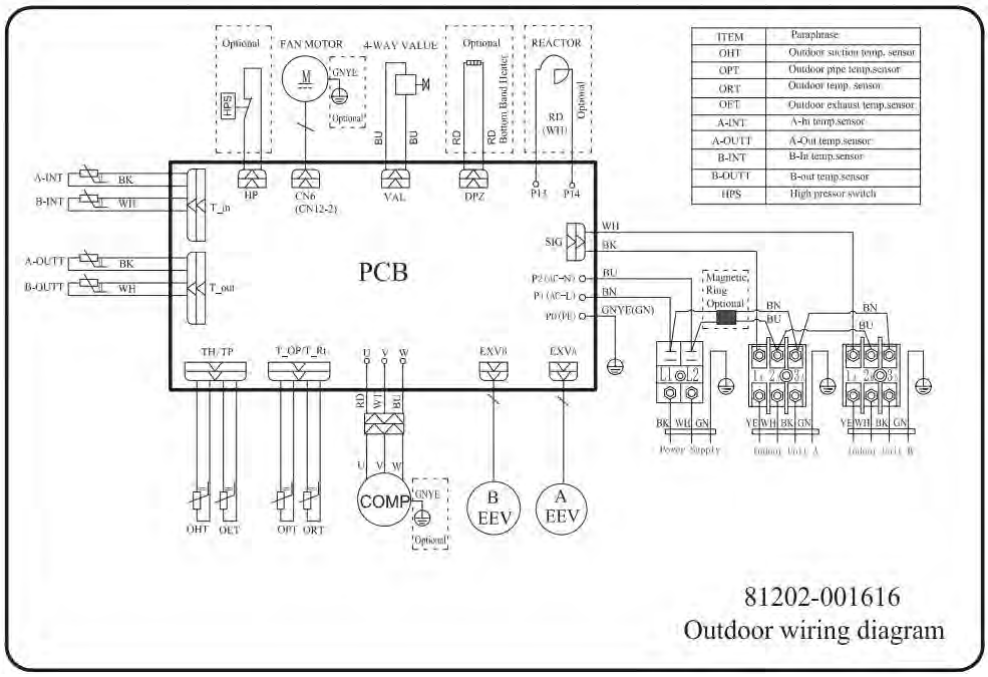


4. Electrical Parts

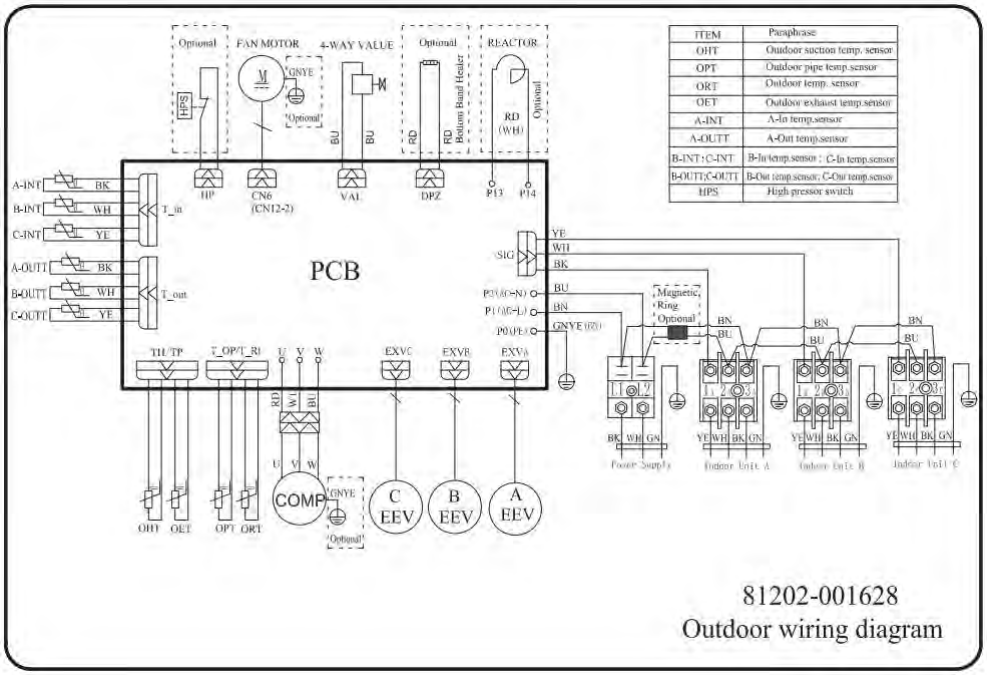
4.1 Wiring Diagram

Outdoor Unit

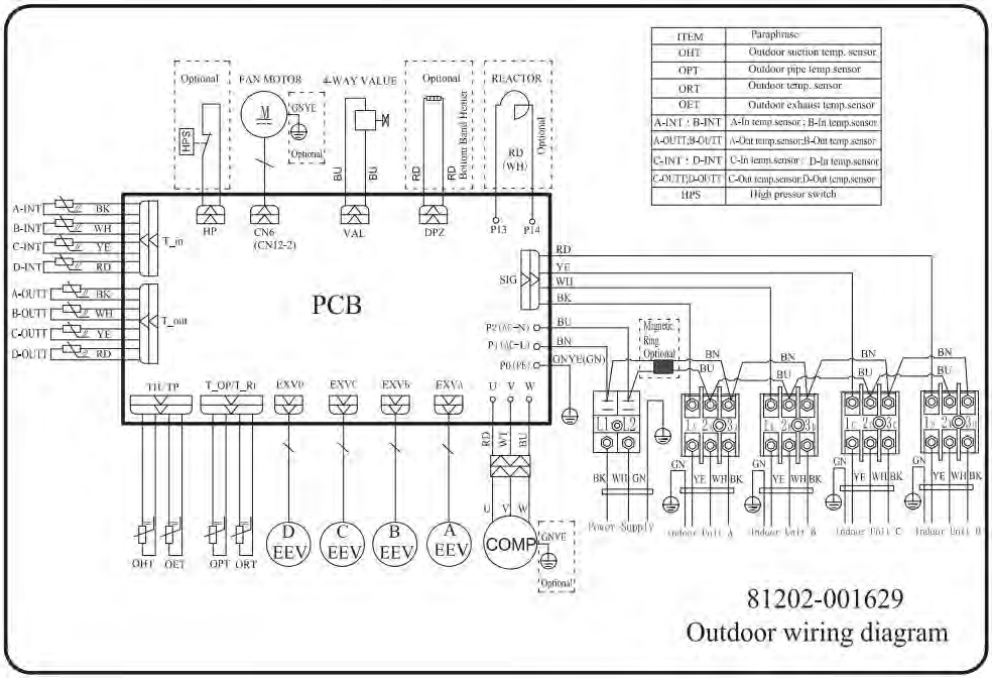
YN020GLSI24M2G



YN030GLSI24M3G



YN040GLSI24M4G



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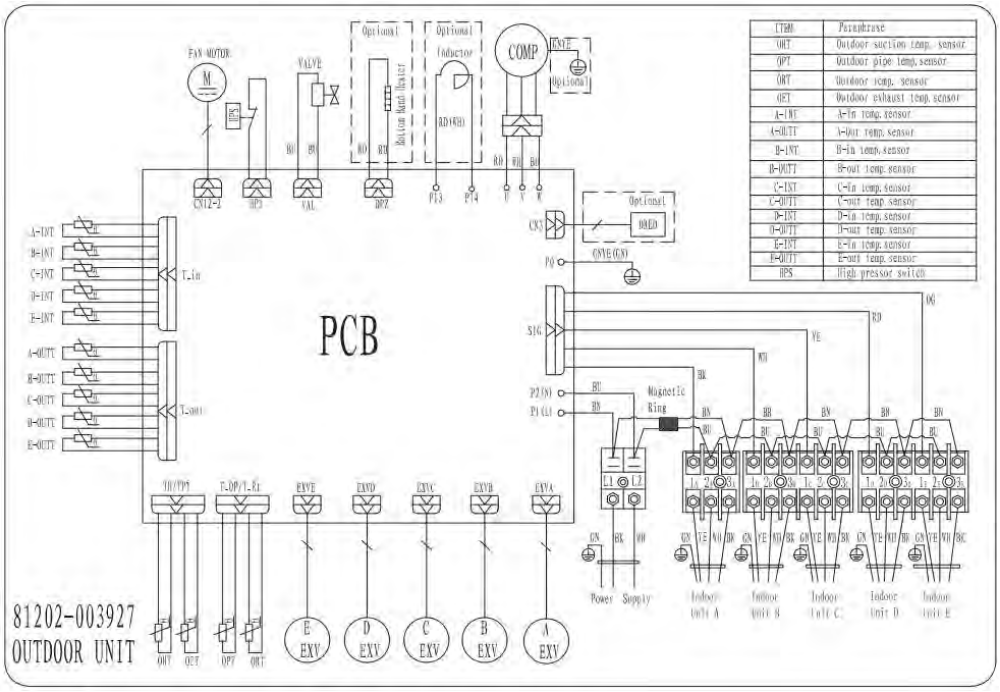
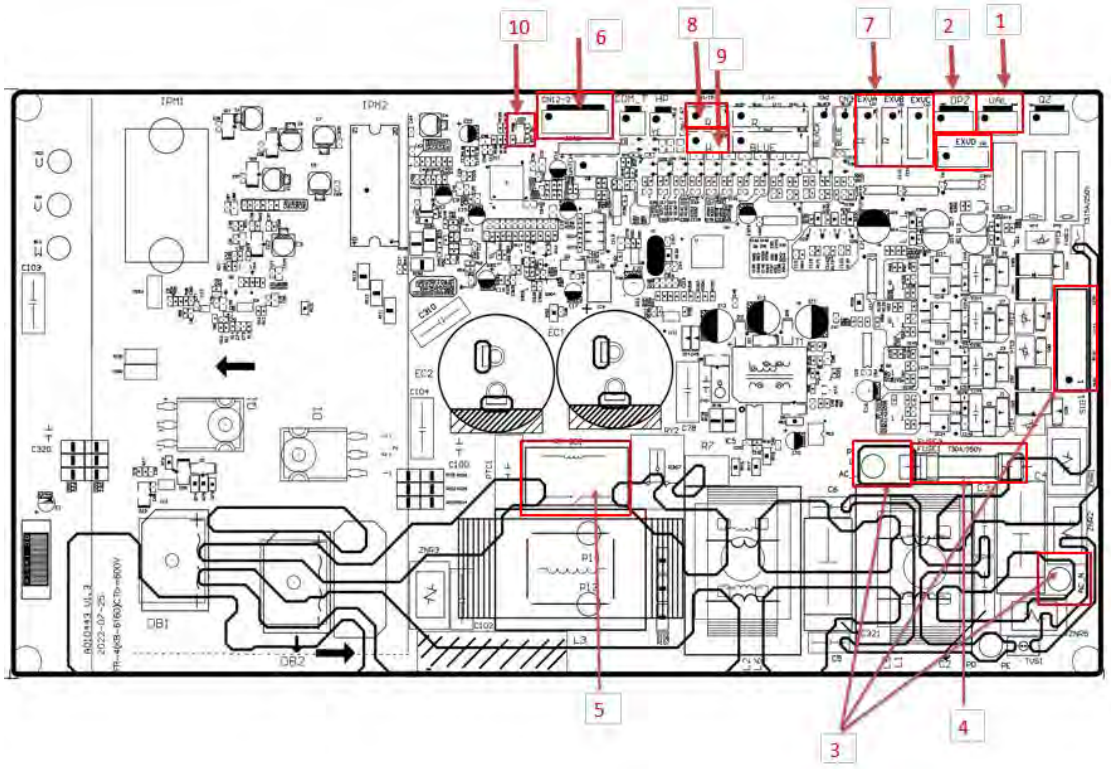


4.2 ODU PCB Printed Diagram

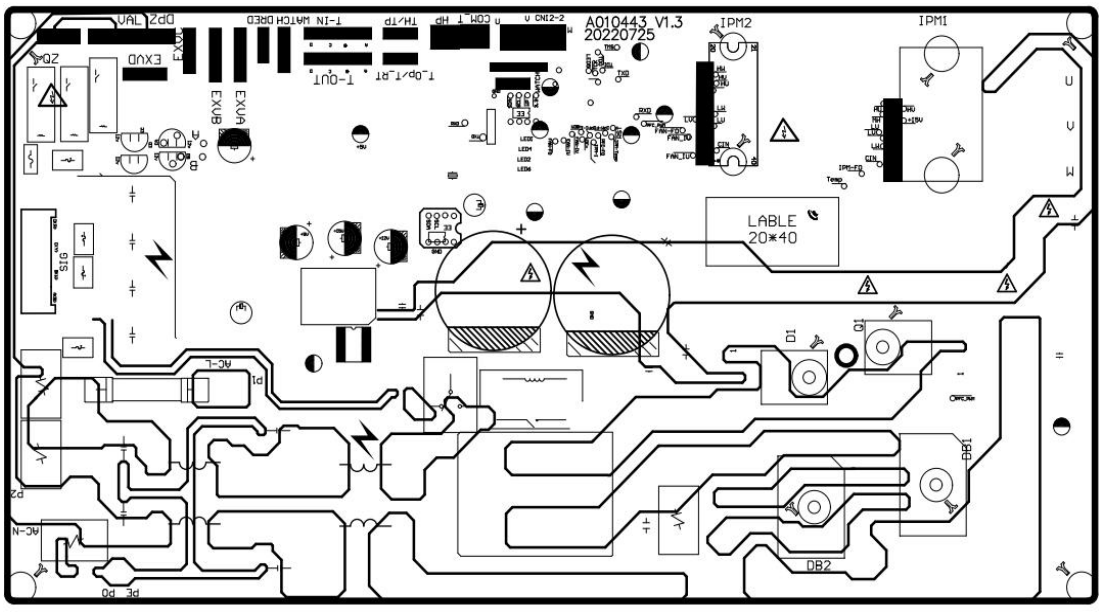
Model Numbers: YN020GLSI24M2G | YN030GLSI24M3G | YN040GLSI24M4G

Top view:



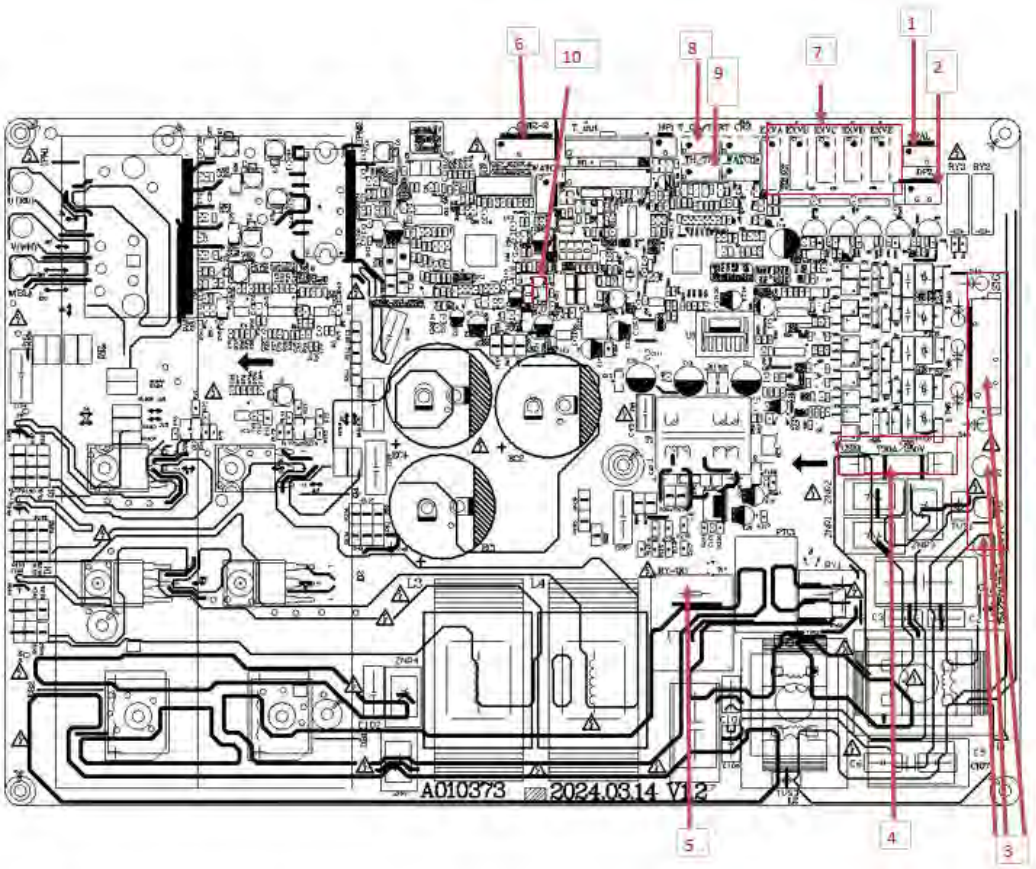
1	4-way valve
2	Heater
3	L, N and communication
4	Fuse
5	ODU PCB main relay
6	DC and AC motor connector
7	Discharge sensor connector
8	OAT/OPT sensor connector
9	LED5

Bottom view:



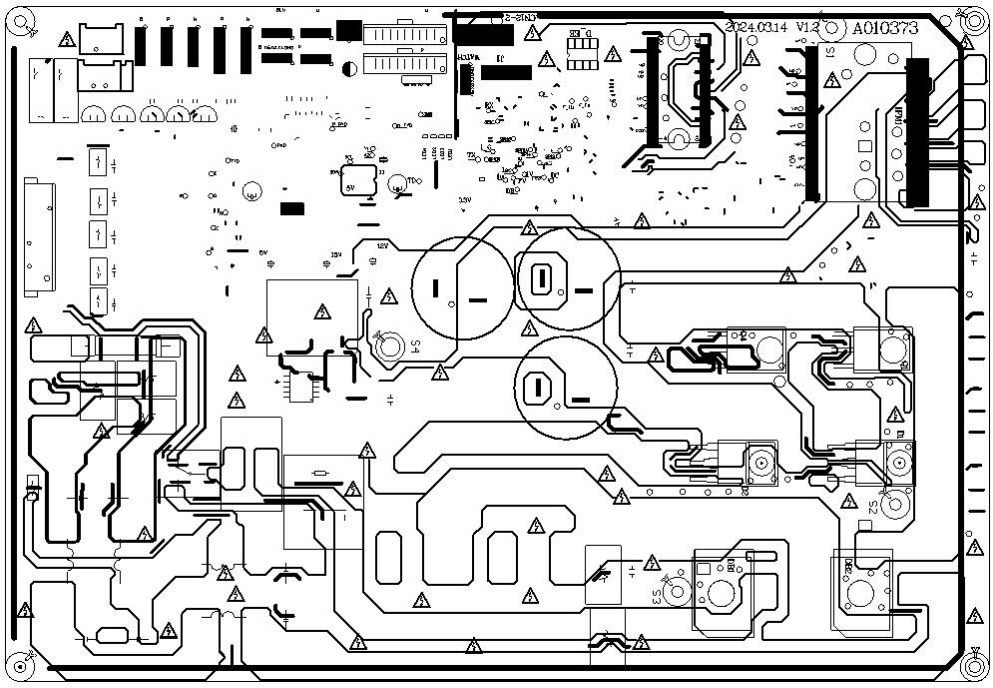
Model Numbers: YN050GLSI24M5G

Top view:



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

Bottom view:



4.3 Function and Control

1) Cooling Mode Operation

Compressor Frequency Control

According to the difference of the room temperature and set temperature (δt = RT-ST), the running frequency of the compressor is controlled by the electric controller.

When the room temperature is considerably higher than the set temperature, the compressor will start operating at a high frequency. As the room temperature decreases, the compressor running frequency will also decrease. When the room temperature is lower than the set temperature, the compressor will operate at a significantly low frequency.

In general, the unit will change its running frequency according to δt, adjusting the room temperature closer to the set temperature.

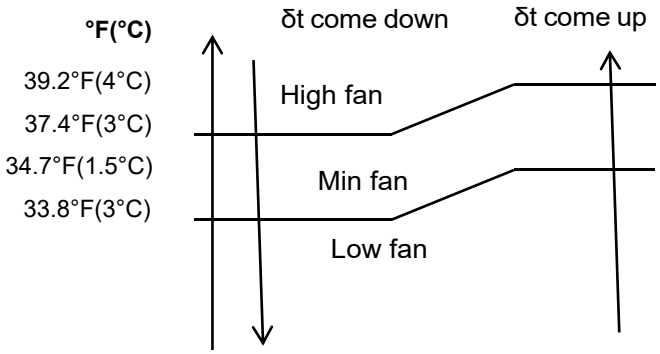
Outdoor Temperature Affects the Running Frequency of the Compressor

The outdoor temperature affects the running frequency of the compressor. The compressor's running frequency is adjusted based on the difference in the outdoor unit's inlet temperature. When the outdoor temperature is about 86°F(30°C), the compressor will operate in high frequency.

If the unit operates in Cooling mode and the outdoor temperature is less than 28.4°F(-2°C), the controller will shutdown the compressor and show the error code. When the ambient temperature is above 33.8°F(1°C), the compressor will automatically operate.

Auto Fan Control in Cooling Mode

In Cooling and Feel mode, the fan speed is determined by δt as the following diagram:



2) Dry Mode Operation

The system for Dry operation uses the same refrigerant circle as the Cooling operation.

When the system operates Dry mode, it begins by operating in Cooling mode. The set temperature is "RT 28.4° F(-2°C)". After, the system operates in Cooling mode with the lowest fan speed. During the duration of the operation, the remote controller cannot adjust the fan speed. However, the vane direction can be controlled.

In Dry mode, when RT≤53.6°F(12°C), the compressor stops and begins operating again at RT≥57.2°F(14°C).

3) Heating Mode Operation (Heat Pumps Only)

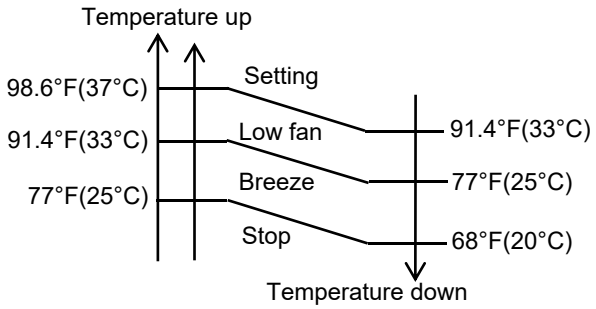
Frequency Control

Similarly to the frequency control in Cooling mode, the running frequency of the compressor is managed by the remote controller. The unit changes its running frequency according to **δt**, making the room temperature closer to the set temperature.

Indoor Fan Motor Control

Cold Air Prevention Control

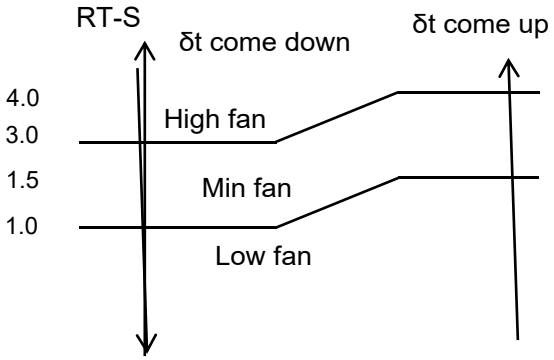
- This function is intended to prevent cold air from being discharged when Heating mode is selected or defrosting is occurring.
- The indoor fan speed will be controlled as the following:



- In the Heating operation, if the air conditioner is turned Off, the indoor fan motor will run for 30s after the compressor stops operating.

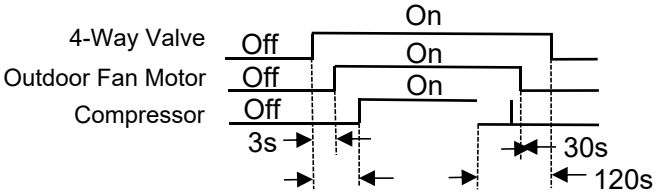
Auto Fan Control (Heating)

In Heating and Feel mode, the fan speed is determined by **δt** as the following:



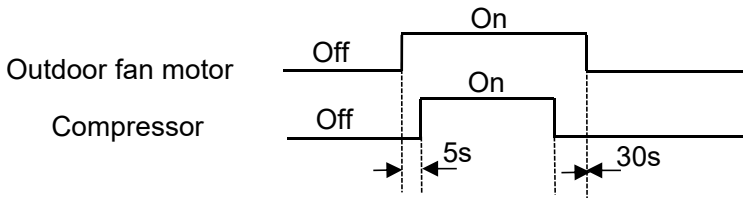
4-Way Valve Control

In Heating mode, the 4-way valve will power On 8s before the compressor and cut Off 2 min later than the compressor. The 4-way valve will not power On unless the machine is switched Off, the mode changes, or the defrosting process is active.



Outdoor Fan Motor Control

In Heating mode, the outdoor fan will power On 5s ahead of the compressor, and cut Off 30s later than the compressor.



Defrosting

Defrosting is controlled by the microprocessor.
When the unit operates for 30 min total, the compressor operation is more than 3 min continuously, and one of the following conditions are met, the unit will enter the Defrosting mode:

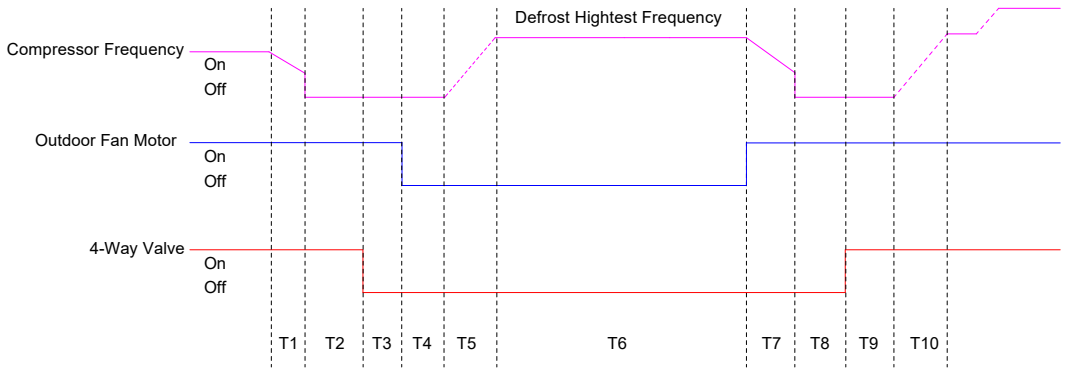
- When FrostDeg ≥ 23°F(-5°C) and OPT ≤ 23°F(-5°C), the .2 times defrosting interval time is 45 min.
- When 14°F(-10°C) ≤ FrostDeg < 14°F(-10°C) and OPT < FrostDeg, the .2 times defrosting interval time is 45 min.
- When 8.6°F(-13°C) ≤ FrostDeg < 14°F(-10°C) and OPT < FrostDeg, the .2 times defrosting interval time is 45 min.
- When 5°F(-15°C) ≤ FrostDeg < 8.6°F(-13°C) and OPT < FrostDeg, the .2 times defrosting interval time is 65 min.
- When 5°F(-15°C) ≤ FrostDeg < 14°F(-10°C) and OPT < FrostDeg, the .2 times defrosting interval time is 75 min.
- When FrostDeg < 5°F(-15°C) and OPT < 5°F(-15°C), the .2 times defrosting interval time is 75 min.

FrostDeg: C*OAT-α
OAT: Outdoor environment temperature

When OAT < 32°F(0°C), C = 0.8
When OAT ≥ 32°F(0°C), C = 0.6 α=8

Before the air con enters the Defrosting mode, the compressor running frequency drops down to a lower frequency first, then the compressor shuts down.

In Defrosting mode, all protection functions are available.



T	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
Times	Drop frequency or stop	50s	5s	5s	Rise frequency	2-11 min	Stop defrost	50s	10s	Rise frequency

In Defrosting mode, the LED display shows the mode by blinking.

Regardless of when the AC enters or exits Defrosting mode, the indoor fan motor speed remains the same as the Cold Air Prevention Control.

If one of the following conditions are met, the units exits Defrosting mode, and changes to Heating mode:

- Outdoor coil temperature (OPT) > 41°F(5°C) and maintains for 30s.
- Outdoor coil temperature (OPT) > 50°F(10°C) and maintains for 2s.
- Continues the defrosting operation for 11 min.

Indoor Exchanger Overheat Protection

If the indoor exchanger temperature (IPT) is higher than 129.2°F(54°C), the unit enters indoor exchanger overheat protection. The compressor drops its frequency.

If IPT ≥ 149°F(65°C) and maintains for 30s, the control system shuts down the compressor. The compressor recovers while the IPT drops less than 125.6°F(52°C).

4) Sleep Mode

When the "Sleep" button is pressed, the AC operates as the following:

- The indoor fan speed is set at low speed, the power and sleep lamps are On, and the display of the temperature will close after 30s.

- If the Cooling/Dry operation is selected with Sleep mode, the set temperature will raise by 33.8°F(1°C) 1 hour later and by 35.6°F(2°C) 2 hours later. After 3 hours, the set temperature will raise by 37.4°F(3°C) and remain for 2 hours. Then the set temperature increases by 35.6°F(2°C). After 1 hour, the set temperature remains.

- If the Heating operation is selected with Sleep mode, the step temperature will decrease by 33.8°F(1°C) 1 hour later and by 35.6°F(2°C) 2 hours later. After 3 hours, the step temperature will decrease by 37.4°F(3°C) and remain for 2 hours. Then the set temperature decreases by 35.6°F(2°C). After 1 hour, the set temperature remains.

5) Emergency Operation

Pressing the Emergency Operation switch activates different modes with distinct sound signals:
Cooling mode: A short "beep" sound.
Heating mode: Two short "beep" sounds.
Unit off: A long sound (approximately 3s).

If the unit is in emergency operation, when the unit receives the signal of the remote controller, the unit will only operate by the controller.

When the remote is missing or has no battery power, press the Emergency Operation switch on the front of the indoor unit for a function test.

Note: Do not press the Emergency Operation switch during normal operation.

6) Auto-Restart Function (Optional)

When the air conditioner is operating in one mode, all of its operation data will be memorized into the IC by the main PCB, such as the operation mode, preset temperature, etc. If the power supply is interrupted and then recovers, the Auto-Restart function will activate and the air conditioner will resume operation in its previous mode.

7) Auto-Restart Pre-Setting (Optional)

If the Auto-Restart function is needed, follow these steps to activate this function:

a. Pull the air-con's plug out of the socket.
b. Press and hold the emergency button (On/Off) on the indoor unit. Then insert the plug into the socket again.
c. Press and hold the emergency button for more than 10s until 3 short beeps are heard. The beeps indicate the Auto-Restart function has been activated.
d. During the operation, press the timer button 10 times in 8s to turn Off the Auto-Restart function.

8) Water Pump Control (Cassette and Duct Type)

When the unit operates in Cool or Dry mode, the water pump turns On. Once the compressor turns Off or changes to another mode, the water pump stops after 10 min. When the unit checks if the water level is full, the unit stops and displays the water full code. When full water protection is eliminated, the pump operates for 10 min and then turns Off. When the water pump switch is open for 8s continuously, the system will enter water full protection. When the water pump switch is On for 180s continuously, the water full protection stops.

9) Protection and Failure Display

- When the protection display is available, the remote controller will show an error code. The digital LED shows the error code and setting temperature by turns.
- If there is more than one failure, it will show error codes according to the error list sequence.
- To ensure the signal communication of the indoor and outdoor units, any failure code related to the outdoor unit will display for 2 min after it's recovered.
- The sensor failure can be recovered automatically after it becomes normal.

Protection Function

1) Mode Conflict Protection for the Indoor Units

When the setting mode is different for each indoor unit, the system runs in the following status:

A. The system mode is determined by the indoor unit that turns On first, except if the indoor unit is in Fan mode. Cooling/Drying mode conflicts with Heating mode.

B. If the first indoor unit is in Fan mode and the second indoor unit is in Cooling or Heating mode, then the system will run in Cooling or Heating mode.

2) Time Delay for Safety Protection

A. 3-min delay for the compressor: The compressor stops for 3 min before restarting in order to balance the pressure in the in the refrigeration cycle. The delay will protect the compressor.

B. 150s delay for the 4-way valve: The 4-way valve stops for 150s after the compressor delay, preventing the refrigerant-gas abnormal noise when the Heating operation is Off or switches to another operation.

3) Discharge Temperature Protection

A temperature sensor is located on the discharge pipe. When the temperature on the discharge pipe exceeds the limit of 239°F(115°C), the system control will shut down the compressor and the display board will show the error code.

4) Lower Voltage Protection

When AC voltage < 160V or DC voltage < 170V, the unit will shut down and recover while AC voltage < 255V or DC voltage < 390V.

5) Over-voltage Protection

When AC voltage > 275V or DC voltage > 400V, the unit will shut down and recover while AC voltage < 255V or DC voltage < 390V.

6) Overcurrent Protection

When the current of the outdoor unit is overloaded, the controller will drop the operation frequency or immediately shut down the unit and show the error code.

7) Condenser Temperature Protection

When the condenser temperature ≥ 149°F(65°C) and keeps for 10s, the air conditioner will shut down and show the error code. The air conditioner will recover while the condenser temperature < 125.6°F(52°C) and the compressor stops operating for 3 min.

8) IPM Module Protection

The IPM module has high-temperature and overcurrent protection. If there is signal feedback to the IPM, the outdoor unit will shut down. The LED display on the outdoor PCB will show the error code.

9) Evaporator Freeze Protection

When the evaporator temperature < 35.6°F(2°C), the controller will drop compressor operate frequency. When the evaporator temperature < 32°F(0°C) and maintains for 1 minute, the expand value of the unit will stop operating. When the entire operating unit enters freeze protection, the compressor will stop and recover.

5. Installation Manual

5.1 Installation for Service

1) Check the information in this manual to find out the dimensions of the space needed for proper installation of the device, including the minimum distances allowed compared to adjacent structures.

2) The appliance must be installed, operated, and stored in a room with a floor area larger than 13.1 ft (4m).

3) Keep the installation of the pip-work to a minimum.

4) Protect the pipe-work from physical damage. Do not install the pipe-work in a unventilated space if the area is small than 13.1 ft (4m).

5) Comply with the national gas regulations

6) Ensure the mechanical connections are accessible for maintenance purposes.

7) Follow the instructions given in this manual for handling, installing, cleaning, maintaining, and disposing of the refrigerant.

8) Ensure that the ventilation openings are clear of obstructions.

9) Notice: Only perform service as recommended by the manufacturer.

10) Warning: Store the appliance in a well-ventilated area where the room size corresponds to the room area specified for the operation.

11) Warning: Store the appliance in a room without continuously operating open flames, such as an operating gas appliance. In addition, store the appliance in a room without ignition sources, such as an operating electric heater.

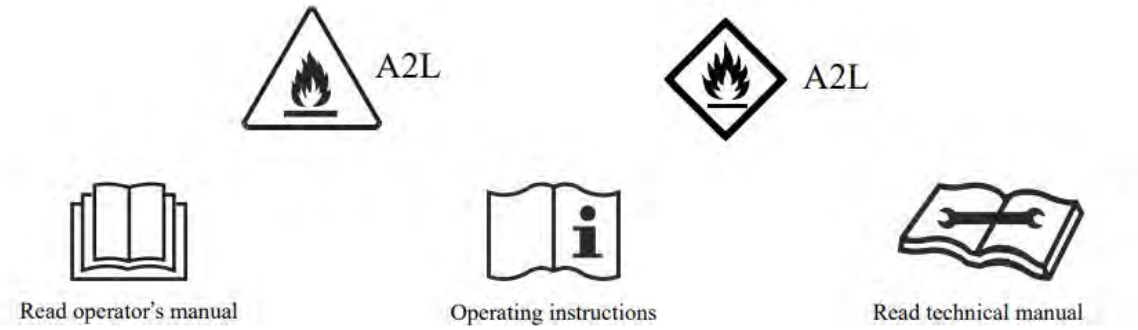
12) Store the appliance properly to prevent mechanical damage from occurring.

13) Individuals working on a refrigerant circuit must have a valid and up-to-date certificate from an assessment authority accredited by the industry, recognizing their competence in handling refrigerants. The individual's work on the refrigerant circuit must be in accordance with the assessment specifications. The service operations must be carried out in accordance with the recommendations of the equipment manufacturer. Maintenance and repair operations that require the assistance of other qualified individuals must be conducted under the supervision of the person competent in using flammable refrigerants.

14) Only competent individuals shall carry out working procedures that affect safety.

15) Warning:

- Do not use any means to accelerate the defrosting process or clean the frost. Follow the recommended guidelines from the manufacturer.
- Do not store the appliance in a room with continuously operating ignition sources, such as open flames, an operating gas appliance, or an operating electric heater.
- Do not pierce or burn the appliance.
- Keep in mind that refrigerants may not contain an odor.



16) Servicing Information:

Inspect the Area

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

Work Procedure

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

General Work Area

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

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

Fire Extinguisher

If you need to conduct hot work on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment must be available. Keep a dry powder or CO2 fire extinguisher adjacent to the charging area.

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

Well-Ventilated Area

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

Inspect the Refrigeration Equipment

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

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

Inspect the Electrical Devices

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

Initial safety checks must include the following:
--- Confirm the capacitors are discharged. Ensure this is done in a safe manner to avoid the possibility of sparking.
--- Ensure that no live electrical components and wiring are exposed while charging, recovering, or purging the system.
--- Confirm there is continuity of earth bonding.

17) Repairs to Sealed Components

During repairs to sealed components, disconnect all electrical supplies from the equipment being worked on prior to the removal of sealed covers, etc. If having an electrical supply to the equipment during service is necessary, use a permanently operating form if leak detection, which should be located at the most crucial point.

When working on electrical components, ensure the casing is not altered in a way that will affect the level of protection. This includes damage to cables, excessive number of connections, terminals not meeting the original specifications, damage to seals, incorrect fitting of glands, etc. Ensure that the seals or sealing materials have not degraded to the point of being unserviceable for preventing the ingress of flammable atmospheres. Replacement parts must be in accordance with the manufacturer's specifications.

Note: Using silicon sealant may inhibit the effectiveness of certain types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

18) Repairs to Intrinsically Safe Components

Do not apply permanent inductive or capacitive loads to the circuit unless they are within the equipment's permissible voltage and current limits. Intrinsically safe components are the only types of components that can be worked on while in the presence of a flammable atmosphere. The test apparatus must be at the correct rating. Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

19) Cabling

Ensure the cabling is protected from wear, corrosion, excessive pressure, vibrations, sharp edges, or any other adverse environmental effects. When checking the cable, take into account the effects of aging or continual vibrations from sources such as compressors or fans.

20) Detection of Flammable Refrigerants

Do not use potential sources of ignition to search for refrigerant leaks under any circumstances. Do not use a halide torch or any other detector using a naked flame.

21) Leak Detection Methods

The following leak detection methods are acceptable for systems containing flammable refrigerants.

Use the electronic leak detectors to detect flammable refrigerants. Ensure the electronic leak detector's sensitivity is properly calibrated. Calibrate the detection equipment in a refrigerant-free area. Confirm the detection equipment is not a potential ignition source and is suitable for the refrigerant being used. Set the leak detection equipment to a percentage of the refrigerant's LFL. Calibrate the detection equipment to the refrigerant employed. Confirm the appropriate percentage of gas (25% maximum).

Leak detection fluids are suitable to use with most refrigerants. However, avoid using detergents containing chlorine because the chlorine may react with the refrigerant and corrode the copper pipe-work. If a leak is suspected, extinguish all naked flames. If a leakage of refrigerant is found that requires brazing, recover all the refrigerant from the system, or isolate the refrigerant in a part of the system remote from the leak. Purge the oxygen free nitrogen (OFN) through the system before and during the brazing process.

22) Removal and Evacuation

When breaking into the refrigerant circuit to make repairs or perform other procedures, it is recommended to follow the best practices since inflammability is possible.

Complete the following procedure:
-- Remove the refrigerant.
-- Purge the circuit with inert gas.
-- Evacuate.
-- Purge the circuit again with inert gas.
-- Open the circuit by cutting or brazing.

Recover the refrigerant charge into the proper recovery cylinders. Flush the system with OFN to render the unit safe. This process may need to be repeated several times. Do not use compressed air or oxygen for this task.

Flushing procedure: Break the vacuum in the system with OFN. Continue filling until the working pressure is reached. Vent the system to the atmosphere. Finally, pull the system down to a vacuum.

Repeat this process until no refrigerant is within the system. When the final OFN charge is being used, vent the system down to atmospheric pressure to enable work to take place. This operation is important if brazing operations on the pipe-work are taking place. Ensure that the outlet for the vacuum pump is not close to any ignition sources and well-ventilated.

23) Decommissioning

Before carrying out this procedure, the technician must be completely familiar with the equipment and its details. It is recommended to safely recover the refrigerants. Before recovering the refrigerant, take an oil and refrigerant sample in case analysis is required for reusing reclaimed refrigerant. Ensure electrical power is available when completing this procedure.

-- Become familiar with the equipment and its operation.
-- Isolate the system electrically.
-- Before attempting the procedure, ensure the following:
- Mechanical handling equipment is available for handling refrigerant cylinders.
- All personal protective equipment is available.
- The recovery process is supervised throughout the procedure by a competent.
- Recovery equipment and cylinders conform to the appropriate standards.

-- Pump down the refrigerant system, if possible.
-- If vacuuming the system is not possible, make a manifold so that the refrigerant can be removed from various parts of the system.
-- Ensure the cylinder is situated on the scales before the recovery procedure begins.
-- Start the recovery machine and operate it in accordance with the manufacturer's instructions.
-- Do not overfill the cylinders. (No more than 80% volume liquid charge)
-- Do not exceed the maximum working pressure of the cylinder, even temporarily.
-- After the cylinders are filed correctly and the process is completed, promptly remove the cylinders and equipment from the site. Confirm the isolation valves on the equipment are closed off.
-- Do not charge the recovered refrigerant into another refrigeration system unless it has been cleaned and checked.

24) Labeling

Label the equipment stating that it has been de-commissioned and emptied of refrigerant. Ensure the label is dated and signed. Confirm the labels on the equipment state the equipment contains flammable refrigerant.

25) Recovery

When servicing or decommissioning the system, remove the refrigerant safely. When transferring refrigerant into cylinders, employ appropriate refrigerant recovery cylinders. Ensure that the correct number of cylinders for holding the total system charge are available. Only use cylinders designated for recovering refrigerant. The cylinder must include pressure-relief and shut-off valves. Empty recovery cylinder must be evacuated and cooled before recovering the refrigerant. The recovery equipment must be in good working order, and a set of instructions for its use must be readily available. The recovery equipment must be capable of recovering flammable refrigerants.

In addition, a set of calibrated weighing scales must be available. Hoses must be complete with leak-free disconnect couplings. Before using the recovery machine, confirm it functioning properly and has been maintained correctly. Also, confirm that any associated electrical components are sealed to prevent ignitions in the event of a refrigerant release. Consult the manufacturer if in doubt. Return the recovered refrigerant to the refrigerant supplier in correct recovery cylinder with the relevant waste transfer note arranged. Do not mix refrigerants in the recovery unit and cylinders.

Before removing the compressors or compressor oils, evacuate them to an acceptable level, ensuring the flammable refrigerant does not remain within the lubricant. Complete the evacuation process before returning the compressors to the suppliers. Only employ electric heating to the compressor body to accelerate the evacuation process. Safely drain the oil from system.

5.2 Installation Precautions

Important Considerations

- The air conditioner must be installed by professional personnel. The installation manual is only intended to be used by professional installation personnel. The installation specifications should be subject to our after-sale service regulations.
- When filing the combustible refrigerant, any rude operations may cause injuries to individuals and objects.
- Complete a leak test after the installation is finished.
- Perform the safety inspection before maintaining or repairing an air conditioner using combustible refrigerant, ensuring that the risk of fire is reduced.
- Operate the machine under a controlled procedure in order to minimize the risk posed by combustible gas or vapor.
- Refer to the tables below for the total weight of refrigerant and the required room area for air conditioner installation.

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
R454B	0.296	1	0.6	1.04	1.48	2.11	2.44	2.99	3.86
		1.8	1.1	1.86	2.66	3.81	4.39	5.38	6.95
		2.2	1.3	2.28	3.26	4.65	5.37	6.58	8.49
		2.5	1.5	2.59	3.70	5.28	6.10	7.47	9.65

Table GG.2 - Minimum room area (m^2)

Category	LFL(kg/m^3)	h_0(m)	Charge amount (M) (kg) Minimum room area (m^2)						
			1.224kg	1.836kg	2.448kg	3.672kg	4.896kg	6.12kg	7.956kg
R454B	0.296	0.6	/	31	56	126	223	349	590
		1	/	12	20	45	80	126	212
		1.8	/	7	9	14	25	39	66
		2.2	/	6	8	11	17	26	44

Installation Safety Principles

1. Site Safety

Open Flames Prohibited

Ventilation Necessary

2. operation safety

Mind Static Electricity

Must wear protective clothing and anti-static gloves

Don`t use mobile phone

Installation Safety

● Refrigerant Leak Detector ● Appropriate Installation Location		The left picture is the schematic diagram of a refrigerant leak detector.

Caution:

- Installation should occur in a well-ventilated location.
- When using refrigerant R454B during installation or maintenance, the location should be free from open fire, welding, smoking, drying oven, or any other goods with temperatures higher than 548°F(286.7°C).
- Appropriate anti-static measures, such as wearing anti-static clothing and gloves, are necessary when installing the appliance.
- Select a location where the indoor and outdoor units' air inlets and outlets are unobstructed. Ensure the air inlets and outlets of the indoor unit are even.
- Ensure the location is not near heat sources or a combustible/explosive environment.
- 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 min until the refrigerant leaks completely. If the product is damaged, carry it back to the maintenance station. Welding the refrigerant pipe or conducting other operations on the user's site is prohibited.

Suggested Tools

Tool	Picture	Tool	Picture	Tool	Picture
Standard Wrench		Pipe Cutter		Vacuum Pump	
Adjustable/ Crescent Wrench		Screw drivers (Phillips & Flat blade)		Safety Glasses	
Torque Wrench		Manifold and Gauges		Work Gloves	
Hex Keys or Allen Wrenches		Level		Refrigerant Scale	
Drill & Drill Bits		Flaring tool		Micron Gauge	
Hole Saw		Clamp on Amp Meter			

Safety Rules and Recommendations for the Installer

- Read this guide before installing and using the appliance.
- During the installation of the indoor and outdoor units, restrict children from accessing the working area. Unforeseeable accidents may occur.
- Confirm that the base of the outdoor unit is firmly fixed.
- Ensure that air cannot enter the refrigeration system. Check for refrigerant leaks when moving the air conditioner.
- Complete a test cycle after installing the air conditioner. Record the operating data.
- Protect the indoor unit with a fuse of appropriate capacity for the maximum input current or with another overload protection device.
- Ensure that the main voltage corresponds to the value stamped on the rating plate. Keep the switch or power plug clean. Correctly insert the power plug into the socket, avoiding the risk of electric shock or fire due to insufficient contact.
- Confirm the socket is suitable for the plug.
- The appliance must be fitted with a means for disconnection from the main power supply, featuring contact separation in all poles to provide full disconnection under "Over Voltage Category III" conditions. These means must be incorporated in the fixed wiring in accordance with the wiring rules.
- The air conditioner must be installed by professional or qualified individuals.
- Do not install the appliance within 19.7 inch (50 cm) of inflammable substances (alcohol, etc.) or pressurized containers (spray cans, etc.).
- If the appliance is used in unventilated areas, take precautions to prevent refrigerant gas leaks and the risk of fire.
- The packaging materials are recyclable and should be disposed of in separate waste bins. When the air conditioner reaches the end of its useful life, bring it to a special waste collection center for disposal.
- Only use the air conditioner as instructed in this booklet. These instructions are not intended to cover every possible condition and situation. As with any electrical household appliance, common sense and caution are recommended for installation, maintenance, and operation.
- Install the appliance in accordance with applicable national wiring regulations.
- Before accessing the terminals, disconnect all the power circuits from the power supply.
- If the appliance is being used by children ages 8 and older or individuals with reduced physical, sensory, mental capabilities, or lack of experience and knowledge, supervision or instruction must be given. Ensure children do not interact with the appliance. Children should not clean or perform maintenance on the appliance.
- Do not install the air conditioner alone. Always contact specialized technical personnel.
- Cleaning and maintenance must be carried out by specialized technical personnel. Disconnect the appliance from the main electricity supply before carrying out any cleaning or maintenance.
- Do not pull out the plug to switch Off the appliance when it's in operation because this could create a spark causing a fire.

- This appliance has been made for domestic air conditioning environments. Do not use the appliance for any other purpose, such as drying clothes, cooling food, etc.
- To prevent dust and waste accumulation, always use the appliance with the air filter mounted. Operating the appliance without the filter may lead to malfunctions.
- The user is responsible for having the appliance installed by a qualified technician, who must check that the earthing/grounding is done in accordance with current legislation. The technician must also insert a thermos magnetic circuit breaker.
- The batteries in the remote controller must be recycled or disposed of properly. In regards to the disposal of scrap batteries, discard the batteries as sorted municipal waste at the accessible collection point.
- Prolonged and direct exposure to the air conditioner's cold air could be dangerous for your health. Take particular care in rooms where there are children, old or sick people.
- If the appliance gives off smoke or there is a burning smell, immediately cut Off the power supply and contact the Service Center.
- Prolonged use of the device in such conditions could cause fire or electrocution.
- Repairs must be carried out by an authorized Service Center of the manufacturer. Incorrect repairs could expose the user to the risk of electric shock, etc.
- Unhook the automatic switch if you foresee not using the device for a long period of time. Adjust the airflow direction properly.
- Direct the flaps downwards in Heating mode and upwards in Cooling mode.
- Ensure that the appliance is disconnected from the power supply when it will remain inoperative for a long period. The appliance should also be disconnected when carrying out cleaning or maintenance.
- Selecting the most suitable temperature can prevent damage to the appliance.

Safety Rules and Prohibitions

- Do not bend, tug, or compress the power cord because this could cause damage. A damaged power cord can possibly cause electrical shocks or fire. Only specialized technical personnel can replace a damaged power cord.
- Do not use extensions or gang modules.
- Avoid touching the appliance while barefoot or when any of your body is wet or damp.
- Do not obstruct the air inlet and outlet of the indoor or outdoor units. Obstructions in the inlet or outlet can reduce the efficiency of the air conditioner. Consequent failures or damages are possible as well.
- Do not alter the characteristics of the appliance.
- Do not install the appliance in an environment where the air could contain gas, oil, or sulfur. In addition, do not install the appliance near sources of heat.
- The appliance is not intended for use by individuals (including children) with reduced physical, sensory, or mental capabilities, or those lacking of experience and knowledge, unless they have been given supervision or instruction by a person responsible for their safety.
- Do not climb onto or place any heavy or hot objects on top of the appliance.
- Do not leave windows or doors open for long periods of time when the air conditioner is operating.
- Do not direct the airflow onto plants or animals.
- Prolonged and direct exposure to the air conditioner's cold air could negatively impact plants and animals.
- Do not put the air conditioner in contact with the water. The electrical insulation could be damaged, causing electrocution.
- Do not insert a stick or similar object into the appliance. This may cause injury.
- Children must be supervised to ensure they do not interact with the appliance.
- If the supply cord is damaged, it must be replaced by the manufacturer, service agent, or similarly qualified individual in order to avoid hazards.

5.3 Installation Preparation

Notes for Installation and Maintenance

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.
- All installation and maintenance must be performed by a distributor or qualified person.
- All electric work must be performed by a licensed technician according to local regulations and instructions given in this manual.
- Be cautious during installation and maintenance. Prohibit incorrect operations to prevent electric shock, casualty, and other accidents.
- Use the flammable gas detector to check the area before unloading and opening the container.
- No fire sources and smoking.

Warnings
Electrical Safety Precautions

- Turn Off the air conditioner's power supply before checking and starting maintenance.
- The air conditioner must apply a specialized circuit. Prohibit sharing the same circuit with other appliances.
- The air conditioner should be installed in a suitable location. Ensure the power plug is touchable.
- Make sure each wiring terminal is connected firmly during installation and maintenance.
- Have the unit adequately grounded. The grounding wire can't be used for other purposes.
- Apply protective accessories such as protective boards, cable-cross loops, and wire clips.
- The live, neutral, and grounding wires of the power supply must correspond to the live, neutral, and grounding wires of the air conditioner.
- The power cord and power connection wires can't be pressed by hard objects.
- If the power cord or connection wire is broken, it must be replaced by a qualified person.
- 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.
- For air conditioners without plugs, an air switch must be installed in the circuit. The air switch should be all-pole parting and the contact parting distance should be more than 0.1 inch (3 mm).
- Confirm all the wires and pipes are connected properly and the valves are opened before energizing.
- Check if there is electric leakage on the unit body. If yes, eliminate the electric leakage.
- 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.
- If installing the unit in a humid place, a circuit breaker must be installed.

Risk of Fire Safety Precautions
Warning - Risk of fire due to the flammable refrigerant used

- Repairs must only be conducted by trained service personnel. Do not puncture the refrigerant tubing.
- Dispose of materials properly in accordance with federal or local regulations.
- Consult the repair manual/owner's guide before attempting to service this product. All safety precautions must be followed.
- Follow handling instructions carefully in compliance with national regulations.

Selection of the Installation Location

Installation Safety Precautions

- Select the installation location according to the requirements of this manual. (See the requirements in the Installation section).

- Handle unit transportation with care. The unit should not be carried by only 1 person if it is more than 44 lbs (20kg).

- When installing the indoor and outdoor units, a sufficient fixing bolt must be installed, ensuring the installation supporter is firm.

- Wear a safety belt if the working height is above 7 ft (2m).

- Use equipped or appointed components during installation.

- Make sure no foreign objects are left in the unit after finishing installation.

Improper installation may lead to fire hazard, explosion, electric shock, or injury.

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

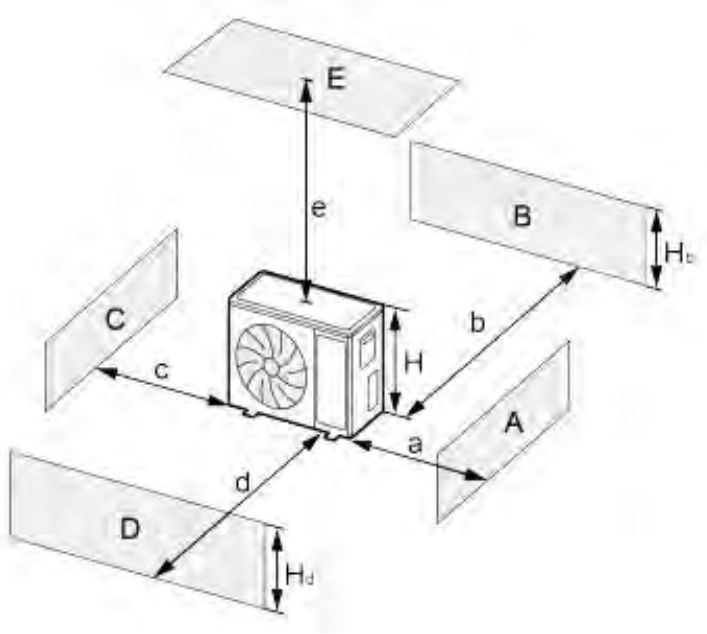
Warning!
1) Install the indoor unit in a location that can withstand a load of at least five times the weight of the main unit and that will not amplify sound or vibration.
2) If the installation location is not strong enough, the indoor unit may fall and cause injuries.
3) If the job is done with the panel frame only, there is a risk that the unit will become loose.

Unit Installation Space and Location

Installation Space and Outdoor Unit Location Diagram

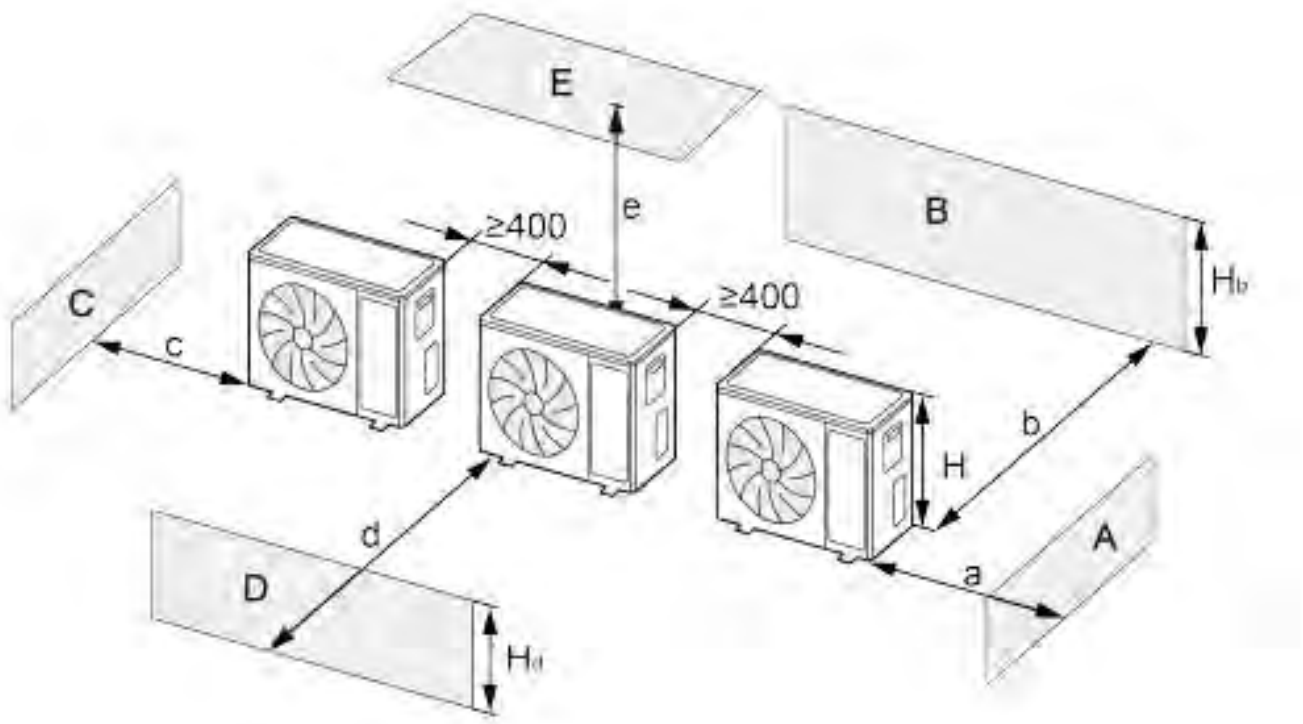
Notice: For the best performance of the outdoor unit, ensure its installation space conforms to the following installation dimensions.

1) One outdoor unit installed



A~E	Hb / Hd / H		inch (mm)				
			a	b	c	d	e
B	——		——	≥ 3⅞ (100)	——	——	——
A, B, C	——		≥ 11¾ (300)	≥ 3⅞ (100)	≥ 3⅞ (100)	——	——
B, E	——		——	≥ 3⅞ (100)	——	——	≥ 39⅜ (1000)
A, B, C, E	——		≥ 11¾ (300)	≥ 5⅞ (150)	≥ 5⅞ (150)	——	≥ 39⅜ (1000)
D	——		——	——	——	≥ 39⅜ (1000)	——
D, E	——		——	——	——	≥ 39⅜ (1000)	≥ 39⅜ (1000)
B, D	Hb<Ha	Hd>H	——	≥ 3⅞ (100)	——	≥ 39⅜ (1000)	——
	Hb>Hd	Ha<H	——	≥ 3⅞ (100)	——	≥ 39⅜ (1000)	——
B, D, E	Hb<Ha	Hb≤1/2H	——	≥ 9¾ (250)	——	≥ 78¾ (2000)	≥ 39⅜ (1000)
		1/2H<Hb≤H	——	≥ 9¾ (250)	——	≥ 78¾ (2000)	≥ 39⅜ (1000)
		Hb>H	Prohibited				
	Hb>Ha	Ha≤1/2H	——	≥ 3⅞ (100)	——	≥ 78¾ (2000)	≥ 39⅜ (1000)
		1/2H<Hd≤H	——	≥ 7⅞ (200)	——	≥ 78¾ (2000)	≥ 39⅜ (1000)
		Hd>H	Prohibited				

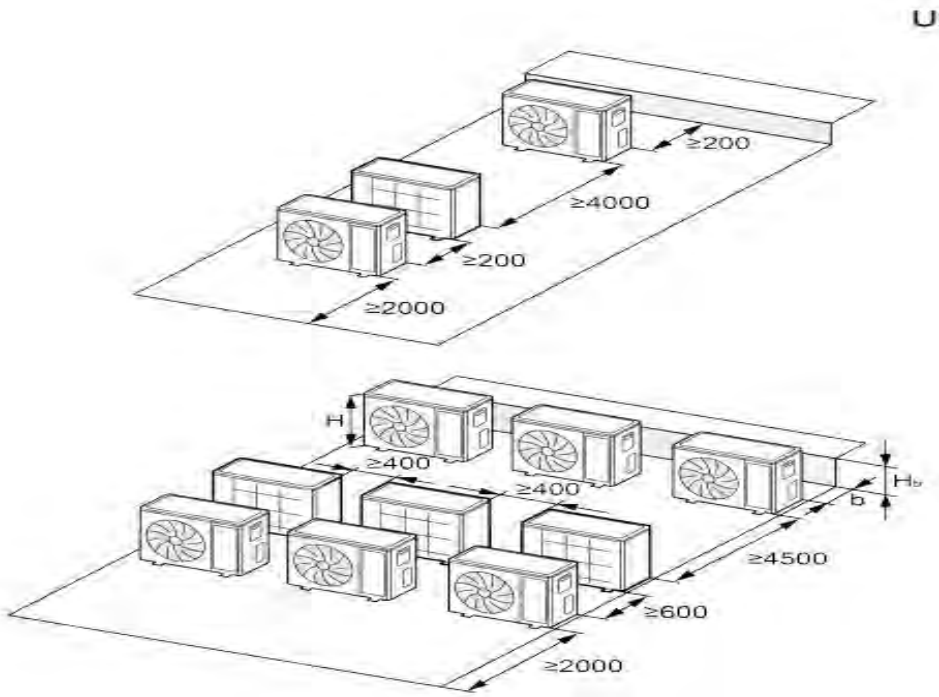
2) Two or more outdoor units installed side-by-side.



A~E	Hb / Hd / H		inch (mm)				
			a	b	c	d	e
A, B, C	——		≥ 11¾ (300)	≥ 11¾ (300)	≥1000	——	——
A, B, C, E	——		≥ 11¾ (300)	≥ 11¾ (300)	≥1000	——	≥ 39⅜ (1000)
D	——		——	——	——	≥ 78¾ (2000)	——
D, E	——					≥ 78¾ (2000)	≥ 39⅜ (1000)
B, D	Hb<Ha	Hd>H	——	≥ 11¾ (300)	——	≥ 78¾ (2000)	——
	Hb>Ha	Hd≤1/2H	——	≥ 9¾ (250)	——	≥ 78¾ (2000)	——
		1/2H<Hd≤H	——	≥ 11¾ (300)	——	≥ 98⅜ (2500)	——
B, D, E	Hb<Ha	Hb≤1/2H	——	≥ 11¾ (300)	——	≥ 78¾ (2000)	≥ 39⅜ (1000)
		1/2H<Hb≤H	——	≥ 11¾ (300)	——	≥ 98⅜ (2500)	≥ 39⅜ (1000)
		Hb>H	Prohibited				
	Hb>Ha	Hd≤1/2H	——	≥ 9¾ (250)	——	≥ 98⅜ (2500)	≥ 39⅜ (1000)
		1/2H<Hd≤H	——	≥ 11¾ (300)	——	≥ 98⅜ (2500)	≥ 39⅜ (1000)
		Hd>H	Prohibited				

3) Outdoor units installed in rows.

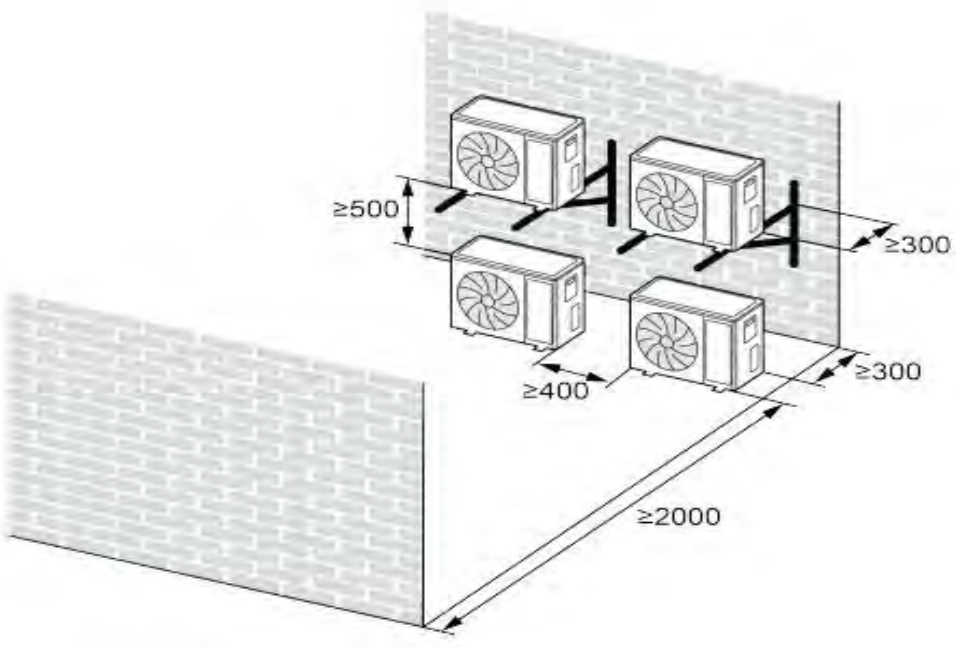
Unit: mm



Hb/H	inch (mm)
Hb≤1/2H	b≥ 9¾ 250
1/2H<Hb≤H	b≥ 11¾ 300
Hb>H	Prohibited

4) Outdoor units installed one above another.

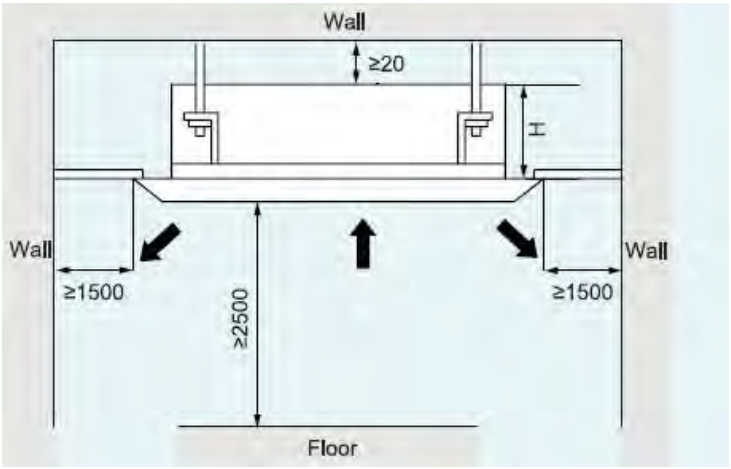
Unit: mm



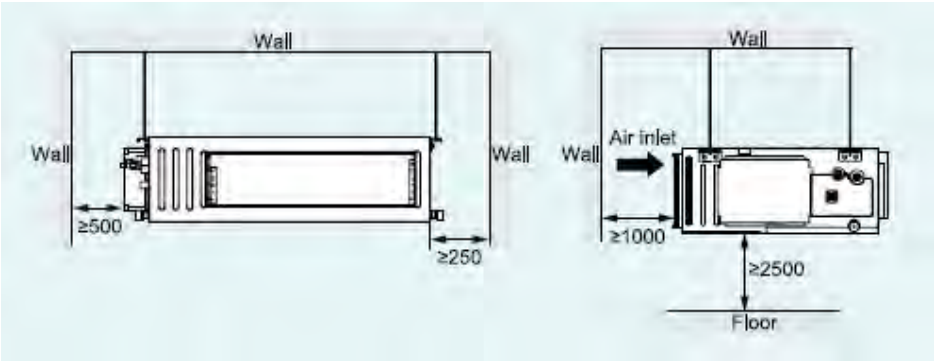
Installation Space and Indoor Unit Location Diagram

Notice: For the best performance of the indoor unit, ensure its installation space conforms to the following installation dimensions.

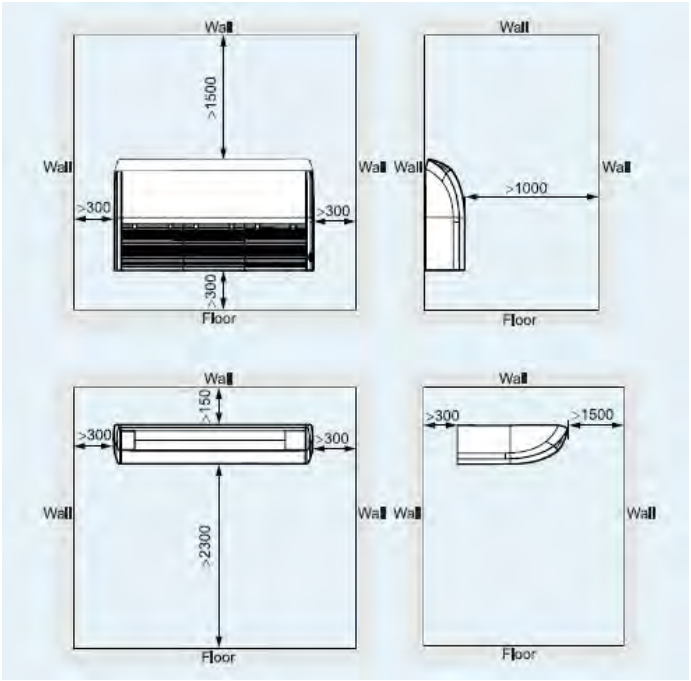
1. Cassette



2. Duct



3. Ceiling Floor



5.4 Unit Installation

Indoor Unit Installation

A. Cassette

Preparation Work on the Ceiling:

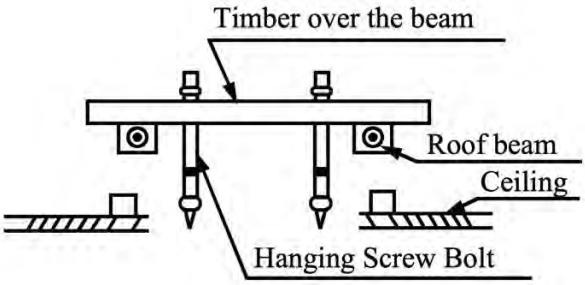
- The installation height between the ceiling and floor must be greater than 8.2 ft (2.5m).
- Change the installation method based on the construction structure. Consult professionals for detailed information.
- After opening a hole, the ceiling should be horizontal and strong to prevent vibrations. Cut the beams at the hole and remove them. Reinforce the beams that have been cut, as well as the beams fixing the ceiling.

Installation of the Hanging Screw Bolt
Use a bolt with a M10 whorl. The center distance between the bolts is decided by the size of the unit.

Use the following installation procedure:

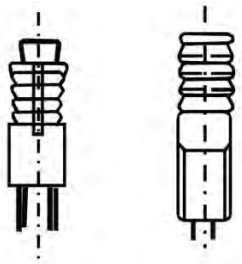
Wooden Construction

Put the square timber over the roof beam, then install the hanging screw bolts.



For Finished Concrete Bricks

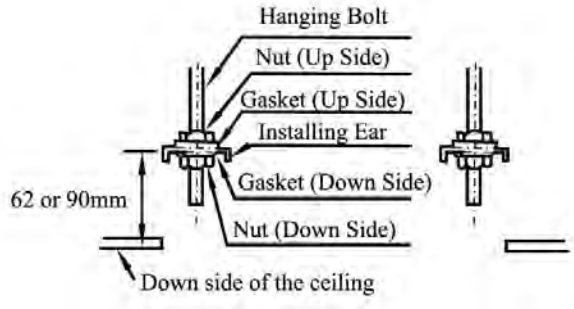
Install the hanging hook with an expansible bolt into the concrete. Install the hanging hook 1.8-2 inches (45~50mm) deep to prevent it from loosening.



Overhanging the Indoor Unit

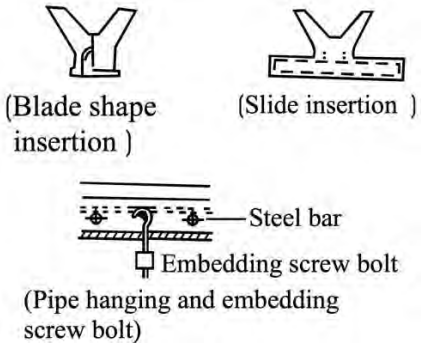
Cassette: Adjust the gasket (downside) to 3.5 inches (90mm) over the ceiling.

Compact cassette: Adjust the gasket (downside) to 2.4 inches (62mm) over the ceiling.



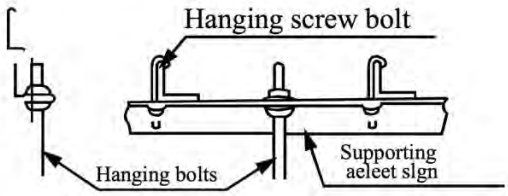
New Concrete Bricks

Inlay or embed the screw bolts.

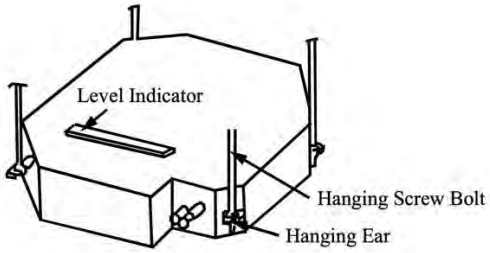


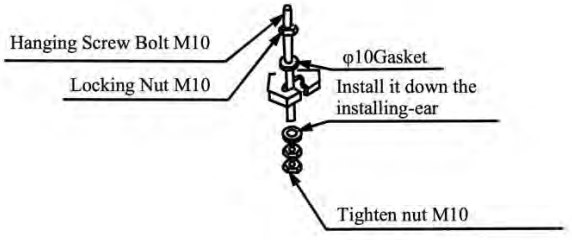
Steel Roof Beam Structure

Install the supporting angle steel.



Install the hanging bolt into the T groove of the hanging tool. Overhang the indoor unit and ensure it's leveled using a level indicator.



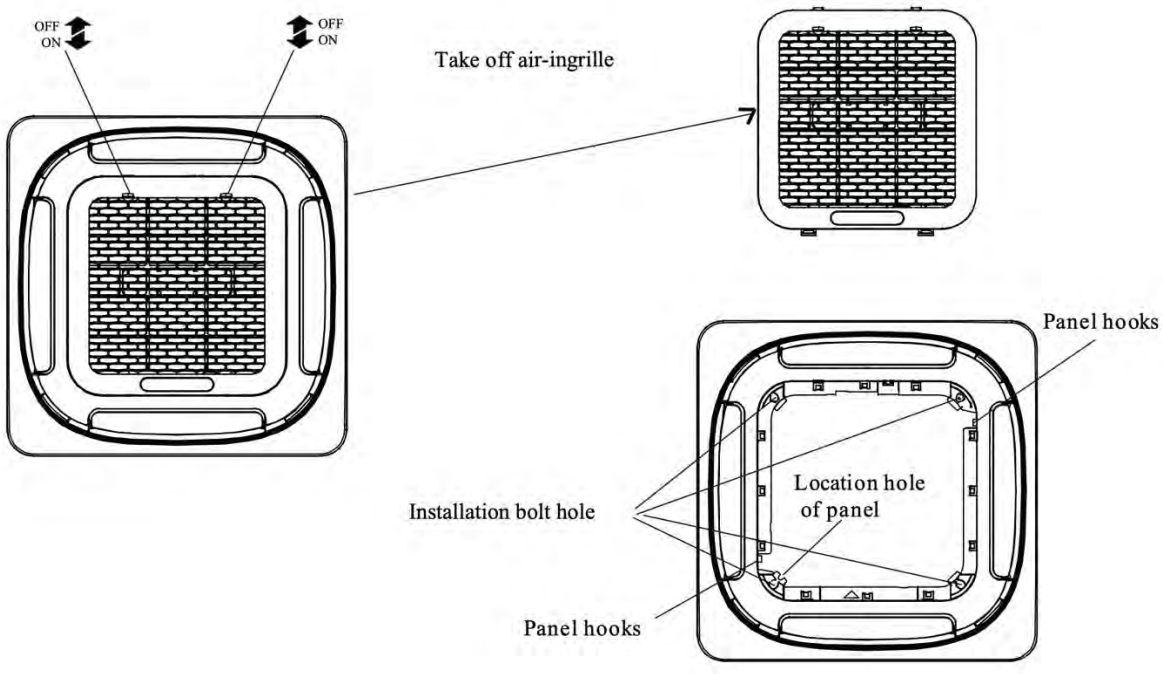


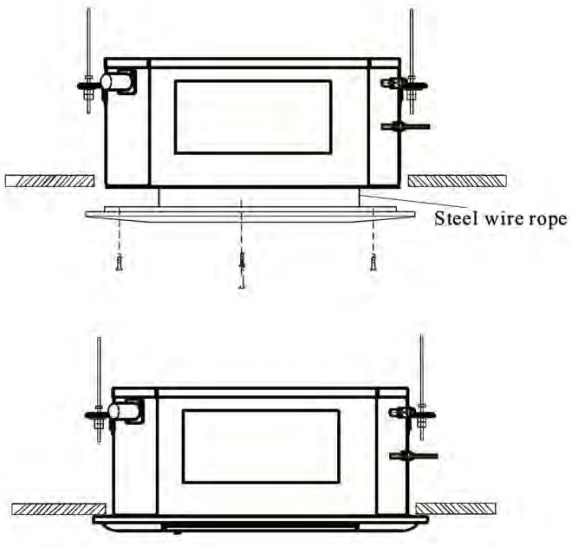
Panel Installation

Complete the panel installation after the piping and wiring is finished.
Before installation, confirm the indoor unit and ceiling hole installation size is correct.

Caution: Be sure to seal the connection parts between the panel-ceiling and the panel-indoor unit. Seal the small gaps too, as they may cause wind/water leakage or condensing water.

Cassette Dimension: 18K





1) Screw 2 M5*20 bolts at opposite angles of the indoor unit. Before fixing the screws, determine the orientation of the panel. Align the positioning holes on the panel with the positioning pins on the box.

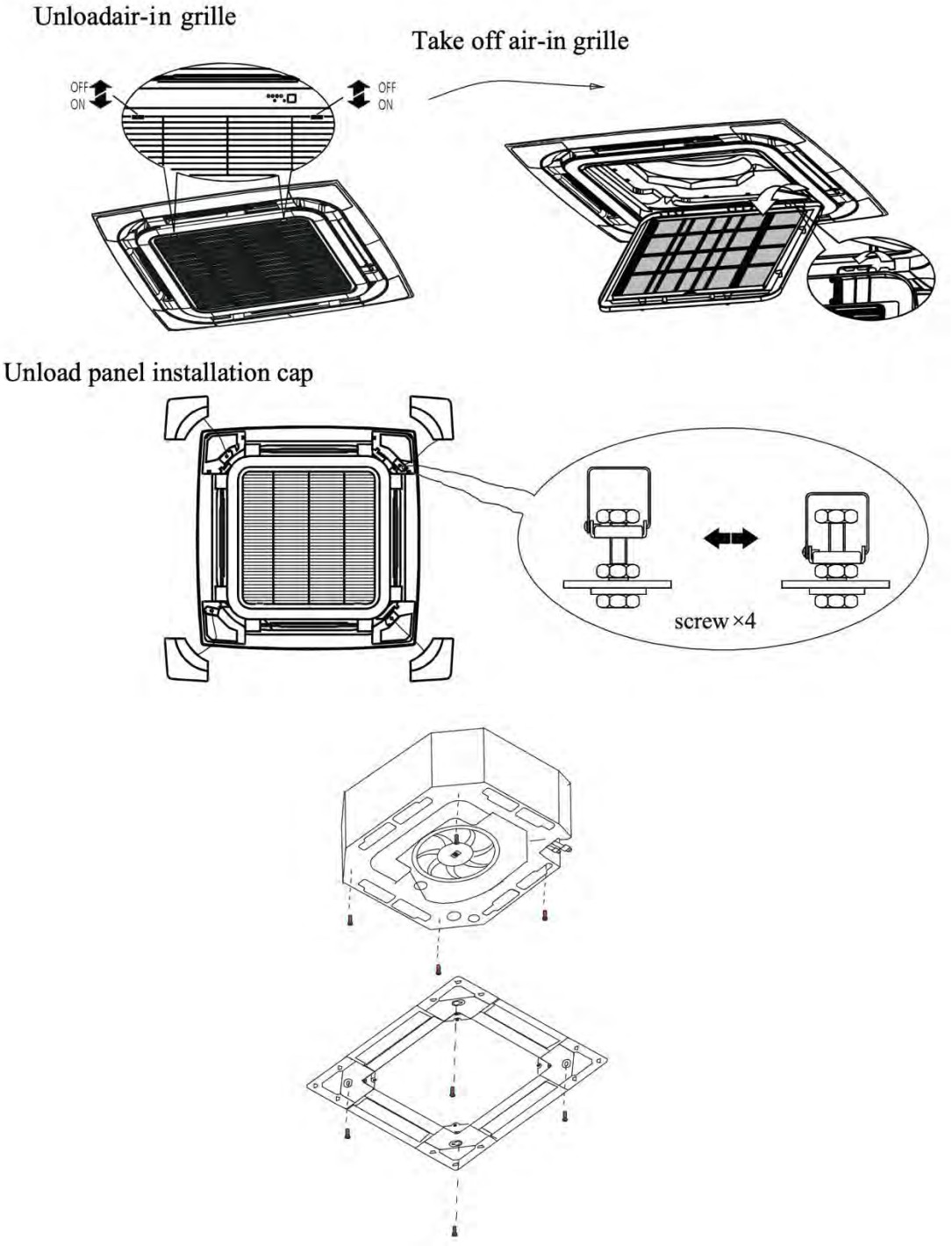
2) Connect the step motor and display board wires to the electrical box according to the Electric Wiring diagram on the electrical box.

3) Screw the other 2 M5*20 bolts through the holes of the panel into the indoor unit.

4) Adjust the location and direction of the panel so that its louvers align with the outdoor unit's outlet. Then fasten all the bolts to secure the panel and indoor unit together.

5) Re-attach the indoor unit's air-in grille and panel.

Cassette Dimension: 24K



1) Screw the M10 gasket and M6*20 bolt at the corner of the indoor unit. Before fully fastening them, screw the other additional bolts, which are shown in red in the figure. Notice that the direction of the red arrows on the electrical box aligns with the one on the panel.

2) Connect the step motor and display board wires to the electrical box according to the Electric Wiring diagram on the electrical box.

3) Screw the other 2 M6*20 bolts with the M10 gasket through the hole of the panel into the indoor unit.

4) Adjust the location and direction of the panel so that its louvers align with the outdoor unit's outlet. Then fasten all the bolts to secure the panel and indoor unit together.

5) Re-attach the indoor unit's air-in grille and panel.

B. Ductable Concealed

A M10 whorl is used.

Consult a professional for information on your specific ceiling arrangement:

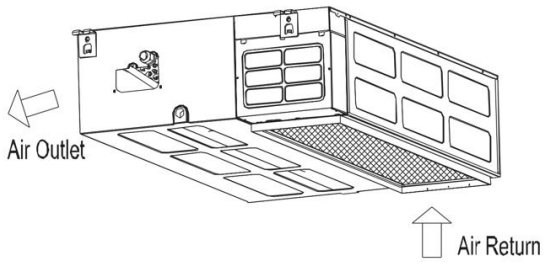
1) Dismantle the scale of the ceiling. Ensure to keep the ceiling leveled. Strengthen the beam to avoid vibration.
2) Break the beam of the ceiling.
3) Strengthen the breaking point of the ceiling and reinforce the ceiling beam.

After the main body hanging is finished, arrangement of the pipe and line will be done in the ceiling. The direction of the pipe is determined after the installation location is selected. If the ceiling has existed, arrange the refrigerant pipe, drainage pipe, as well as the indoor and outdoor connecting line.

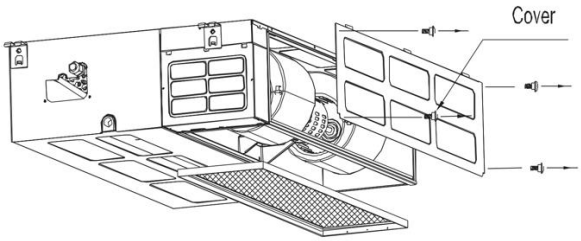
Choice of Air Return Ways

The indoor unit is fitted with the downward air return, which can be changed to its backward counterpart if necessary. Follow these steps to change the air return direction to backward.

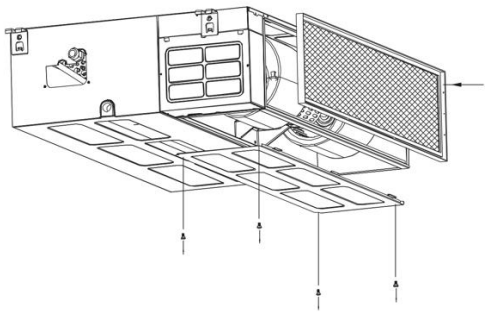
1) Air return downward



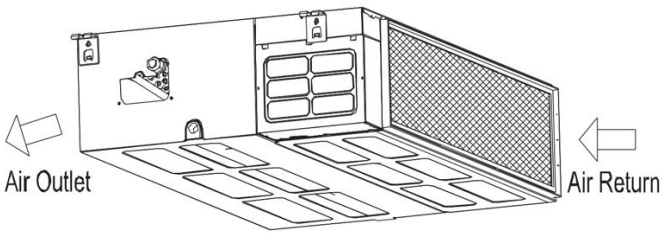
2) Loosen the nut and dismantle the flannel plate and filter. Loosen the nut and dismantle the back cover.



3) Install the flannel plate and filter at the backside. Install the cover on the downside of the unit.

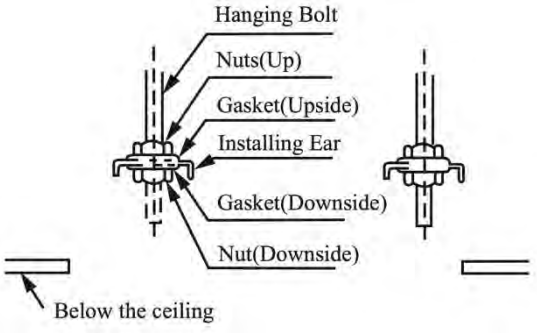


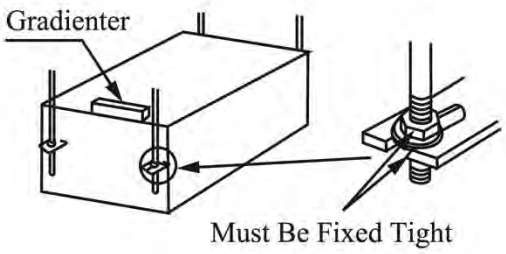
4) Air return backward



Hanging & Installation of the Indoor Unit

1) Adjust the Nut Position While There is a Gap Between the Gasket (Downside) and Ceiling.



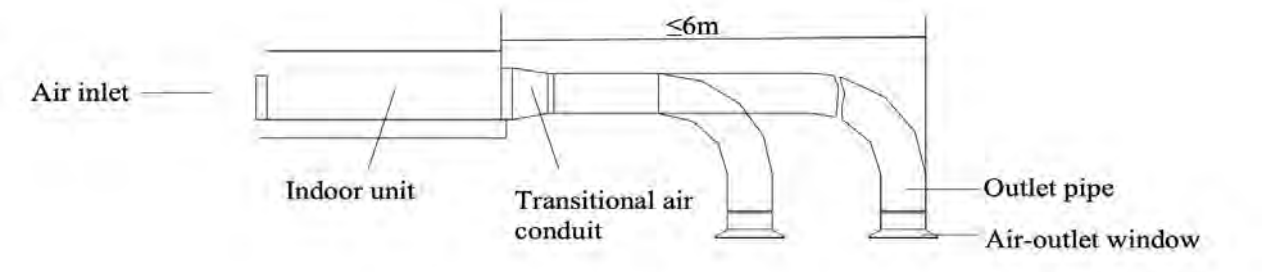


- Hang the nut inside the U slot of the installation panel.
- Confirm the level degree with a gradienter. Leaning the unit downside toward the non-draining side is prohibited. The suspension height should not be less than 7.9 ft (2.4m).

2) Mounting the Outlet Pipe

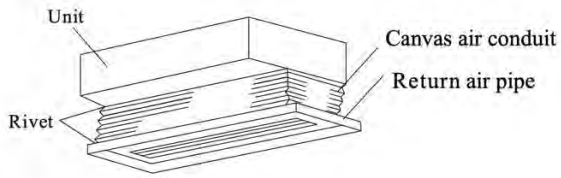
- Generally, we have 2 types of outlet pipes available (rectangular or round pipes).
- Connect the rectangular air conduits directly to the air outlet of the indoor units using rivets. For outlet dimensions, see the outline drawing of the unit.
- Connect the round air conduits to a piece of a traditional air conduit before connecting it to the air outlet of the indoor unit. The other end of the round air conduit can be separately connected to the air conduit window or to the air conduit window after air flow diversion. The total length cannot exceed 19.7 ft (6m).

As shown in the figure below, the air speeds at all air outlets must be set to ensure consistency for optimal room air-conditioning performance.

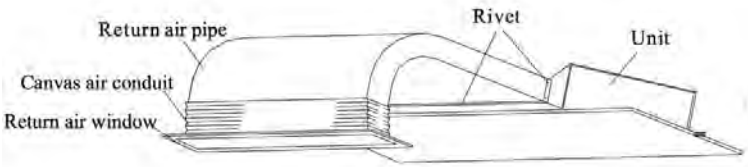


3) Installation Method for the Return Air Pipe

- In the situation where the sidewise air intake is adopted, the return air pipe needs to be fabricated and rivet-connected to the return air orifice. The other end of it should be connected to the return air window.
- In the situation where the underside air intake is adopted, purchase or fabricate a section of pleated canvas air conduit. This will serve as the transition joint for the return air orifice and return air window. With this method, it can be freely adjusted according to the height of the indoor ceiling board. In addition, the canvas air conduit may restrict the vibration of the ceiling board, as shown in the figure below.



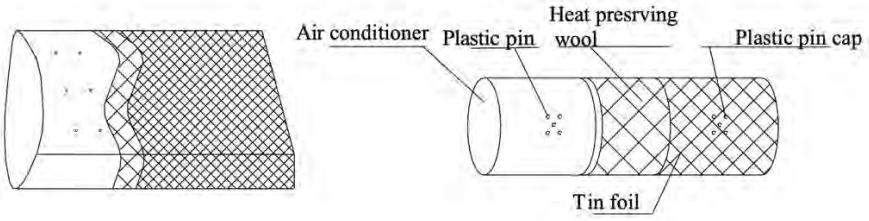
Installation mode for underside air intake



Installation mode for sidewise air intake

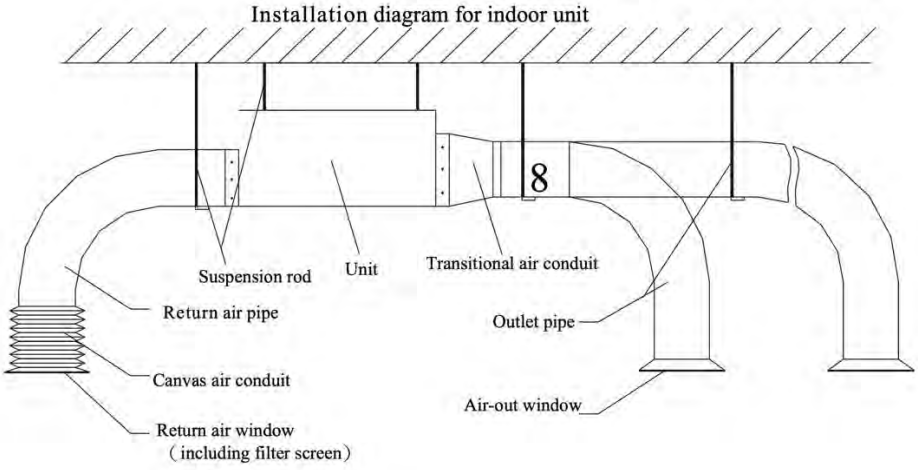
4) Tips for Installation of the Return Air Pipe and Outlet Pipe

- To minimize energy loss occurring in the transmission process and condensed water during the heating operation, equip the return air pipe and outlet pipe with a heat-insulating layer as shown in the figure.



- Fix the return air pipe and outlet pipe to the floor precast slabs using an iron stand. In addition, tightly seal all the ports of the air conduit with gasket cement. The edge clearance of the return air pipe should be 5.9 inch (150mm) minimum.

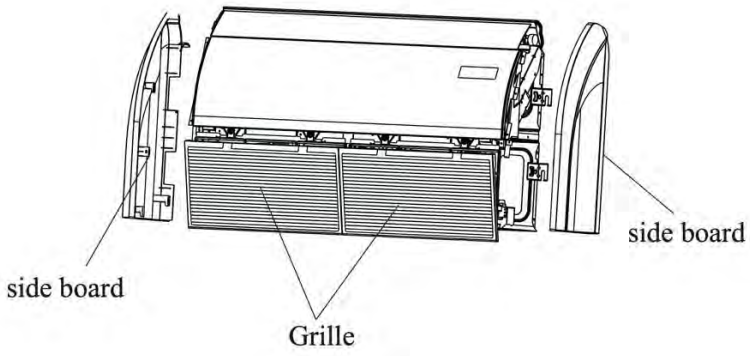
- Install the drain pipe for condensed water with a minimum gradient of 1%. Insulate the drain pipe with a heat-perserving pipe casing.



C. Floor-Ceiling Flex

Installation Procedure

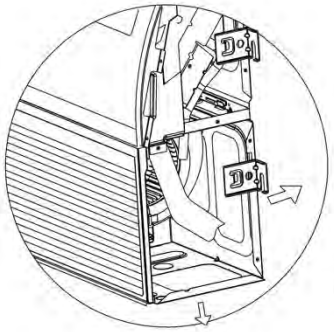
Remove the grille and sideboard.



Floor Console Type

1) Select the Piping and Drainage Directions

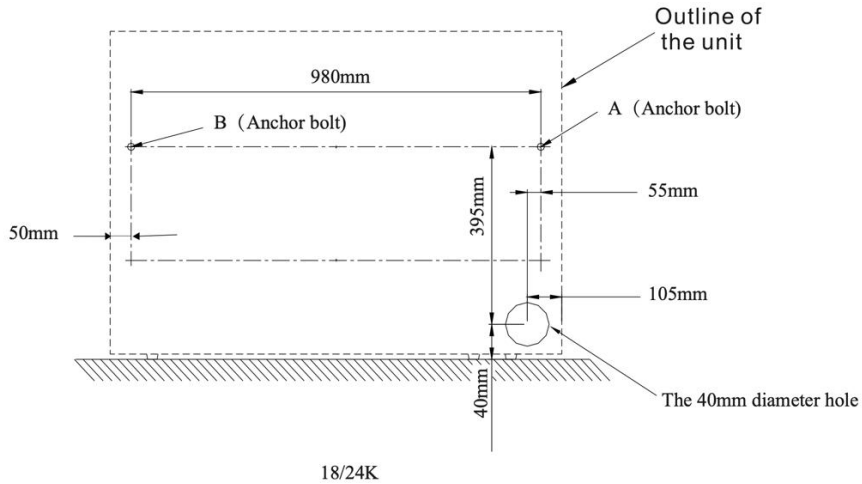
The piping and drainage can be set in 2 directions as shown below. After selecting the direction, drill a 3.9 inch (100mm) diameter hole in the wall. The hole must be tilted downward towards the outdoor for smooth water flow. When leading the pipe out from the rear, make a hole in the position shown below.



(Fig.1)

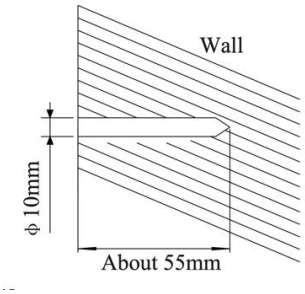
2) Drill Holes for Anchor Bolts and Install the Anchor Bolts (m10)

According to the position of the holes, install 2 expansible anchor bolts (A and B) in the position shown below.

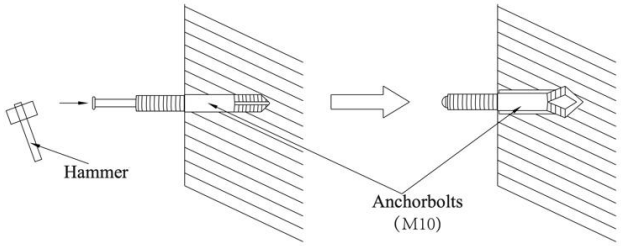


18/24K

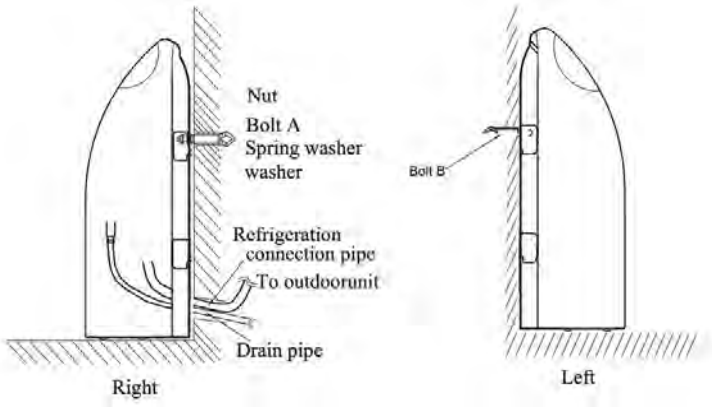
Use a concrete drill to create two 0.4 inch (10mm) diameter holes in the A and B positions on the wall.



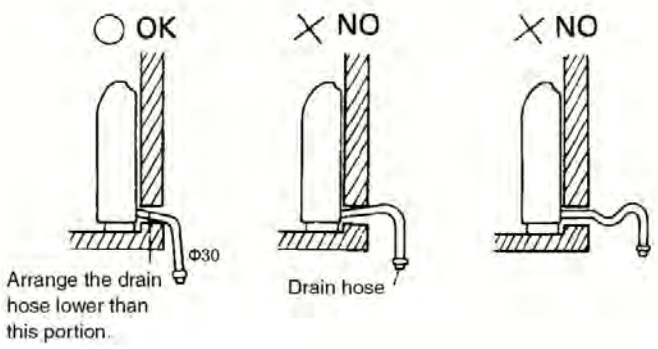
Insert the anchor bolts into the drilled holes, then drive the pins completely into the anchor bolts with a hammer.



Install the unit using witmuts, washers, and spring washers.
Note: The installation angle should not exceed 15 degrees.



Caution: Be sure to arrange the drain hose so that it is leveled lower than the drain hose connecting port of the indoor unit.

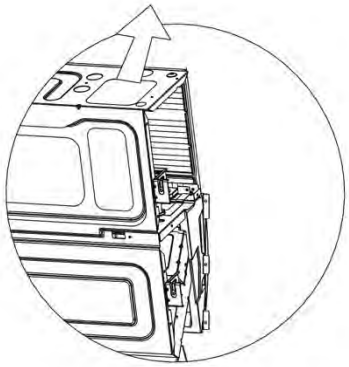


Under Ceiling Type

1. Select the Piping and Drain Directions

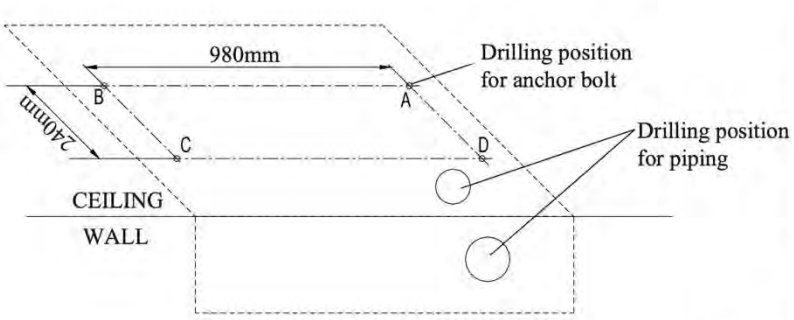
Caution: Install the drainage hose at the rear of the unit. Do not install the drainage hose at the top of the unit.

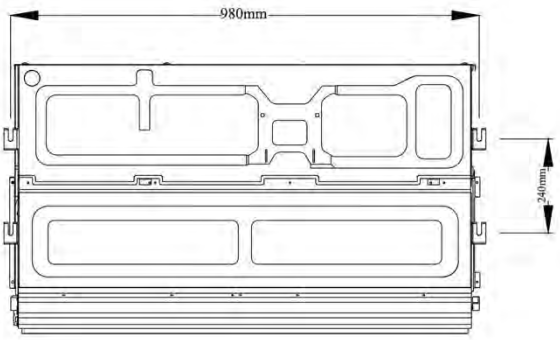
After selecting the directions, drill 3.1 inch (80mm) and 2 inch (50mm) or 5.9 inch (150mm) diameter holes in the wall so that the hole is tilted downward toward the outside for smooth water flow.



2) Drill Holes for Anchor Bolts and Install the Anchor Bolts (m10)

Drill 4 holes for the anchor bolts at the A, B, C, and D positions.



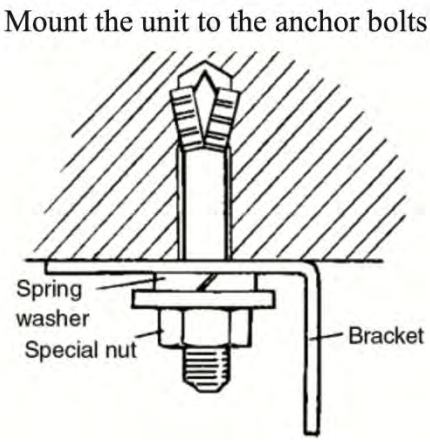


18/24K

3) Install the Indoor Unit

Securely tighten the nuts to each bolt with washers and spring washers.

Note: The installation angle should not exceed 10 degrees.



Outdoor Unit Installation

1. Select the Installation Location

1) Do not install the outdoor unit near sources of heat, steam, or flammable gas.

2) Do not install the unit near an area that is too windy or dusty.

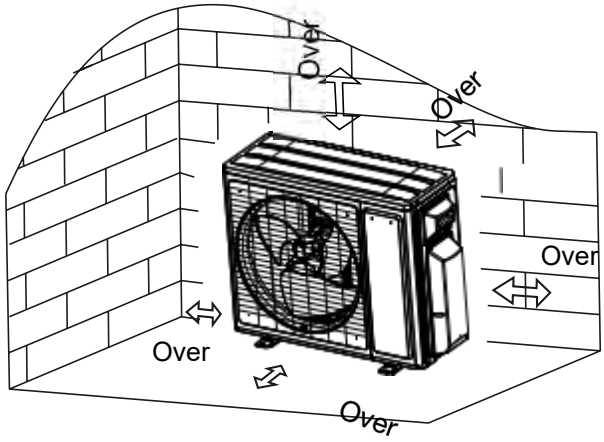
3) Do not install the unit in a location where people often pass. Select a location where the air discharge and operating sound will not disturb the neighbors.

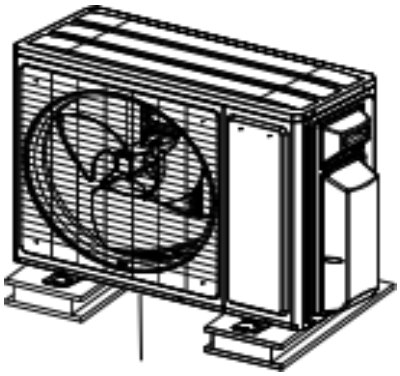
4) Avoid installing the unit in a location where it will be exposed to direct sunlight. If needed, use protection that will not interfere with the air flow.

5) Reserve the spaces, as shown in the picture, for the air to circulate freely.

6) Install the outdoor unit in a safe and solid place.

7) If the outdoor unit is subject to vibration, place rubber blankets on the feet of the unit.



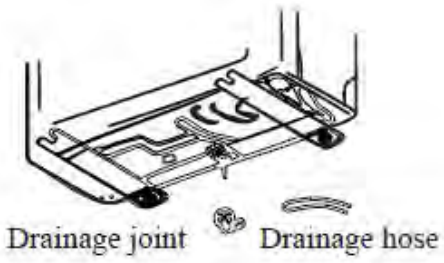


At least 1.2 in (3cm) above the floor

2. Install the Drainage Hose (Only for Heat Pump Models or RCACs)

1) Insert the drainage joint to the hole at the bottom of the outdoor unit.

2) Connect the drainage hose to the joint and ensure it's well-connected.



3. Fasten the Outdoor Unit

1) Mark the installation positions for the expansion bolts according to the outdoor unit installation dimensions.

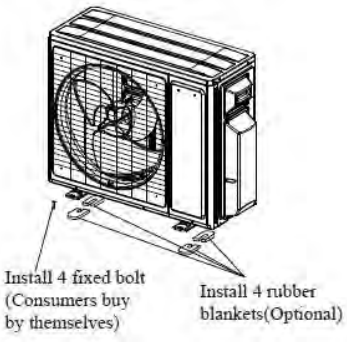
2) Drill holes and clean the concrete dust. Then place the bolts.

3) If necessary, install 4 rubber blankets on the hole before placing the outdoor unit (optional). This will reduce vibrations and noise.

4) Place the outdoor unit base on the bolts and pre-drilled holes.

5) Use the wrench to fix the outdoor unit firmly with bolts.

Note: The outdoor unit can be fixed on a wall-mounting bracket. Follow the instructions to fix the wall-mounting bracket on the wall. Then fasten the outdoor unit on it. Ensure it's kept horizontal. The wall-mounting bracket must be able to support at least 4 times the weight of the outdoor unit.



4. Wiring Cover and Cable Clamp

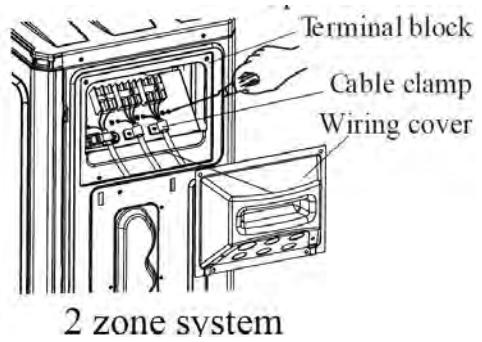
1) Use a phillips screwdriver to unscrew the wiring cover. Grasp and press the wiring cover down gently to remove it.

2) Unscrew the cable clamp and remove it.

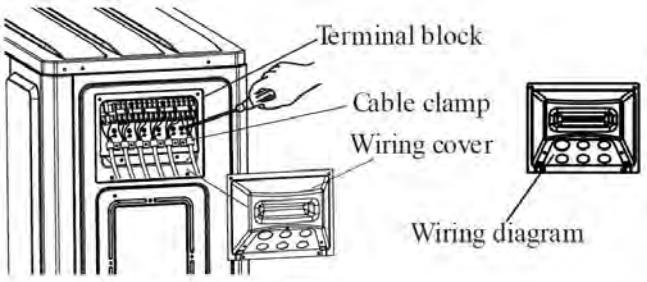
3) Attach the connecting wires to the corresponding terminals according to the wiring diagram pasted inside the wiring cover. Ensure all the connections are firmly secured.

4) Reinstall the cable clamp and wiring cover.

Note: When connecting the wires of the indoor and outdoor units, the power should be cut Off.



2 zone system



5 zone system

5. Connecting the Refrigerant Pipe

1) Unscrew the valve cover. Grasp and press the wiring cover down gently to remove it.

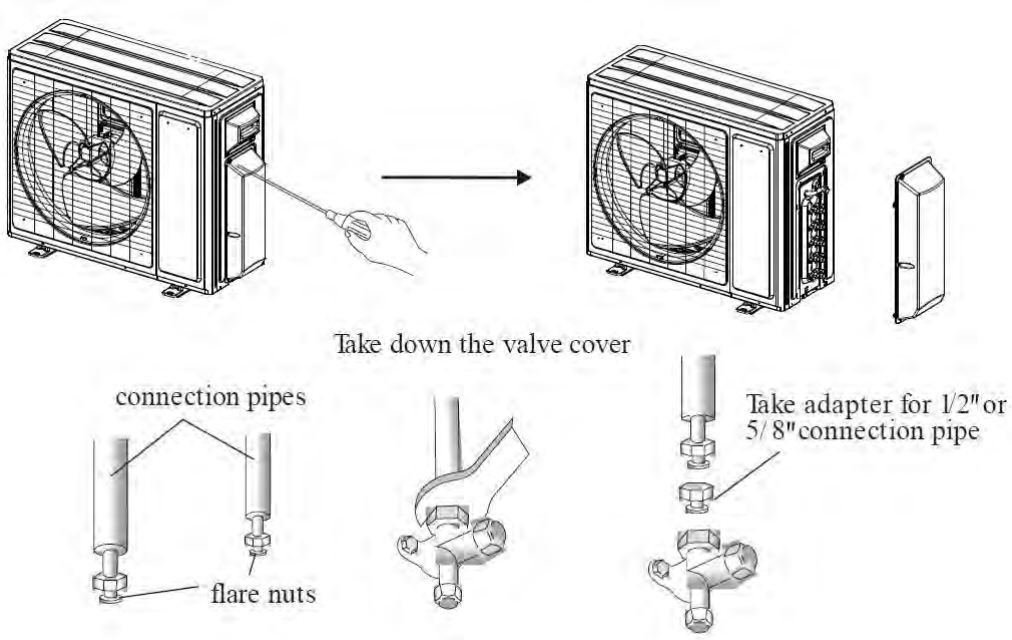
2) Remove the protective caps from the end of the valves.

3) Remove the plastic cover in the pipe ports. Check whether there is any sundry on the port of the connecting pipe. Ensure the port is clean.

4) After aligning the center, tighten the flare nut of the connecting pipe. Rotate the flare nut by hand.

5) Use a spanner to hold the body of the value. Use a torque wrench to tighten the flare nut according to the torque values in the Torque Requirement table.

Note: If you need to connect ½ inch or ⅝ inch connecting pipes, use the transitadapter.



6. Vacuum Pumping (2-Zone System)

1) Use a spanner to remove the protective caps from the service port, low pressure valve, and high pressure valve of the outdoor unit.

2) Connect the pressure hose of the manifold gauge to the service port on the outdoor unit's low pressure valve.

3) Connect the charge hose from the manifold gauge to the vacuum pump.

4) Open the low pressure valve of the manifold gauge and close the high pressure valve.

5) Turn On the vacuum pump to vacuum the system.

6) Vacuum the system for at least 15 min. Ensure the compound gauge indicates -0.1 MPa (-76cm/Hg).

7) Close the low pressure valve of the manifold gauge and turn Off the vacuum.

8) Hold the pressure for 5 min. Ensure the rebound of the compound gauge pointer does not exceed 0.005 MPa.

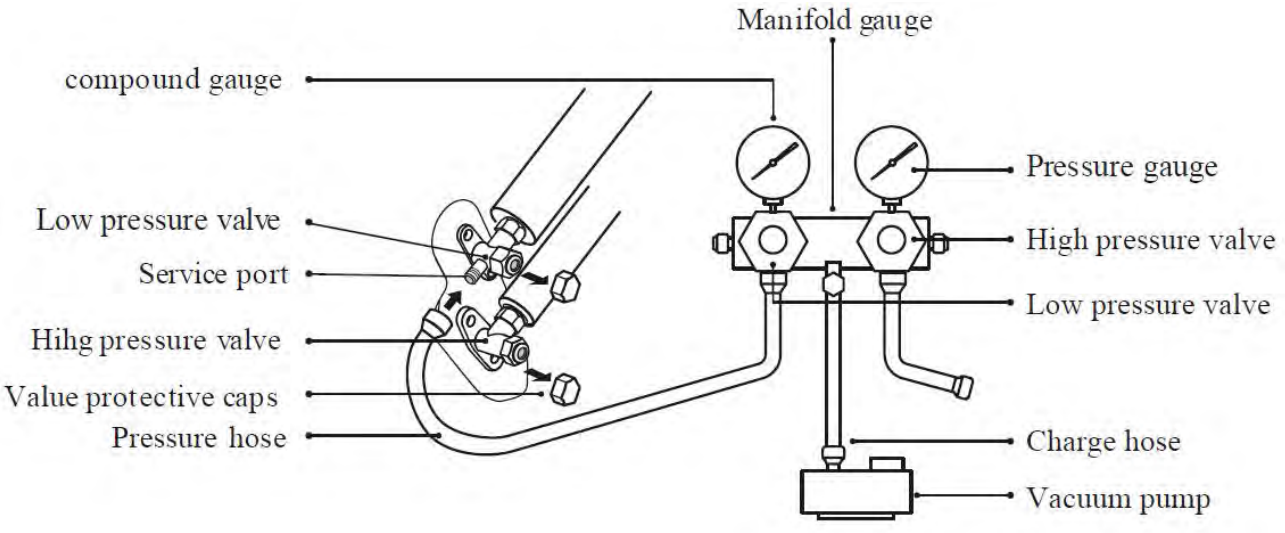
9) Open the low pressure valve counterclockwise (1/4 turn) with the hexagonal wrench to allow a small amount of refrigerant to enter the system. After 5s, close the low pressure valve and quickly remove the pressure hose.

10) Use soapy water or a leak detector to check indoor and outdoor joints for leakage.

11) Fully open the low pressure valve and high pressure valve of the outdoor unit with a hexagonal wrench.

12) Reinstall the protective caps of the service port, low pressure valve, and high pressure valve of the outdoor unit.

13) Reinstall the valve cover.



Note: After installing the lineset, vacuum the unit before opening the valve switch.

Vacuum Pumping (3/4/5 Zone System)

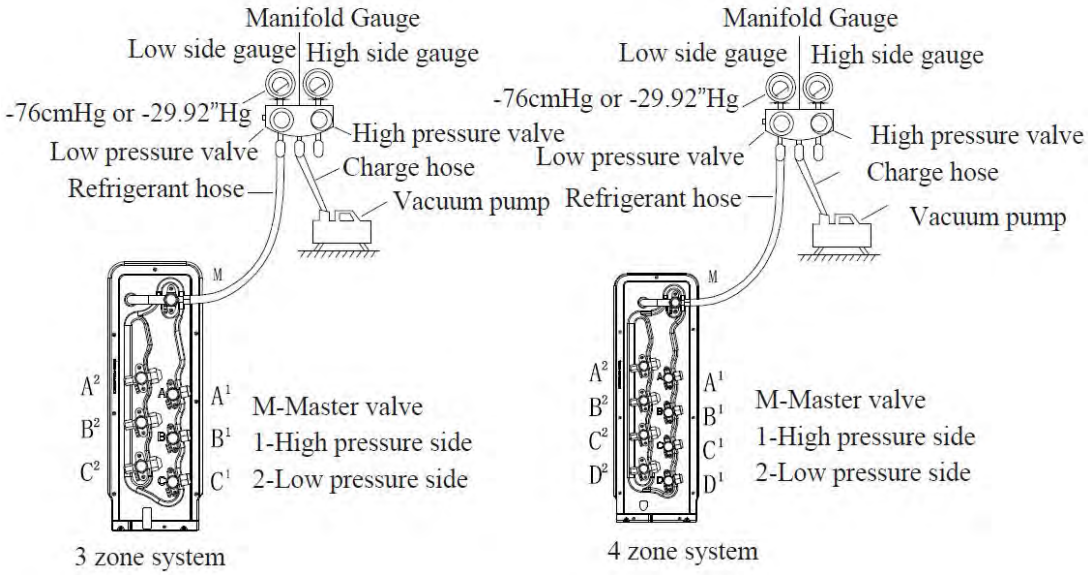
Preparations and Precautions

Air and foreign matter in the refrigerant circuit may cause abnormal rises in pressure, which can damage the air conditioner, reduce its efficiency, or cause injury. Use a vacuum pump and manifold gauge to evacuate the refrigerant circuit, removing any non-condensable gas and moisture from the system. Evacuation of the refrigerant must be performed before the initial installation.

1) Confirm both the high-pressure and low-pressure pipes between the indoor and outdoor units are connected properly in accordance with the Refrigerant Piping Connection section of this manual.
2) Ensure the wiring is connected properly.
3) Perform a nitrogen leak check on all the refrigerant joints.

Evacuations Instructions

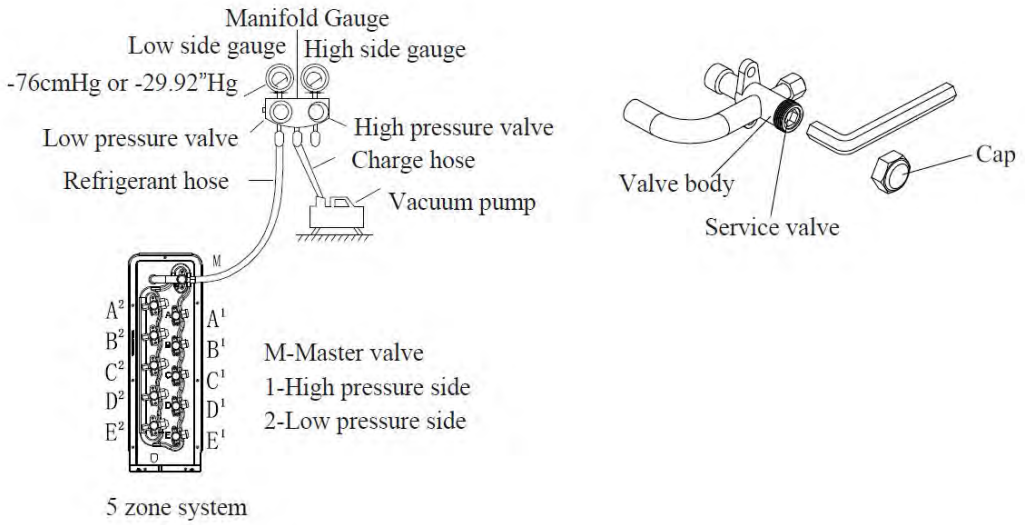
Before using the manifold gauge and vacuum pump, read their operation manuals to familiarize yourself with how to use them properly.



1) Connect the refrigeration hose from the low side manifold gauge to the themaster service valve port of the outdoor unit.

2) Connect the charge hose from the manifold gauge to the vacuum pump.

3) Open the low pressure side service valves (A2, B2, C2, etc.) if the lineset was connected. But be careful not to open the high pressure side service valves (A1, B1, C1, etc.).



4) Open the low pressure side valve on the manifold gauge. Keep the high pressure side valve closed.

5) Turn On the vacuum pump to evacuate the system.

6) Run the vacuum until the compound meter reads -76cmHg/-29.92"Hg (-101 kPa). Using a micron gauge is recommended. Run the vacuum until the micron gauge reads 350-500 microns or less.

7) Close the low pressure side valve on the manifold gauge, then turn Off the vacuum pump.

8) Wait 10-15 min, then confirm that there has been no change in the system vacuum. Use a micron gauge to confirm the system is still below 500 microns.

9) If there is a change in system vacuum, refer to the Gas Leak Check section for information on how to check for leaks. If there is no change, remove the charge hose from the service port.

10) Use an allen wrench to fully open the master valves (M1, M2) on top, as well as the high pressure side service valves (A1, B1, C1, etc.).

11) Tighten the caps on all the valves (master valves, high side and low side services valves) by hand. If needed, you may tighten it further by using a torque wrench.

Note: Open the valve stems gently. When opening the service valve, turn the allen wrench until it hits against the stopper. Do not try to force the valve to open further.

Pipe Length and Additional Refrigerant

Inverter Models ODU Capacity(Btu/h)	2 Zone System	3 Zone System	4 Zone System	5 Zone System
Max. equivalent length for all indoor units	131ft/40m	197ft/60m	197ft/80m	295ft/90m
Max. length to farthest indoor unit	82ft/25m	98ft/30m	98ft/30m	98ft/30m
Max. height difference between indoor and outdoor unit	49ft/15m	49ft/15m	49ft/15m	49ft/15m
Max. height difference between indoor unit	33ft/10m	33ft/10m	33ft/10m	33ft/10m
Standard refrigerant pipe length (ft /m)	49ft/15m	74ft/22.5m	98ft/30m	123ft/37.5m
Additional refrigerant charge (Based on the IDU liquid line size)	1/4in 0.11oz/ft	1/4in 0.11oz/ft	1/4in 0.11oz/ft 3/8in 0.22oz/ft	1/4in 0.11oz/ft 3/8in 0.22oz/ft

Torque Parameters

Pipe Size	Newton meter[N x m]	Pound-force foot(Ibf-ft)	Kilogram-force meter(kgf-m)
1/4 " (Φ6.35)	15 - 20	11.1 - 14.8	1.5 - 2.0
3/8 " (Φ9.52)	31 - 35	22.9 - 25.8	3.2 - 3.6
1/2 " (Φ12)	45 - 50	33.2 - 36.9	4.6 - 5.1
5/8 " (Φ15.88)	60 - 65	44.3 - 48.0	6.1 - 6.6

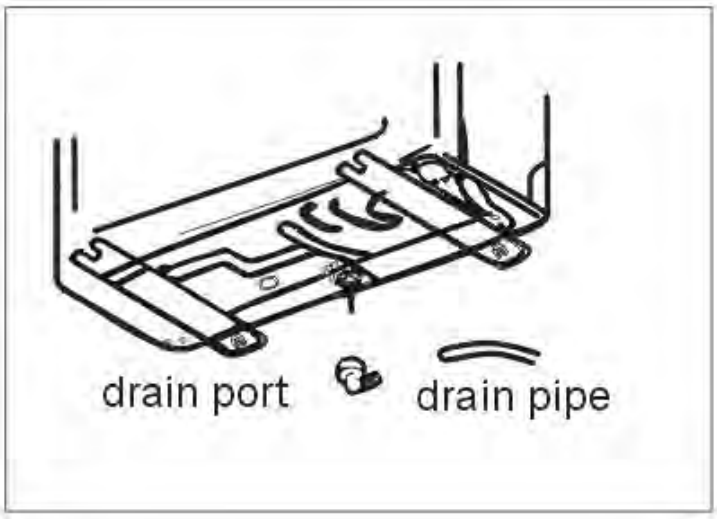
Outdoor Side Drain Pipe

- Install the outdoor unit on a solid wall and securely fasten it.
- Before connecting the pipes and cables, decide the best position on the wall and leave sufficient space for maintenance.
- Fasten the support to the wall using screw anchors.
- Use a larger quantity of screw anchors than normally required for its weight to avoid vibration during operation. This will also keep the unit 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 the water is draining into a suitable place.

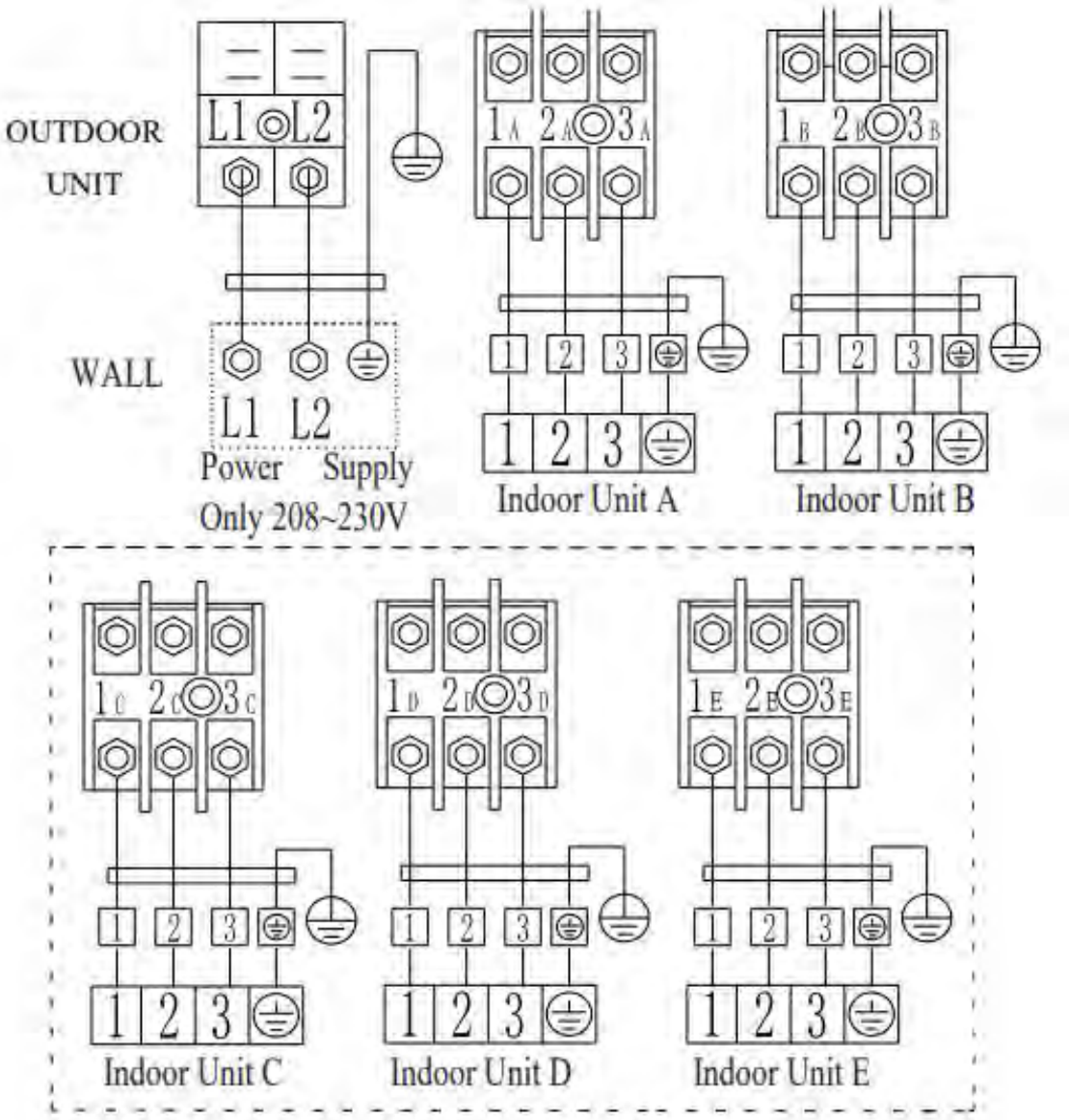


5.5 Electrical Installation

Cable Connection Between the IDU and ODU

Plug the connection cables to the corresponding terminals, as shown below. For example, Terminal (A) of the outdoor unit must connect with Terminal (A) of the indoor unit.

1) Connect to the internal and external communication lines.
2) Connect the fire line.
3) Connect the zero line.



5.6 Test Run

Inspections before the test run. Complete the following checks before the test run:

Description	Inspection Method
Electrical Safety Inspection	• Check whether the power supply voltage complies with the specifications. • Check whether there is any wrong or missing connections between the power lines, signal line, and earth wires. • Check whether the earth resistance and insulation resistance comply with the requirements.
Installation Safety Inspection	• Confirm the direction and smoothness of the drainage pipe. • Confirm the joint of the refrigerant pipe is installed correctly. • Confirm the safety of the outdoor unit, mounting plate, and indoor unit installation. • Confirm the valves are fully open. • Confirm that there are no foreign objects or tools left inside the unit. • Complete the installation of the indoor unit's air inlet grille and panel.
Refigerant Leakage Detection	• Leakage may occur in these areas: -- Piping joints -- Connector of the outdoor unit's two valves -- Valve spools -- Welding points • Foam Detection Method: Apply soapy water or foam evenly on the parts where leakage may be occurring. Then observe whether bubbles appear. If no bubbles form, it indicates there is no leakage. • Leak Detector Method: Use a professional leak detector and read the operation instructions. Use the detector in the position where the leakage may be occurring for at least 3 min. If the test detects leakage, the nut needs to be tightened. Test the unit again until there is no leakage. After the leak detection is completed, wrap the exposed pipe connector of the indoor unit with thermal insulation material and insulation tape.

Test Running Instructions

1. Turn On the power supply.

2. Press the On/Off button on the remote controller to turn On the air conditioner.

3. Press the Mode button to switch the modes to Cooling or Heating.
In each mode, set as below:
Cooling - Set the lowest temperature
Heating - Set the highest temperature

4. Run the unit for 8 min in each mode and ensure all the functions are operating correctly and respond to the remote controller. Functions check as recommended:
    4.1 If the outlet air temperature responds to the Cooling and Heating modes.
    4.2 If the water drains properly from the drainage hose.
    4.3 If the louver and deflectors rotate properly (optional).

5. Observe the test run state of the air conditioner for at least 30 min.

6. After the test run is successful, return the unit to its normal settings. Then press the On/Off button on the remote controller to turn Off the unit.

7. Inform the user to read this manual carefully before using the unit, as well as demonstrate to the user how to operate the air conditioner. Ensure the user has the necessary knowledge for service and maintenance. Remind the user to properly store the accessories.

Note: If the ambient temperature exceeds the range mentioned in the Operation Instructions section and the unit cannot run in Cooling and Heating modes, lift the front panel and refer to the emergency button operation to run the Cooling and Heating modes.

6. Troubleshooting Guide

6.1 Error Codes

Code	Reason	Remark
E0	IDU and ODU communication failure	Is the IDU and ODU wiring connection correct?
E1	IDU room temperature sensor failure (IDU RT failure)	IDU sensor and PCB
E2	IDU coil temperature sensor failure (IDU IPT failure)	IDU sensor and PCB
E3	ODU coil temperature sensor failure (OPT)	ODU coil sensor and ODU PCB
E4	AC-cooling system abnormal	Gas leakage? 2-way or 3-way valve blocked etc.
E5	IDU / ODU mismatched failure (Specific performance test on the production line)	/
E6	IDU PG fan motor / DC fan motor operating abnormally (IDU failure)	Fan motor, fan blade, and PCB
E7	ODU ambient temperature sensor failure	ODU ambient sensor and ODU PCB
E8	ODU discharge temperature sensor failure	ODU discharge sensor and ODU PCB
E9	IPM / Compressor driving control abnormal	ODU PCB, compressor, etc.
EA	ODU current test circuit failure	Is the ODU PCB broken?
Eb	Abnormal communication between the main PCB and display board (IDU failure)	Display board and main PCB
EC	Abnormal communication between the system module and drive module (ODU failure)	ODU PCB broken
EE	ODU EEPROM failure	1. Is the ODU PCB broken? 2. Try to re-power On the AC unit.
EF	ODU DC fan motor failure	Fan motor and ODU PCB
EH	ODU suction temperature sensor failure	ODU suction sensor and PCB
EU	ODU voltage test circuit abnormal	ODU PCB
En	ODU gas pipe temperature sensor failure	ODU gas pipe sensor and PCB
Ey	ODU liquid pipe temperature sensor failure	ODU liquid pipe sensor and PCB
P0	IPM module protection	ODU PCB
P1	Over- / Under-voltage protection	1. ODU PCB broken? 2. Power supply abnormal?
P2	Over-current protection	1. ODU PCB broken? 2. Power supply abnormal?
P4	ODU discharge pipe over-temperature protection	Check the troubleshooting for details
P5	Sub-cooling protection in Cooling mode	Check the troubleshooting for details
P6	Overheating protection in Cooling mode	Check the troubleshooting for details
P7	Overheating protection in Heating mode	Check the troubleshooting for details
P8	Outdoor over-temperature / under-temperature protection	Check the troubleshooting for details
P9	Compressor driving protection (Load abnormal)	Check the troubleshooting for details

PA	Communication failure for Top flow unit / Preset mode conflict (IDU failure)	Check the troubleshooting for details
F0	Infrared customer feeling test sensor failure (IDU failure)	Query by pressing the remote controller
F1	Electric power test module failure (IDU failure)	Query by pressing the remote controller
F2	Discharge temperature sensor failure protection	Check the troubleshooting for details
F3	ODU coil temperature failure protection	Check the troubleshooting for details
F4	Cooling system gas flow abnormal protection	Check the troubleshooting for details
F5	PFC protection	Check the troubleshooting for details
F6	The 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 value reversing abnormal	Check the troubleshooting for details
F9	The module temperature test circuit failure	ODU PCB
FA	The 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
H1	High pressure switch failure	1. High pressure switch is damaged 2. High pressure switch connection is loose 3. ODU main PCB is damaged
H2	Low pressure switch failure	1. Low pressure switch is damaged 2. Low pressure switch connection is loose 3. ODU main PCB is damaged

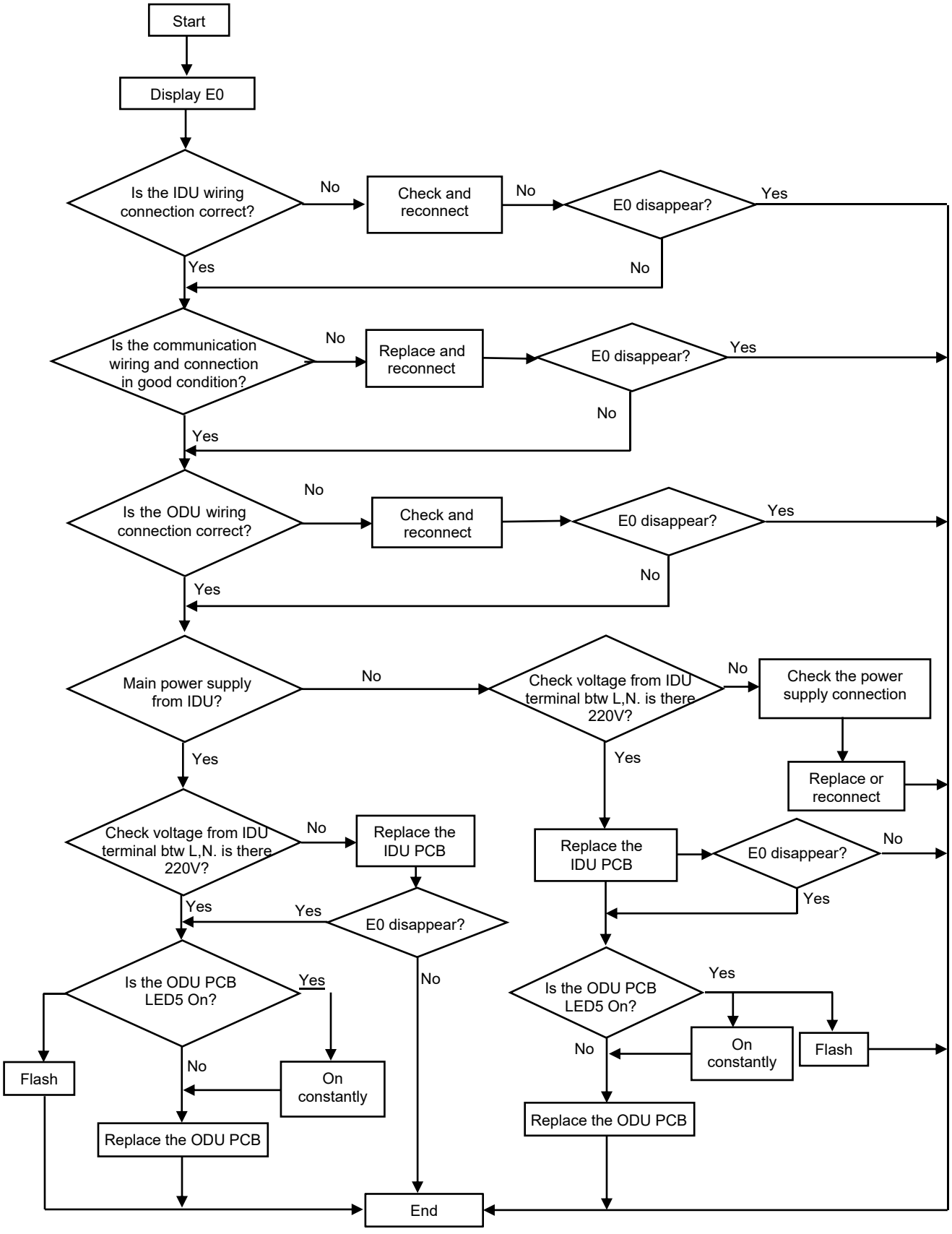
Note: Remote Controller Failure Code Querying Function

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

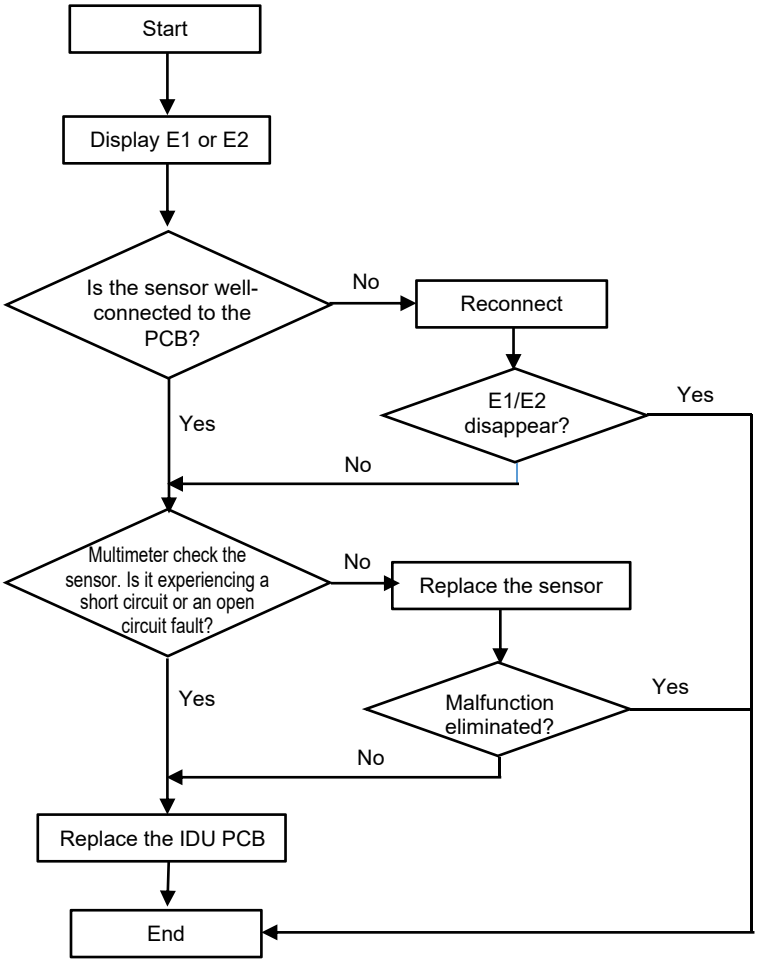
Malfunction	Possible Causes
The Appliance Does Not Operate	Power failure or plug pulled out.
	Damaged indoor/outdoor unit fan motor.
	Faulty protective device or fuses.
	Faulty compressor thermo-magnetic circuit breaker.
	Loose connections or plug pulled out.
	It sometimes stops operating to protect the appliance.
	Voltage higher or lower than the voltage range.
	Active Timer-On function.
	Damaged electronic control board.
Strange Odor	Dirty air filter.
Noise of Running Water	Back flow of liquid in the refrigerant circulation.
A Fine Mist Comes From the Air Outlet	This occurs when the air in the room becomes very cold. For example, in the Cooling or Dehumidifying/Dry modes.
A Strange Noise Can Be Heard	This noise is made by the expansion or contraction of the front panel due to variations in the temperature. This does not indicate a problem.
Insufficient Airflow (Either Hot or Cold)	Unsuitable temperature setting.
	Obstructed air conditioner intakes and outlets.
	Dirty air filter.
	Fan speed set at minimum.
	Other sources of heat in the room.
	No refrigerant.
The Appliance Does Not Respond to Commands	The remote control is not close enough to the indoor unit.
	The batteries of the remote control need to be replaced.
	Obstacles between the remote control and signal receiver in the indoor unit.
The Display is Off	Active Display function.
	Power failure.
Switch Off the Air Conditioner Immediately and Cut Off the Power Supply in the Event of:	Strange noises during operation.
	Faulty electronic control board.
	Spraying water or other liquids inside the appliance.
	Overheated cables or plugs.
	Very strong smells coming from the appliance.

6.2 Troubleshooting

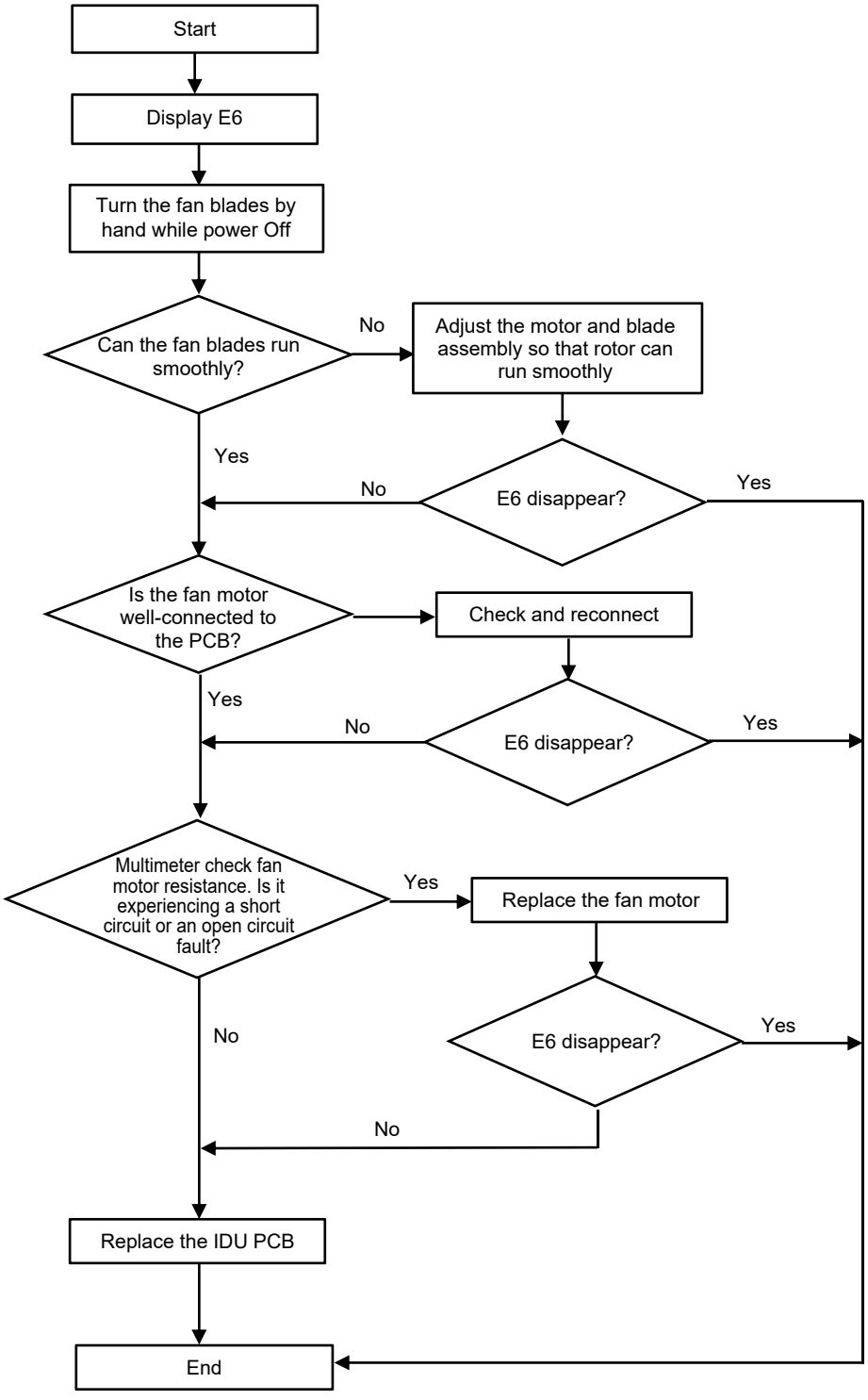
1) E0 --- IDU and ODU Communication Failure



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

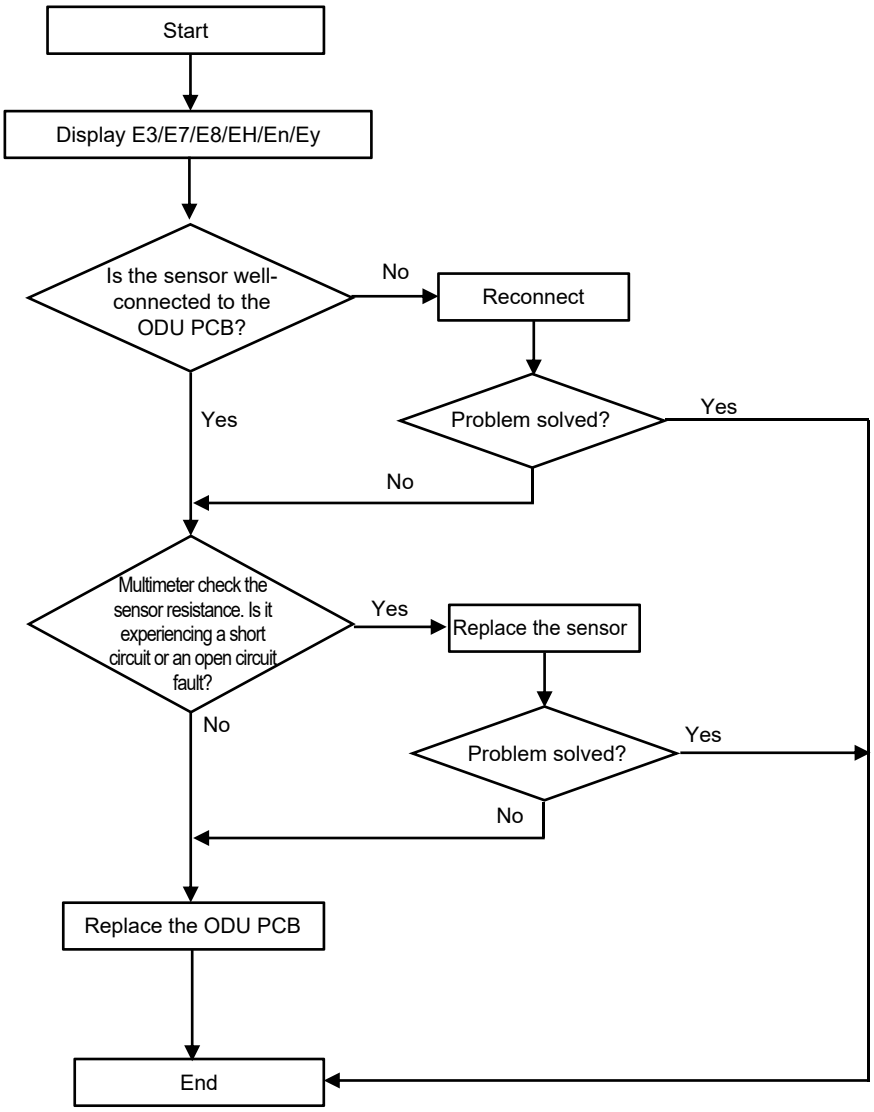


3) E6 --- IDU Ventilation Failure (PG and DC Fan Motor Only)



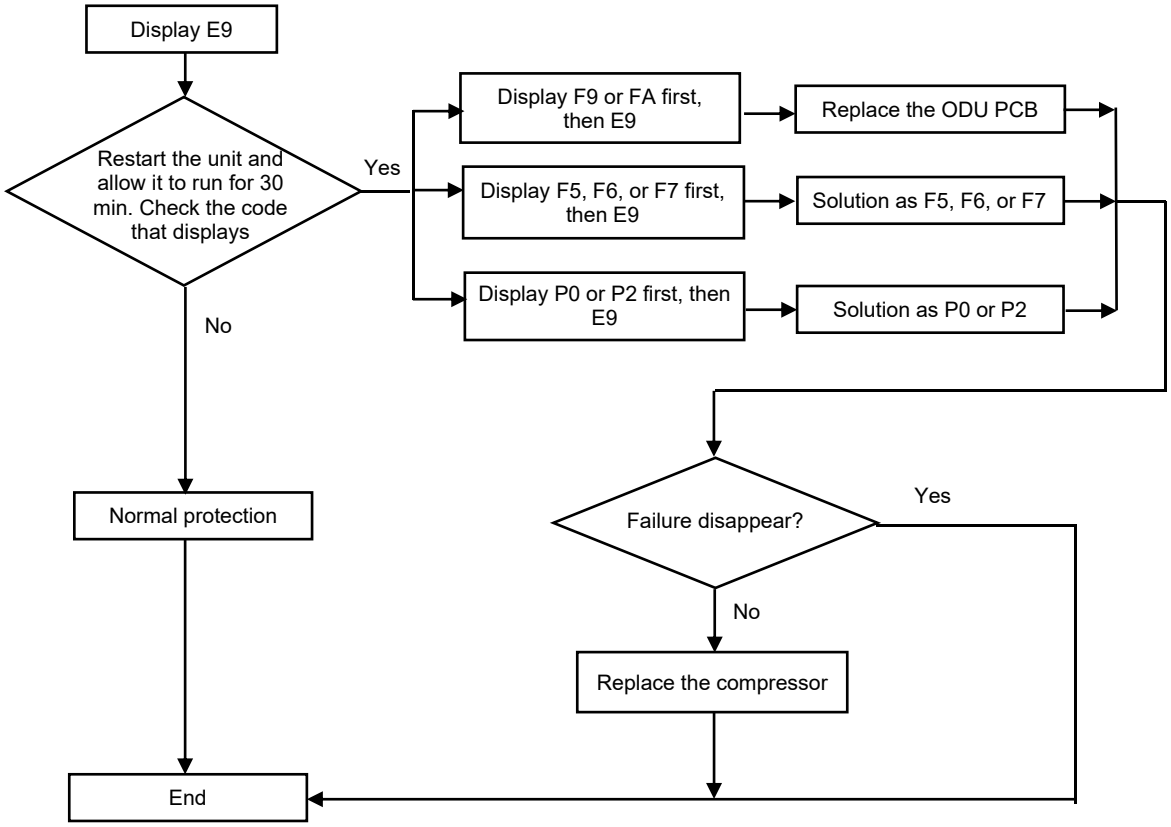
4) E3, E7, E8, EH, En, or Ey ---
ODU Coil Temperature Sensor Failure
Ambient Temperature Sensor Failure
Discharge Temperature Sensor Failure
Suction Temperature Sensor Failure
Gas Pipe Temperature Sensor Failure
Liquid Pipe Temperature Sensor Failure

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



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

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



6) ODU Current Test Circuit Failure

Cause: Outdoor current sampling circuit failure or driver parameter mismatch
Solution: Replace the ODU PCB.

7) Eb --- IDU Abnormal Communication Between Main Board and Operating Board

Cause: 1. The communication wire is damaged; 2. Outdoor main board is damaged; 3. Operating board is damaged.
Solution: 1. Replace the communication wire; 2. Replace the outdoor main board; 3. Replace the operating board.

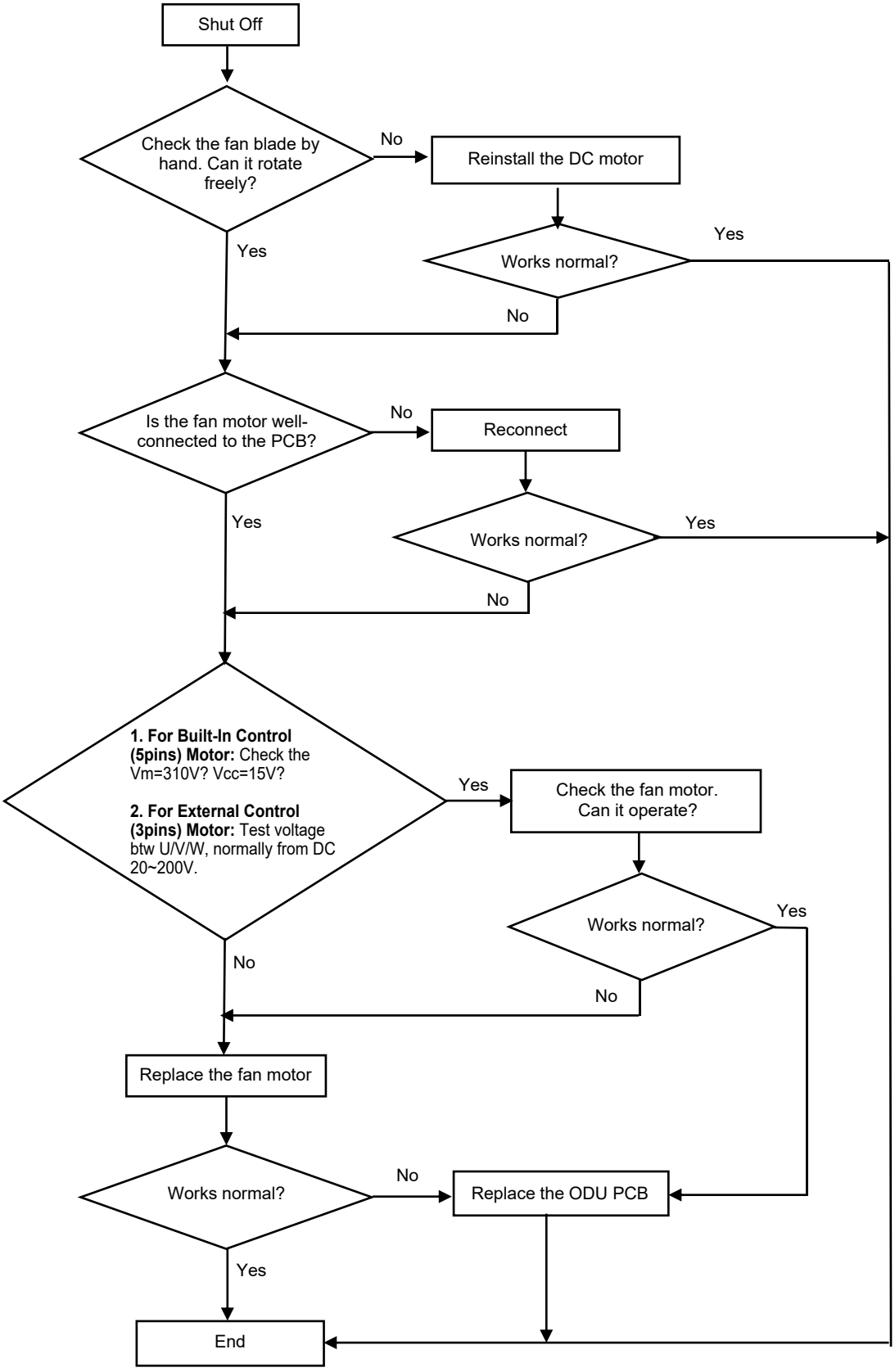
8) EC --- Abnormal Communication Between System Module and Drive Module

Cause: 1. The communication circuit of the outdoor unit PCB is damaged; 2. Program mismatch between the system module and drive module.
Solution: Replace the ODU PCB.

9) EE --- ODU EEPROM Failure

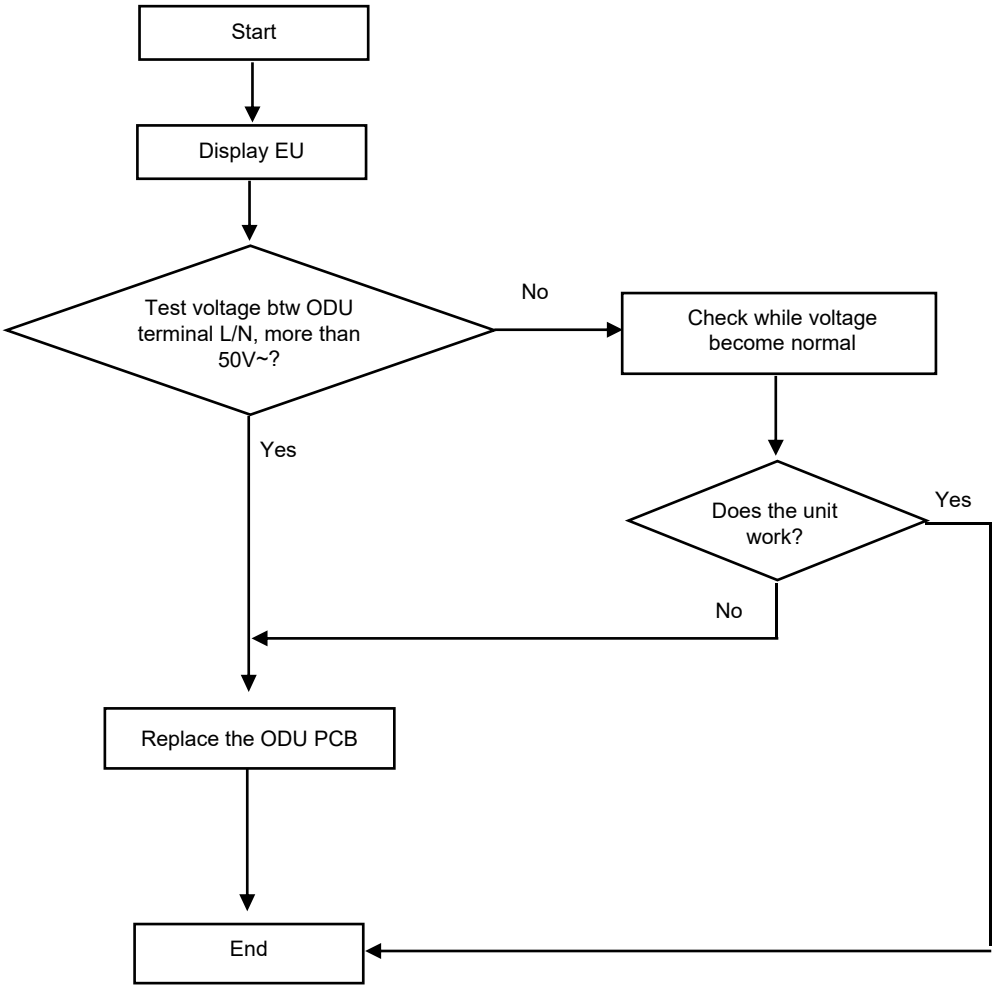
Cause: The ODU main board is damaged.
Solution: Replace the ODU PCB.

10) EF --- ODU DC Fan Motor Failure



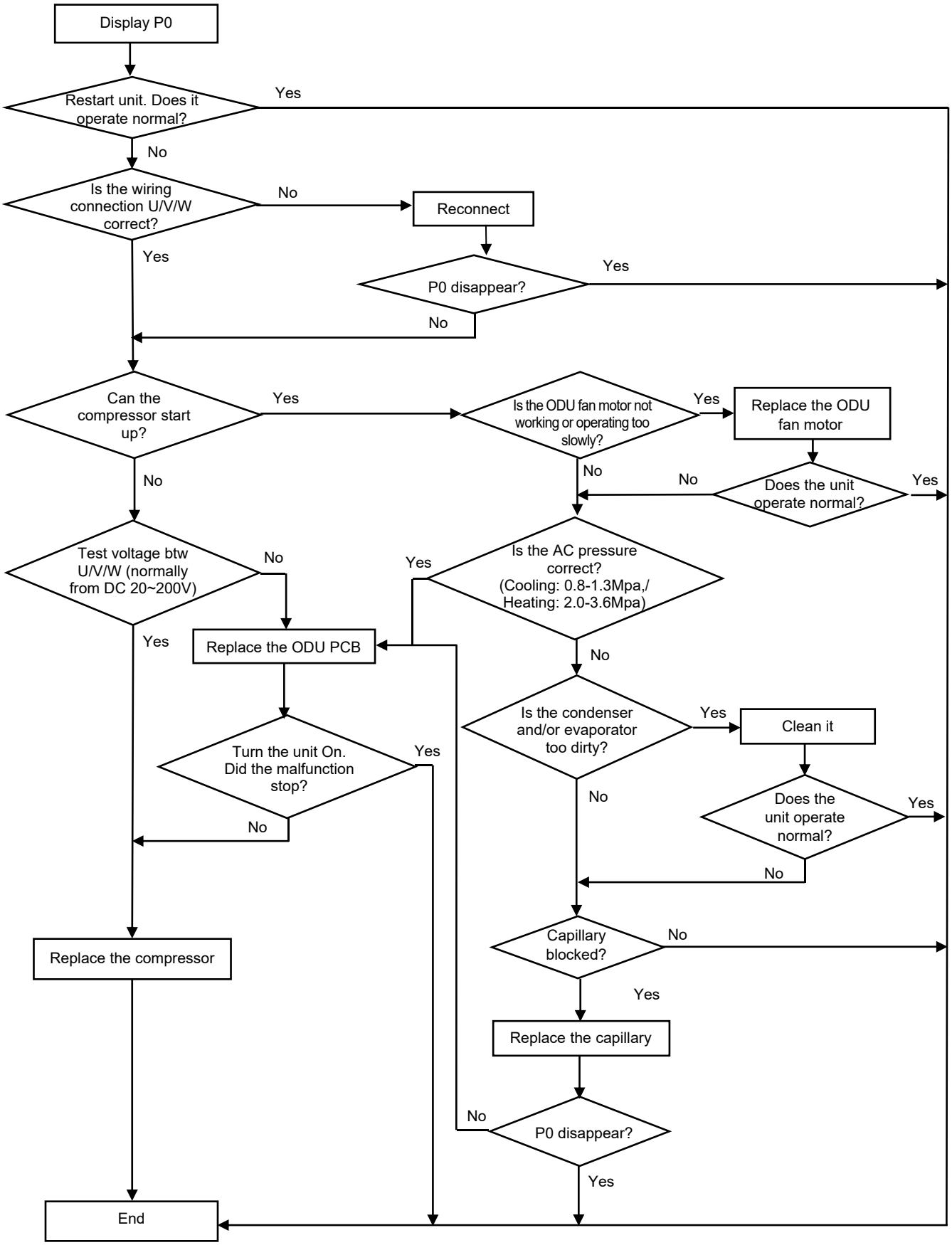
11) EU --- ODU Voltage Test Sensor Failure

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



12) P0 --- IPM Protection

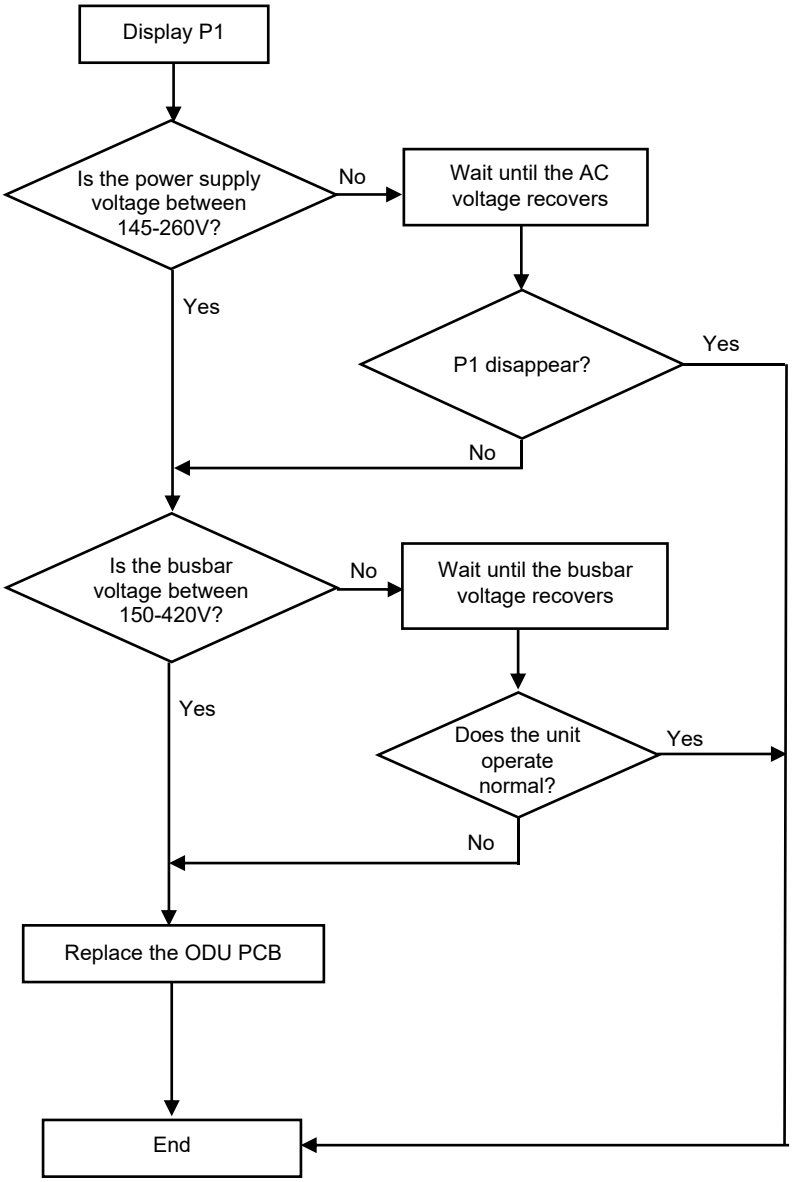
If the IPM is experiencing overheating or over-current conditions, the AC unit will display the "P0" error code.



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

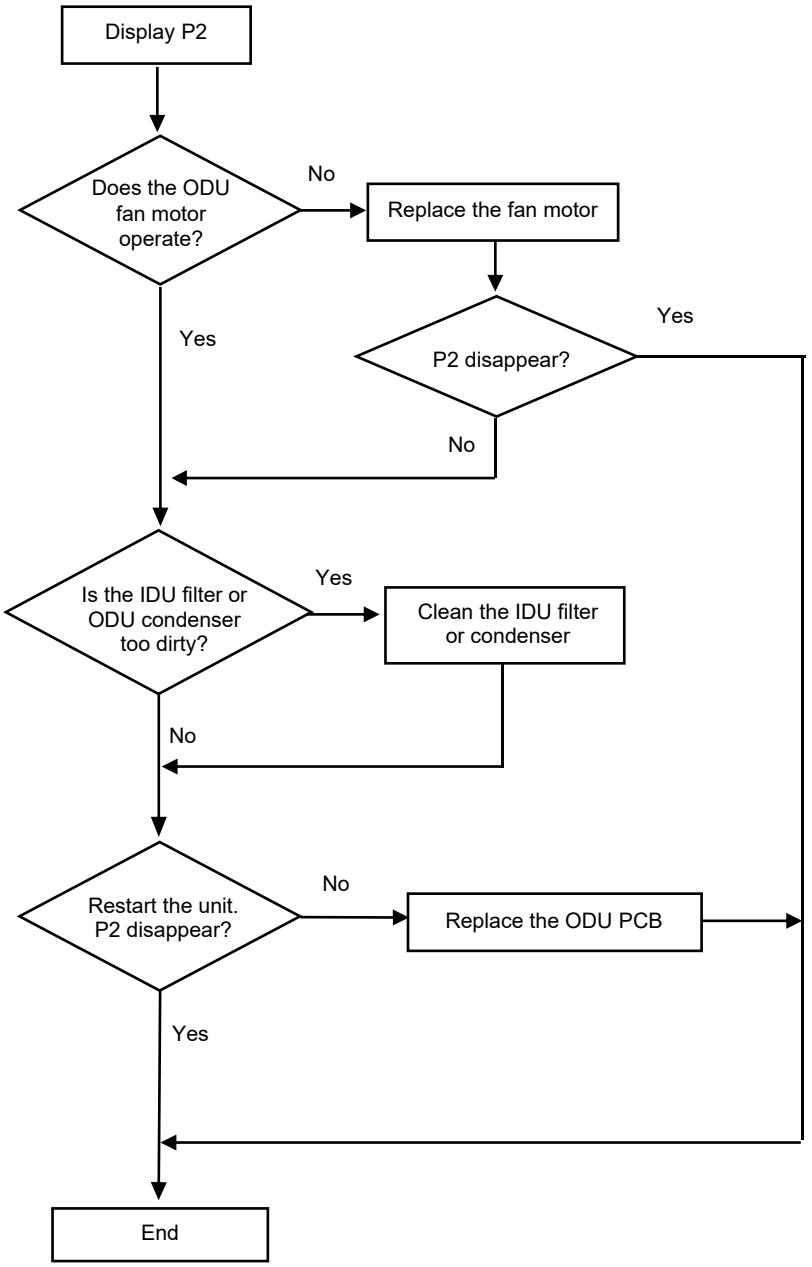
1. Test voltage between L and N. When the power supply V > AC260V or V < AC150V, the AC will display the "P1" error code. The unit will recover back to the previous status while V > AC155V.

2. Test voltage on the big size electrolytic capacitor of the ODU PCB. When DC busbar voltage V > DC420V or V < DC150V, the unit will recover back to the previous status while DC190V < V < DC410V.

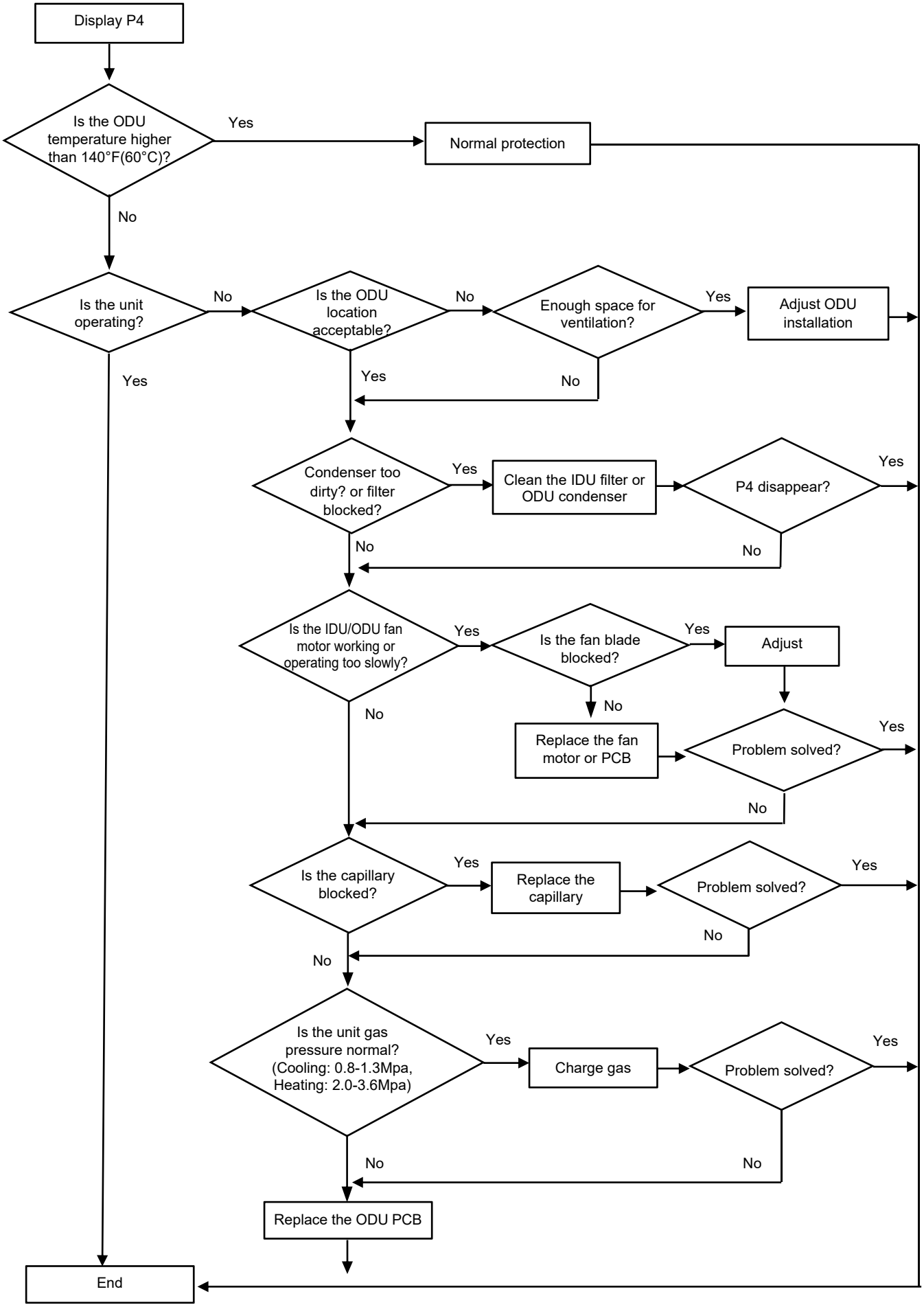


14) P2 --- Over-Current Protection

When the AC unit's running current is more than Imax, the unit will stop and display the "P2" error code.
Note: For different AC models, the Imax has different valves.

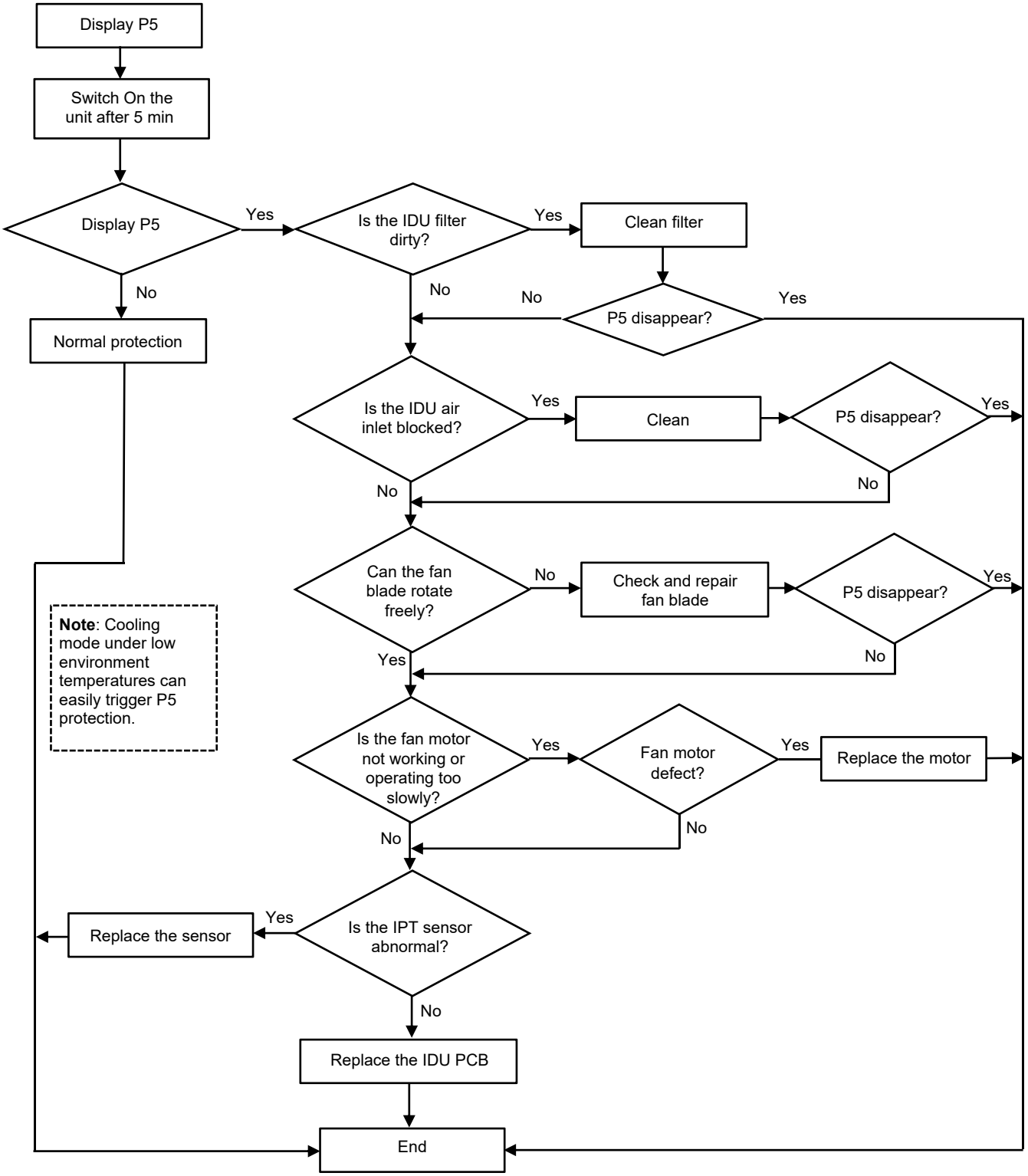


15) P4 --- ODU Discharge Temperature Overheating Protection



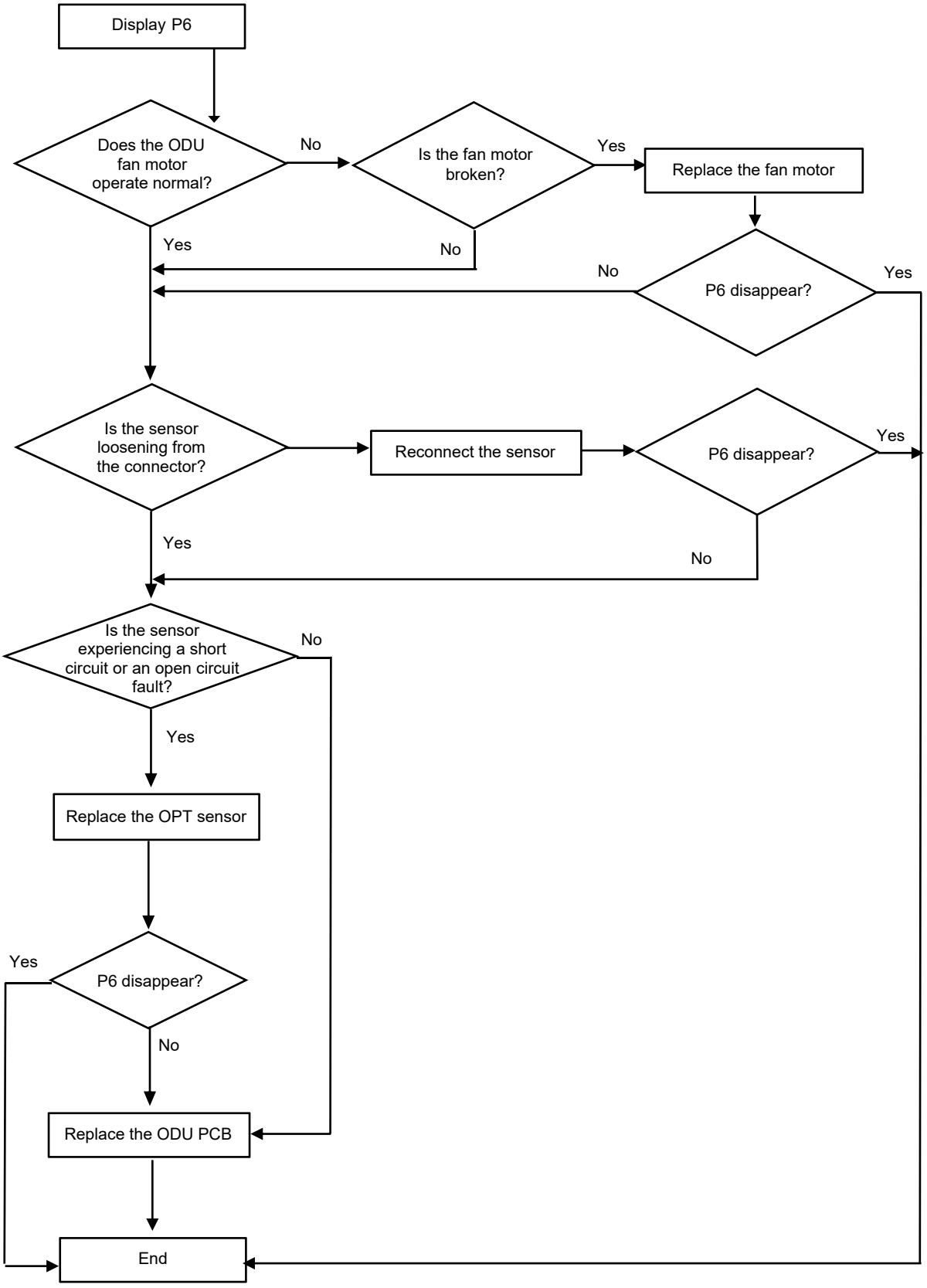
16) P5 --- Sub-Cooling Protection in Cooling/Dry Mode

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



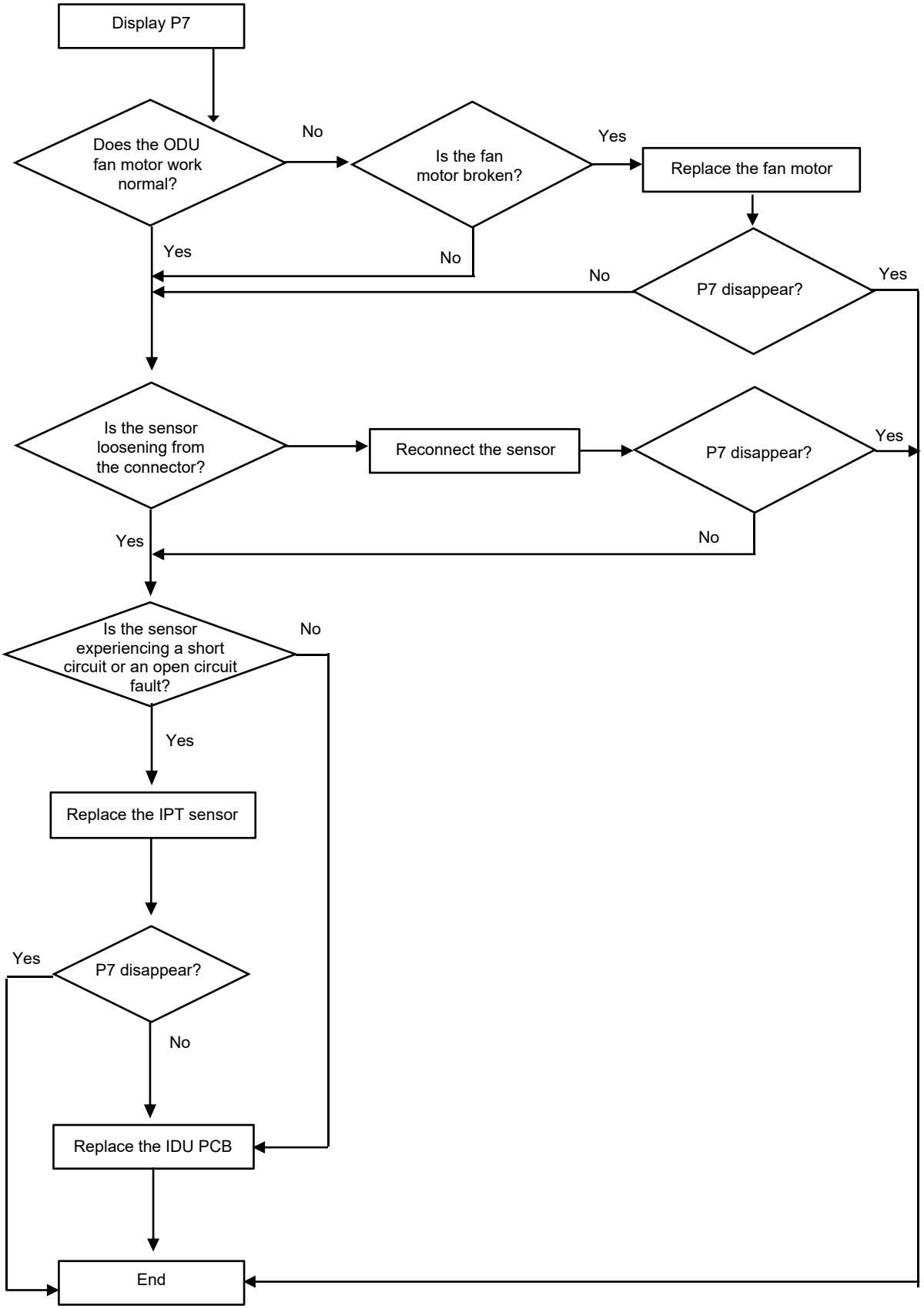
17) P6 --- Overheating Protection in Cooling Mode

In Cooling or Dry mode, when the ODU condenser coil temperature is OPT ≥ 144°F(62°C), the MCU will switch Off the outdoor unit and display the "P6" error code.



18) P7 --- Overheating Protection in Heating Mode

In Heating mode, when the IDU evaporator coil temperature is IPT ≥ 144°F(62°C), the ODU PCB will switch Off the outdoor unit and display the "P7" error code.

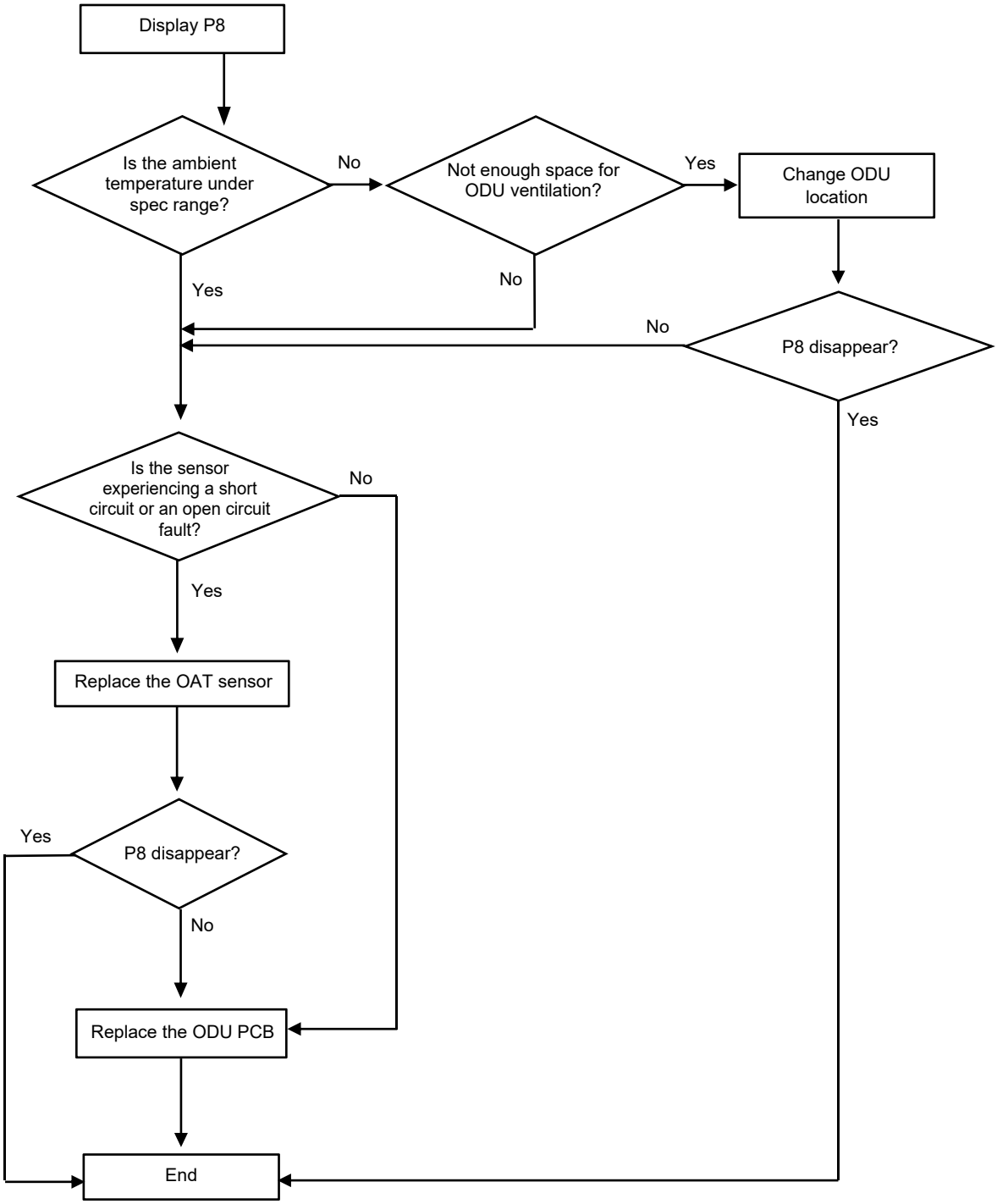


19) P8 --- Outdoor Over-Temperature / Under-Temperature Protection

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

1) **In Cooling or Dry mode**: ODU ambient temperature: OAT < -4°F(-20°C) or OAT > 145°F(63°C)
2) **In Heating mode**:

   a. OAT ≥ 104°F(40°C)
   b. 86°F(30°C) < OAT ≤ 104°F(40°C) and RT > 95°F(35°C)

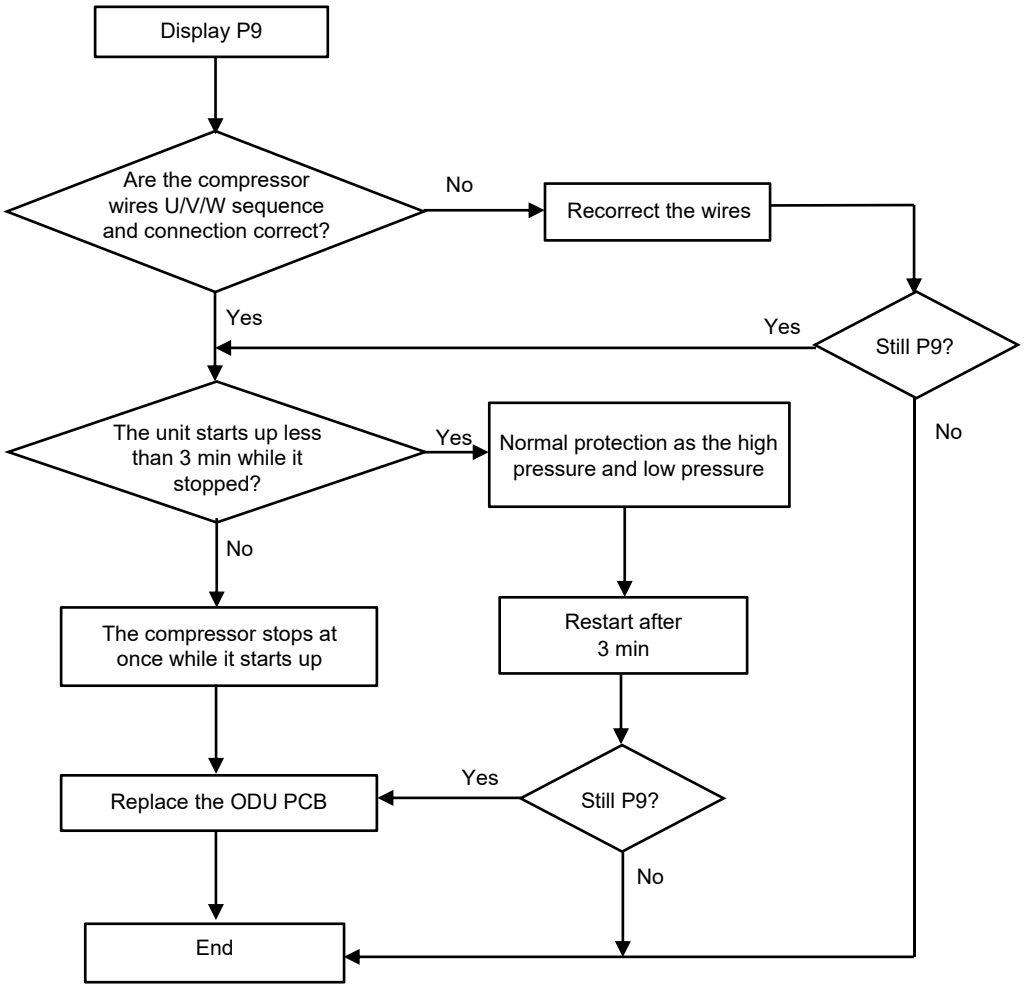


20) P9 --- Compressor Driving Protection (Compressor Load Abnormal)

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

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

The outdoor unit will shut Off and display the "P9" error code.
The unit will restart 6 times continuously. If it still can't operate normally, then the unit will display the error code again.



21) PA --- Communication Failure for Top Flow Unit / Preset Mode Conflict

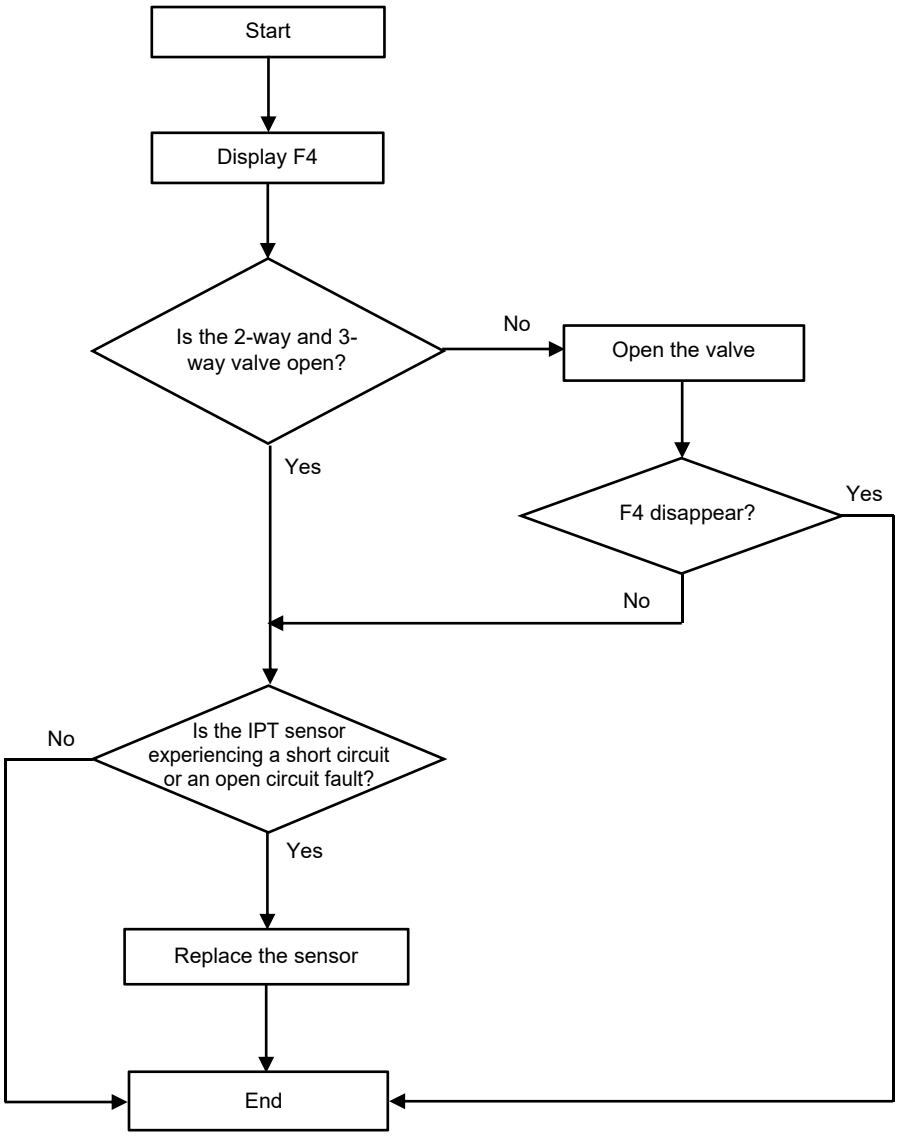
Cause:
1) If the first-activated indoor unit (with the highest priority) operates in Cooling/Dehumidification mode, other indoor units can only operate in Cooling/Dehumidification mode and Air Supply mode. Otherwise, an indoor unit attempting to operate in a different mode will report a mode conflict fault and will not be allowed to start up. This will not affect the indoor units already running.

2) If the first-activated indoor unit (with the highest priority) operates in Heating mode, other indoor units can only operate in Heating mode. Otherwise, an indoor unit attempting to operate in a different mode will report a mode conflict fault and will not be allowed to start up. This will not affect the indoor units already running.

Solution: Set all the indoor units to the same mode.

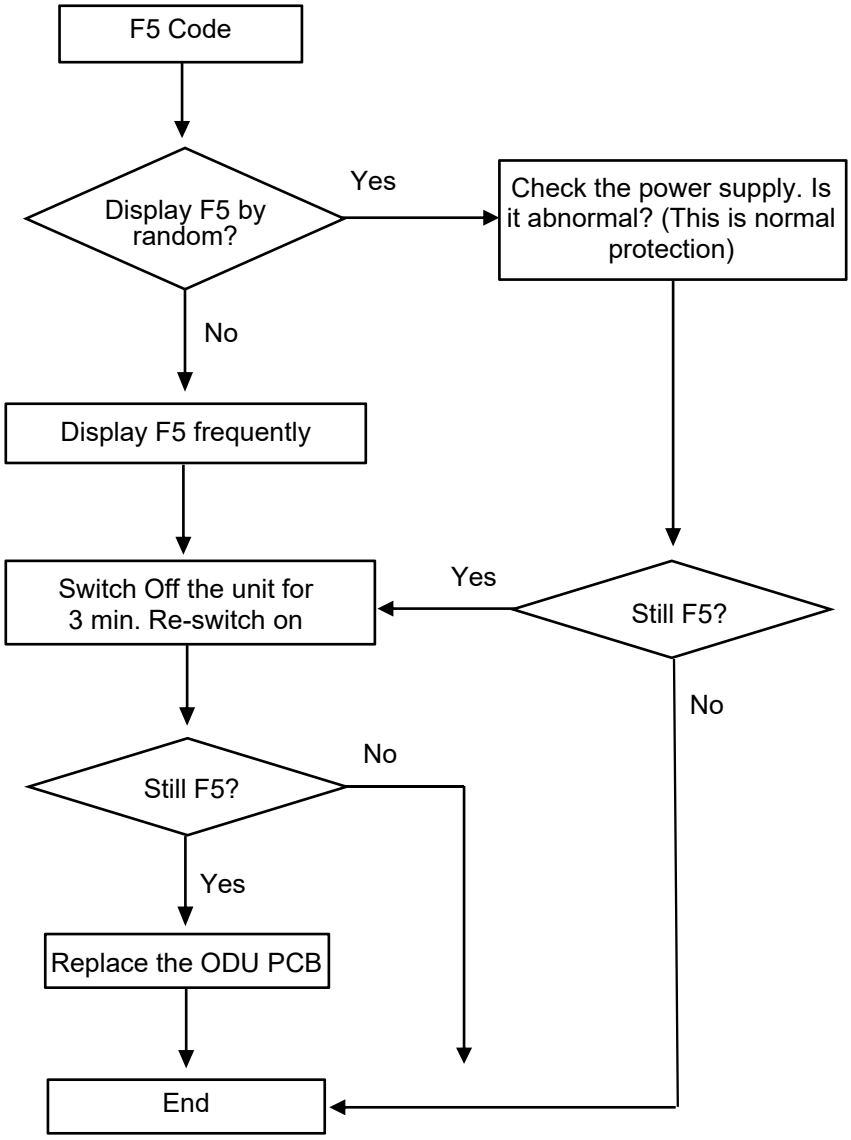
22) F4 --- Cooling System Gas Flow Abnormal Protection

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.



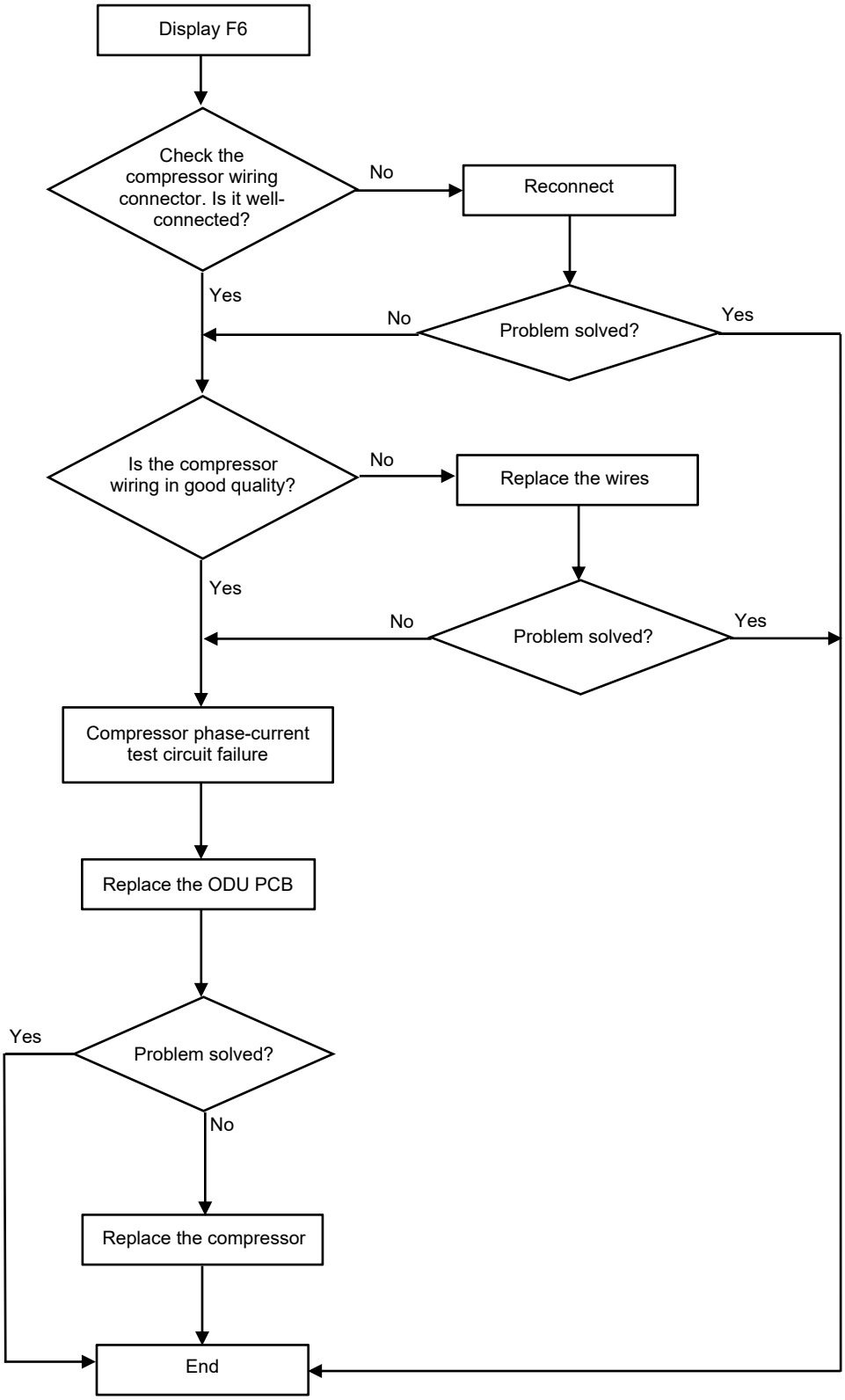
23) F5 --- PFC Protection

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



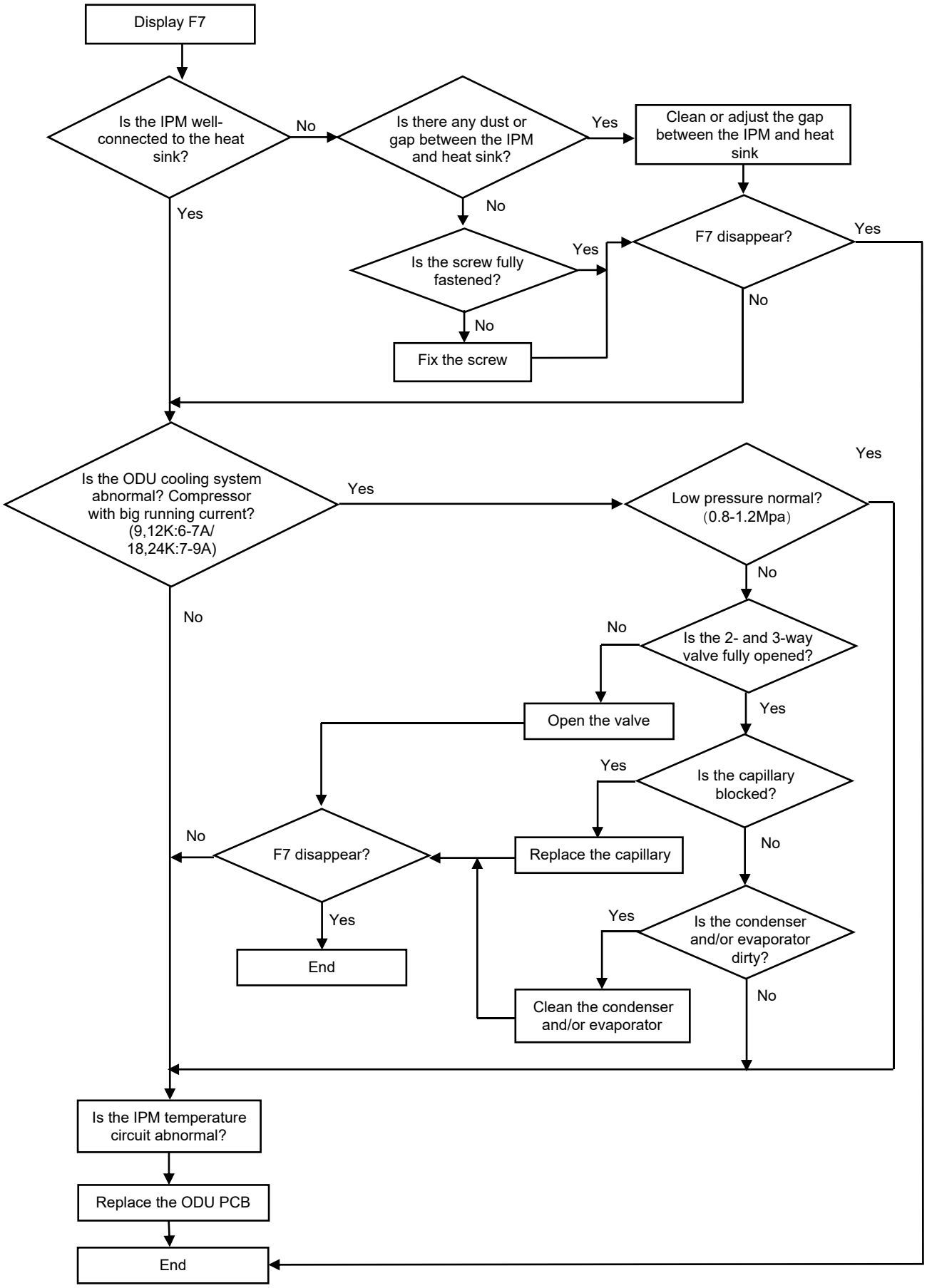
24) F6 --- Compressor Lack of Phase / Anti-Phase Protection

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.



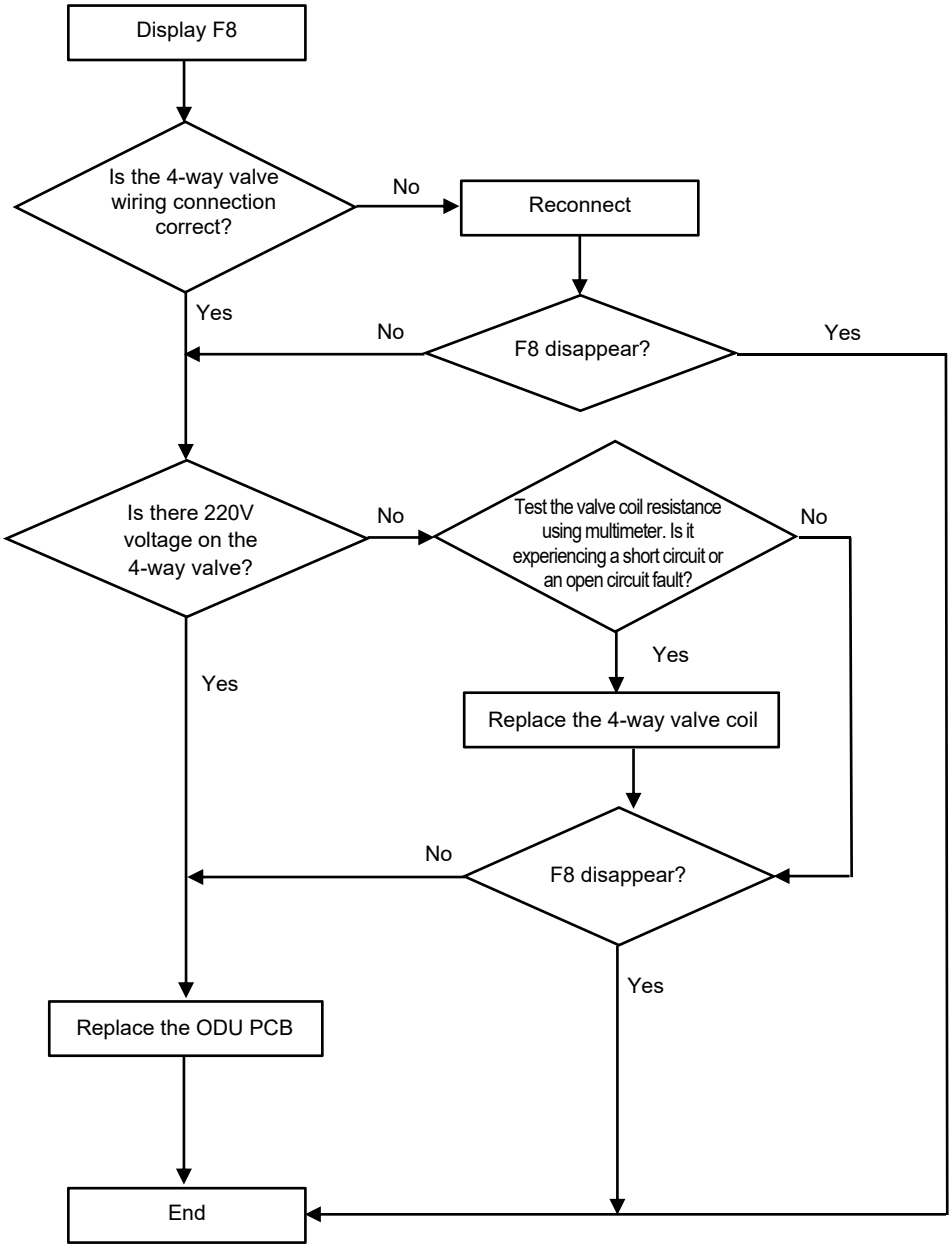
25) F7 --- Module Temperature Protection

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.



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

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



27) F9 --- Module Temperature Test Circuit Failure

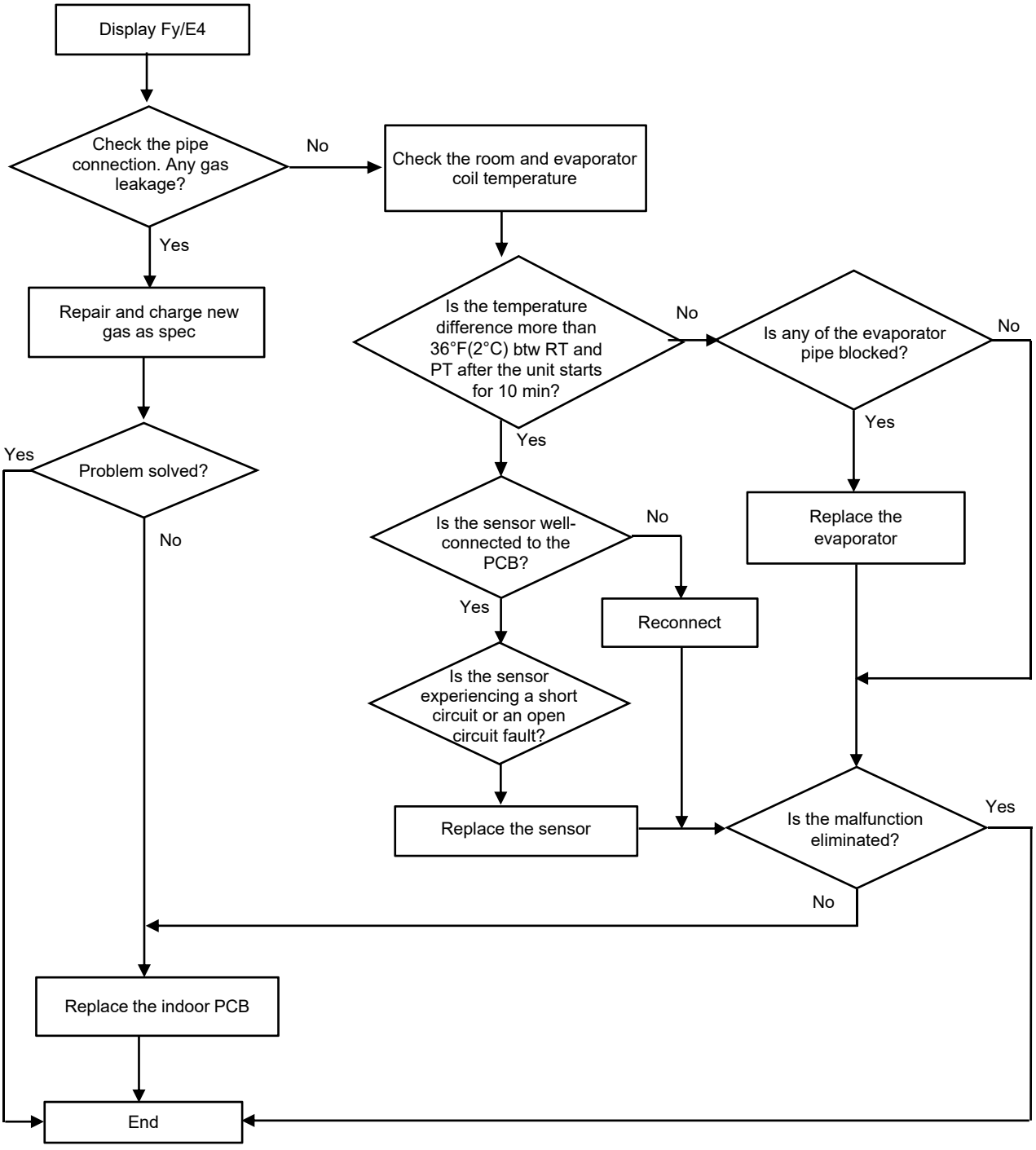
Reason: The IPM module temperature test circuit failure.
Solution: Replace the ODU PCB.

28) FA --- Compressor Phase-Current Test Circuit Failure

Reason: The compressor phase-current test circuit failure.
Solution: Replace the ODU PCB.

29) Fy, E4 --- Gas Leakage Protection and Abnormal AC Cooling System

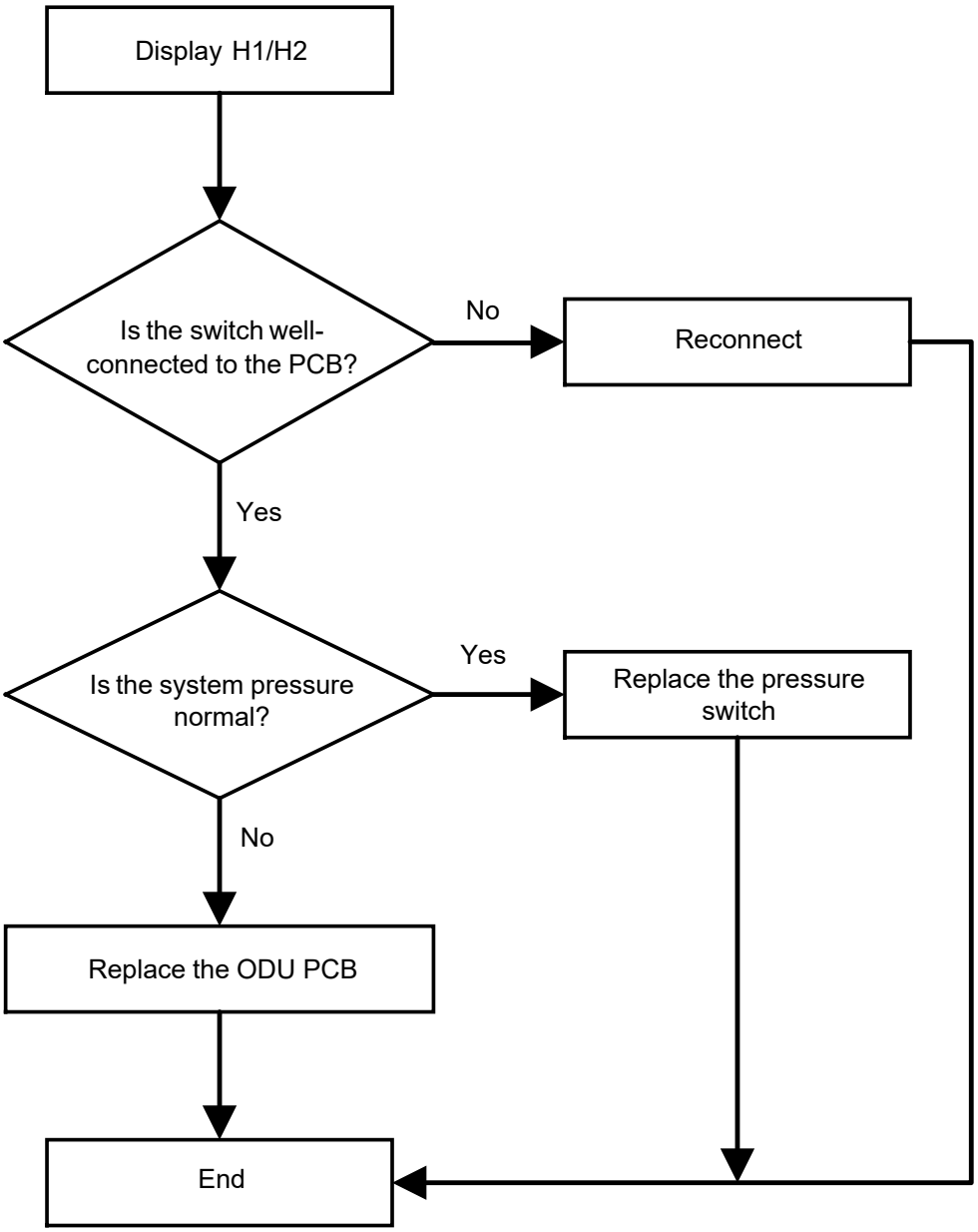
After the compressor operates at high frequency for 9 min, if the IDU evaporator and ODU condenser temperatures show only minor variations compared to previous readings but the compressor discharge temperature remains high, the unit will display the "Fy" or "E4" error code.



30) H1, H2 --- High Pressure Switch Failure and Low Pressure Switch Failure

1. The high-pressure switch is installed at the discharge pipe of the system. When the pressure on the high-pressure side of the system exceeds the preset protection value, the protection mechanism is triggered. The "H1" error code displays.

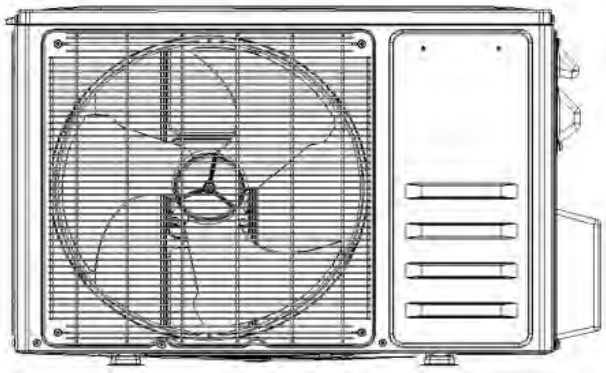
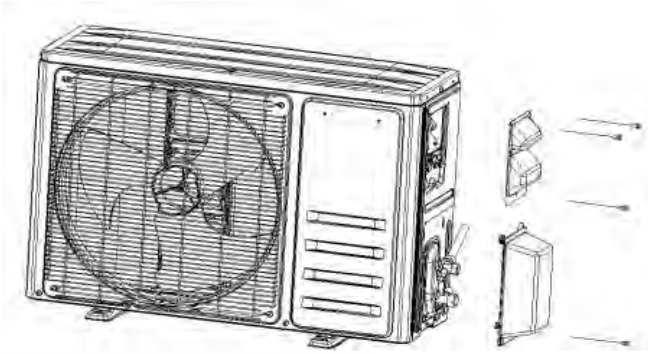
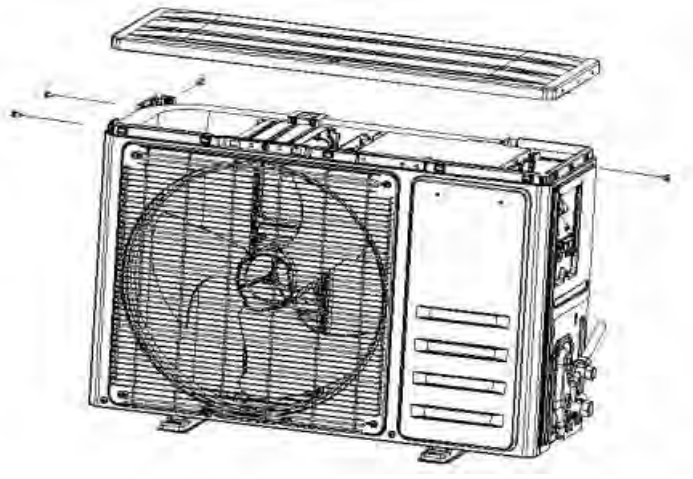
2. The low-pressure switch is installed at the suction pipe of the system. When the pressure on the low-pressure side of the system falls below the preset protection value, the protection mechanism is triggered. The "H2" error code displays.

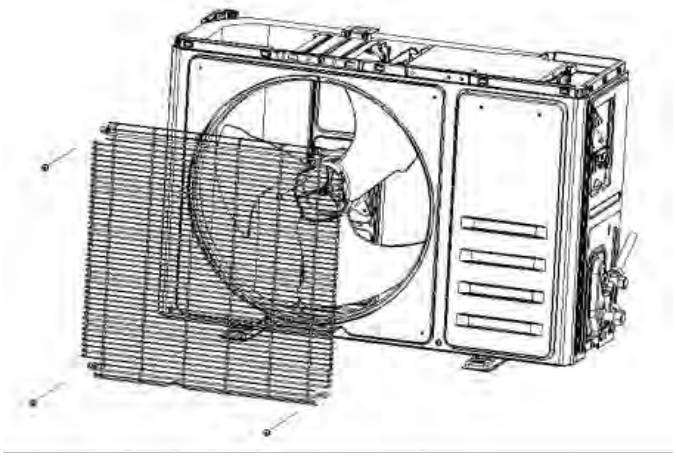
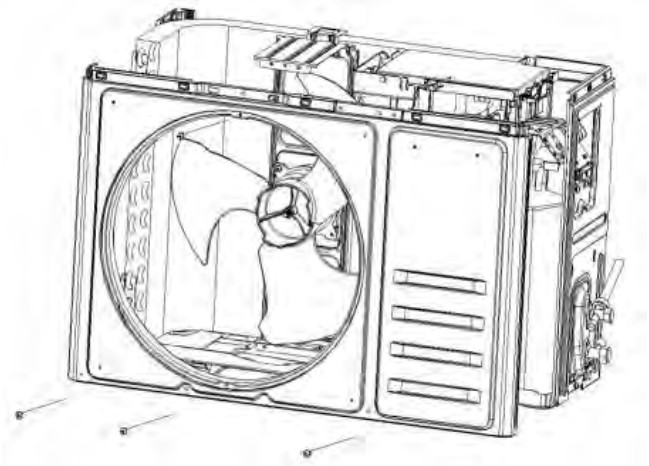
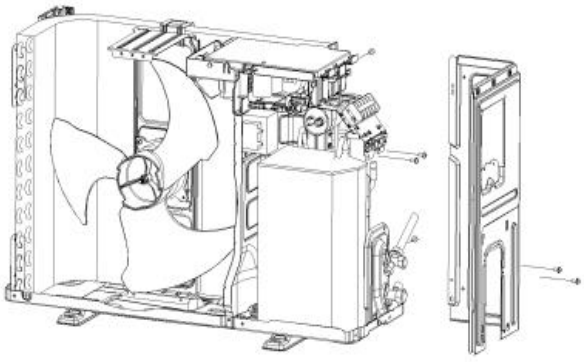


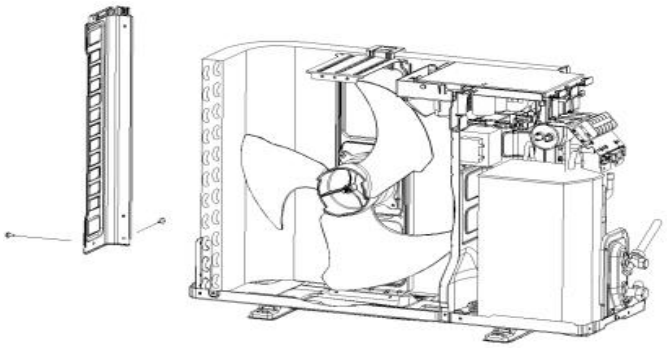
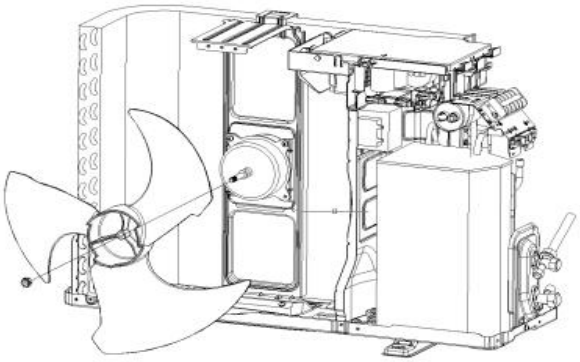
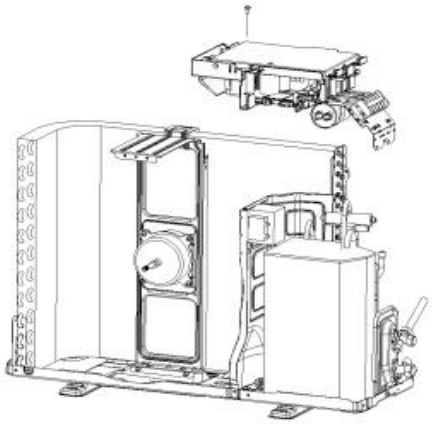
7. Indoor and Outdoor Unit Disassembly

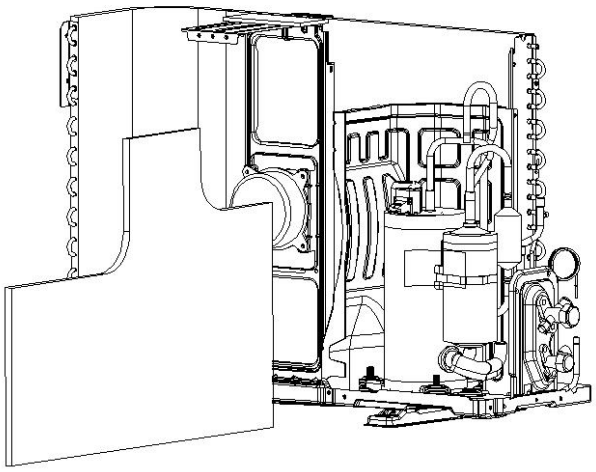
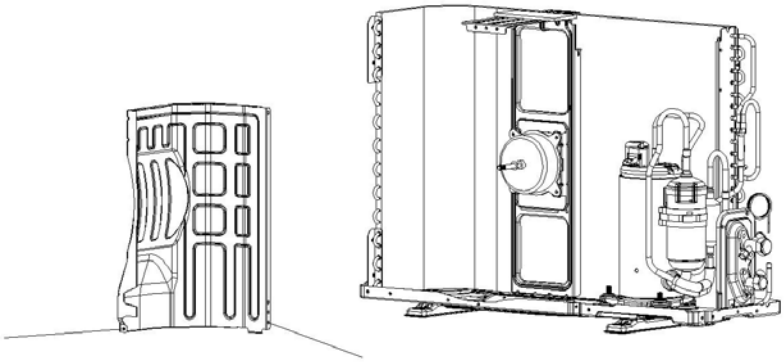
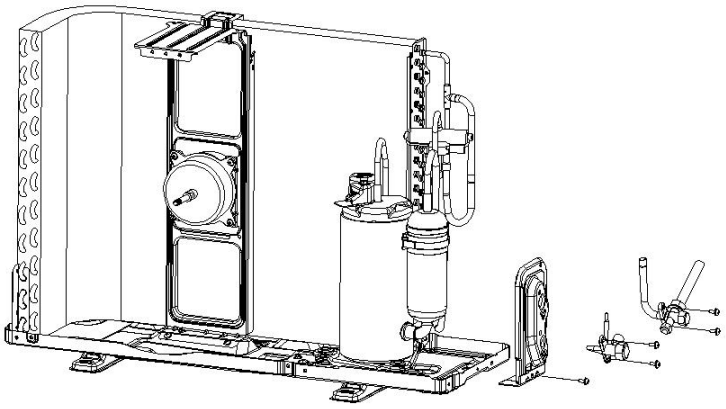
7.1 Outdoor Unit Disassembly

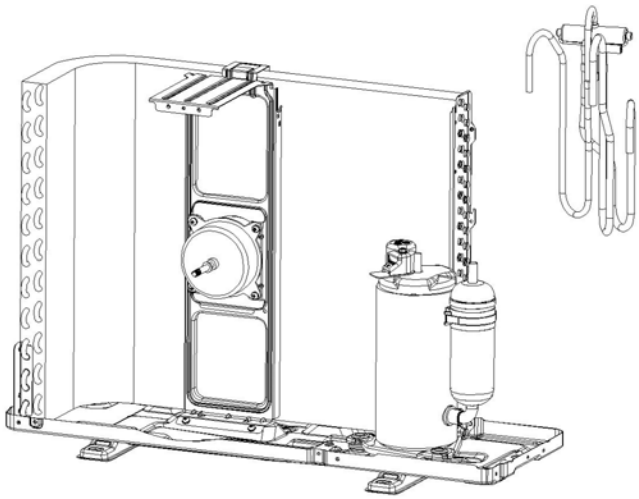
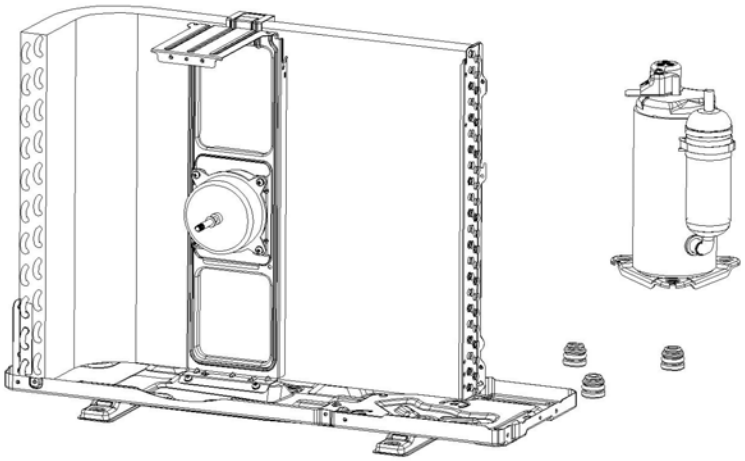
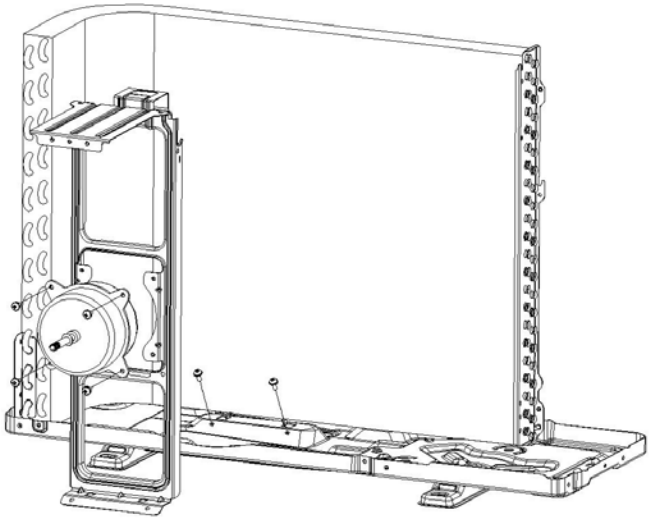
Outdoor Unit Model Numbers: YN020GLSI24M2G | YN030GLSI24M3G | YN040GLSI24M4G | YN050GLSI24M5G

Steps		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 off the top cover.	

2. Disassemble the fan guard and front panel		
A	Remove the grille screws from the front panel, then take out the grille.	
B	**1).** Unfix the screws on the front panel of the fan guard. **2).** Separate the ODU middle plate and base plate. Lift the front panel so you can take it out from the unit.	
3. Disassemble the left and right plate		
A	Unfix the screws on the right plate, electric box assembly, valve plate, and base plate. Then remove the right plate.	

B	Unfix the screws on the left plate, base plate, and condenser plate. Then take out the left plate.	
4. Disassemble the axis fan blade		
A	Unscrew the fan blade nut. Remove the blade.	
5. Disassemble the electric box		
A	Unfix the screws on the electric box and motor supporter. Loosen the wiring clamp, then take out the control box.	

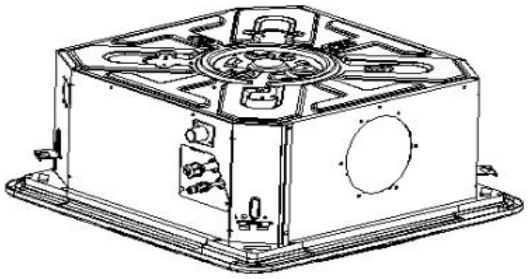
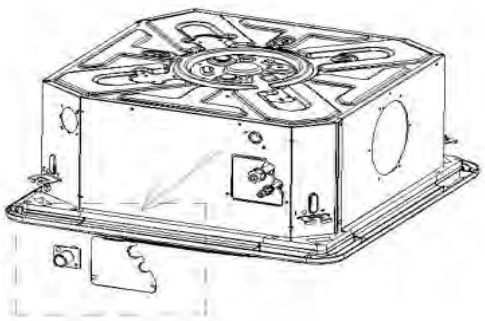
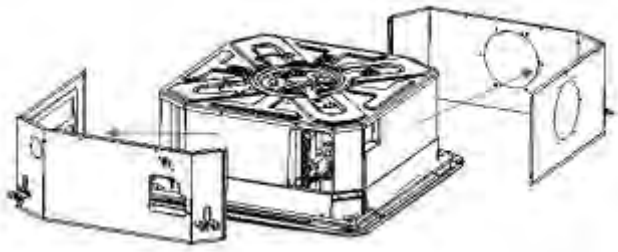
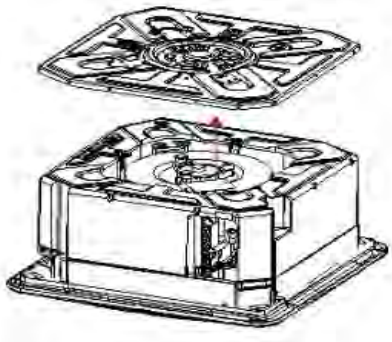
6. Remove the noise cotton		
A	Take the noise cotton out.	
7. Disassemble the separate plate		
A	Unfix the screw on the separate plate and unit, then take it out.	
8. Disassemble the 2-way and 3-way valve		
A	Unfix the screws on the valve plate and base. Take out the 2-way and 3-way valve by welding. **Note**: **1).** Welding can only occur while there is no gas in the unit. **2).** Pay attention to the fire to prevent any injury.	

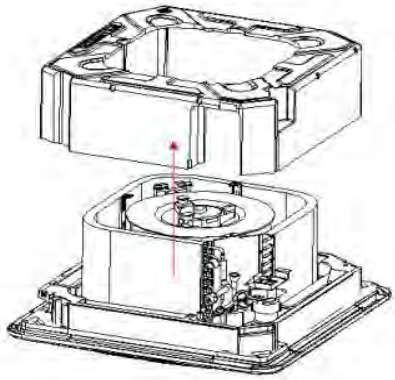
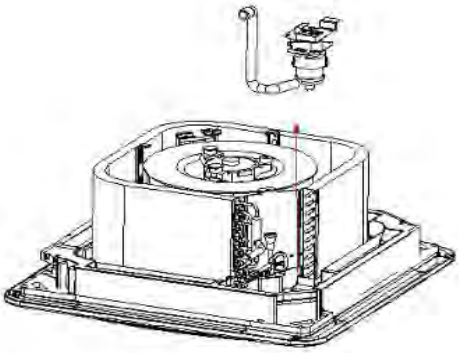
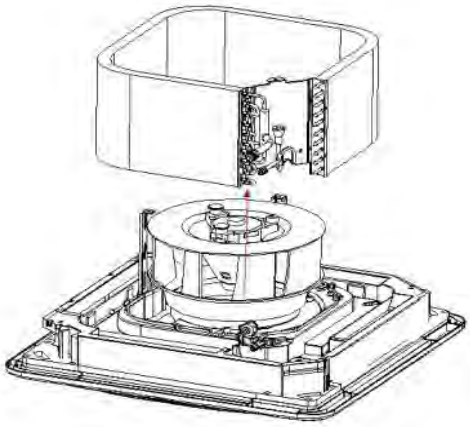
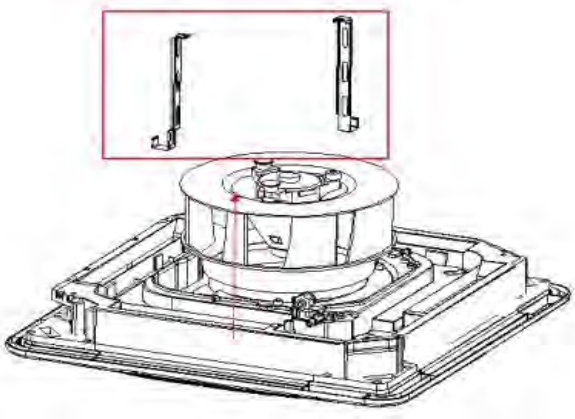
9. Disassemble the 4-way valve assembly		
A	Remove the 4-way valve from the system by welding. Ensure there is no damage to the compressor, nameplate, etc.	
10. Disassemble the compressor		
A	Unscrew the nuts and remove the compressor.	
11. Remove the fan motor and fan supporter		
A	Unfix the screws 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.	

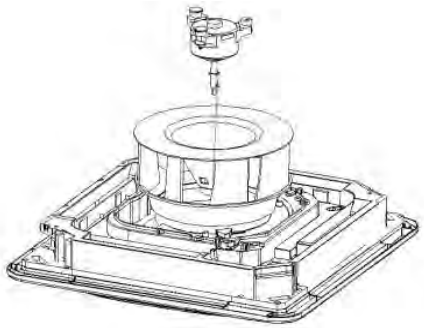
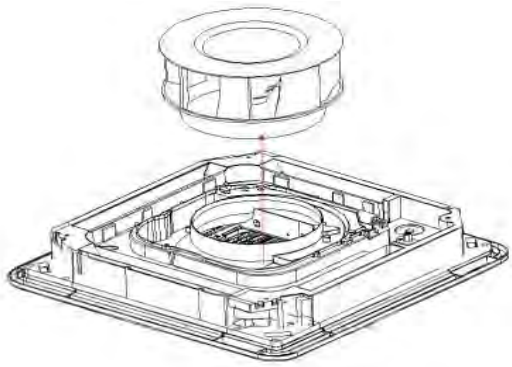
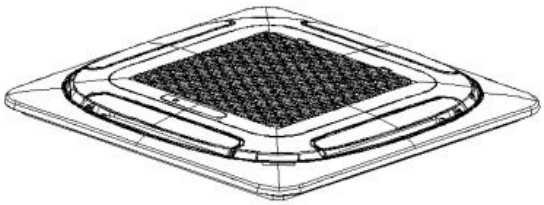
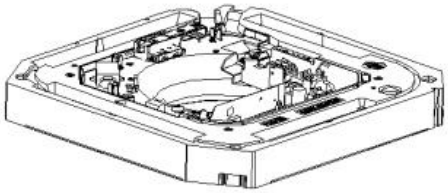
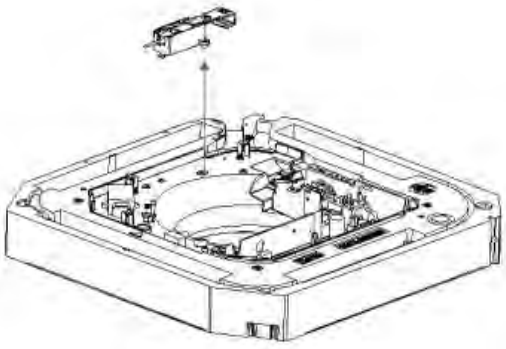
7.2 Indoor Unit Disassembly

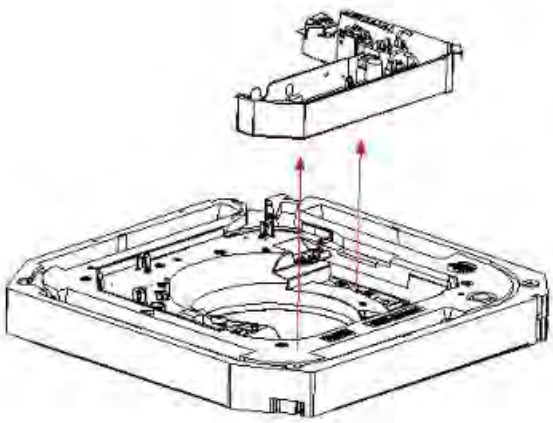
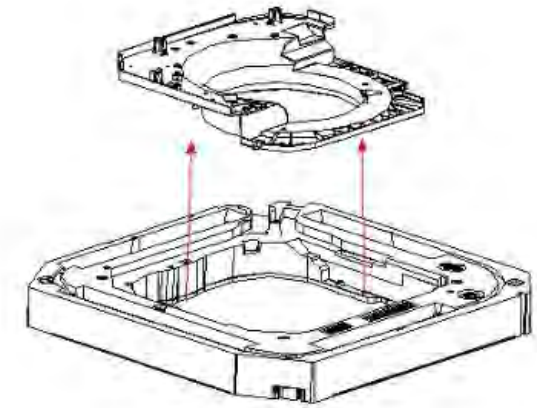
Ceiling Cassette

Indoor Unit Model Numbers: CT009GLSILCFHG | CT012GLSILCFHG | CT018GLSILCFHG | CT024GLSILSFHG

Steps	Reference Photo
Before disassembly	
1. Remove the seal plate and drain spout	
A. Disassemble the seal plate. **B.** Remove the drain spout.	
2. Remove the front and rear fascia assembly	
Unfix the screws and hooks on the base plate, as well as the front and rear panel assembly. Remove the front and rear fascia assembly from the unit.	
3. Dismantle the base assembly	
Remove the chassis components by unfixing the screws between the base foam part, evaporator fix plate, and base assembly.	

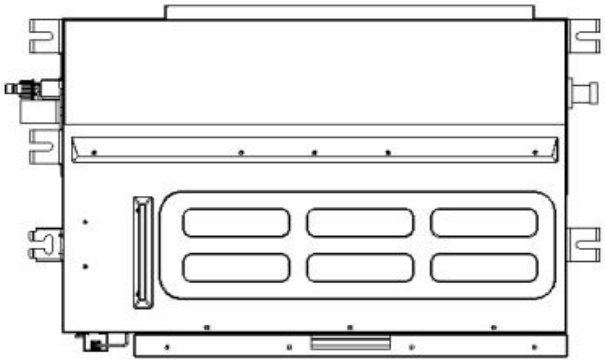
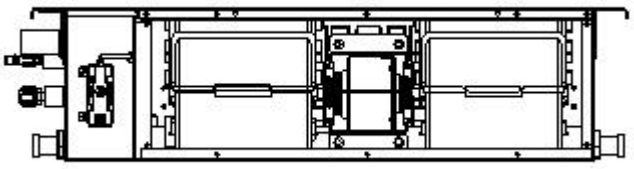
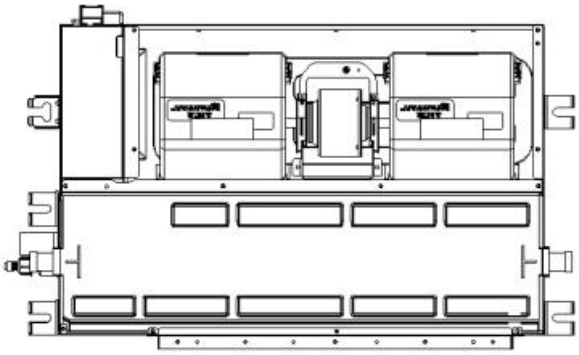
4. Remove the base foam assembly	
Remove the base foam assembly.	
5. Dismantle the water pump assembly	
Dismantle the water pump assembly. Take out the water pump in the same direction shown in the photo.	
6. Dismantle the evaporator assembly	
Dismantle the evaporator assembly. Take out the evaporator in the same direction shown in the photo.	
7. Remove the evaporator fixing plates	
Remove the evaporator fixing plates in the same direction as shown in the photo.	

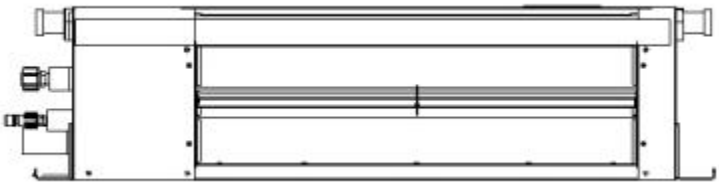
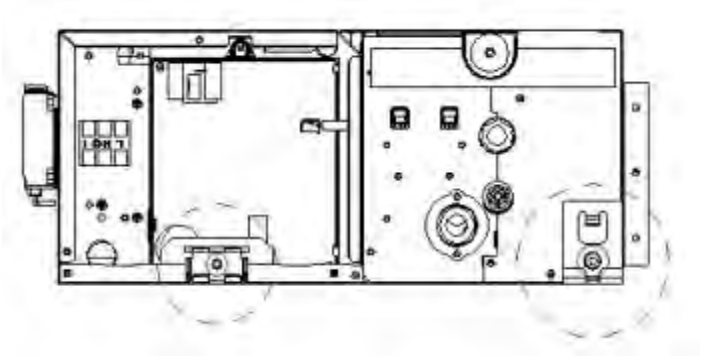
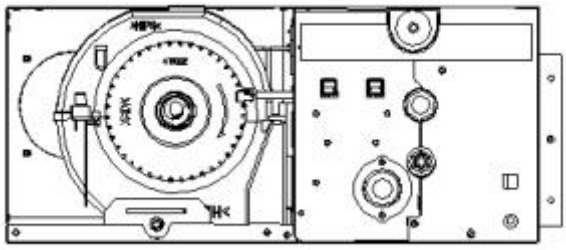
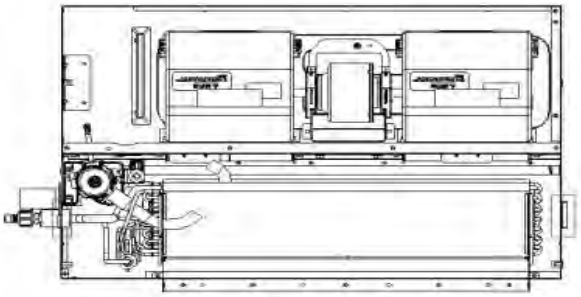
8. Disassemble the DC motor	
Disassemble the DC motor.	
9. Remove the centrifugal fan	
Remove the centrifugal fan.	
10. Remove the panel assembly	
Unfix the screws on the panel and drainage assembly. Remove the panel assembly	 
11. Remove the USB/wireless network module	
Unfix the screws on the USB/ wireless network module and air guide part. Remove the module.	

12. Remove the electric box assembly	
Unfix the screws on the electric control box, water tray assembly, and air guide in the direction shown in the photo. Remove the electric control box assembly.	
13. Disassemble the air guide parts	
Unfix the screws on the guide parts and water tray. Remove the air guide parts.	

Ductable Concealed

Indoor Unit Model Numbers: RT009GLSILCFHG | RT012GLSILCFHG | RT018GLSILCFHG | RT024GLSILSFHG

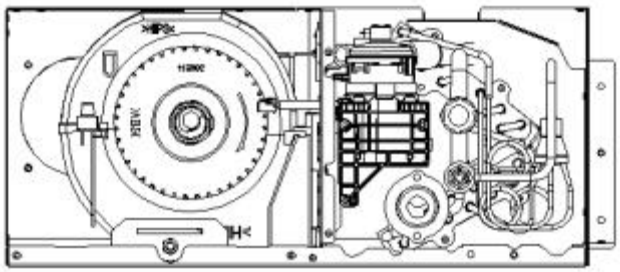
Steps	Reference Photo
Before disassembly	
1. Disassemble the filter assembly	
A. Disassemble the filter assembly. **B.** Remove the filter.	
2. Disassemble the base part and air return plate	
A. Remove the base part by unfixing the screws on the left and right side panels, as well as the center partition. **B.** Remove the screws between the air return plate, left side plate, and electric control box. Then remove the air return plate. **C.** Remove the wireless network fixing cover and take out the USB connection cable.	

3. Disassemble the front panel assembly	
Unfix the screws on the front panel, then remove the assembly.	
4. Remove the electrical box cover and hooks	
A. Unfix the screws on the electrical box cover, then remove the cover. **B.** Unfix the screws on the hooks, then remove the hooks.	
5. Remove the electric control box assembly	
Unfix the screws on the electric control box, then remove the electric control box.	
6. Remove the water tray assembly	
A. Remove the base plate. **B.** Lift the drain nozzles up on both sides to take out the water tray.	

7. Disassemble the right side plate and drainage mounting assembly

A. Unfix the screws between the right side plate, evaporator end plate, top plate, and drain mounting assembly. Then remove the right side plate.

B. Remove the drain nozzle on the drain mounting assembly, then take out the assembly.

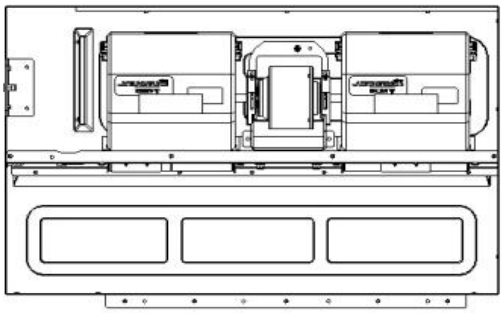


8. Remove the water pump assembly, evaporator module, and left side panel

A. Unfix the screws on the water pump assembly and center divider. Then remove the water pump assembly.

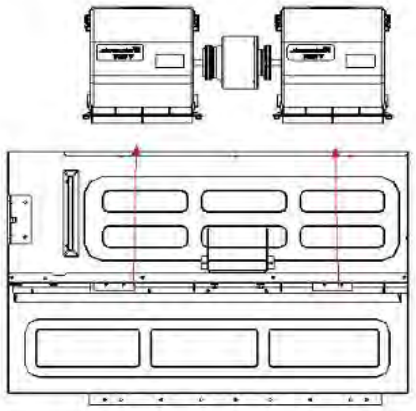
B. Unfix the screws on the evaporator module and left side panel assembly. Then take out the left side panel.

C. Unfix the screws on the left side panel, top panel, and center partition. Remove the left side panel.



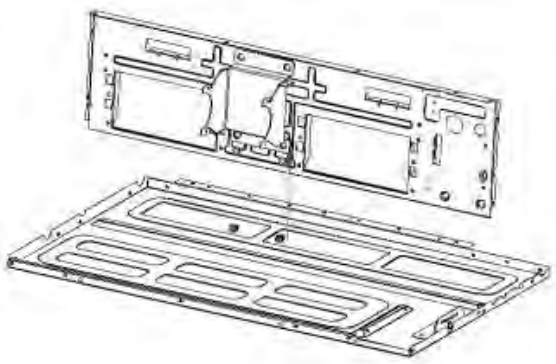
9. Remove the centrifugal fan volute assembly and DC motor

Remove the motor limit clasp, then take the volute assembly and DC motor out in the direction shown in the photo.



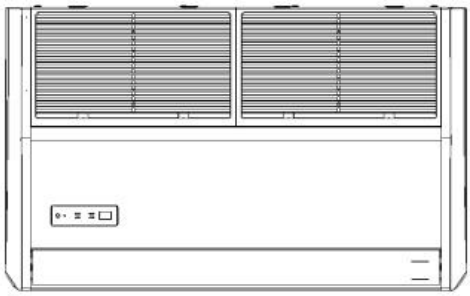
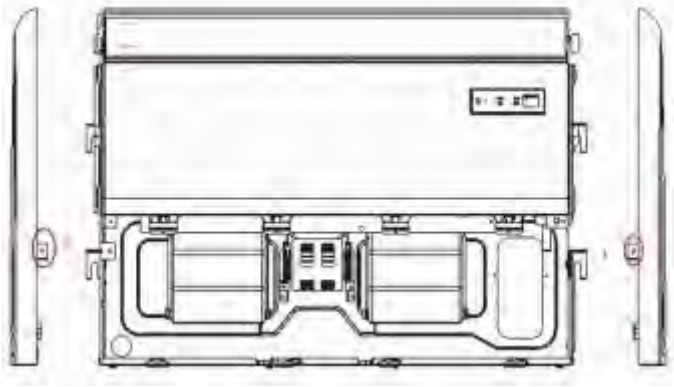
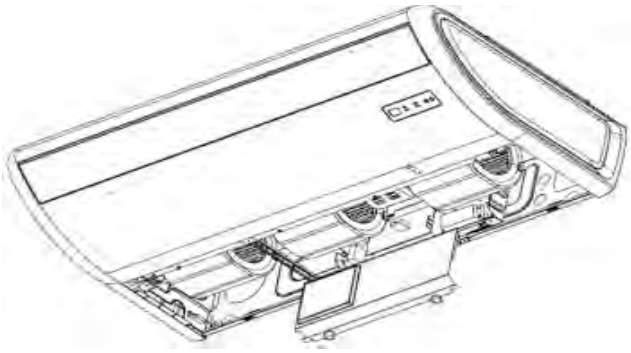
10. Remove the center divider assembly

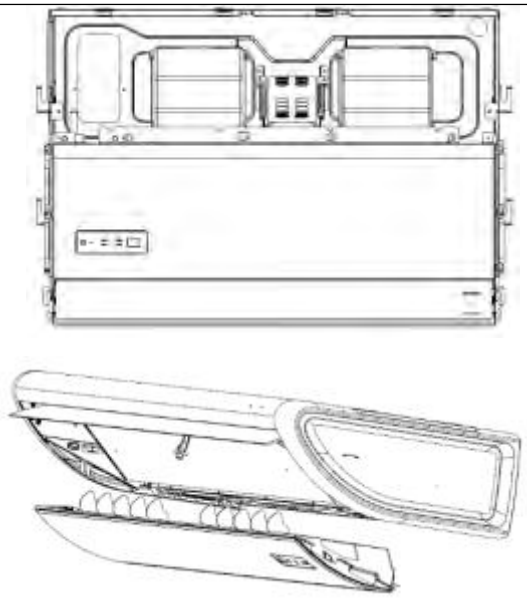
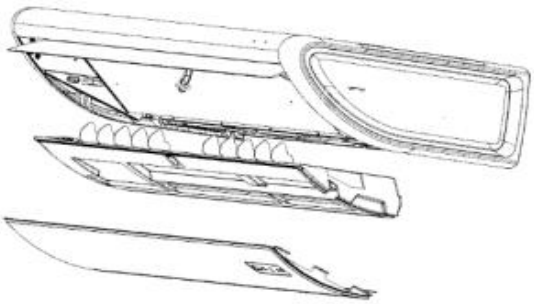
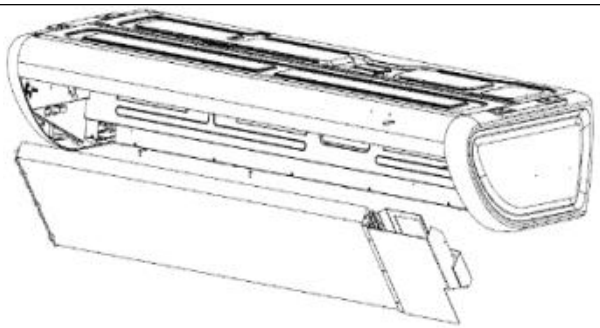
Unfix the screws on the center divider assembly and top cover. Remove the center divider.

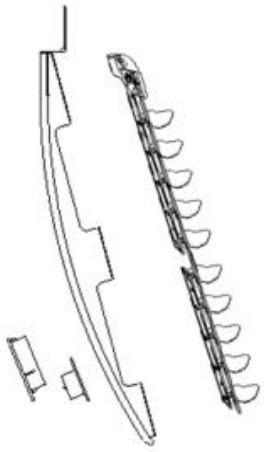
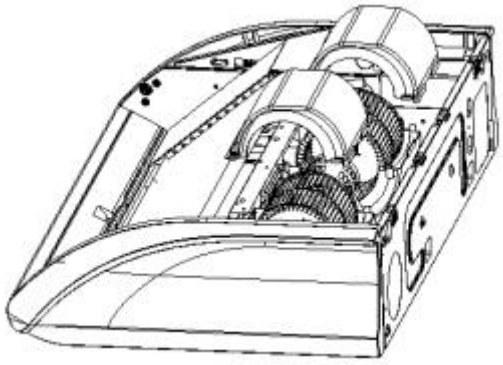
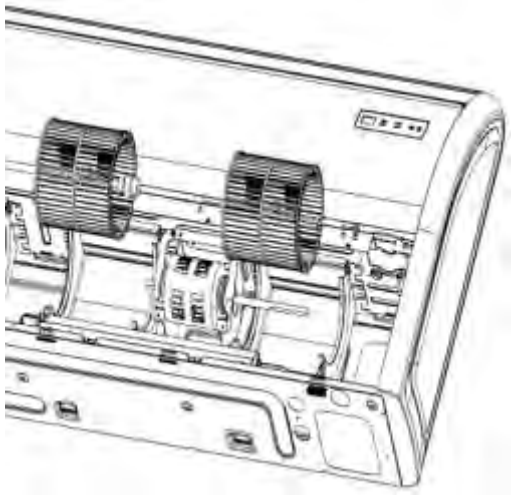
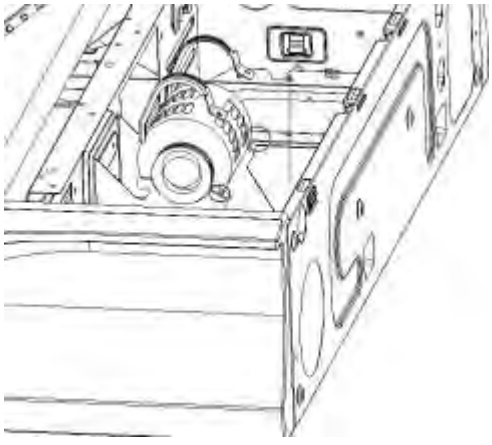


Floor-Ceiling Flex

Indoor Unit Model Numbers: UT018GLSILCFHG | UT024GLSILSFHG

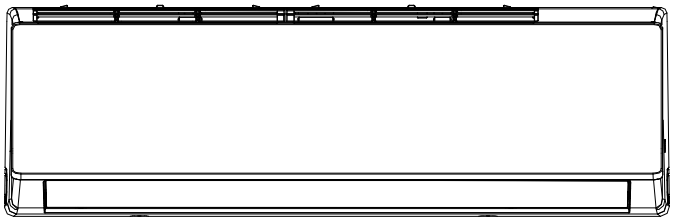
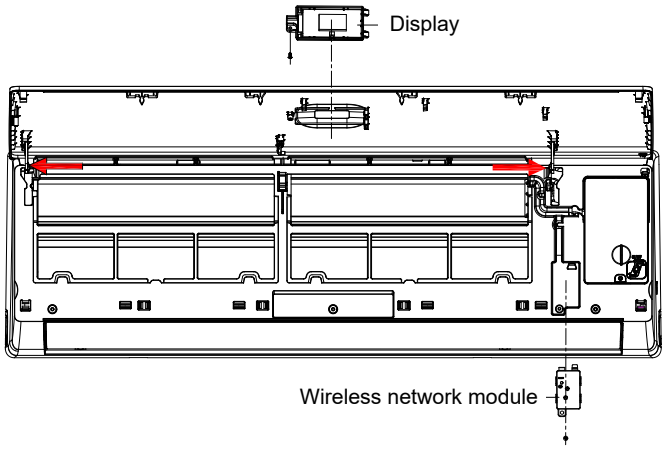
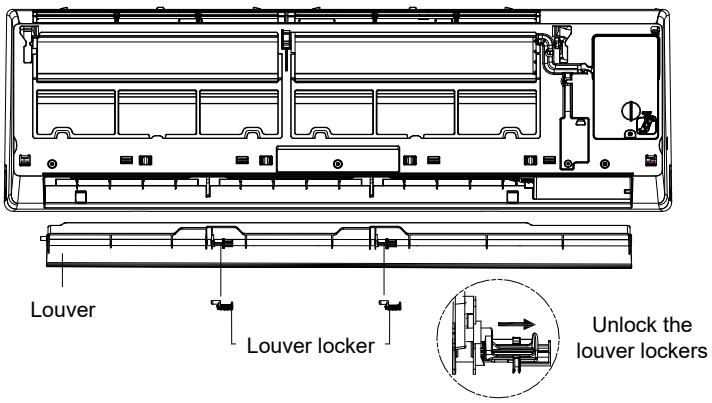
Steps	Reference Photo
Before disassembly	
1. Remove the front grille	
A. Remove the screws by pushing the buckles in the direction as shown in the photo. **B.** Open the grille. Then remove the grille from the back snap hook.	
2. Dismantle the left and right side plate	
Unfix the screws as shown in the photo. Remove the left and right side blocks from the snap hooks.	
3. Remove the electronic control box assembly	
Unfix the screws as shown in the photo. Then remove the electronic control cover plate.	

4. Remove the front panel assembly	
Unfix the screws on the front panel. Then remove the panel assembly.	
5. Remove the water tray	
Take out the water tray.	
6. Remove the evaporator assembly	
Take out the evaporator.	

7. Remove the display panel and vane assembly	
Take out the display panel and vane assembly.	
8. Remove the volute parts	
Remove the volute parts.	
9. Disassemble the centrifugal fan	
Take out the centrifugal fan.	
10. Disassemble the fan motor	
Remove the fan motor.	

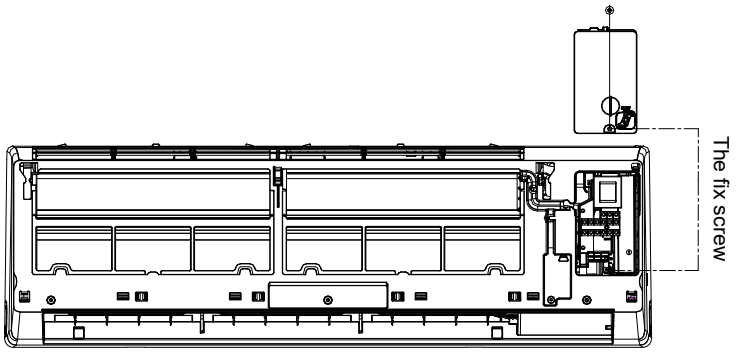
Wall Mounted

Indoor Unit Model Numbers: WT009ALSI24HLG | WT012ALSI24HLG | WT009GLSI24HLG | WT012GLSI24HLG | WT018GLSI24HLG | WT024GLSI24HLG

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

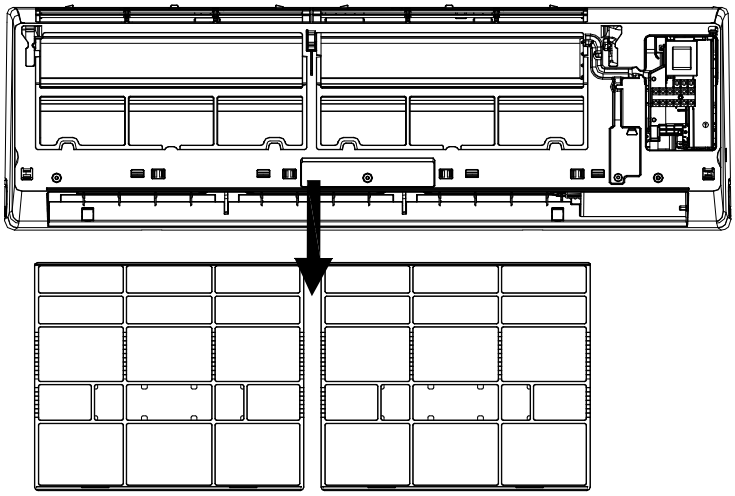
3. Remove the electric control box cover

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



4. Remove the filter

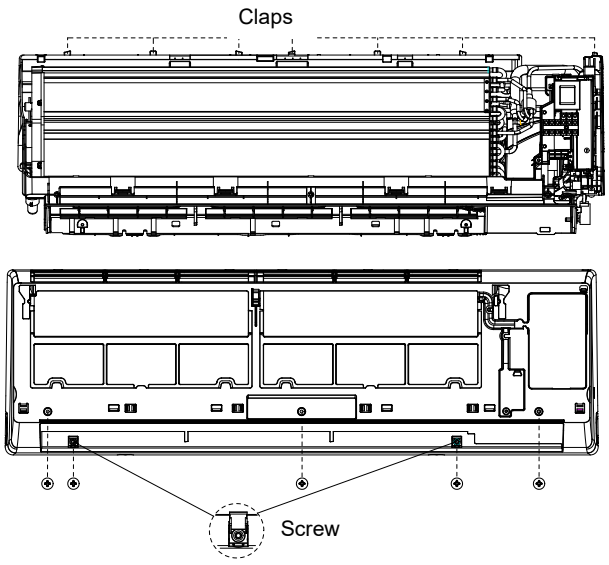
Push the filter slightly upwards. You can take the filter out from the unit.



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 out the frame.



6. Disassemble the electric control box

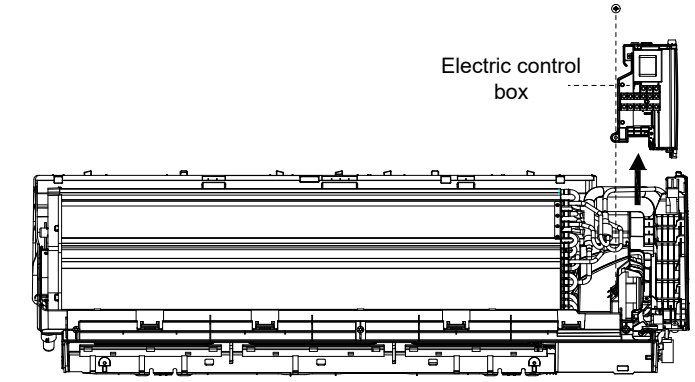
A. Remove the RT and IPT from the evaporator.

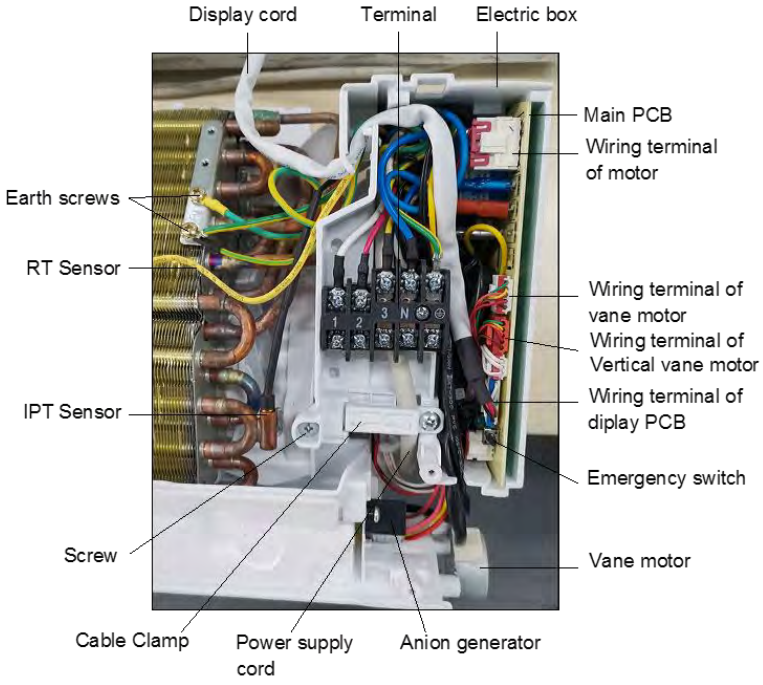
B. Unscrew all the earth ground wirings on the evaporator.

C. Take all the connectors out from the PCB.

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

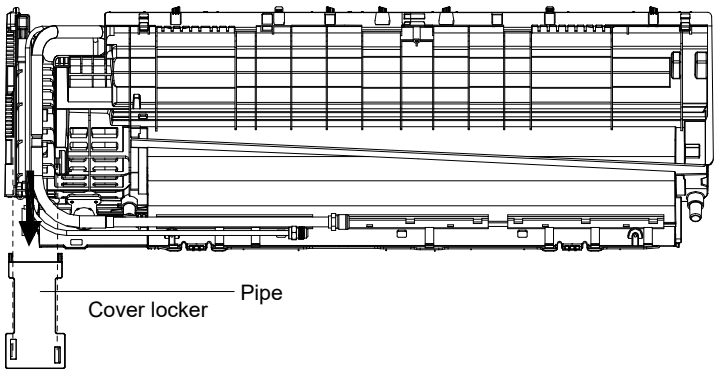
Note: The picture on the right is for your reference only. The wiring connection for the exact model may be slightly different.





7. Remove the pipe cover

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

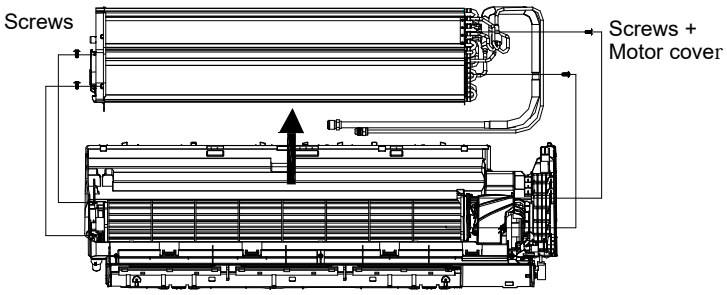


8. Disassemble the evaporator

A. Unfix 2 screws on the left side.

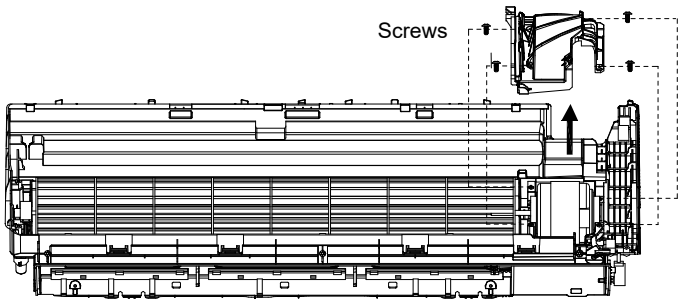
B. Unfix 2 screws on the right side of the motor cover/right support plate.

C. Take the evaporator out from the unit by uplifting the input/output pipes slightly.



9. Remove the motor cover

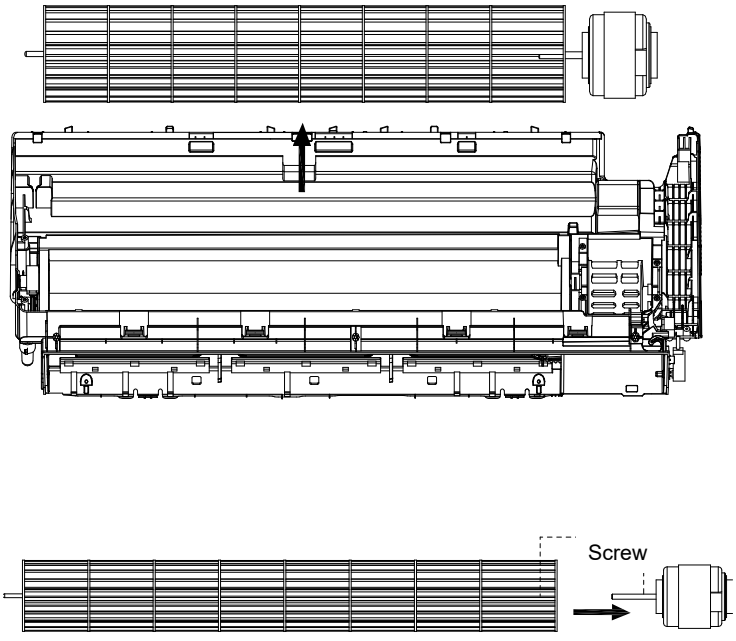
Unfix 4 screws on the motor cover of the base frame.



10. Disassemble the fan motor and fan blade

A. Lift the fan blade and fan motor. Take out the base frame.

B. Unfix 1 screw on the axis of the fan motor, then you can separate the fan blade and fan motor.



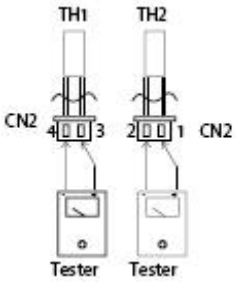
8. Thermistor Temperature Characteristics

Indoor Unit and Outdoor 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)	2.898	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	20.475	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
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				

Resistance at 77°F(25°C): Wall split type 5 kΩ; Cassette and Duct 10 kΩ.



TH1: Indoor room temperature sensor and outside air temperature sensor
TH2: Indoor exchange temperature sensor and outside exchange temperature sensor
TH4: Outdoor exchange temperature sensor and outside exchange temperature sensor
TH5: Outdoor ambient temperature sensor and outside exchange temperature sensor

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

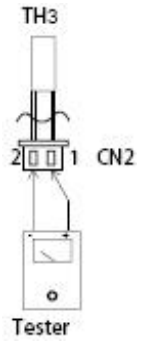
Outdoor Unit Discharge Sensor Temperature Characteristics

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
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 the resistance, disconnect the connectors as shown above.

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

PIONEER®

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