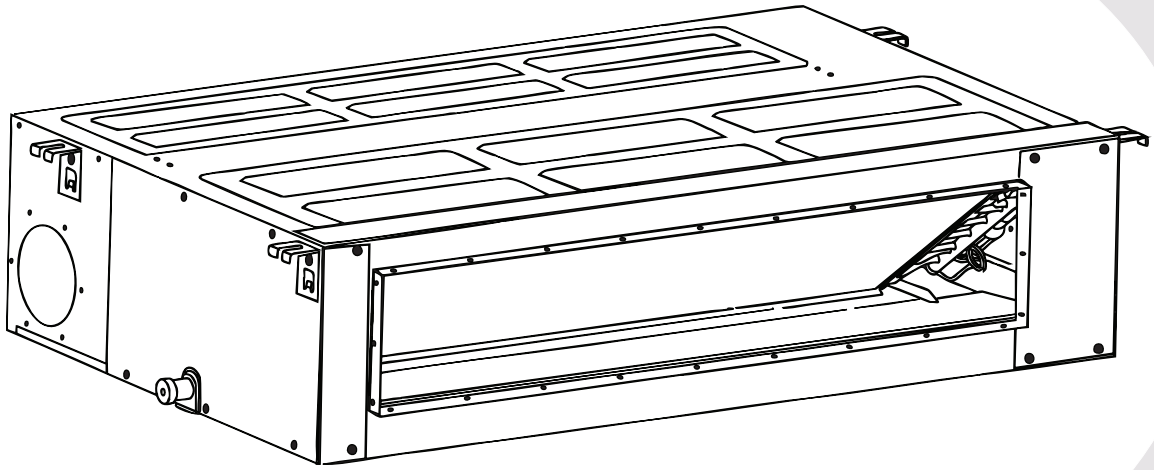
DUCTED MINI SPLIT SYSTEM AIR CONDITIONER / HEAT PUMP

PIONEER®

RYT-24 Inverter Series

For 9,500-22,000 BTU/hr Systems

Quantum Ultra (R-454B) - RT Indoor and YN Outdoor



Service Manual

Note
Intended for use with **Single-Zone Split Systems**. If the indoor sections will be installed as part of a **Multi-Zone System**, refer to the supplemental instructions provided with the Multi-Zone Outdoor Unit for complete and accurate guidance. Certain specifications—such as minimum floor area requirements—may differ, and are outlined in more detail within the **Multi-Zone Section** documentation.

IMPORTANT NOTICE:
Read this manual carefully before installing or operating your new air conditioning system. Be sure to save this manual for future reference.

CONTENTS

1. Important Notice 3
2. Maintenance Notes 4
3. R-454B Refrigerant Notes 7
4. Product Overview 13
5. Refrigerant Piping Specifications 19
6. Maintenance 20
7. Troubleshooting 22
8. Unit Control 57
9. Remote Control 63
10. Emergency Manual Button 66
11. Wiring Diagrams 67
12. PCB Layouts 69
13. Air Volume Static Pressure Curve 73
14. Noise Levels 74
15. System Diagram 77
16. Thermistor Temperature Characteristics 78

Important Notice

1

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

Information, specifications, and parameters are subject to change without prior notice due to technical modifications or improvements. Actual specifications are provided on the product nameplate label.

How to Order Spare Parts

To ensure your order is accurate, provide the following information:

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

Maintenance Notes

2

Carefully read all safety precautions before maintenance. The following information is essential for safe and proper execution.

- Follow all instructions and correct procedures during maintenance to eliminate risks of electrical shock, injury, and equipment accidents.
- Ensure all electrical work is performed by a licensed technician in compliance with national and local electrical codes.
- Ensure an authorized distributor or qualified professional perform all maintenance.
- Observe all warnings and cautions throughout this manual.
- Test the area with a flammable gas detector before unloading and opening the container.
- Keep the area free of open flames and smoking materials.

A. Electrical Safety Precautions

Electrical & Power Supply Requirements

- Connect the air conditioner to a dedicated circuit; do not share the circuit with other appliances.
- Install an appropriate circuit breaker (such as a GFCI/RCD) if the indoor unit is located in a humid or damp environment.
- For hardwired systems (without a plug), install a circuit breaker that features all-pole disconnection and a minimum contact separation of 0.1 inches (3 mm).

Wiring Safeguards

- Ensure all wiring terminals are securely connected during maintenance.
- Properly match the live, neutral, and grounding wires from the power supply to the corresponding air conditioner terminals.
- Adequately ground the unit; the grounding wire must not be used for any other purpose.
- Ensure the power cord and connection wires are not crushed, pinched, or compressed by surrounding components or hard objects.
- Install protective accessories, including protective boards, cable routing loops, and clips to safeguard the wiring.

Maintenance Notes

2

Maintenance & Component Replacement

- Turn off the air conditioner's power supply prior to checking the unit or performing maintenance.
- Use only the supplied or specified components during installation to ensure proper system performance.
- If the power cord or connection wire is damaged, it must be replaced by a qualified technician.
- If the power cord length is insufficient, obtain an approved replacement from the manufacturer or distributor; do not splice or extend the wire yourself.
- If a fuse is blown, replace it with a new fuse of the exact same specification; do not use copper wires or jumper wires as a substitute.
- Handle the unit with care during transport; a team lift is required if the unit weighs more than 44 lbs (20 kg).
- Wear a safety harness at all times if the working height exceeds 7 feet (2 m).
- Ensure no foreign objects remain inside the unit upon completion of installation; debris can cause electrical shock, fire, explosion, or personal injury.

Pre-Start & Commissioning Checks

- Confirm all wiring and piping connections are secure and all valves are open prior to energizing the system.
- Test the unit body for electrical leakage; resolve any faults before allowing the system to operate.

B. Fire Safety Precautions

Warning: Risk of fire due to the flammable refrigerant used

- Review all safety precautions in this manual before attempting any product service or repair.
- Handle the equipment carefully in strict compliance with all national regulations.
- Ensure only trained service personnel perform system repairs.
- Avoid puncturing the refrigerant tubing during maintenance.
- Dispose of all materials properly in accordance with national, state, and local regulations.

Maintenance Notes

2

C. Relocation Safety Precautions

- Avoid relocation areas where corrosive or flammable gases may leak, as accumulated gas can lead to explosions or other accidents.
- Do not use extension cords or multi-outlet adapters; if the power cord is of insufficient length, contact an authorized service center for an approved replacement to prevent electrical shock or fire hazards.
- Securely clamp all interconnecting wiring between indoor and outdoor units to eliminate external stress on the terminals. Using non-specified wires or insecure connections poses a severe electrical shock or fire hazard.
- Securely attach the connecting pipe before operating the compressor; running the compressor with open valves and disconnected piping will draw in air, causing dangerous pressure spikes, compressor overheating, or gas leaks.
- Charge the unit only with the specific refrigerant listed on the nameplate during installation or relocation; using unapproved or non-specified refrigerants can cause operational failures, mechanical malfunctions, or severe safety hazards.
- When recovering refrigerant (pump down) during relocation or repair:
    - Confirm the indoor unit is running in Cooling mode.
    - Fully close the liquid-side valve (2-way valve).
    - Wait 30 to 40 seconds, then fully close the gas-side valve (3-way valve).
    - Immediately stop the unit and disconnect the power supply.
    - CAUTION: The entire refrigerant recovery process must not exceed 1 minute. Running the process too long will cause the compressor to overheat, risking equipment failure or personal injury.
- Purge the refrigerant circuit during relocation to ensure it is completely free of air and moisture; foreign substances will cause abnormal pressure spikes or compressor failure, resulting in personal injury.
- Ensure both the liquid-side and gas-side valves are fully closed and the power is disconnected before detaching the connecting pipe; disconnecting the pipe while valves are open allows the compressor to suck in air, causing abnormal pressure, compressor overheating, or gas leaks.

R-454B Refrigerant Notes

3

A. Introduction

This air conditioner uses R-454B, an environmentally friendly refrigerant. Compared to conventional refrigerants, R-454B does not deplete the ozone layer and has a lower global warming potential (GWP). Note that R-454B is odorless and mildly flammable, and may pose a risk of fire or explosion under certain conditions.

B. Precautions

General Compliance & Servicing

- Ensure all maintenance is performed exclusively by authorized professionals in strict compliance with the manufacturer's operating manual.
- Contact the nearest authorized service center to arrange professional servicing.
- Comply with all national gas safety laws and regulations.

Flammable Refrigerant Handling & Worksite Safety

- Conduct a safety inspection prior to servicing any system using combustible refrigerants to minimize fire risks.
- Recover all refrigerant from the system prior to performing maintenance or decommissioning the air conditioner.
- Handle flammable refrigerants with extreme care to eliminate the risk of severe injuries and equipment damage.
- Eliminate all ignition sources and high-temperature hazards from the work area.
- Keep surrounding surfaces and equipment below 745°F (396°C) when handling R-454B refrigerant.
- Wear appropriate anti-static clothing and gloves when installing systems with R-454B refrigerant.

R-454B Refrigerant Notes

3

C. Special Tools

Tool Name	Requirement(s) for Use
Mini Vacuum Pump	An explosion-proof vacuum pump that ensures high precision. Its vacuum degree must be below 10 Pa.
Filling Device	A special explosion-proof filling device that ensures precision. Its filling deviation must be below 5g.
Leak Detector	A detector that it is calibrated regularly. Its annual leak rate should not exceed 10g.
Concentration Detector	• Equip the maintenance site with a fixed combustible refrigerant concentration detector. Connect this detector to a safeguard alarm system. Its error must not exceed ±5%. • Equip the installation site with a portable combustible refrigerant concentration detector that features a two-level audible and visual alarm. Its error must not exceed ±10%. • Ensure that the concentration detectors are calibrated regularly. Check and confirm their functionality before each use.
Pressure Gauge	Ensure that the pressure gauges are calibrated regularly. Confirm that the pressure gauges are compatible with R-454B refrigerant.
Fire Extinguisher	Carry fire extinguishers during installation and maintenance. Ensure that the maintenance site is equipped with two or more types of fire extinguishers (dry powder, carbon dioxide, or foam). These extinguishers must have highly visible labels and be placed in designated locations.

R-454B Refrigerant Notes

3

D. Maintenance

Inspections for the Maintenance Environment

- Verify the room is free of refrigerant leaks prior to operation.
- Only operate the system in rooms that meet the area requirements specified on the nameplate.
- Ensure that the room is continuously ventilated.
- Do not permit open flames, welding, smoking, drying ovens, or any other ignition sources with temperatures exceeding 745°F (396°C) in the room.
- Ensure that mobile phones and all other electronic devices are turned off while in the room.
- Equip the maintenance area with a functional dry powder or carbon dioxide (CO_2) fire extinguisher.

Inspections for the Maintenance Equipment

- Confirm that the maintenance equipment is compatible with the refrigerant. Use only the professional equipment recommended by the air conditioner manufacturer.
- Verify that the refrigerant leak detector has been calibrated. Ensure its maximum alarm concentration does not exceed 25% of the lower explosion limit (LEL). The leak detector must remain operational during all maintenance procedures.

Inspections for the Air Conditioner

- Before performing maintenance, ensure the air conditioner is reliably grounded.
- Turn off the power and completely discharge the capacitor before beginning maintenance. If power is required during maintenance, continuously perform leak detection at the highest-risk locations to prevent hazards.
- Verify that all warning labels on the air conditioner are legible and in good condition; immediately replace any that are damaged or obscured.

Leak Inspection Before Maintenance

- Before starting maintenance, use a manufacturer-recommended leak detector or pump-type concentration detector to ensure there are no active leaks.
- If a leak is suspected:
    - Extinguish or remove all open flames and ignition sources from the area.
    - Turn off the air conditioner immediately.
    - Ensure the workspace is thoroughly ventilated.

R-454B Refrigerant Notes

3

Safety Principles During Maintenance

- Ensure the workspace is well-ventilated throughout the maintenance process.
- Do not smoke, weld, use open flames, or operate mobile phones in the work area.
- Wear anti-static clothing and gloves if the relative humidity falls below 40%.
- Immediately initiate forced ventilation and seal the leak source if a combustible refrigerant leak is detected.
- Transport the product back to the service station if the refrigerant system must be opened for maintenance; welding refrigerant pipes or performing similar operations at the customer's site is strictly prohibited.
- Restore the air conditioner to its original state and verify that the refrigerant system is reliably grounded if a follow-up service visit is necessary due to missing spare parts.
- Secure the cylinder vertically when storing it in a vehicle or at the maintenance site, keeping it away from electrical equipment, heat, radiation, and ignition sources.

Requirements for the Maintenance Location

- Ensure the maintenance location is well-ventilated, located at ground level, and not in a basement.
- Divide and label the maintenance location into separate welding and non-welding areas, ensuring a safe distance between them.
- Equip the maintenance location with proper ventilation and air exhaust systems to prevent refrigerant gas accumulation.
- Install the main power switch outside the maintenance area, and ensure it is equipped with explosion-proof protective devices.
- Maintain an instrument management system for all combustible refrigerant leak detectors, and verify that the detectors are functioning normally prior to maintenance.
- Equip the maintenance area with functional fire extinguishers suitable for electrical fires, such as dry chemical or carbon dioxide (CO_2) extinguishers.
- Prohibit the use of temporary wiring or extension sockets within the maintenance location.

R-454B Refrigerant Notes

3

Requirements for Filling the Refrigerants

- Purge and vacuum the system for at least 30 minutes using nitrogen before operating the refrigerant system.
- Avoid cross-contamination among different refrigerants when using the charging device.
- Keep the total pipeline length as short as possible to minimize residual refrigerant inside the lines.
- Store and maintain all refrigerant storage tanks in an upright position.
- Ground the refrigeration system securely prior to charging it with refrigerant.
- Charge the system using only the specific refrigerant type and volume indicated on the product nameplate.
- Prohibit overcharging under any circumstances.
- Seal the refrigeration system properly upon completing all maintenance work.
- Verify that no maintenance procedures alter, damage, or reduce the original safety protection grade of the system.

In-Maintenance Welding

- Ensure the workspace is well-ventilated throughout the maintenance process.
- Confirm the refrigeration system is completely drained and cleaned, ensuring no residual refrigerant remains in the outdoor unit before beginning any welding.
- Close the outdoor unit stop valve before performing any torch-welding or brazing maintenance.

Maintenance of Electrical Components

- Ensure the workspace is well-ventilated throughout the maintenance process.
- Store refrigerant tanks vertically in a separate, well-ventilated location at a temperature range of 14°F to 122° F (-10°C to 50°C).
- Affix clear hazard warning labels to all refrigerant storage tanks.
- Confirm the refrigeration system is completely drained and cleaned, ensuring no residual refrigerant remains in the outdoor unit before beginning any welding.
- Close the outdoor unit stop valve before performing any torch-welding or brazing maintenance.
- Disconnect the unit's power before removing sealing covers. If power is required during maintenance, perform continuous leak detection at the most critical points to prevent potential hazards.
- Ensure all replacement parts and materials strictly meet the specifications recommended by the manufacturer.

R-454B Refrigerant Notes

3

- Verify that sealing materials have not degraded due to aging, ensuring they retain their full ability to prevent combustible gas leaks.
- Ensure that the sealing function is not compromised or damaged after performing maintenance.
- Ensure that the maintenance of electrical components does not interfere with the proper reinstallation of the protective cover.
- Inspect the area around the serviced electrical parts using a specialized leak detector to ensure there are no refrigerant leaks.
- Do not modify, remove, or bypass any safety protection components after completing maintenance.
- Verify that the unit has a reliable ground connection and is completely free of refrigerant leaks before performing a trial operation.

Maintenance of Electrical Components

- Establish an emergency response plan for the maintenance location.
- Implement appropriate safety precautions during all work activities.
- Prohibit ignition sources (such as matches or lighters) and static-producing clothing or footwear within the work area.
- In the event of a large combustible refrigerant leak, follow these emergency procedures:
    - Activate ventilation systems immediately while isolating all other power sources.
    - Evacuate all affected personnel from the area urgently.
    - Inform nearby residents to evacuate to a distance of at least 66 feet (20 m) from the site.
    - Place an immediate emergency alarm call.
    - Set up an emergency boundary and prohibit unauthorized personnel and vehicles from approaching.
    - Ensure responding professional firefighters wear anti-static clothing while handling the emergency on-site.
    - Direct firefighters to locate and cut off the source of the refrigerant leak as soon as possible.
    - Blow nitrogen across the site, focusing specifically on low-lying areas, to clear away any residual combustible refrigerant gas.
    - Use a handheld detector to thoroughly scan the area surrounding the leak source.
    - Do not clear or turn off the emergency alarm until the refrigerant concentration reads exactly zero.

Product Overview

4

The Quantum Ultra Ceiling Concealed (RYT-24) is part of the DC Inverter U-match series, along with the Quantum Ultra 8-Way Ceiling Cassette (CYT-24) and Quantum Ultra Universal Flex (UYT-24). The U-match series uses adaptive technology that allows a single outdoor unit to work with different types of indoor units, so the system can be matched to the room's interior design and the user's needs. This reduces inventory management and after-sales maintenance costs. The series is suitable for a wide range of settings, including apartments, villas, hotels, office buildings, and small to medium-sized supermarkets.

Model Numbers

Note

The serial number is located behind the electric control box cover on each unit.

Model	Full System	Indoor Unit	Outdoor Unit
9.5K	RYT009GLSI24RL	RT009GLSILCFHG	YN009GLSI24RPG
11K	RYT012GLSI24RL	RT012GLSILCFHG	YN012GLSI24RPG
17K	RYT018GLSI24RL	RT018GLSILCFHG	YN018GLSI24RPG
22K	RYT024GLSI24RL	RT024GLSILCFHG	YN024GLSI24RPG

Product Overview

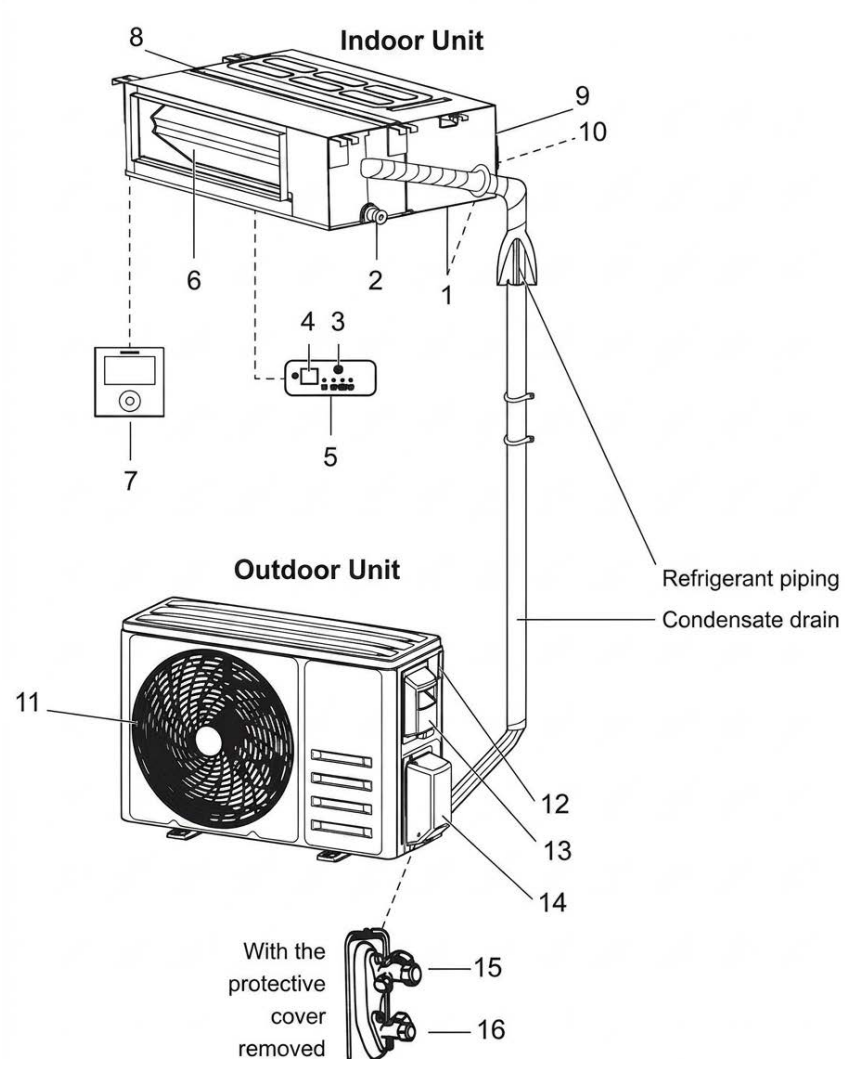
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Part Names

Note

Illustrations in this manual are for explanatory purposes. The actual shape of the indoor unit may be slightly different. The actual shape shall prevail.

The system consists of two units connected by insulated copper pipes and an electrical communication cable. Mount the indoor unit on a wall inside the room selected for air conditioning. Install the outdoor unit on the ground or on the wall using suitable mounting brackets.



No.	Description
1	Return air filter locations
2	Drain outlet stub
3	Manual emergency button
4	LED display
5	Indoor unit display board
6	Supply air outlet
7	Wired controller
8	Air handler hanging hooks
9	Return air inlet
10	Interior condensate pump
11	Air outlet grille
12	Outdoor unit nameplate
13	Terminal block cover
14	Valve protection cover
15	Gas (Suction) line valve
16	Liquid line valve

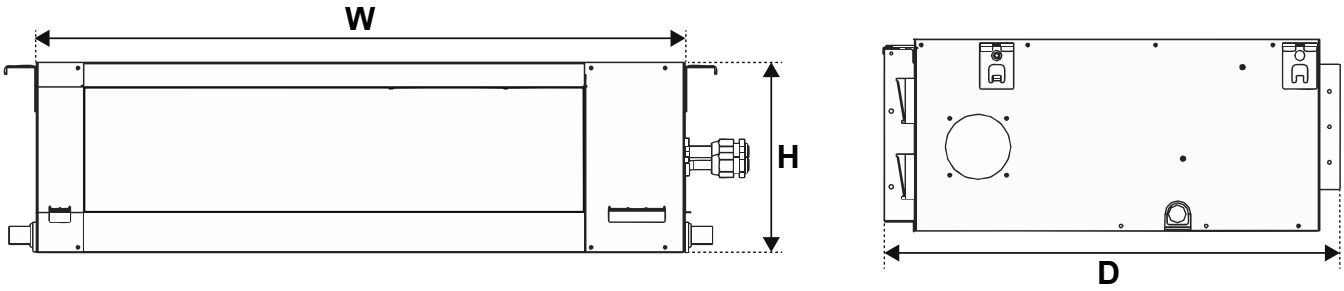
Product Overview

4

Dimensions & Weight

Indoor Unit:

Before proceeding, it is important to select the installation space according to the below dimensions:



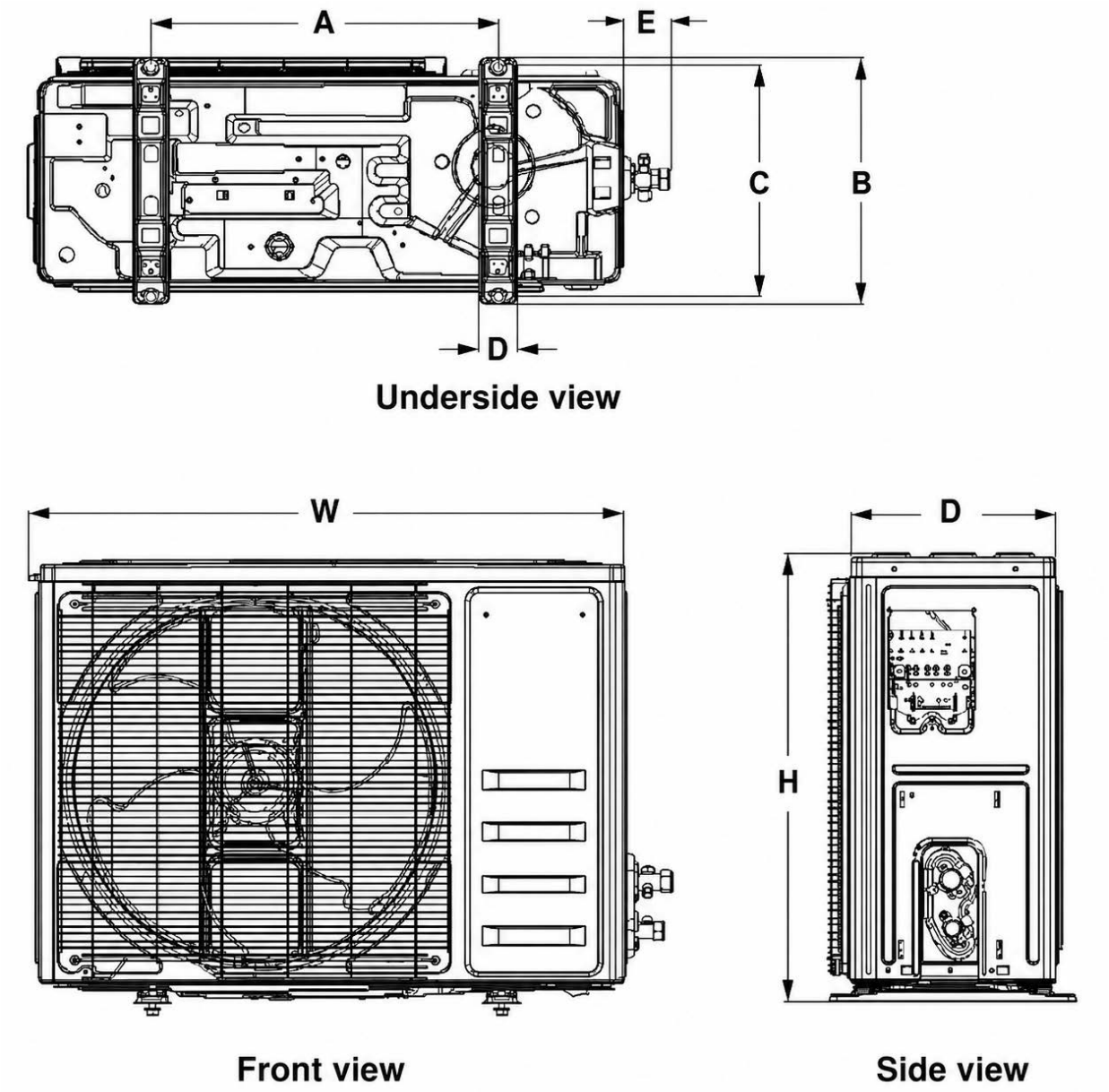
Indoor Unit	Dimensions		
	W	D	H
RT009GLSILCFHG	27-1/2 in	19-1/4 in	7-7/8 in
	698.5 mm	489 mm	200 mm
RT012GLSILCFHG	27-1/2 in	19-1/4 in	7-7/8 in
	698.5 mm	489 mm	200 mm
RT018GLSILCFHG	35-1/2 in	19-1/4 in	7-7/8 in
	902 mm	489 mm	200 mm
RT024GLSILCFHG	43-1/4 in	17-3/4 in	7-7/8 in
	1,098.5 mm	451 mm	200 mm

Indoor Unit	Net Unit Weight
RT009GLSILCFHG	33.1 lbs
	15 kgs
RT012GLSILCFHG	33.1 lbs
	15 kgs
RT018GLSILCFHG	39.7 lbs
	18 kgs
RT024GLSILCFHG	50.7 lbs
	23 kgs

Product Overview

4

Outdoor Unit:



Outdoor Unit	Dimensions							
	W	D	H	A	B	C	D	E
YN009GLSI24RPG	31-7/8 in	12 in	21-5/8 in	17-1/8 in	12 in	11-1/4 in	1-7/8 in	2-1/4 in
	810 mm	305 mm	549 mm	435 mm	305 mm	286 mm	48 mm	57 mm
YN012GLSI24RPG	31-7/8 in	12 in	21-5/8 in	17-1/8 in	12 in	11-1/4 in	1-7/8 in	2-1/4 in
	810 mm	305 mm	549 mm	435 mm	305 mm	286 mm	48 mm	57 mm
YN018GLSI24RPG	36-1/2 in	15 in	27-1/2 in	23-1/8 in	14-3/4 in	13-3/4 in	2-1/8 in	2-1/4 in
	927 mm	381 mm	698.5 mm	587 mm	375 mm	349 mm	54 mm	57 mm
YN024GLSI24RPG	38-1/2 in	16-5/8 in	31-5/8 in	23-7/8 in	16-5/8 in	15-3/8 in	2-3/8 in	2-1/2 in
	978 mm	422 mm	803 mm	606 mm	422 mm	390.5 mm	60 mm	63.5 mm

Product Overview

4

Outdoor Unit	Net Unit Weight
YN009GLSI24RPG	52.7 lbs
	23.9 kgs
YN012GLSI24RPG	58.4 lbs
	26.5 kgs
YN018GLSI24RPG	90.4 lbs
	41 kgs
YN024GLSI24RPG	104.7 lbs
	47.5 kgs

Product Overview

4

Operating Temperatures

The system is designed to run within a certain range of temperatures, which are listed below. The system has built-in protections that may stop the appliance when the ambient temperatures goes outside of these ranges.

Operating Temperatures	°F / °C
Temperature Setting Range	62~86°F
	17~30°C
Ambient Temperature Range for Cooling	5~131°F
	-15~55°C
Ambient Temperature Range for Heating	-13~86°F
	-25~30°C

Testing and rating agencies develop standard rating conditions to obtain full system-rated capacity and efficiency. Within certain limitations, variable speed compressors compensate the deviations from the rating conditions, especially the atmospheric conditions.

Heat pump systems function by exchanging energy between the indoor air and outdoor ambient air (atmospheric) in the form of heat. The system's net cooling or heating capacities and efficiencies change by atmospheric conditions, as well as the indoor air conditions, such as temperatures and humidity levels.

Professional individuals use detailed calculations to determine the capacity of the system required for a specific area or application, which are based on several internal and external factors.

To further optimize the performance of the unit, complete the following:

- Keep doors and windows closed.
- Use Timer On and Timer Off functions to limit energy usage.
- Do not block air inlets or outlets.
- Regularly inspect and clean air filters.

Refrigerant Piping Specifications

5

Refer to these tables for refrigerant piping specifications, such as maximum length and drop height.

RYT-24	9.5K BTU	11K BTU	17K BTU	22K BTU
Liquid Pipe Diameter	Φ 1/4 in (6.4 mm)	Φ 1/4 in (6.4 mm)	Φ 1/4 in (6.4 mm)	Φ 1/4 in (6.4 mm)
Gas Pipe Diameter	Φ 3/8 in (9.5 mm)	Φ 3/8 in (9.5 mm)	Φ 1/2 in (12.7 mm)	Φ 5/8 in (15.9 mm)
Max. Length of Pipe with Standard Charge	25 ft / 7.6 m			
Max. Length Between Indoor and Outdoor Unit	50 ft / 15.2 m	50 ft / 15.2 m	65 ft / 19.8 m	65 ft / 19.8 m
Adjustment Refrigerant Charge (For each additional foot after 25 ft.)	0.11oz/ft			
Max. Drop Height Between Indoor and Outdoor Unit	33 ft / 10 m	33 ft / 10 m	50 ft / 15.2 m	50 ft / 15.2 m
Type of Refrigerant	R-454B			

Maintenance

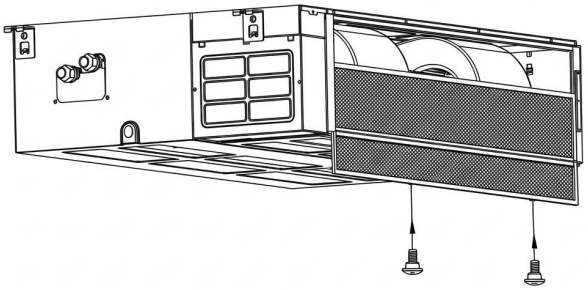
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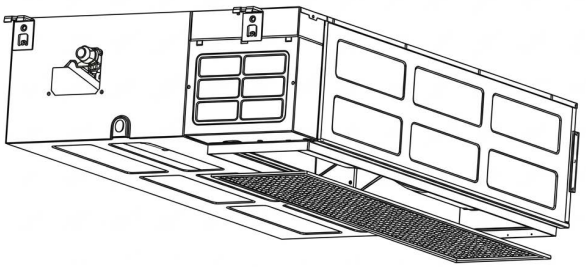
Performing periodic maintenance, such as cleaning the anti-dust filters and the indoor air handler's interior, will ensure the system remains efficient.

CAUTION

- Before performing any maintenance, ensure the system's power supply is turned off for more than 5 minutes.
- Wear safety gloves when working on the equipment, due to the coil's sharp aluminum fin edges.
- Do not spray water directly into the indoor unit, as it can damage the insulation and electrical components.

A. Anti-Dust Filters





Inspect the anti-dust filter once every 2 weeks.

1. For rear return-air configurations, remove the two screws to release the return air filter.

For bottom return-air units, push the filter upward and pull it out at a slight angle.

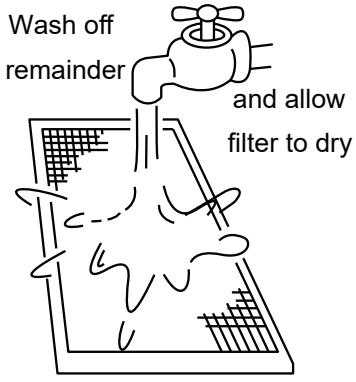
2. Clean the washable filters with warm water (under 113°F / 45°C).

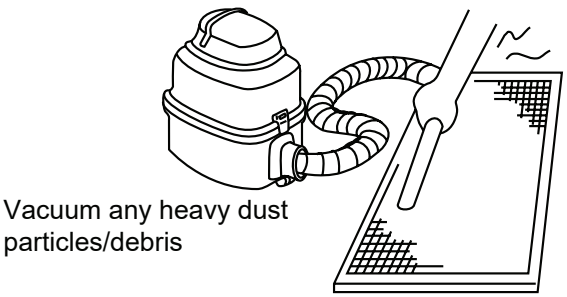
3. Leave the filters to dry in a cool, dry place.

4. Once fully dry, re-insert the filter into its original location.

Note

Accessorial electrostatic or deodorizing filters are not washable and should be replaced every 6 months.





Maintenance 6

B. Interior of the Indoor Air Handler

Inspect the indoor unit's interior as well as the inner coil every season.

1. Disconnect the front panel and remove the top hinge where the pegs connect. This offers easier inspection of the interior and behind the air filters.

2. Clean the interior with a damp, soft cloth and neutral soaps. Do not use any types of aggressive solvents or detergents.

Maintenance - Long Periods of Non-Use

If the air conditioner won't be used for an extended period of time.

Clean all filters

Turn on the Fan function until the unit dries out completely

Turn off the unit and disconnect the power

Remove the batteries from the remote control

Maintenance - Pre-Season Inspection

After long periods of non-use or before periods of frequent use, do the following:

Check for damaged wires

Clean all filters

Check for leaks



Make sure nothing is blocking the air inlets and outlets

Replace the batteries

Troubleshooting 7

Failures Not Caused By Errors

If your air conditioner does not operate properly, check the following items before requesting service:

Problem	Cause	Corrective Measure
The air conditioner can’t operate	If you turn the unit off and then immediately back on, the compressor waits about 3 minutes before starting. This delay protects the compressor and prevents system overload.	Wait for the delay to end.
	The wire connection is wrong.	Connect the wires according to the wiring diagram.
	The circuit breaker's fuse is broken.	Replace the fuse or turn on the circuit breaker.
	Power failure.	Restart system after power returns.
	Power plug is loose.	Re-insert the power plug.
	The remote control has depleted batteries.	Replace the batteries.
Bad cooling effect	The air inlet and outlet of the indoor or outdoor unit is blocked.	Clear the obstacles and keep the indoor and outdoor units well-ventilated.
	Improper set temperature.	Set temperature to an appropriate level.
	Fan speed operating too low for indoor unit.	Set fan speed to an appropriate level.
	Airflow direction is not set correctly	Change the direction of the air louvers.
	Doors or windows are opened.	Close any open doors or windows
	Exposed under direct sunshine.	Close the curtains or blinds to block direct sunlight.
	Too many heat sources in the room.	Remove unnecessary heat sources.
	Filter is blocked or too dirty.	Clean the filter.

Troubleshooting

7

The following situations are not operation failures:

Problem	Time of Occurrence	Cause
Mist comes from the air conditioner	During operation.	When the unit operates in high humidity, the humid air in the room is cooled rapidly.
The air conditioner generates some noise	The air conditioner is buzzing at the beginning of operation.	The temperature controller may make a buzzing sound when it starts. The noise decreases after about 1 minute. This is normal.
Dust comes from the air conditioner	When the unit is turned on, it purrs.	When the unit first starts, the refrigerant flow has not yet stabilized, which may cause a humming sound. The sound becomes quieter after about 30 seconds. This is normal.
	There is a hissing sound when the unit starts or stops, as well as a slight hissing sound during or after operation.	This sound is caused by refrigerant flow stopping or by the drainage system operating. This is normal.
	There is a sound of crunching during or after operation.	The front panel and other components may expand or contract due to temperature changes, causing a creaking sound. This is normal.
	The unit starts operating after being unused for a long time.	Dust that has collected inside the indoor unit is blown out with the airflow.
The air conditioner generates strange odors	During operation.	The indoor unit may absorb odors from the room, such as cigarette smoke, and release them with the airflow.

Troubleshooting

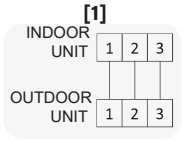
7

Solutions to Common Issues & Scenarios

Issue: The indoor air handler does not turn on

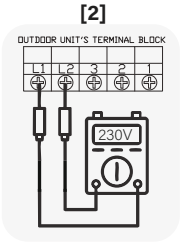
- Solution: Try the manual emergency button on the indoor unit to rule out remote control issues.

[1]



- Solution: Verify that the wiring order is identical between the indoor and outdoor units. The color sequence must match exactly. Check for splices or damage along the control cable. To eliminate variables, temporarily disconnect all accessory items, such as UV lights or condensate pumps, until the problem is resolved.

[2]



- Solution for 230V systems: Use a multimeter to check the AC voltage across terminals L1 and L2 on the outdoor system. Place one probe on L1 and the other on L2. Do not measure each leg to ground. Verify that the reading is between 208~253 VAC.
    - If the reading is between 208~253 VAC, check whether it is the same across terminals 2 and 3 on both the indoor and outdoor units. All readings must match. The system requires a full 230V reading to function.

    - A reading of 0 VAC indicates that the system is not receiving power from the source. Some common reasons are:
        - A fused disconnect is being used, but the fuses are blown and improperly inserted.
        - The disconnect box bus-bar is turned off.
        - A double-pole breaker is not being used. Single or tandem breakers will not operate.

Issue: The pressure reading does not rise when releasing refrigerant during the leak check

- Solution: Verify that the manifold gauge hose pin fully engages the outdoor unit's service port Schrader valve. A pin that is over-extended or under-extended will block access to the refrigerant circuit, preventing pressure measurement and proper vacuuming. The depressor pin inside the hose connector is adjustable to ensure proper engagement.
    - A telltale sign that this is happening is if the gauge reading goes to an instant vacuum when the pump is first turned on, meaning only the gauge is being vacuumed.

    - If so, vacuuming will need to be re-performed, since only the gauge was vacuumed.

Troubleshooting

7

Issue: The system is not holding a vacuum

- Solution: There is likely a leak in the gauge hoses. Repair it and check the vacuum pump.
- Solution: Check the connection points for proper contact and torque, then tighten if necessary.

Issue: The indoor air handler is leaking water

- Solution: Verify that the indoor unit is level both horizontally and vertically.
- Solution: Confirm that the drain tube pitches continuously downward.
    - Pour a cup of water over the indoor unit's coils to ensure it reaches the drain pan.
    - Verify that water drains freely from the tube. If it does not, find the cause and correct it.

Issue: The system indicates that a refrigerant leak is present

- Solution: Cut off the power to the system. Prepare a soapy water spray and apply it to the connection points of the lineset. The point where bubbles form is where the leak is located. Tighten the connection and re-test the system. After the leak is repaired, recharge the system.

Issue: The fan runs in Cooling mode but in Heating mode there is weak or no airflow

- Solution: Fan speed control is typically unavailable in Heating mode. If the coil cannot heat up, the fan will not run at speed. This issue may also indicate low refrigerant.

Troubleshooting

7

Error Codes

Code	Reason	Remark
bc	PM2.5 sensor error (indoor unit; optional feature)	Use the remote control to check the error code
bE	CO_2 sensor error (indoor unit; optional feature)	/
bf	TVOC sensor error (indoor unit; optional feature)	Use the remote control to check the error code
bj	Humidity sensor error (indoor unit)	Use the remote control to check the error code
CL	Filter cleaning reminder	Clean the air filter
d4	Drain pan full protection	/
d5	Access control signal protection	/
E0	Indoor and outdoor units communication error	Is the wiring connection between the units correct?
E1	Indoor unit room temperature sensor error (IDU RT sensor)	Indoor unit sensor and PCB
E2	Indoor unit coil temperature sensor error (IDU IPT sensor)	Indoor unit sensor and PCB
E3	Outdoor unit coil temperature sensor error (ODU OPT sensor)	Outdoor unit sensor and PCB
E4	System abnormality / refrigerant shortage	Gas leakage / 2-way or 3-way valve blocked / etc.
E5	Model configuration mismatch (production line testing only)	/
E6	Indoor unit DC fan fault (IDU fan)	Fan blade, fan motor, and indoor unit PCB

Troubleshooting

7

Code	Reason	Remark
E7	Outdoor unit ambient temperature sensor error (OAT sensor)	Outdoor unit ambient sensor and PCB
E8	Outdoor unit discharge temperature sensor error (ODT sensor)	Outdoor unit discharge sensor and PCB
E9	Outdoor unit IPM / compressor drive fault	Outdoor unit PCB, compressor, etc.
EA	Outdoor unit current sensor error	Is the outdoor unit PCB broken?
Eb	Communication error between indoor main PCB and display board (IDU)	Display board and main PCB
EC	Outdoor unit module communication error	/
EE	Outdoor unit EEPROM error	1. Is the outdoor unit PCB broken? 2. Try to re-power the unit
EF	Outdoor unit DC fan motor error	Fan motor and outdoor unit PCB
EH	Outdoor unit suction temperature sensor error	/
Ej	Outdoor unit mid-coil temperature sensor error	/
En	Outdoor unit gas pipe temperature sensor error	/
EP	Outdoor unit compressor top temperature sensor error	/
EU	Outdoor unit voltage detection circuit abnormality	Outdoor unit PCB
Ey	Outdoor unit liquid pipe temperature sensor error	/

Troubleshooting

7

Code	Reason	Remark
F0	Indoor unit infrared sensor error	Use the remote control to check the error code
F1	Indoor unit power detection module error	Use the remote control to check the error code
F2	Outdoor unit discharge temperature sensor error protection	Check the troubleshooting for details
F3	Outdoor unit coil temperature sensor error protection	Check the troubleshooting for details
F4	Abnormal refrigerant flow protection	Check the troubleshooting for details
F5	Outdoor unit PFC protection	Check the troubleshooting for details
F6	Compressor phase loss / Phase reversal protection	Check the troubleshooting for details
F7	Outdoor unit IPM abnormal temperature protection	Check the troubleshooting for details
F8	Outdoor unit 4-way valve reversing abnormality	Check the troubleshooting for details
F9	Outdoor unit IPM temperature sensor error	Outdoor unit PCB
FA	Outdoor unit compressor phase current detection circuit failure	Outdoor unit PCB
Fb	Cooling / Heating overload frequency limit	Use the remote control to check the error code
FC	Frequency reduction due to high power consumption	Use the remote control to check the error code
Fd	Refrigerant leak sensor communication error	Check the troubleshooting for details

Troubleshooting

7

Code	Reason	Remark
FE	Outdoor unit IPM / compressor phase overcurrent protection	Use the remote control to check the error code
FF	Frequency reduction due to high IPM temperature	Use the remote control to check the error code
FH	Frequency reduction due to compressor drive limit	Use the remote control to check the error code
Fj	Frequency reduction due to high discharge temperature	Use the remote control to check the error code
Fn	Frequency reduction due to high AC input current	Use the remote control to check the error code
FP	Frequency reduction to prevent condensation	Use the remote control to check the error code
FU	Frequency reduction to prevent coil freezing	Use the remote control to check the error code
Fy	Refrigerant deficiency protection	Check the troubleshooting for details
H1	Outdoor unit high-pressure switch error	/
H2	Outdoor unit low-pressure switch error	/
Hd	Refrigerant leak protection	/
P0	Outdoor unit IPM protection	Outdoor unit PCB
P1	Overvoltage / undervoltage protection	1. Is the outdoor unit PCB broken? 2. Is the power supply abnormal?
P2	Overcurrent protection	1. Is the outdoor unit PCB broken? 2. Is the power supply abnormal?

Troubleshooting

7

Code	Reason	Remark
P4	Outdoor unit high discharge temperature protection	Check the troubleshooting for details
P5	Cooling / Dry mode overcooling protection	Check the troubleshooting for details
P6	Cooling mode overheat protection	Check the troubleshooting for details
P7	Heating mode overheat protection	Check the troubleshooting for details
P8	Outdoor ambient high / low temperature protection	Check the troubleshooting for details
P9	Outdoor unit compressor drive overload protection	Check the troubleshooting for details
PA	Mode conflict / Indoor unit upper airflow module communication error	Check the troubleshooting for details

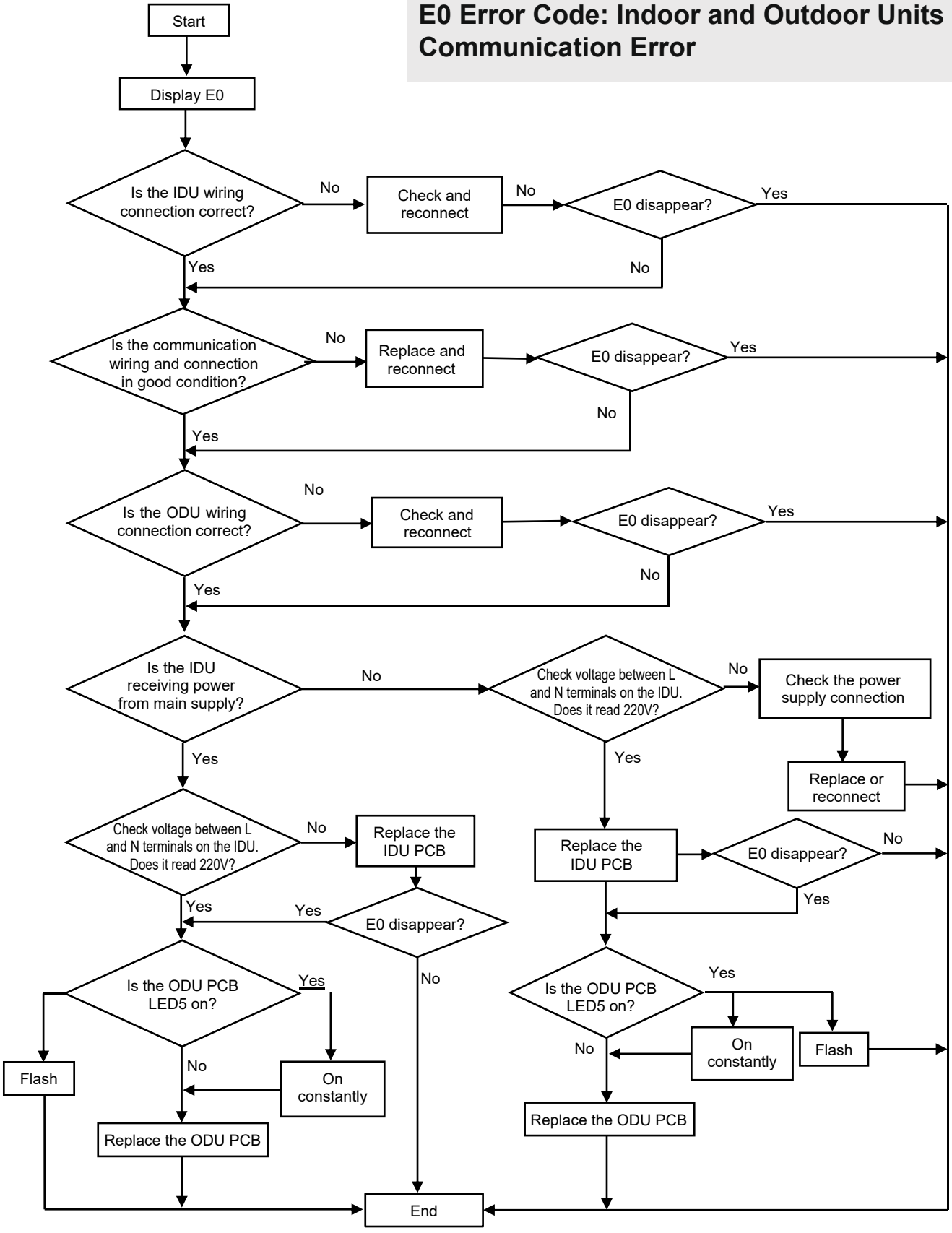
Note: Remote Controller Failure Code Querying Function

As shown in the table above, some codes (Fb–bj) can only be viewed using the remote control. To view these codes, press the ECO button on the remote control 8 times within 8 seconds. The buzzer beeps twice to confirm the query.

Troubleshooting

7

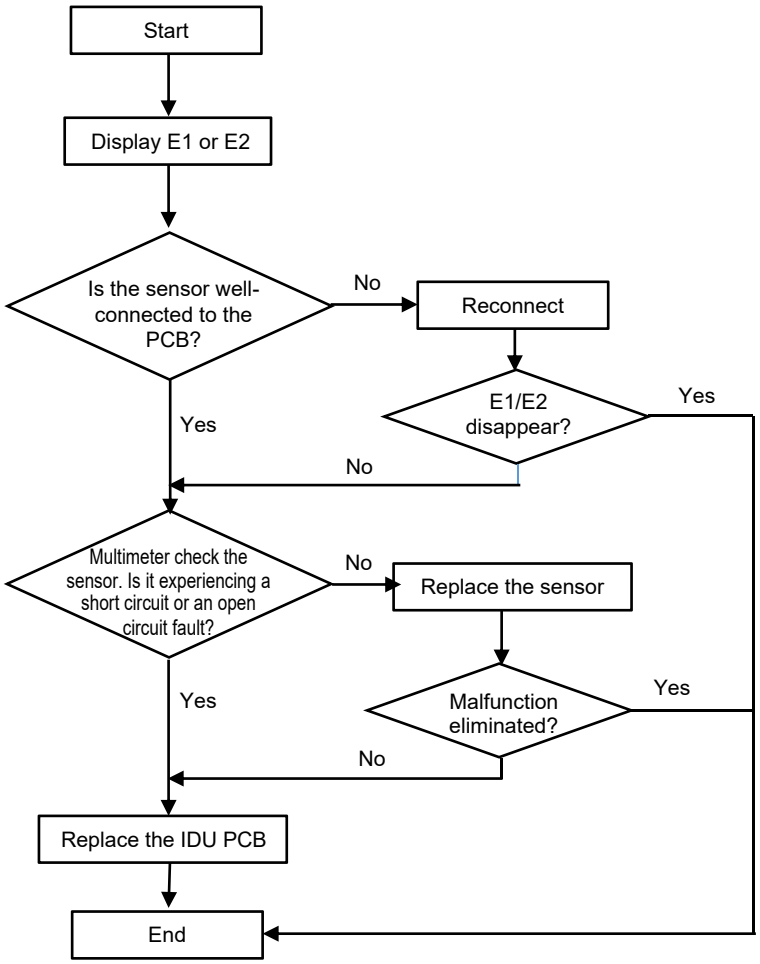
E0 Error Code: Indoor and Outdoor Units Communication Error



Troubleshooting

7

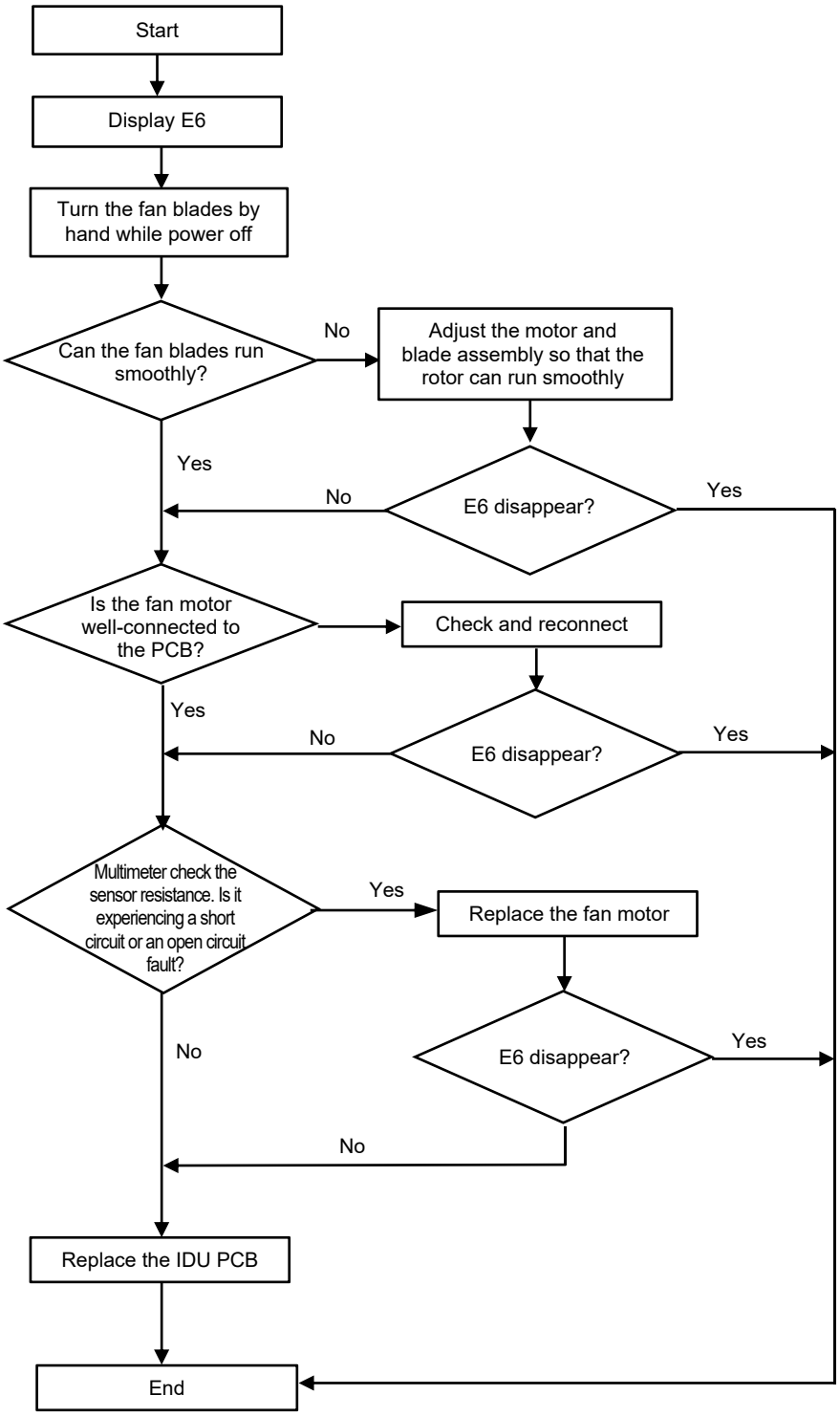
E1 / E2 Error Codes: Indoor Unit Room Temperature Sensor Error and/or Indoor Unit Coil Temperature Sensor Error



Troubleshooting

7

E6 Error Code: Indoor Unit DC Fan Fault



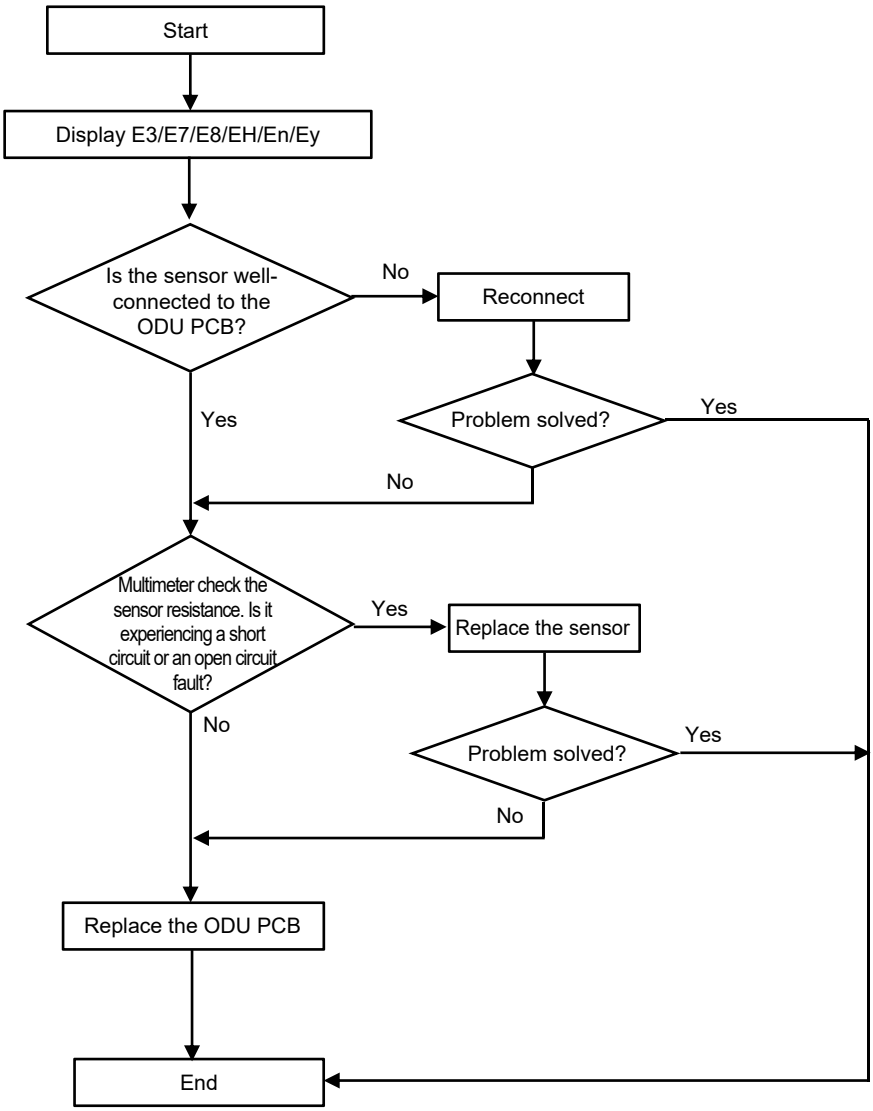
Troubleshooting

7

E3 / E7 / E8 / EH / En / Ey Error Codes:

E3: Outdoor unit coil temperature sensor error
E7: Outdoor unit ambient temperature sensor error
E8: Outdoor unit discharge temperature sensor error
EH: Outdoor unit suction temperature sensor error
En: Outdoor unit gas pipe temperature sensor error
Ey: Outdoor unit liquid pipe temperature sensor error

If any temperature sensor has a short circuit or open circuit, the system displays the corresponding error code, and both the indoor and outdoor units turn off. When the sensor returns to normal, the system goes into standby and can be turned on again as usual.

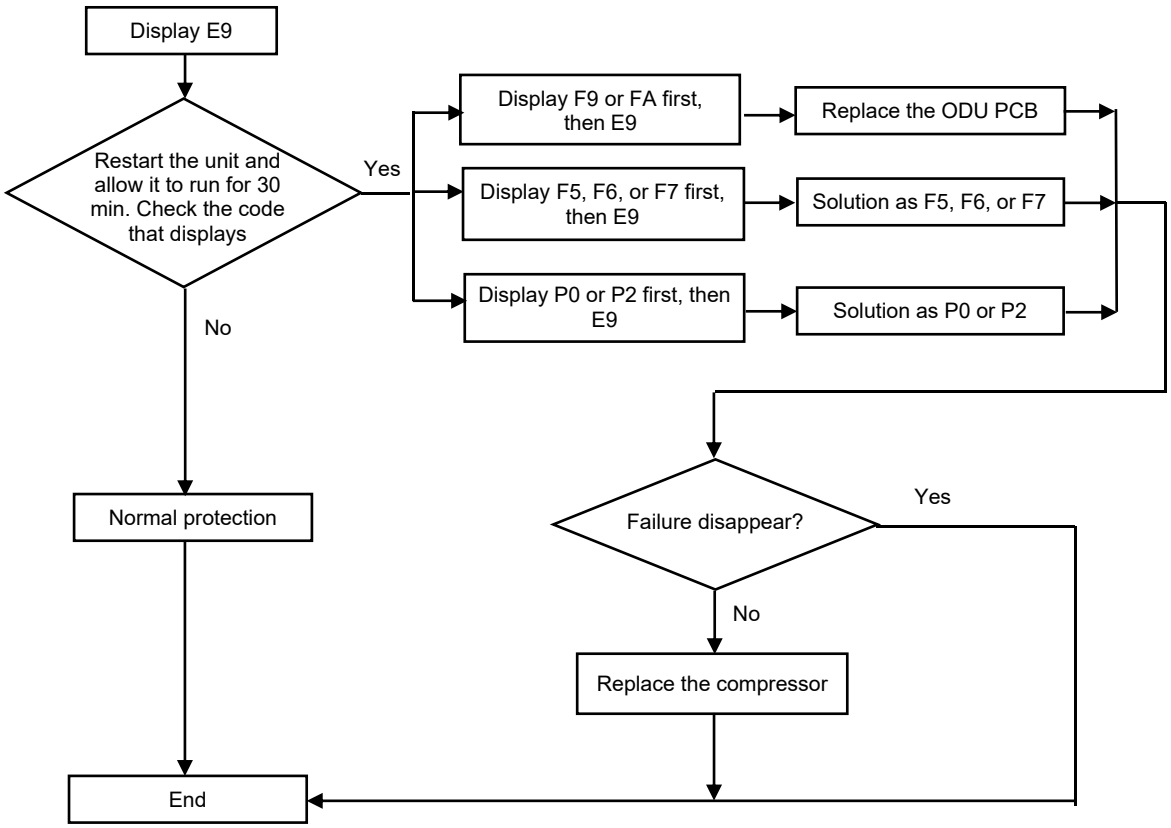


Troubleshooting

7

E9 Error Code: Outdoor Unit IPM / Compressor Drive Fault

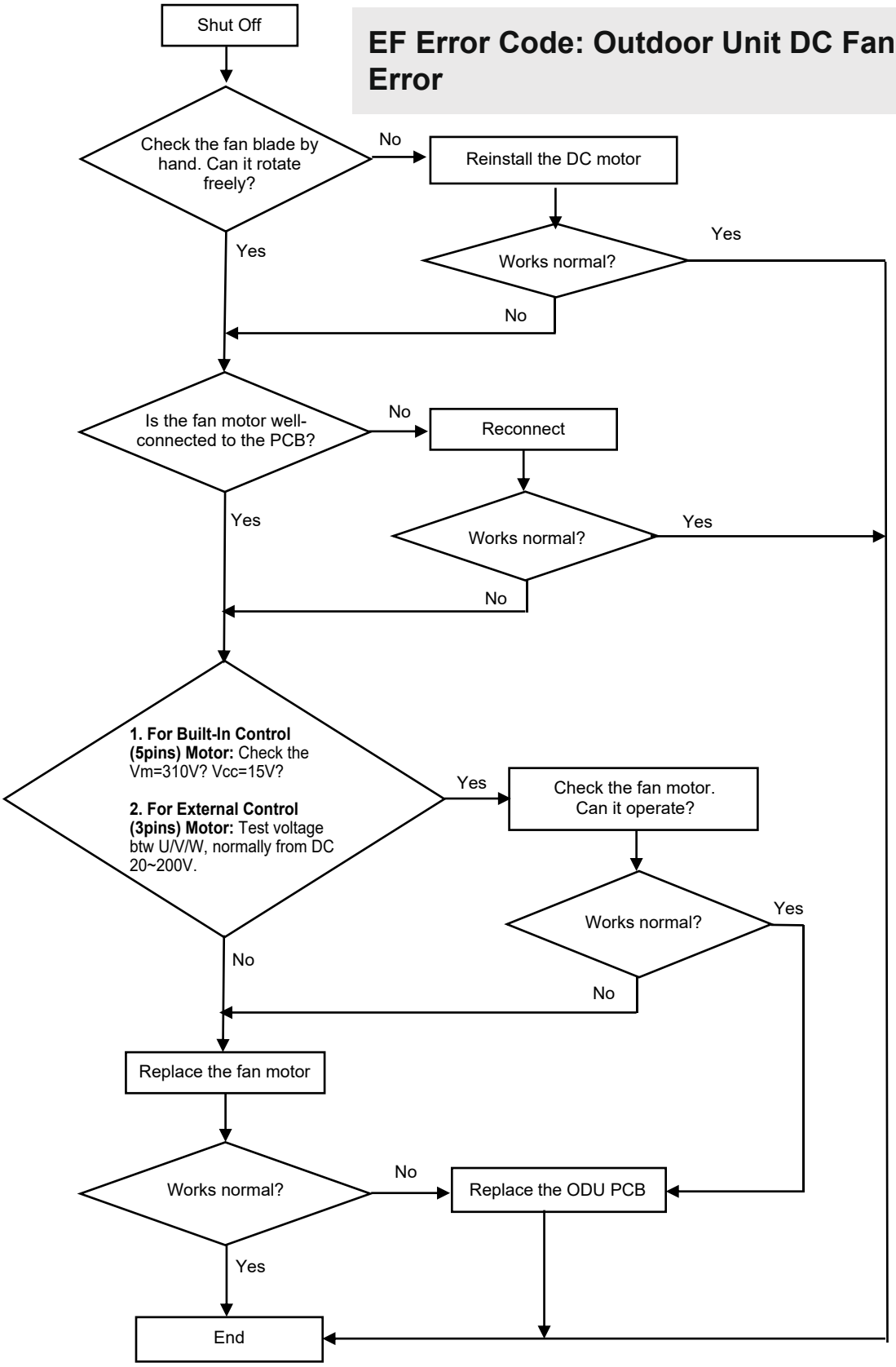
If the IPM protection stops the unit six times in a row, the system displays error code "E9" and will not restart until the Power button is pressed.



Troubleshooting

7

EF Error Code: Outdoor Unit DC Fan Motor Error

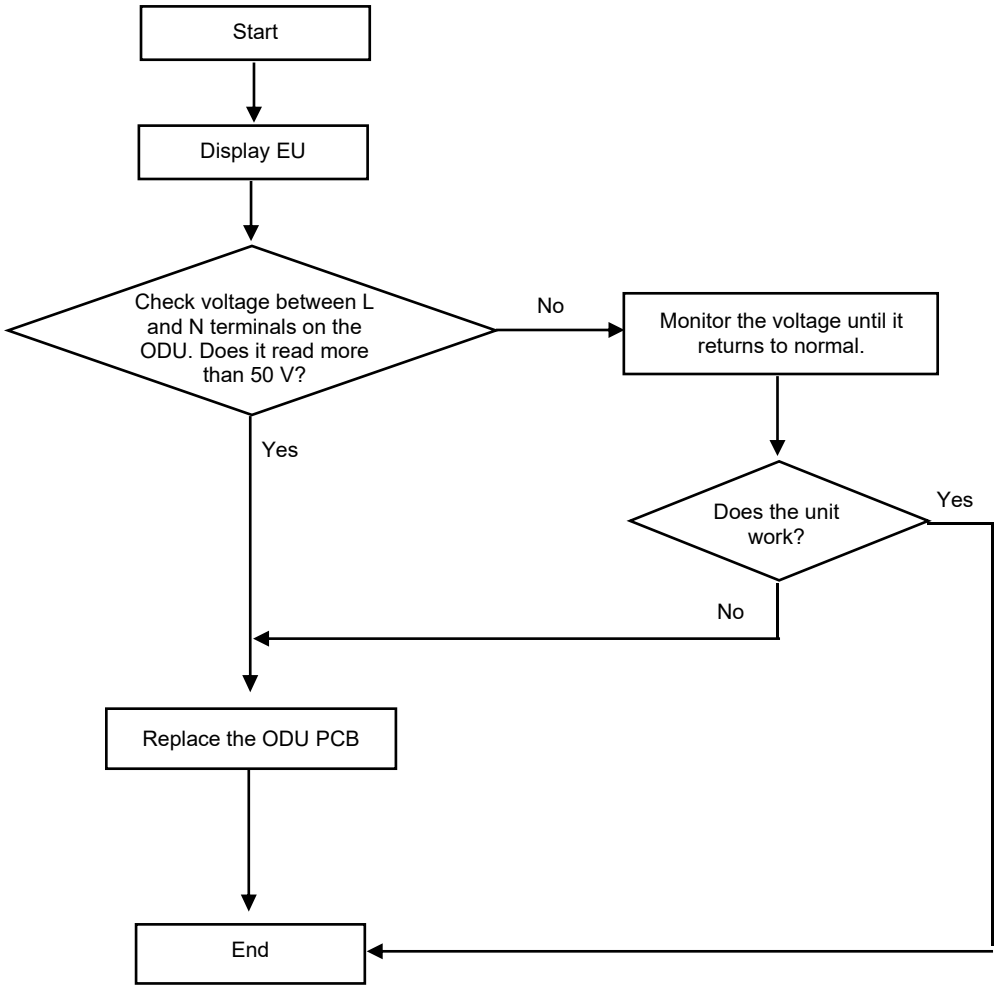


Troubleshooting

7

EU Error Code: Outdoor Unit Voltage Detection Circuit Abnormality

After the power relay is energized, if the measured voltage stays below 50 V for 3 consecutive seconds, the system displays error code "EU."

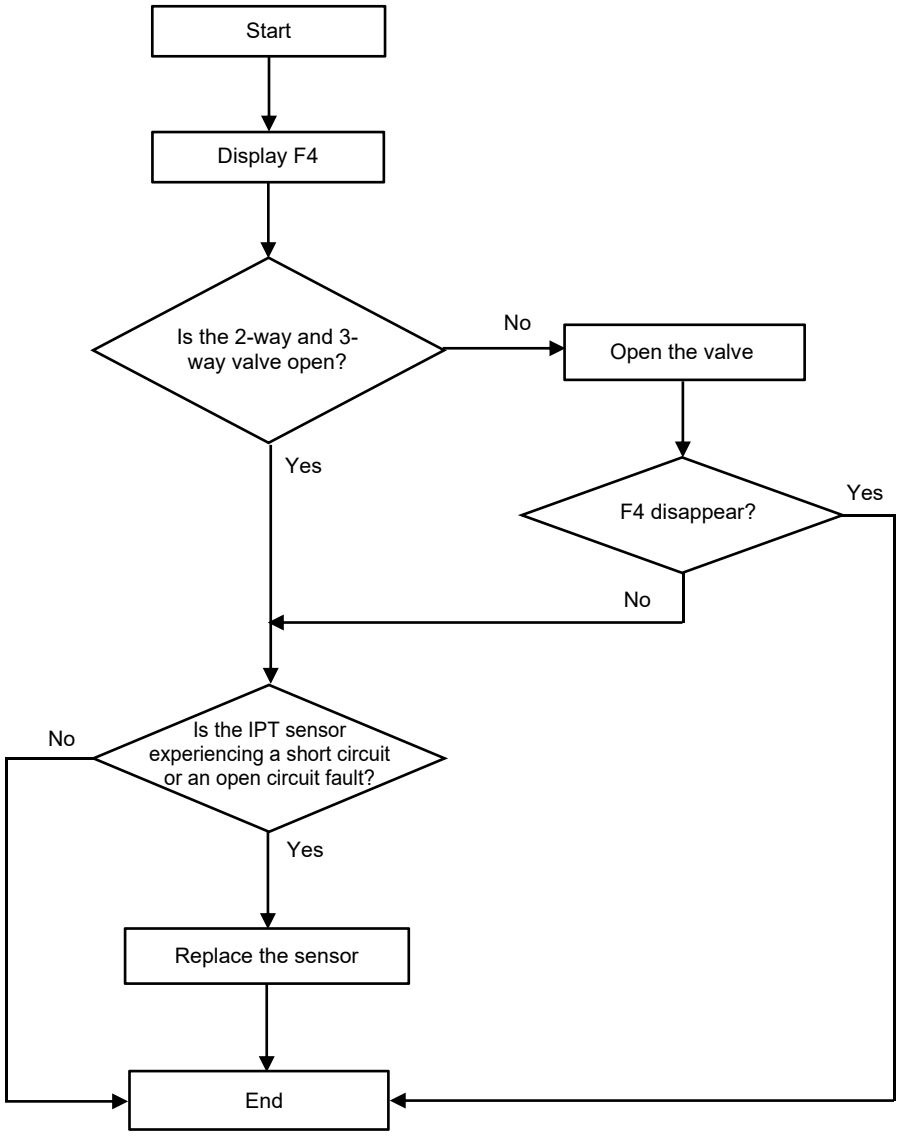


Troubleshooting

7

F4 Error Code: Abnormal Refrigerant Flow Protection

When the compressor starts, the system monitors changes in the indoor coil temperature. If the 2-way or 3-way valve on the outdoor unit has not been opened during installation, refrigerant cannot flow through the system. The system then activates refrigerant flow protection, stops, and displays error code "F4."

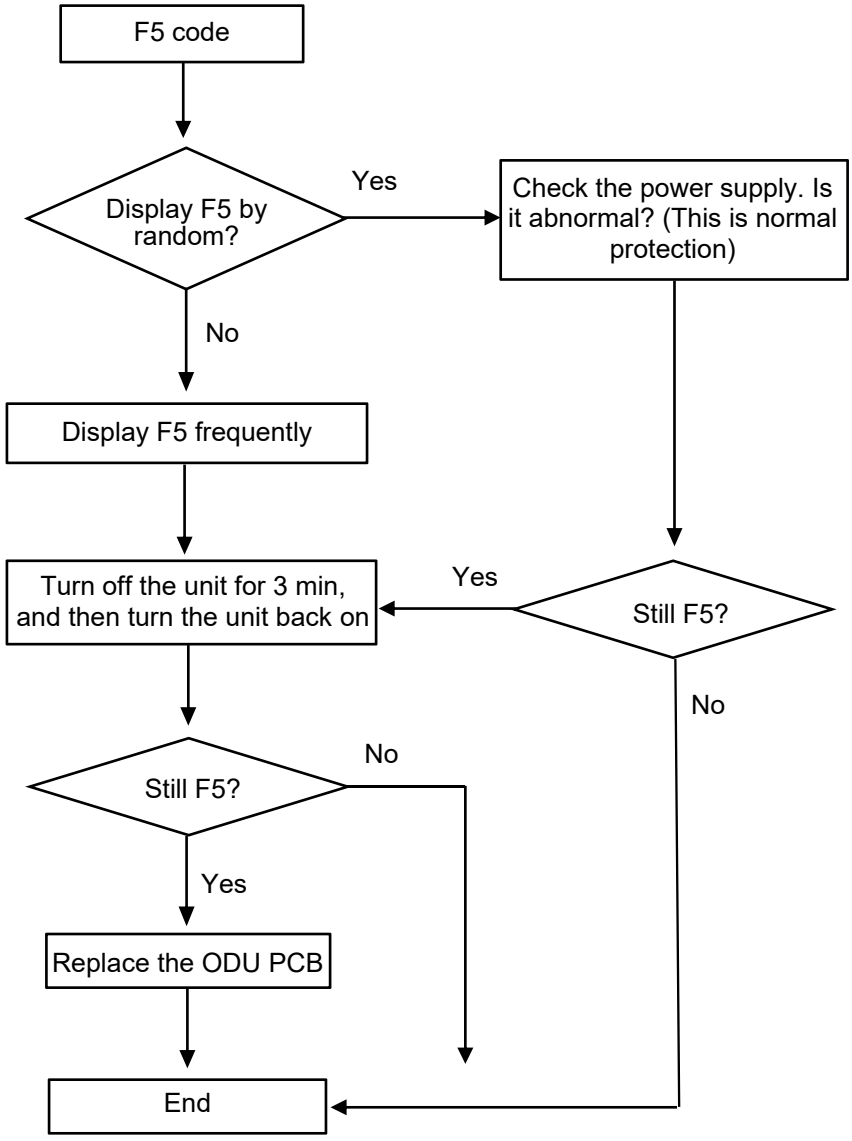


Troubleshooting

7

F5 Error Code: Outdoor Unit PFC Protection

If the outdoor unit undergoes PFC protection, the system displays the "F5" error code.

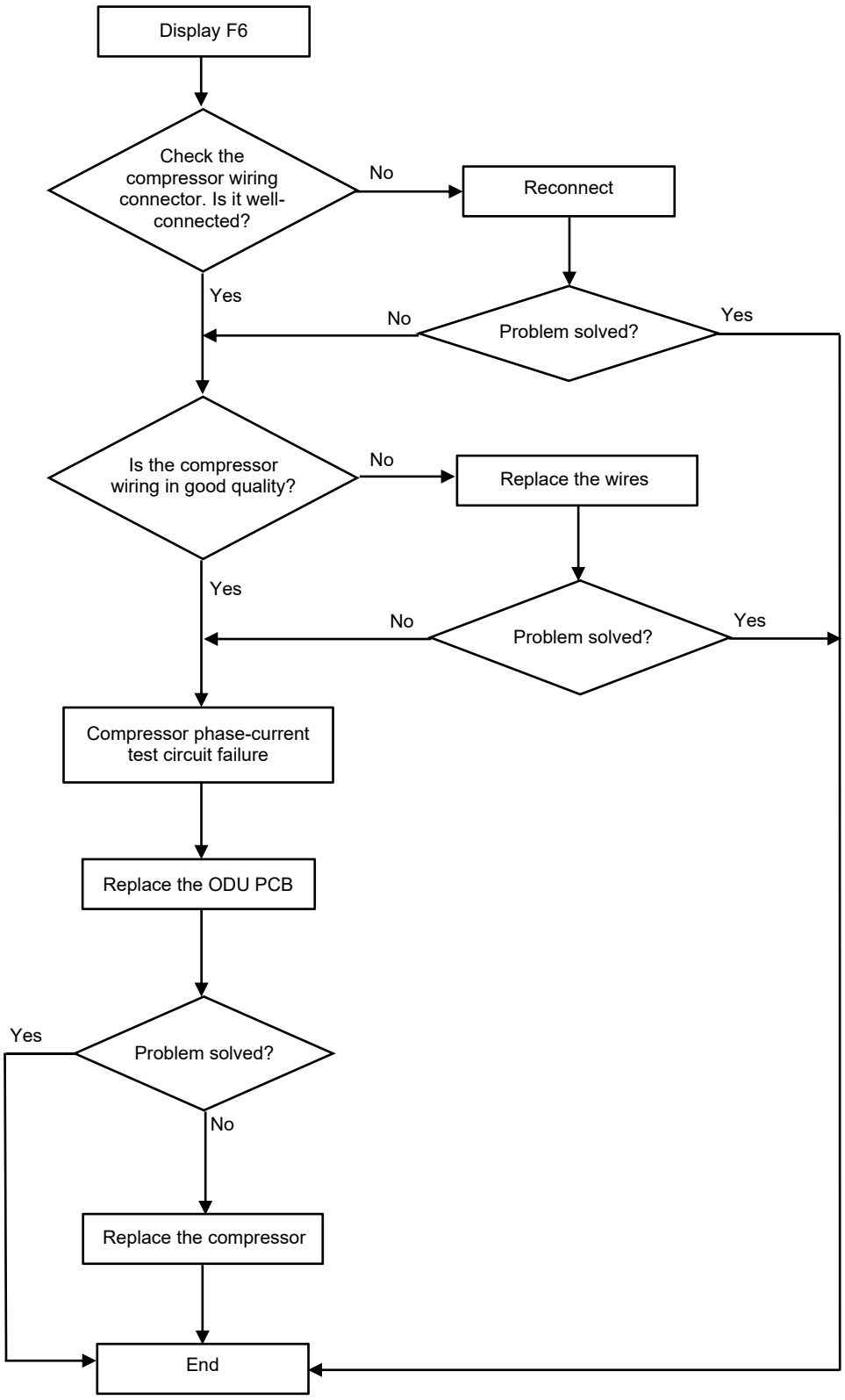


Troubleshooting

7

F6 Error Code: Compressor Phase Loss / Phase Reversal Protection

If the outdoor unit PCB cannot detect current in one or more phases of the compressor, the system activates phase loss protection, stops, and displays error code "F6."



Troubleshooting

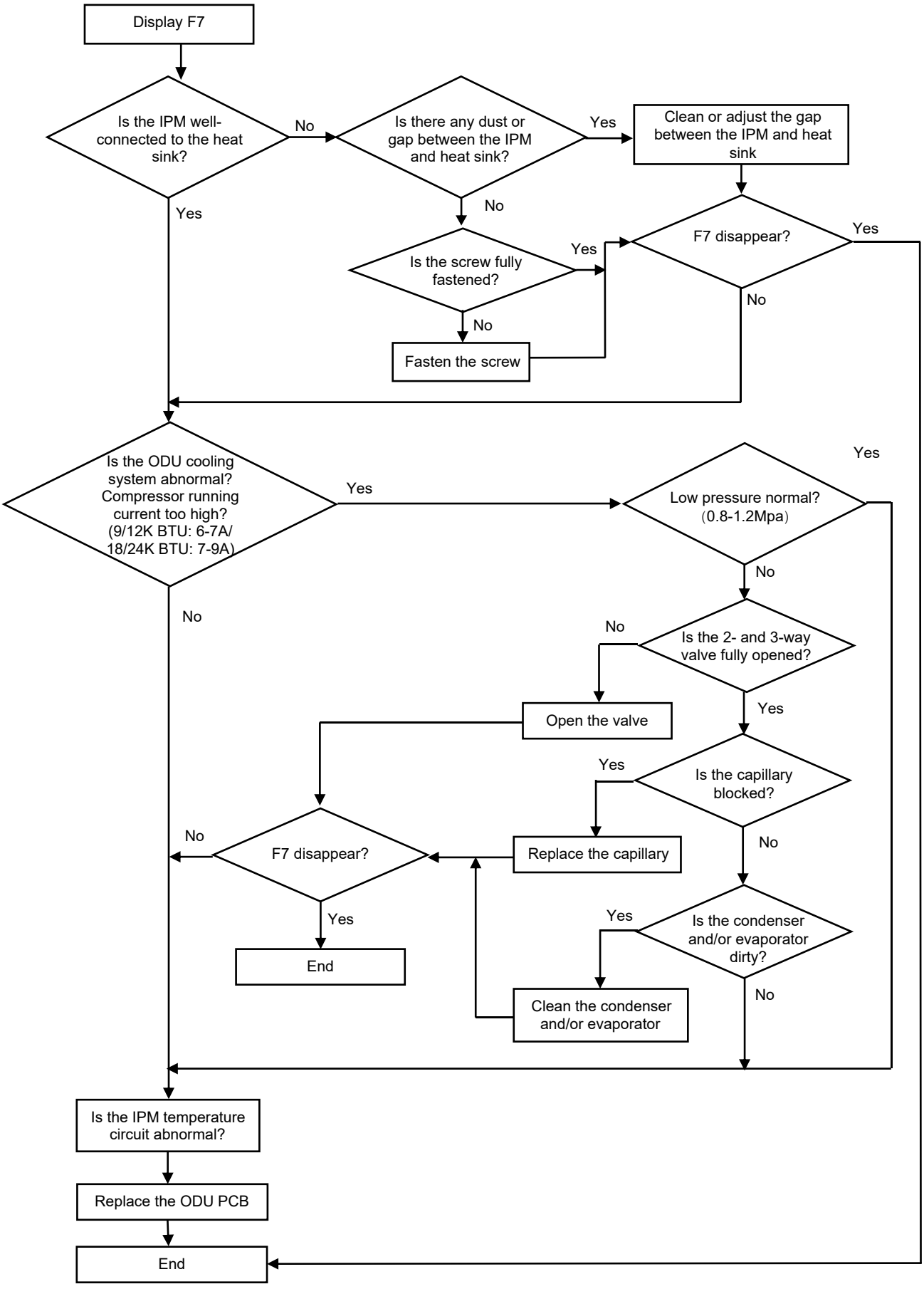
7

F7 Error Code: Outdoor Unit IPM Abnormal Temperature Protection

If the IPM temperature rises above 203°F (95°C), IPM overheat protection activates and the outdoor unit stops. The system displays error code "F7."

Troubleshooting

7

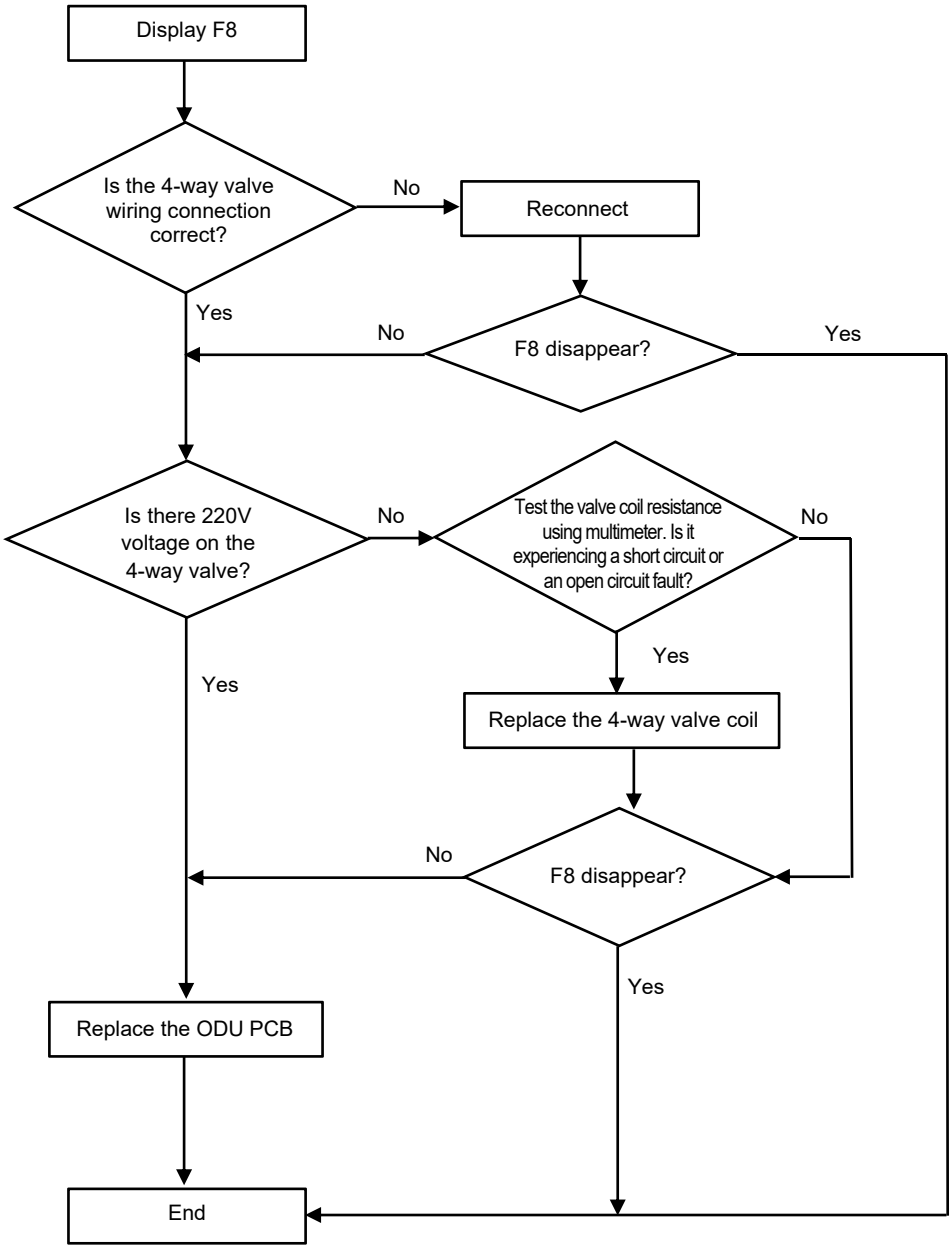


Troubleshooting

7

F8 Error Code: Outdoor Unit 4-Way Valve Reversing Abnormality

In Heating mode, if the IPT is 41°F (5°C) or lower after the compressor has run for 8 minutes, the system displays error code "F8."



Troubleshooting

7

F9 Error Code: Outdoor Unit IPM Temperature Sensor Error

Reason: The IPM module temperature test circuit failure.

Solution: Replace the outdoor unit PCB.

FA Error Code: Outdoor Unit Compressor Phase Current Detection Circuit Failure

Reason: The compressor phase-current test circuit failure.

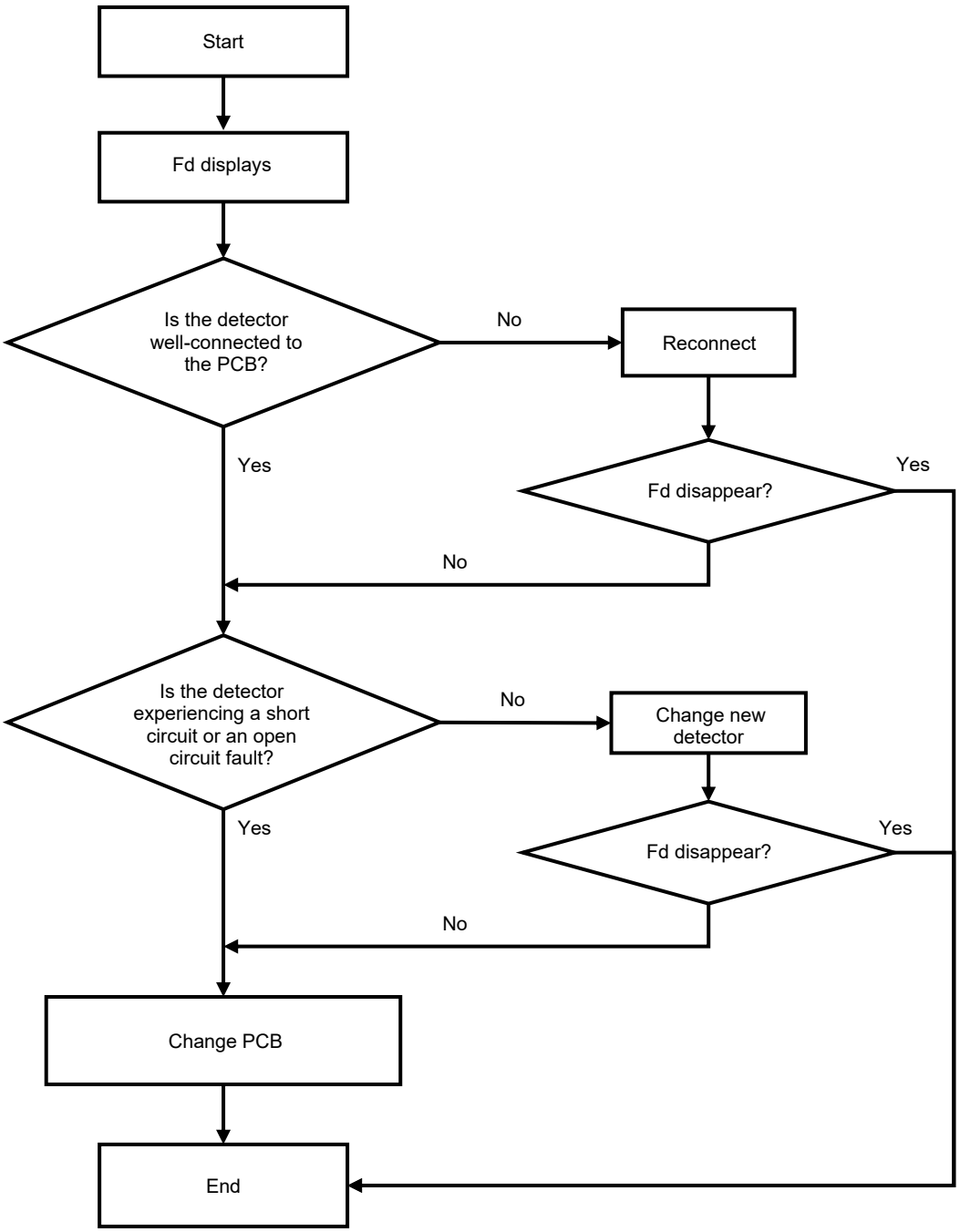
Solution: Replace the outdoor unit PCB.

Troubleshooting

7

Fd Error Code: Refrigerant Leak Sensor Communication Error

If the system detects a refrigerant leak, it displays error code "Fd." Turn off the system immediately and contact a qualified technician to locate the leak.

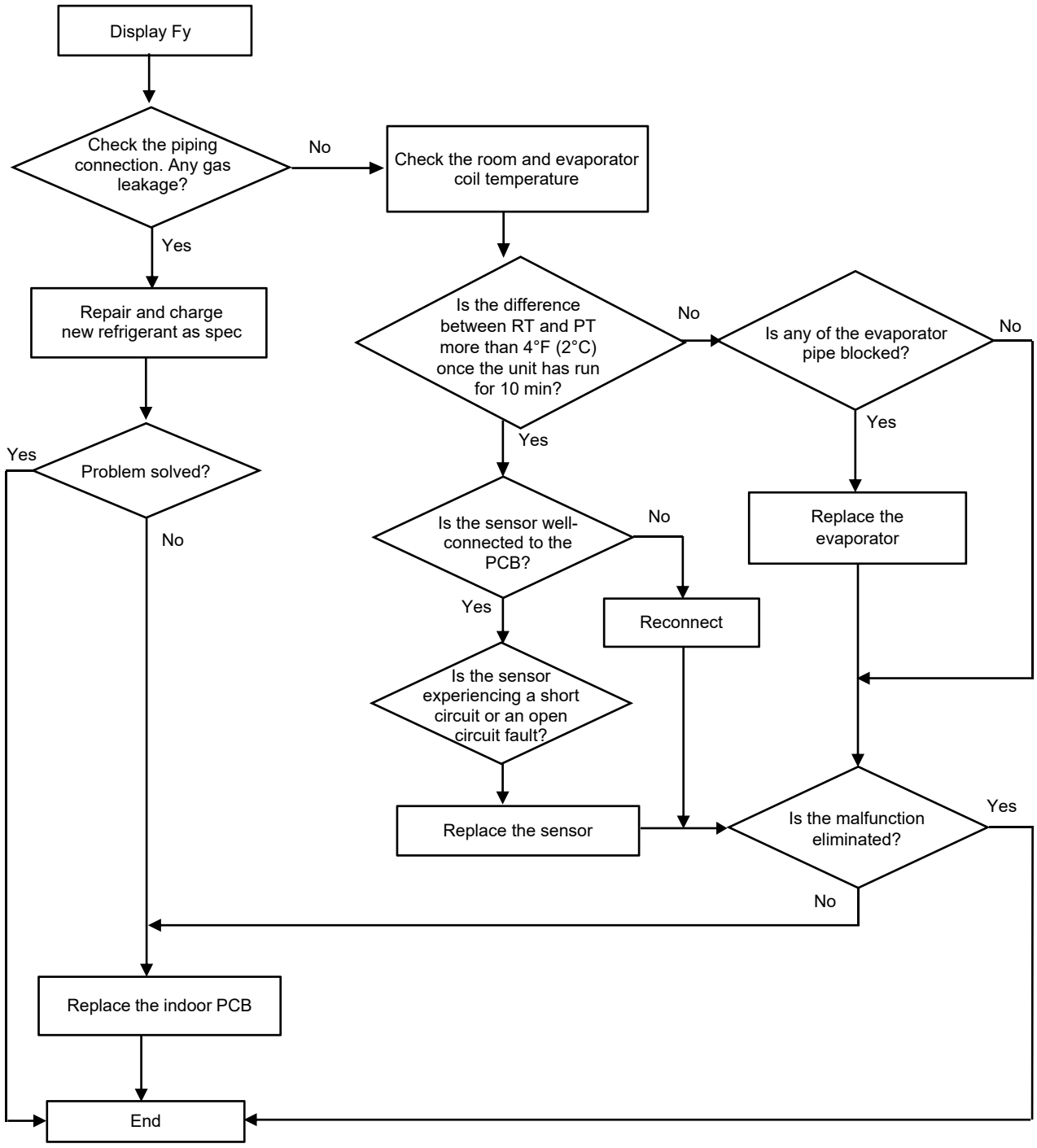


Troubleshooting

7

Fy Error Code: Refrigerant Deficiency Protection

After the compressor has run at high frequency for 9 minutes, if the indoor and outdoor coil temperatures have changed very little from their earlier readings but the compressor discharge temperature stays high, the system displays error code "Fy."

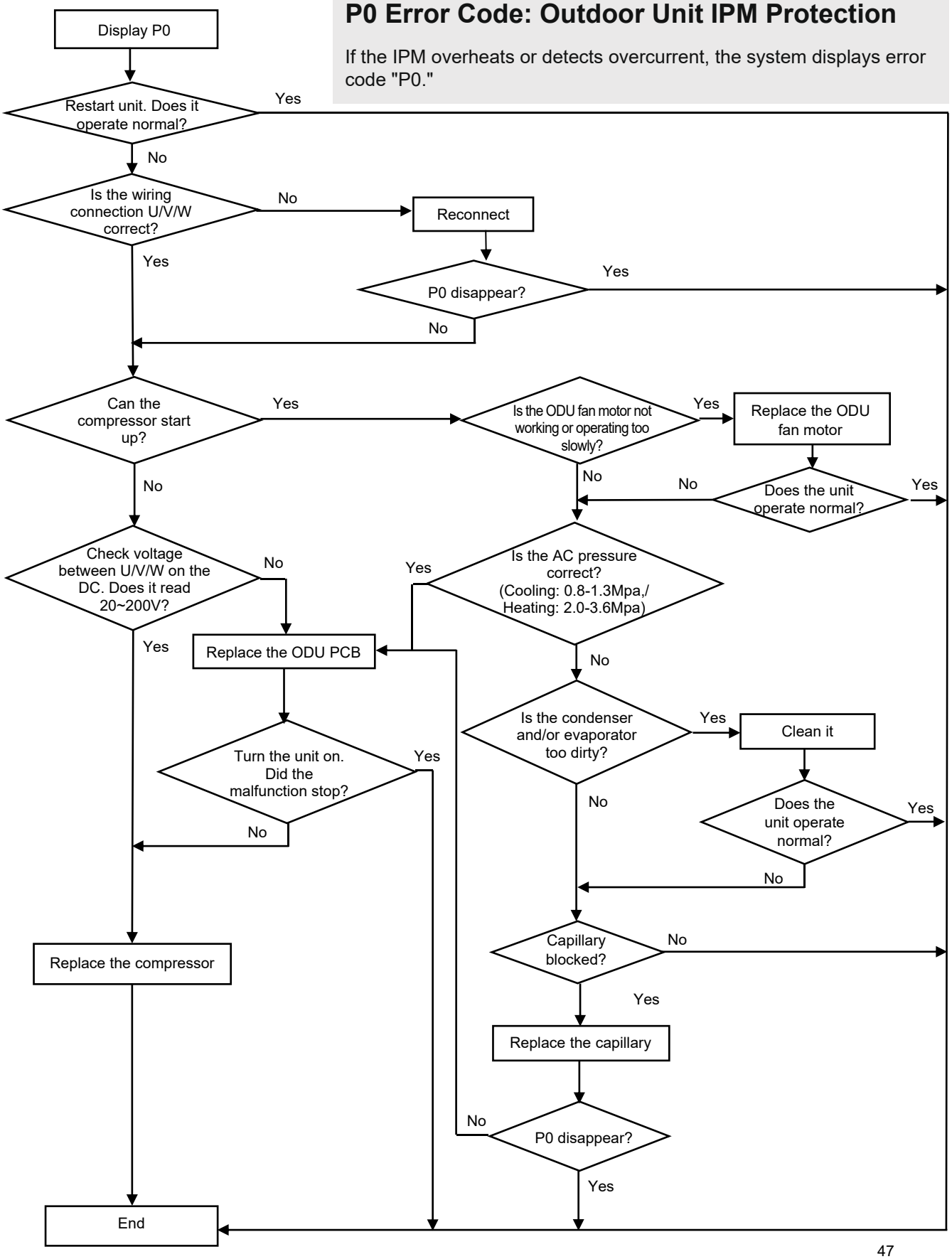


Troubleshooting

7

P0 Error Code: Outdoor Unit IPM Protection

If the IPM overheats or detects overcurrent, the system displays error code "P0."



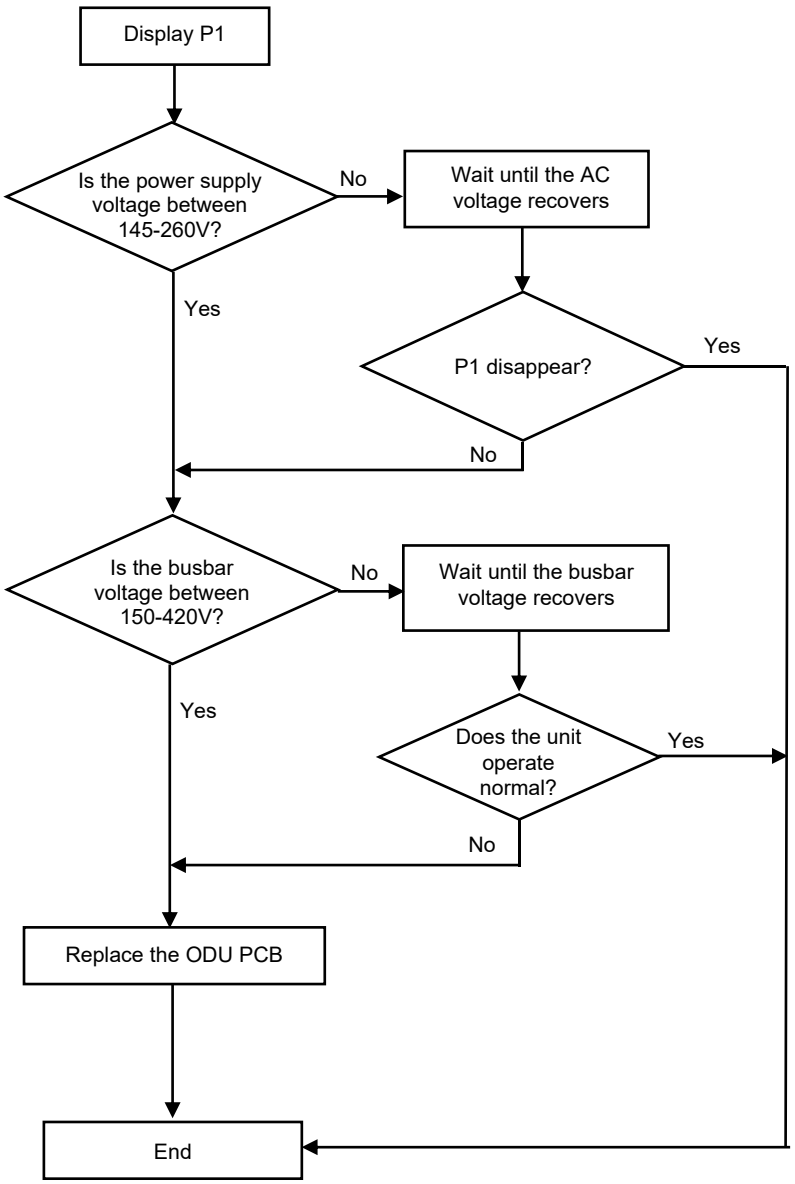
Troubleshooting

7

P1 Error Code: Overvoltage / Undervoltage Protection

1. The system monitors the supply voltage between L and N. If the voltage rises above 260 V AC or drops below 150 V AC, it displays error code "P1." The system returns to its previous operating state when the voltage rises above 155 V AC.

2. The system monitors the DC bus voltage across the large electrolytic capacitor on the outdoor unit PCB. If the voltage rises above 420 V DC or drops below 150 V DC, the system stops displaying error code "P1". The system returns to its previous operating state when the voltage is between 190 V DC and 410 V DC.

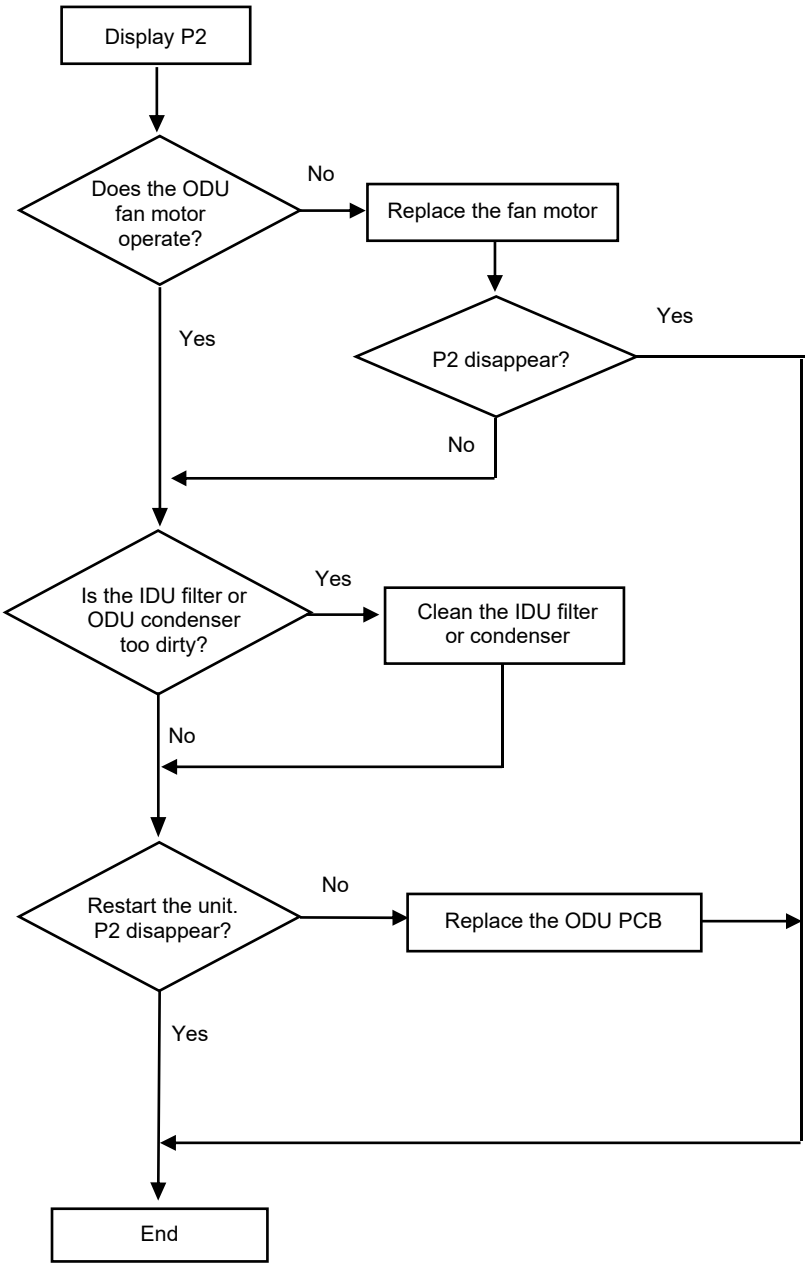


Troubleshooting

7

P2 Error Code: Overcurrent Protection

If the system's operating current exceeds Imax, it stops and displays error code "P2." The Imax value varies by model.



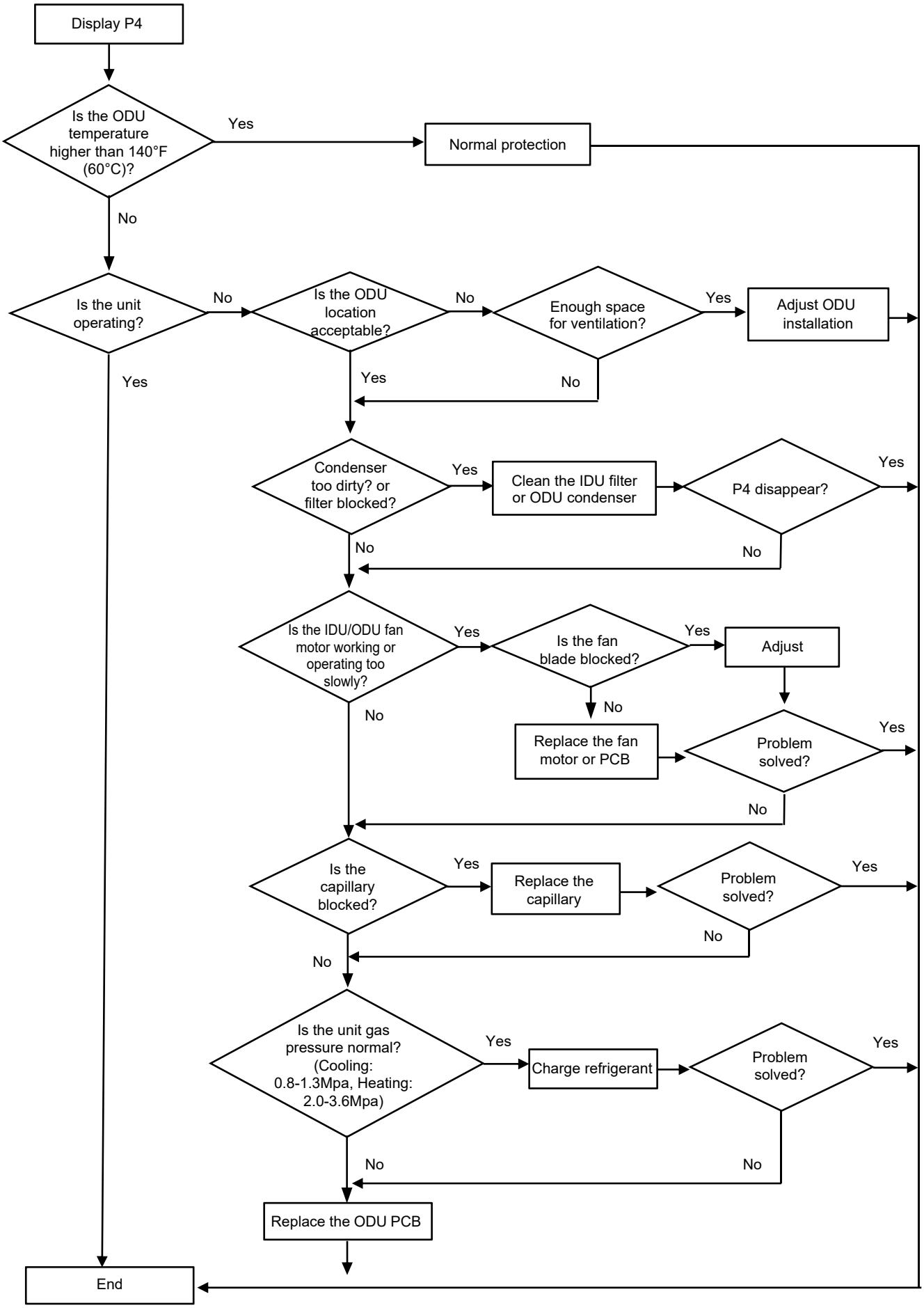
Troubleshooting

7

P4 Error Code: Outdoor Unit High Discharge Temperature Protection

Troubleshooting

7

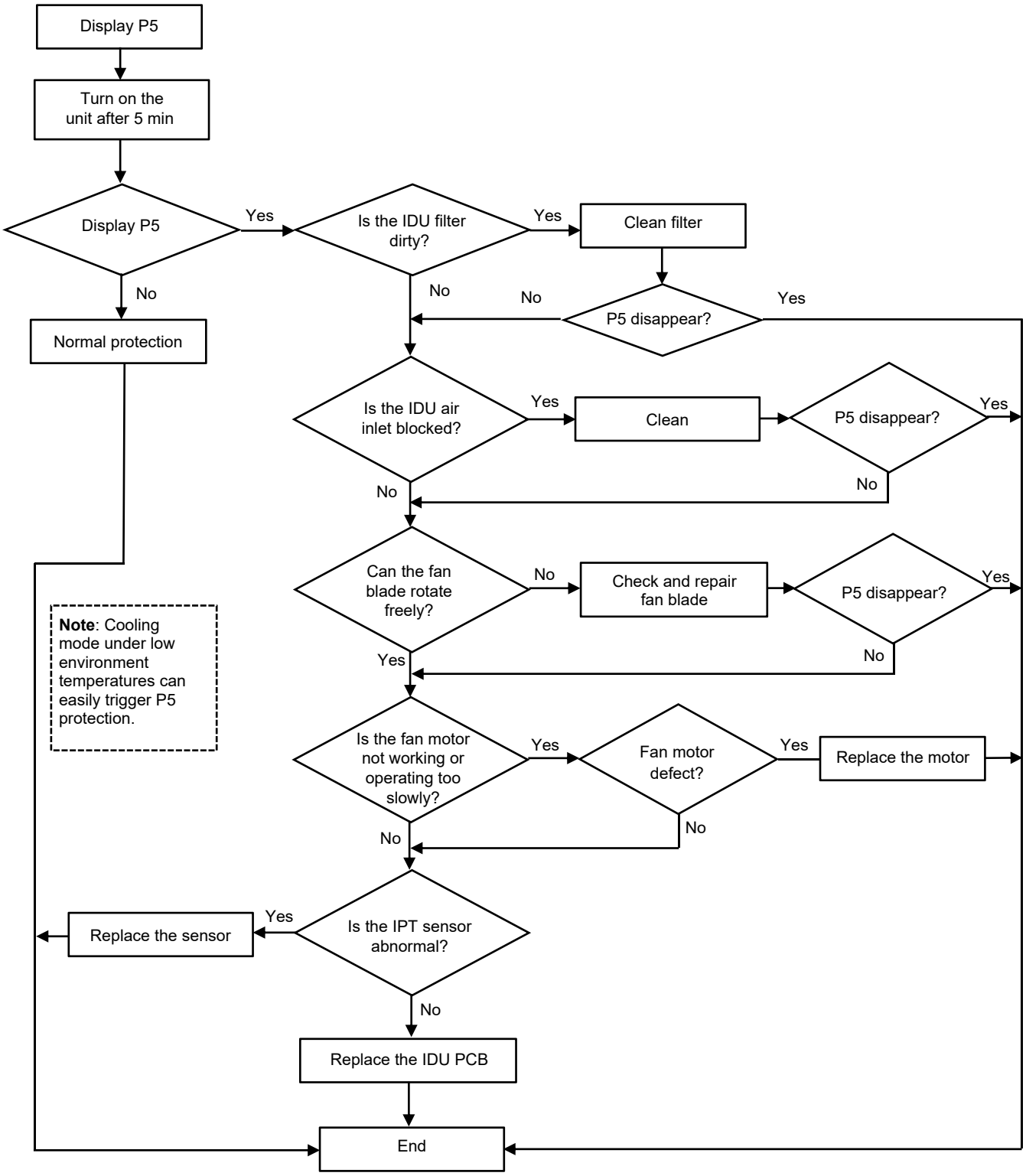


Troubleshooting

7

P5 Error Code: Cooling / Dry Mode Overcooling Protection

In Cooling or Dry mode, after the compressor has run for 6 minutes, if the IPT stays below 34°F (1°C) for 3 consecutive minutes, the outdoor unit stops and the system displays error code "P5."

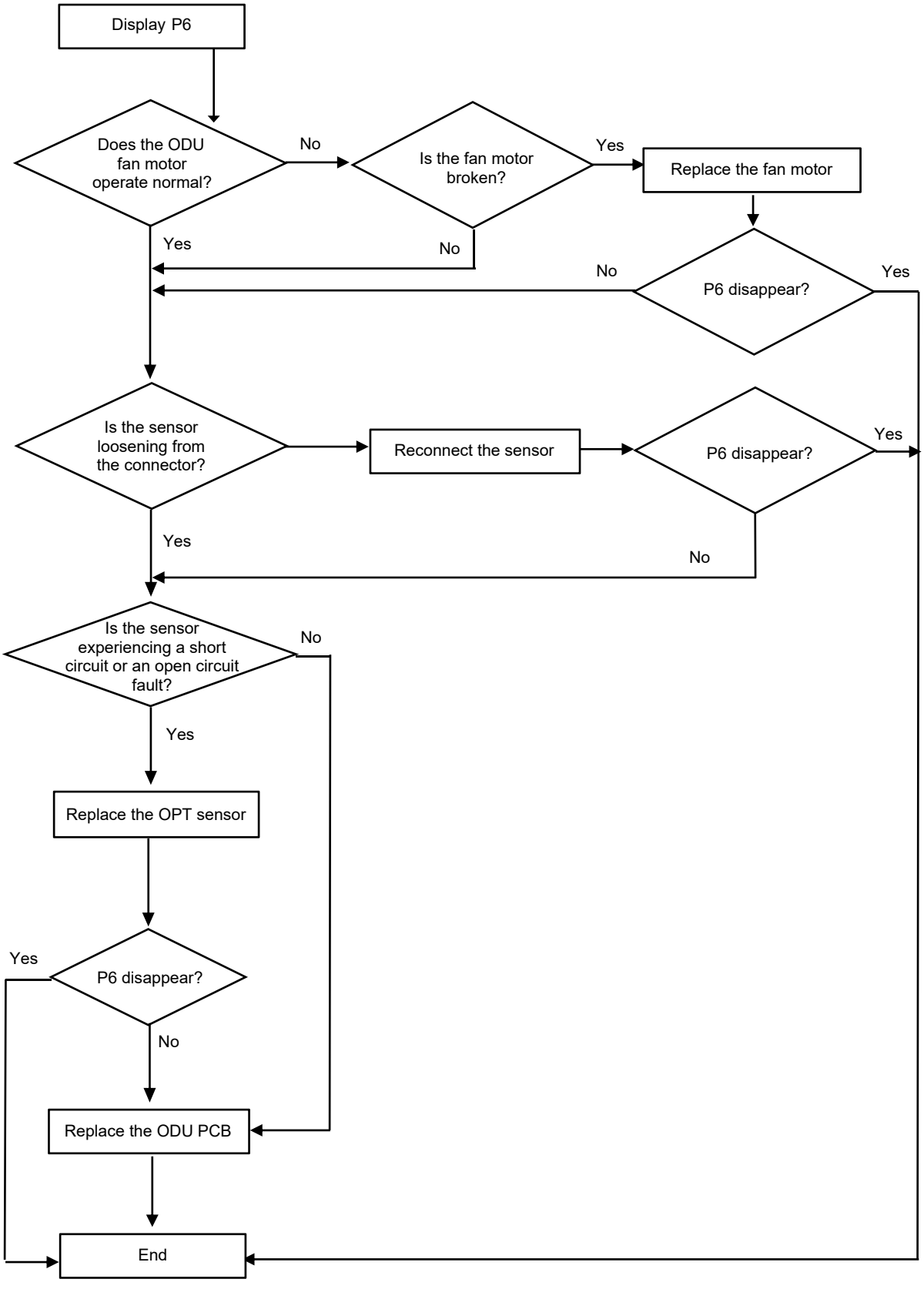


Troubleshooting

7

P6 Error Code: Cooling Mode Overheat Protection

In Cooling or Dry mode, if the outdoor coil temperature reaches 144°F (62°C) or higher, the outdoor unit stops and the system displays error code "P6."

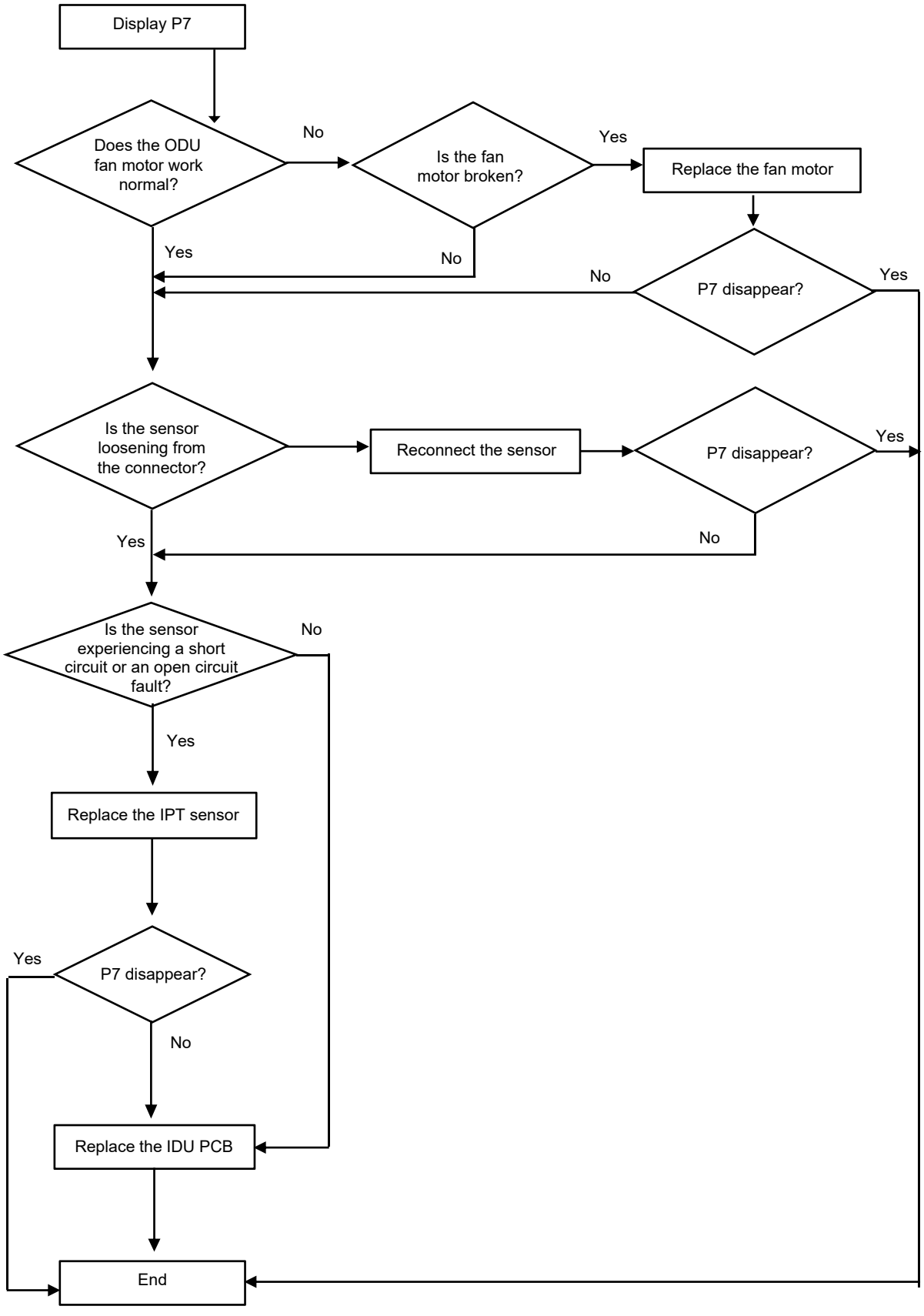


Troubleshooting

7

P7 Error Code: Heating Mode Overheat Protection

In Heating mode, if the IPT reaches 144°F (62°C) or higher, the outdoor unit stops and the system displays error code "P7."



Troubleshooting

7

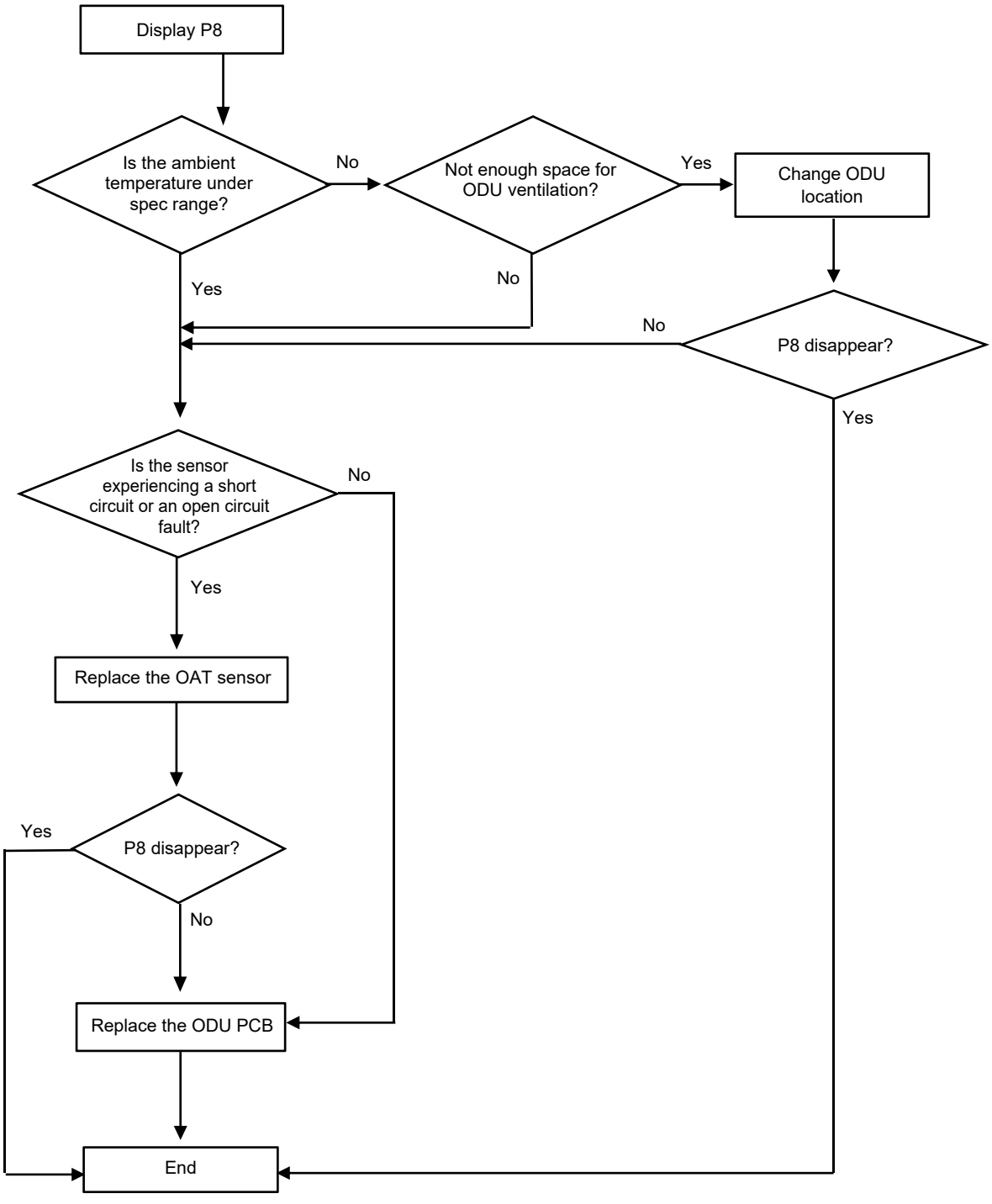
P8 Error Code: Outdoor Ambient High / Low Temperature Protection

If the outdoor ambient temperature goes outside the following range, the compressor stops. After 200 seconds, the system displays error code "P8."

Cooling or Dry mode: Below -4°F (-20°C) or above 145°F (63°C).

Heating Mode:

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



Troubleshooting

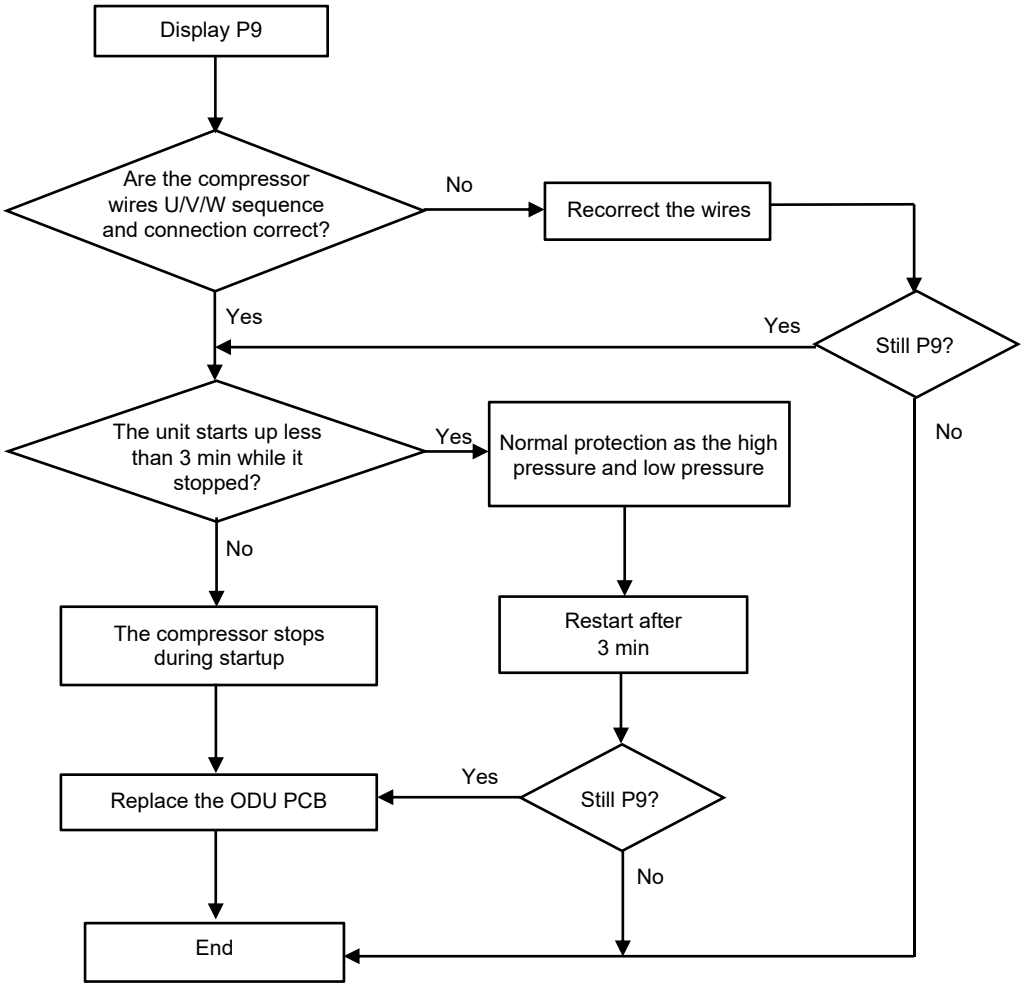
7

P9 Error Code: Outdoor Unit Compressor Drive Overload Protection

If any of the following occurs while the compressor is starting or running, the outdoor unit stops and the system displays error code "P9":

1. The control board does not receive a feedback signal from the compressor.
2. The control board detects an abnormal signal from the compressor.
3. The compressor fails to start normally.

The system then attempts to restart up to six times. If the compressor still does not operate normally, it displays the error code again.



Unit Control

8

A. Introduction

Abbreviations

RT: Room Temperature
IPT: Indoor Pipe (Coil) Temperature
ST: Indoor Set Temperature
OPT: Outdoor Pipe Temperature
OAT: Outdoor Ambient Temperature
ODT: Outdoor Discharge Temperature
CRT: Compensated Room Temperature
IDU: Indoor Unit (Air Handler)
ODU: Outdoor Unit (Condenser)

Temperature Variation

The temperature measured at the indoor unit's air inlet may differ from the actual room temperature. Because the temperature sensor is located inside the air inlet rather than in the main area of the room, the unit's control board applies a temperature compensation to make up for this difference.

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

Unit Control

8

B. Operating Modes & Functions

Cooling Mode

Temperature Control: In Cooling mode, the temperature can be set between 61°F and 88°F (16°C and 31°C). The fan speed and louver position adjust automatically based on the Cooling mode presets.

Compressor & Unit Control:

- The compressor starts, and the indoor unit operates according to the customer's preset settings when:
  - RT-ST reaches or exceeds 33°F (1°C)

- The compressor stops operating when:
  - RT-ST reaches or falls below 27°F (-3°C) and the compressor keeps operating for 2 minutes continuously.
  - RT-ST reaches or falls below 28°F (-2°C) and the compressor operates in the lowest frequency for 5 minutes continuously.
  - RT-ST reaches or falls below 30°F (-1°C) and the compressor operates in the lowest frequency for 10 minutes continuously.

Compressor Frequency Control:

- Based on the relation of RT and ST and the changing speed of RT.

- The compressor stops operating when the indoor unit is:
  - Switched off
  - Under protection
  - Changed to Fan mode

- During normal operation, the compressor runs for at least 7 minutes before the unit programming stops it.

- During normal operation, once the compressor stops, there is a 3-minute delay before the next procedure begins.

Outdoor Unit Fan Motor Control:

- When the unit is:
  - Switched off
  - Under protection
  - At the set temperature

- After the compressor stops operating, the fan motor also turns off based on the OPT and OAT temperatures. The maximum shutdown delay will not exceed 160 seconds.

- When the indoor unit is turned on in Cooling mode, the outdoor unit's fan motor starts 5 seconds after the compressor.

- If the outdoor unit stops operating due to a fault or safety protection, the indoor unit maintains its preset operation.

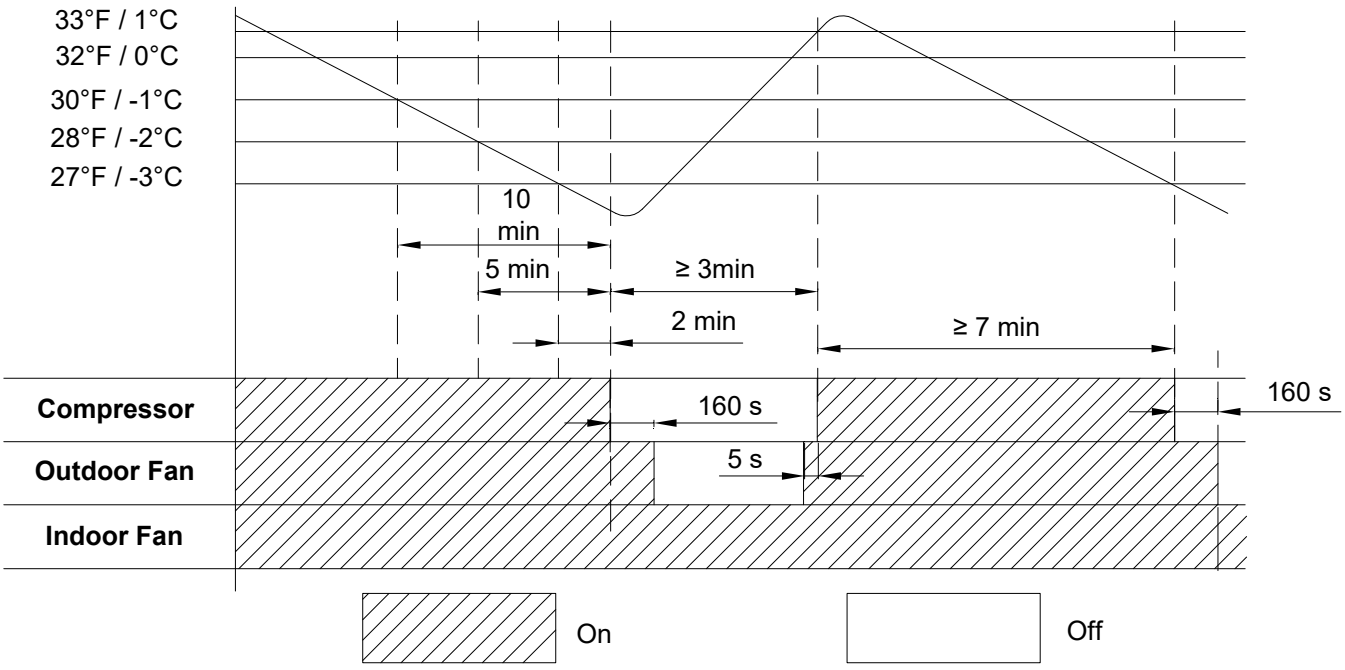
Unit Control

8

Anti-Frosting Protection:

- Control the indoor unit's operating frequency and the rate of frequency change to achieve anti-frost protection.
- Frequency Slowly Increasing (FSI): If the IPT is between 43°F (6°C) and 45°F (7°C), the frequency increases at a rate of 1 Hz per minute, gradually raising the operating speed. Once the IPT reaches or exceeds 45°F (7°C), the indoor unit exits protection mode.
- Frequency Limitation: If the IPT is between 41°F (5°C) and 43°F (6°C), the compressor frequency is prevented from increasing.
- Normal Frequency Decreasing (NFD): If the IPT is between 37°F (3°C) and 39°F (4°C), the frequency decreases by 8 Hz every 90 seconds until it reaches the lower limit.
- Fast Frequency Decreasing (FFD): If the IPT is between 36°F (2°C) and 37°F (3°C), the frequency decreases by 16 Hz every 90 seconds until it reaches the lower limit.
- The indoor unit shuts down if the IPT remains below 34°F (1°C) for 3 continuous minutes. The indoor unit restarts when the IPT exceeds 43°F (6°C) and the compressor has been shut down for at least 3 minutes.

RT-ST



Unit Control

8

Heating Mode

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

Compressor & Unit Control:

- The compressor starts, and the indoor unit operates according to the customer's preset settings when:
  - ST-CRT reaches or exceeds 33°F (1°C).
- The compressor stops operating when:
  - ST-CRT reaches or falls below 27°F (-3°C) and the compressor keeps operating for 2 minutes continuously.
  - ST-CRT reaches or falls below 28°F (-2°C) and the compressor operates in the lowest frequency for 5 minutes continuously.
  - ST-CRT reaches or falls below 30°F (-1°C) and the compressor operates in the lowest frequency for 10 minutes continuously.

Compressor Frequency Control:

- The compressor frequency control is based on the relation of RT and ST and the changing speed of RT.
- The compressor stops operating when the indoor unit is:
  - Switched off
  - Under protection
  - Changed to Fan mode
- Once started, the compressor runs for at least 7 minutes before it can stop, whether during normal operation (cooling or heating) or because of an error code.
- During normal operation, once the compressor stops, it waits at least 3 minutes before restarting.

Indoor Unit Time Delay:

- In Heating mode, when the compressor stops or the unit is switched off, the indoor unit's fan motor continues to run for a few seconds to dissipate residual heat and prevent overheating.

Outdoor Unit Fan Motor Control:

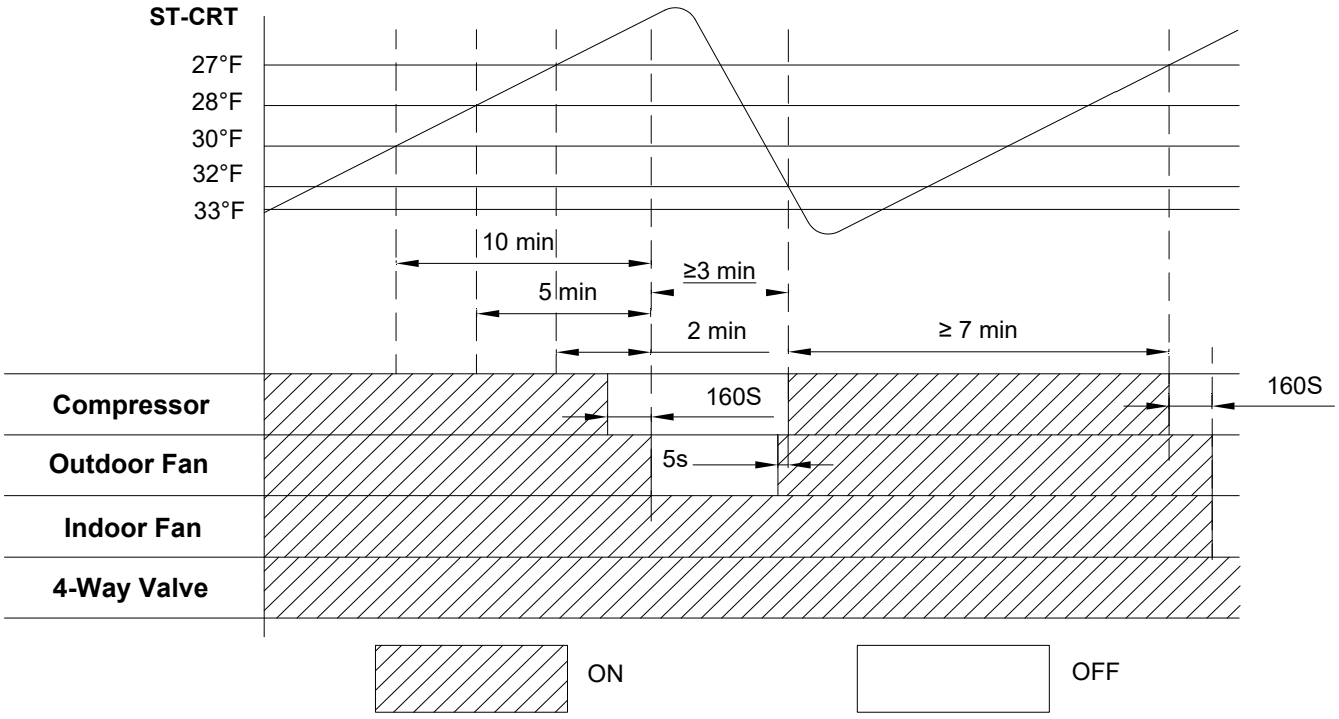
- When the unit is:
  - Switched off
  - Under protection
  - At the set temperature
- When the compressor stops, the outdoor fan motor shuts off after a delay determined by the OPT and OAT. This delay can last up to 160 seconds.
- In Heating mode, the outdoor unit's fan motor starts 5 seconds after the compressor starts.
- During the defrost cycle, the outdoor fan motor starts 48 seconds after the compressor stops.
- When the defrost cycle ends, the compressor turns off, and the outdoor fan motor starts at the same time.

Unit Control

8

4-Way Valve Control:

- In Cooling, Dry, or Fan mode, the 4-way valve is de-energized. When the indoor unit switches to Heating mode, the 4-way valve is energized.
- When Heating mode is turned off, switched to another mode, or stops operating due to protection, the 4-way valve turns off 2 minutes after the compressor stops.
- If the indoor unit stops because a protection function is triggered, the 4-way valve turns off for 4 minutes, then turns back on.
- During the defrost cycle, the 4-way valve is de-energized 43 seconds after the compressor stops. When the defrost cycle ends, the compressor stops, and the 4-way valve is energized 43 seconds later.



Unit Control

8

Compressor Control

When Cooling or Drying mode is turned on, the indoor fan runs for a short time before the compressor starts. In all modes, once the compressor starts, it runs for a minimum period before it can stop, except in special cases. This protects the compressor from frequent starts and stops. After the compressor stops, it will not restart for a few minutes.

Oil Return Control

If the unit runs at low frequency for an extended period, the system activates Oil Return control. This function returns oil from the piping to the compressor to prevent oil starvation. During oil return, the compressor frequency increases to the preset oil return frequency. The process typically takes about 5 minutes.

C. Protection

Motor Overload Protection & Overcurrent Protection

When the motor's load exceeds its capacity, the motor temperature rises and the current exceeds the rated value. The overload protection threshold is much lower than the over-current protection threshold. Overload protection guards against sustained operation above the rated load, which can cause overheating. Overcurrent protection responds to sudden, much higher currents, such as those caused by a short circuit.

Overload Protection Function

Overload protection in Cooling and Dehumidification modes.

Protection Control

When the IPM temperature reaches or exceeds 189°F (87°C), the compressor frequency is limited or reduced to protect the IPM from overheating.

When the IPM temperature reaches or exceeds 203°F (95°C), the system stops operating to protect the IPM.

When the IPM temperature falls below 189°F (87°C) and the compressor has been stopped for at least 3 minutes, the unit can restart.

If IPM over-temperature shutdown protection is triggered six times in a row, the unit will not recover automatically and displays a failure code. Press the On/Off button to reset it. If the compressor runs continuously for more than 6 minutes, the protection counter resets to zero. The failure code and protection count are cleared immediately when the unit is turned off or switched to Fan mode.

If the fault cannot be recovered, changing the operation mode will not clear it.

Remote Control

9

Notes

- Although button shapes and positions vary by model, their features and functions remain identical.
- The display and functional features of the remote controller may vary depending upon the specific system model.
- The unit beeps to confirm each button command.
- There may be a difference between the number of digits shown on the remote control (3) and the number on the indoor unit (2).

Remote Control

9

Remote Buttons Overview

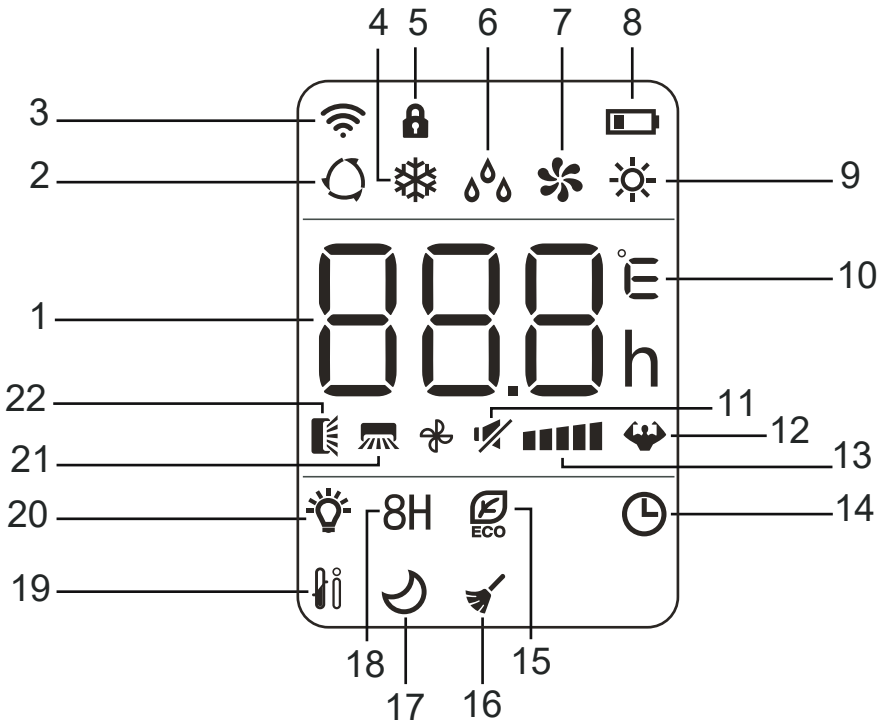
Button	Description
⏻	Turn the air conditioner on or off
TURBO	Activate/deactivate the Turbo feature to allow the system to rapidly reach set temperatures
MUTE	Put the system into Silent mode
MODE	Select the mode of operation (Auto, Cool, Dry, Fan, and Heat modes)
ECO	Activate/deactivate the ECO feature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



Remote Control

9

Remote Control LED Screen & Icons



No.	Icon	Description
1	88	Temperature indicator
2		Auto mode
3		Signal transmit indicator
4		Cooling mode
5		Child lock indicator
6		Dry mode
7		Fan Only mode
8		Battery level indicator
9		Heating mode
10		Unit of temperature (°C/°F)
11		Mute function

No.	Icon	Description
12		Turbo mode
13		Fan speed (Auto or Fixed)
14		Timer active indicator
15	ECO	ECO mode
16		Self-Clean function
17		Sleep function
18	8H	8°C (46°F) Heating function
19		I Feel/Follow Me mode
20		LED display on/off
21		Left-Right swing indicator
22		Up-Down swing indicator

Emergency Manual Button

10

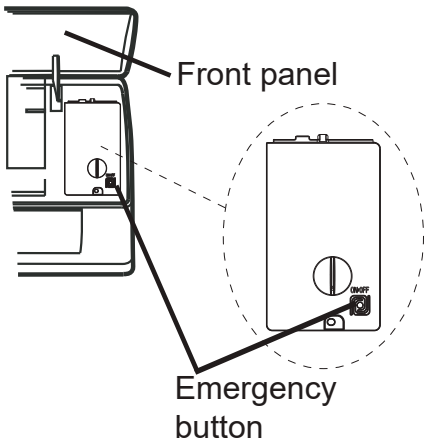
Emergency Manual Button

The emergency button on the front of the indoor unit can be used for a function test if the remote control is malfunctioning or the batteries have lost power. Do not press the emergency switch during normal operation.

The following are available functions using the Emergency manual button:

- First press: Activates Cooling mode.
- Second press (within 3 seconds): Activates Heating mode.
- Third press: Turns the system off.

The emergency button is under the front panel, on the unit's terminal block cover.



If the remote control fails to operate the system, follow these steps:

1. Open and lift the front panel at an angle to access the emergency button.

2. Press the manual button once to start the unit in Cooling mode.

3. Press the button again within 3 seconds to start the unit in Heating mode.

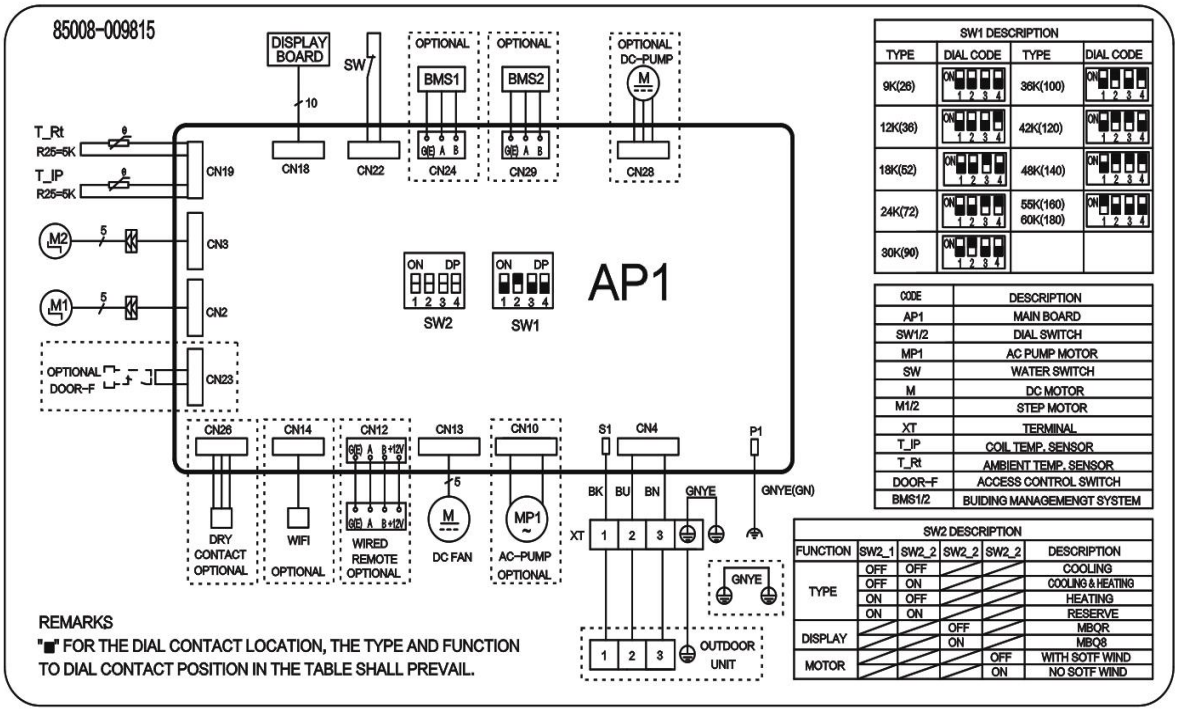
4. Press the button a third time within 5 seconds to turn off the unit.

Wiring Diagrams

11

Control Board Wiring Diagrams

Indoor Unit: RT009GLSILCFHG

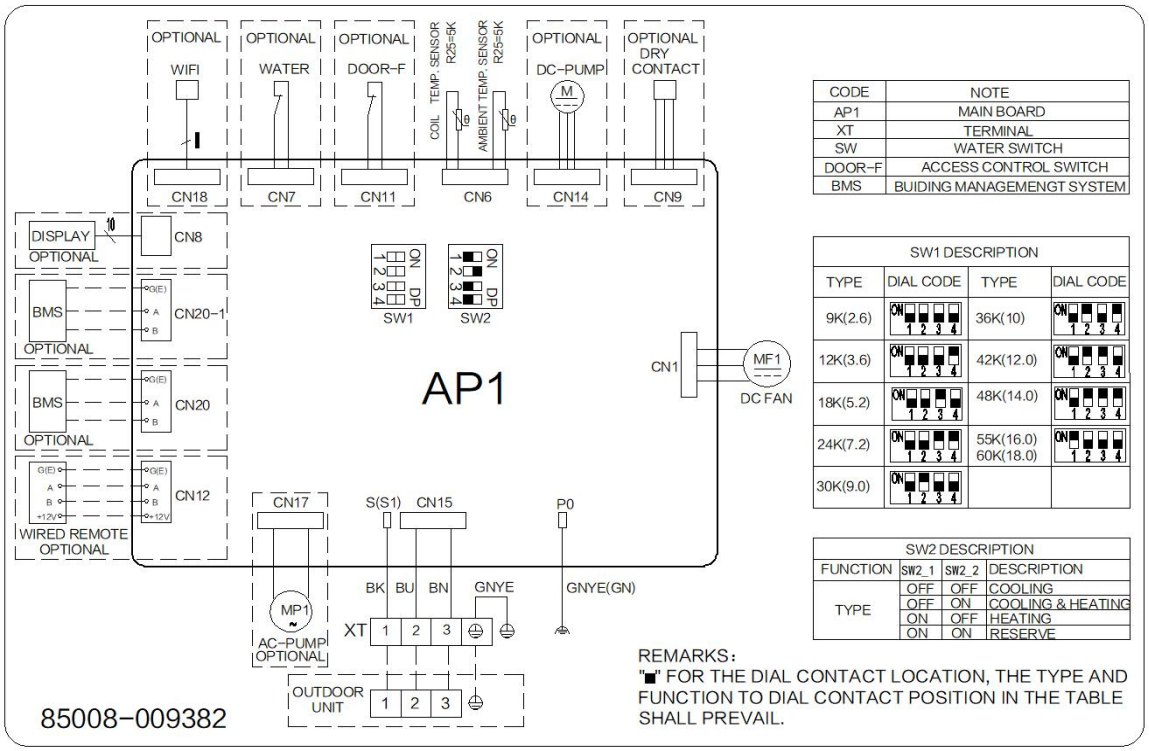


SW1 DESCRIPTION			
TYPE	DIAL CODE	TYPE	DIAL CODE
9K(26)		36K(100)	
12K(36)		42K(120)	
18K(52)		48K(140)	
24K(72)		55K(160) 60K(180)	
30K(90)			

CODE	DESCRIPTION
AP1	MAIN BOARD
SW1/2	DIAL SWITCH
MP1	AC PUMP MOTOR
SW	WATER SWITCH
M	DC MOTOR
M1/2	STEP MOTOR
XT	TERMINAL
T_IP	COIL TEMP. SENSOR
T_Rt	AMBIENT TEMP. SENSOR
DOOR-F	ACCESS CONTROL SWITCH
BMS1/2	BUIDING MANAGEMENGT SYSTEM

SW2 DESCRIPTION					
FUNCTION	SW2_1	SW2_2	SW2_2	SW2_2	DESCRIPTION
TYPE	OFF	OFF			COOLING
	OFF	ON			COOLING & HEATING
	ON	OFF			HEATING
	ON	ON			RESERVE
DISPLAY			OFF		MBQR
			ON		MBQ8
MOTOR				OFF	WITH SOTF WIND
				ON	NO SOTF WIND

Indoor Units: RT012GLSILCFHG | RT018GLSILCFHG | RT024GLSILCFHG



CODE	NOTE
AP1	MAIN BOARD
XT	TERMINAL
SW	WATER SWITCH
DOOR-F	ACCESS CONTROL SWITCH
BMS	BUIDING MANAGEMENGT SYSTEM

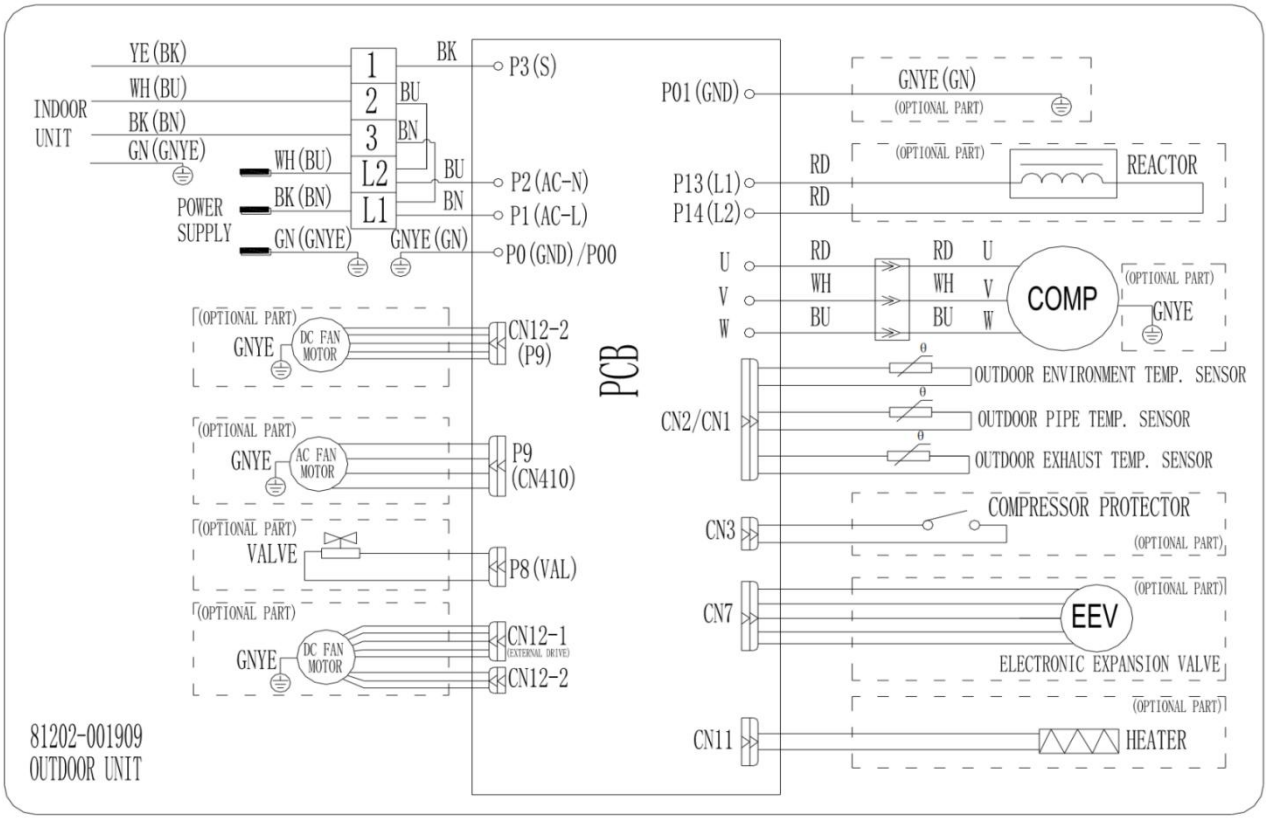
SW1 DESCRIPTION			
TYPE	DIAL CODE	TYPE	DIAL CODE
9K(2.6)		36K(10)	
12K(3.6)		42K(12.0)	
18K(5.2)		48K(14.0)	
24K(7.2)		55K(16.0) 60K(18.0)	
30K(9.0)			

SW2 DESCRIPTION			
FUNCTION	SW2_1	SW2_2	DESCRIPTION
TYPE	OFF	OFF	COOLING
	OFF	ON	COOLING & HEATING
	ON	OFF	HEATING
	ON	ON	RESERVE

Wiring Diagrams

11

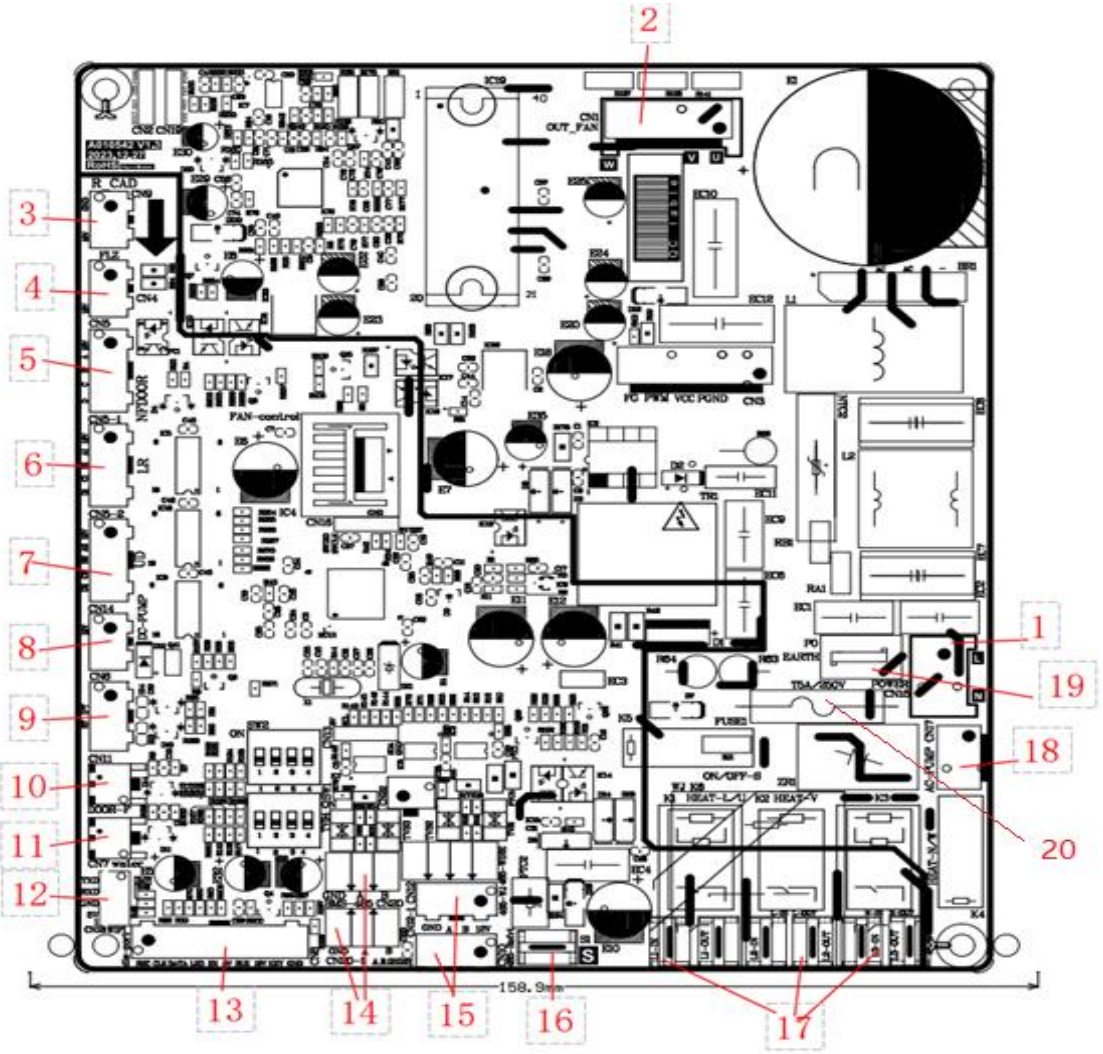
Outdoor Units: YN009GLSI24RPG | YN012GLSI24RPG | YN018GLSI24RPG | YN024GLSI24RPG



PCB Layouts

12

Indoor Units: RT009GLSILCFHG | RT012GLSILCFHG | RT018GLSILCFHG | RT024GLSILCFHG



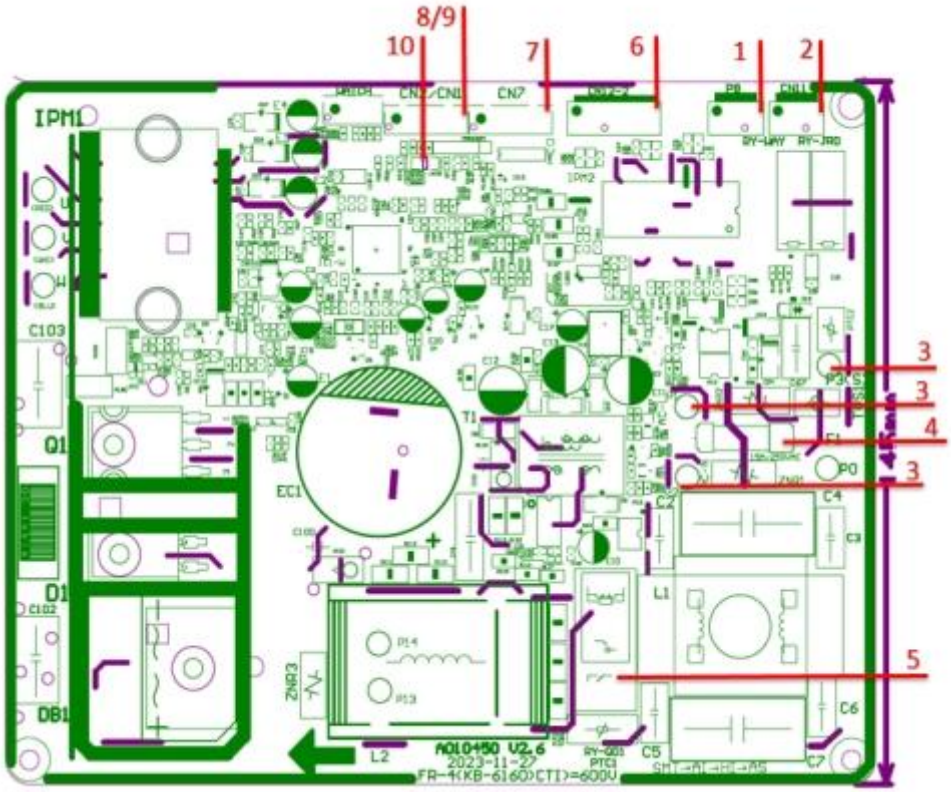
1	Power supply and L, N connector	10	Dry connect
2	DC motor connector	11	Water level test
3	Key card connector	12	Wi-Fi connector
4	Anion connector	13	Display
5	Fresh air connector	14	VRF communication port
6	Left-right swing connector	15	Wired cotrol connector
7	Up-down swing connector	16	IDU/ODU communication wiring
8	Water pump (DC motor) connector	17	E-heater
9	Temperature sensor connector	18	Water pump (AC motor) connector

PCB Layouts

12

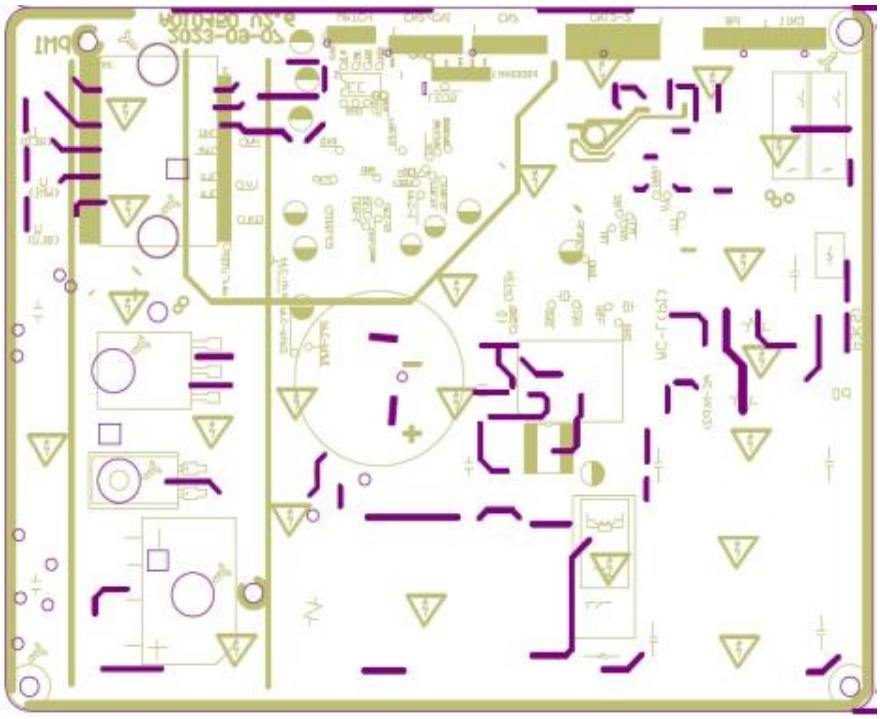
Outdoor Units: YN009GLSI24RPG | YN012GLSI24RPG

Top View



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

Bottom View

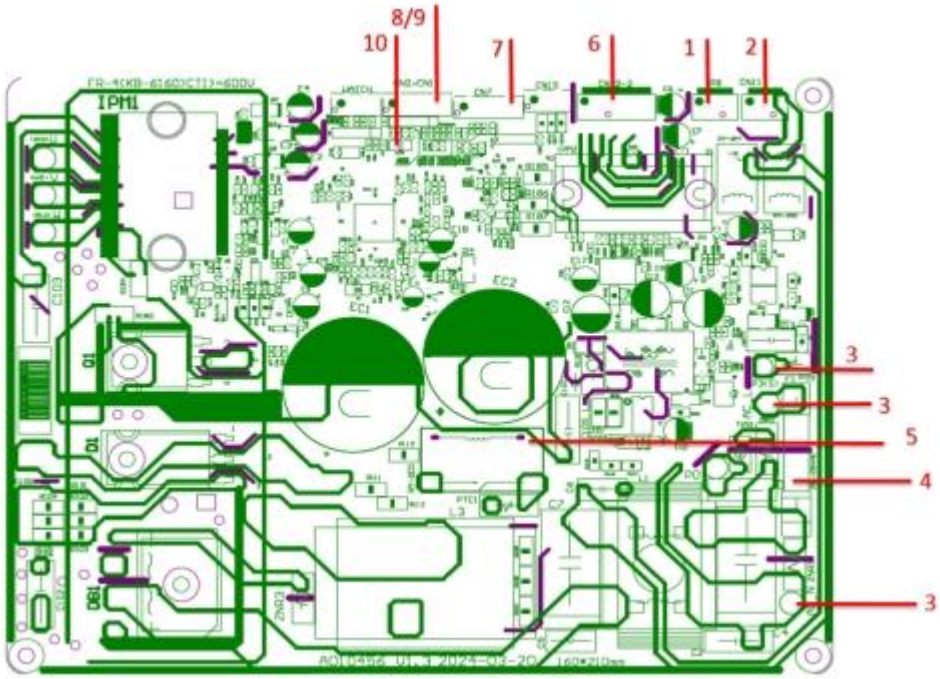


PCB Layouts

12

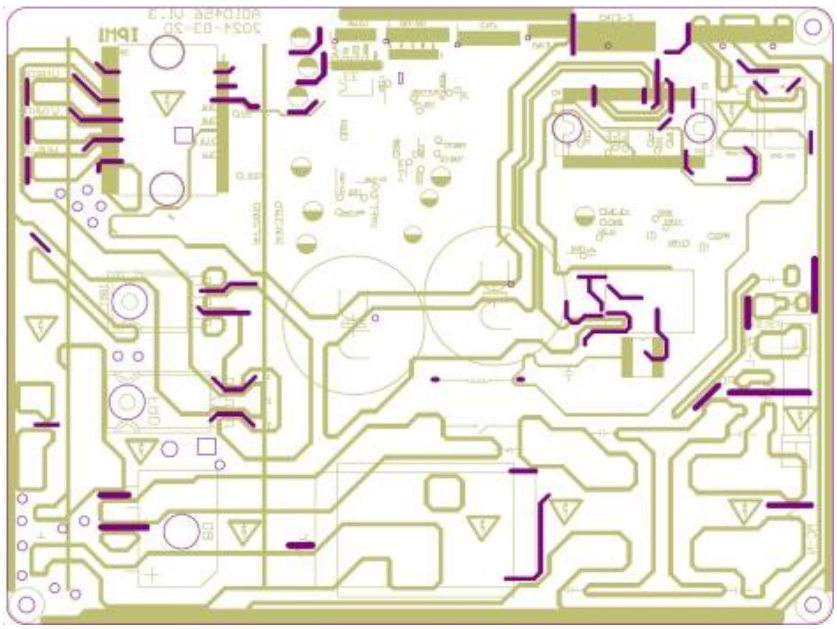
Outdoor Unit: YN018GLSI24RPG

Top View



1	4-way valve
2	Heater
3	L, N and communication
4	Fuse
5	ODU PCB main relay
6	DC motor connector
7	Electronic expansion valve
8	Discharge sensor connector
9	OAT/OPT sensor connector
10	LED5
11	4-way valve
12	Heater
13	L, N and communication

Bottom View

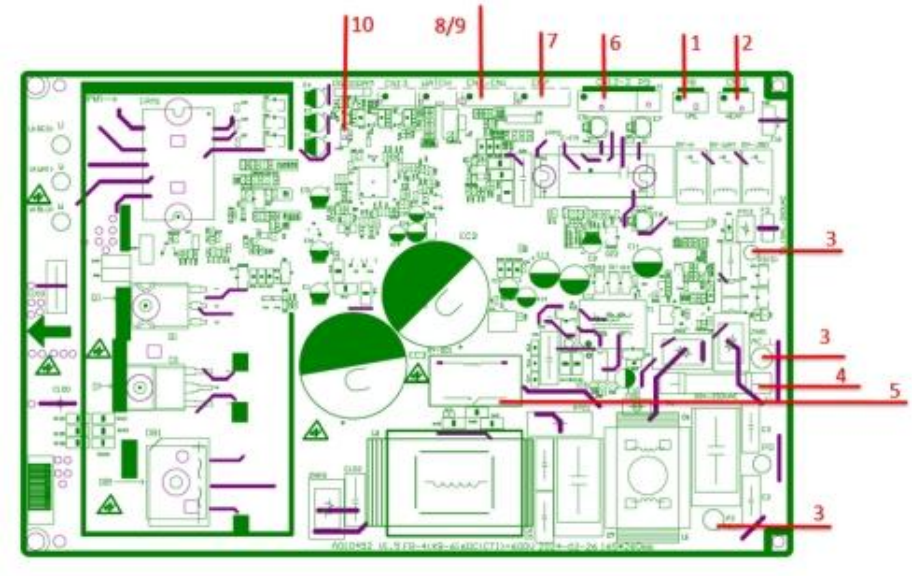


PCB Layouts

12

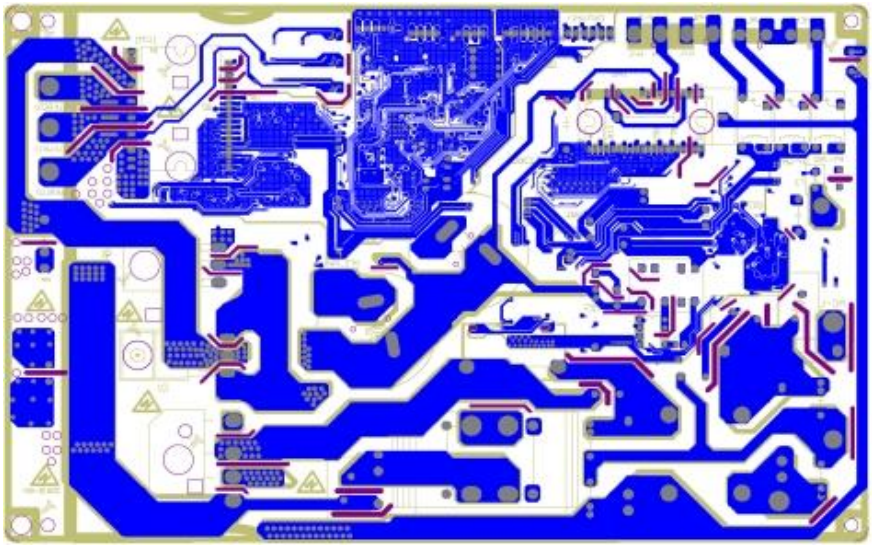
Outdoor Unit: YN024GLSI24RPG

Top View



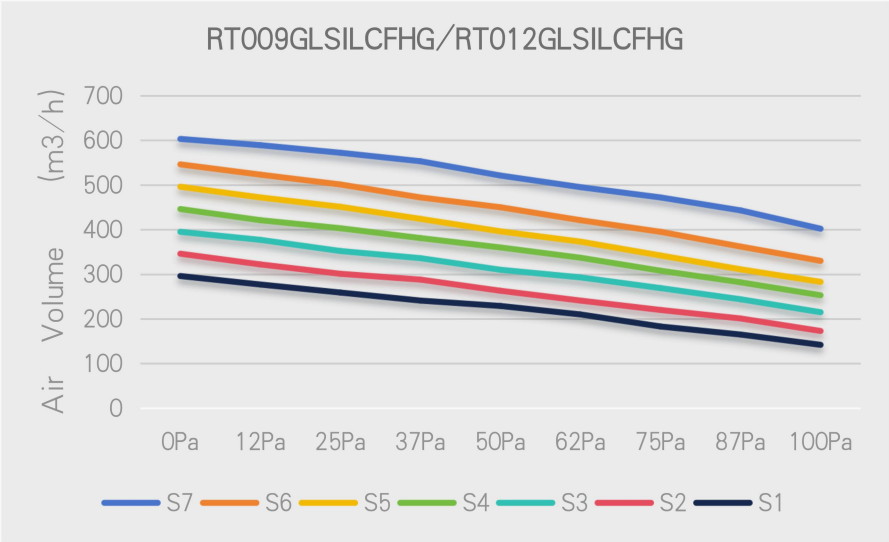
1	4-way valve P8
2	Heater CN11
3	L, N and communication
4	Fuse 1
5	ODU PCB main relay RY-QD1
6	DC motor connector CN12-2
7	Electronic expansion valve CN7
8	Discharge sensor connector CN2
9	OAT/OPT sensor connector CN1
10	LED 5
11	AC motor connector P9
12	LED1-LED4

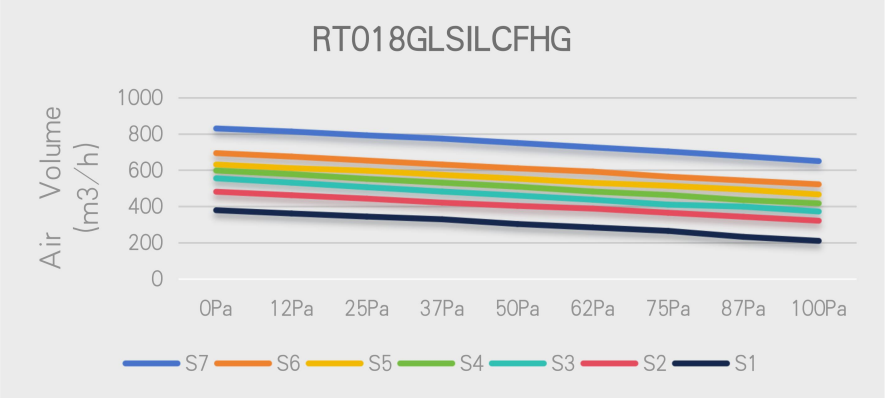
Bottom View

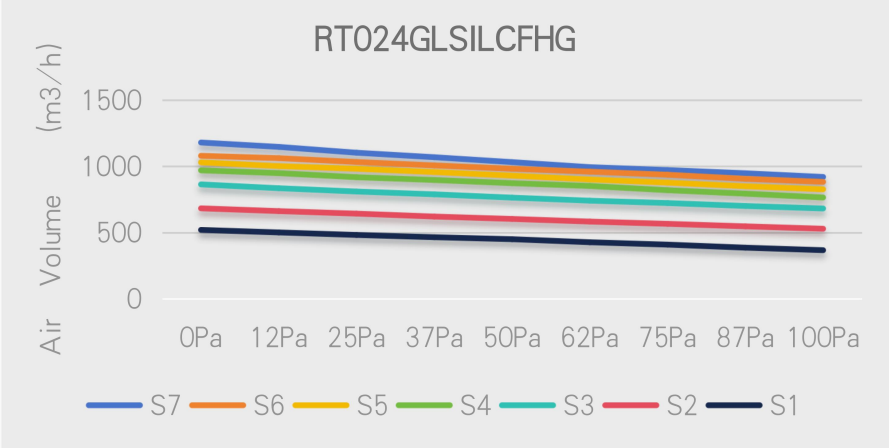


Note:
OAT: Outdoor Ambient Temperature
OPT: Outdoor Pipe Temperature

Air Volume Static Pressure Curve 13







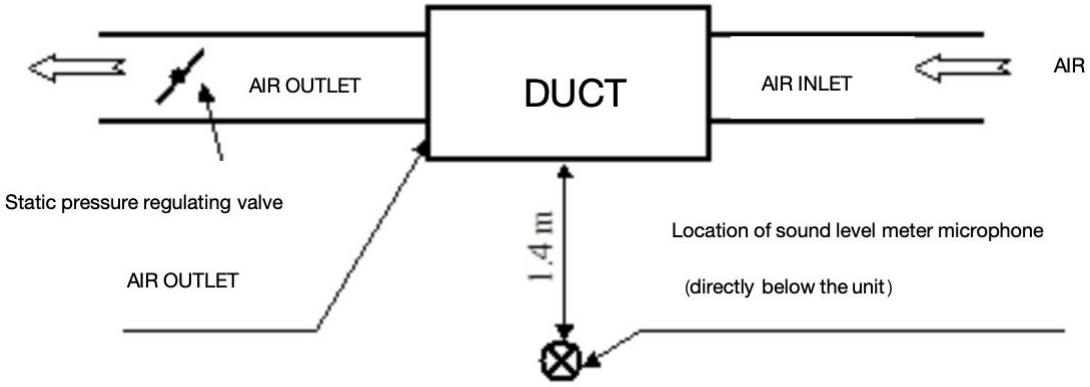
Noise Levels

14

Notes

- The above data was measured under standard conditions. Power specification: 230V~60Hz.
- The above data was measured in a semi-anechoic room.
- Noise levels may vary depending on external factors, such as the room structure. Refer to actual measurements.

Indoor Unit

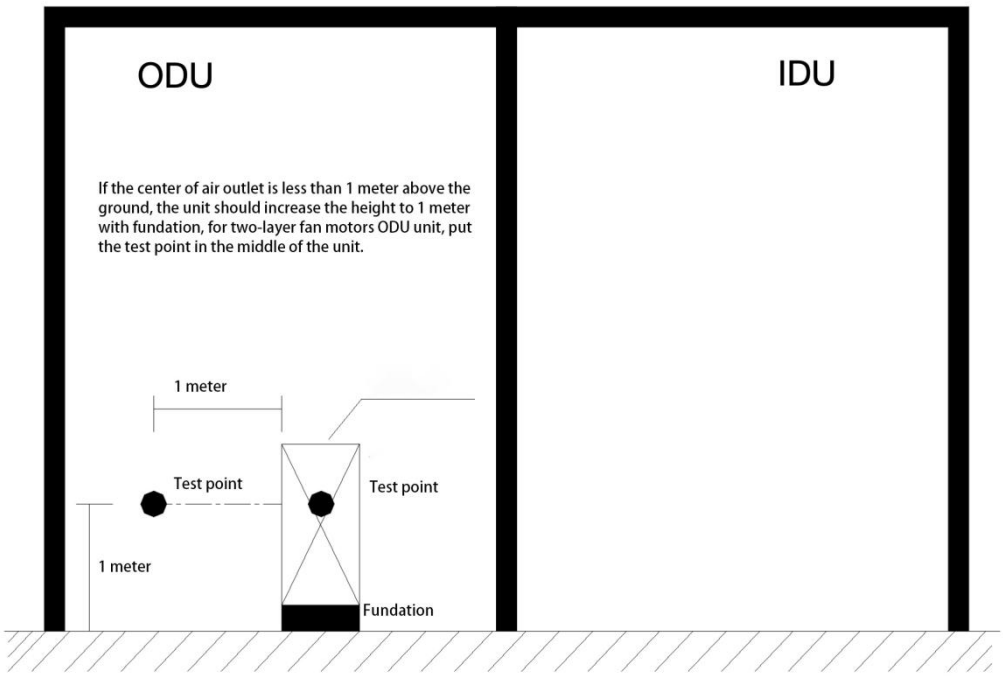


Model	Turbo dB(A)	High dB(A)	Medium dB(A)	Low dB(A)	Mute dB(A)
RT009GLSILCFHG	/	43	41	39	/
RT012GLSILCFHG	/	43	41	39	/
RT018GLSILCFHG	/	41	38	36	/
RT024GLSILCFHG	/	41	38	34	/

Noise Levels

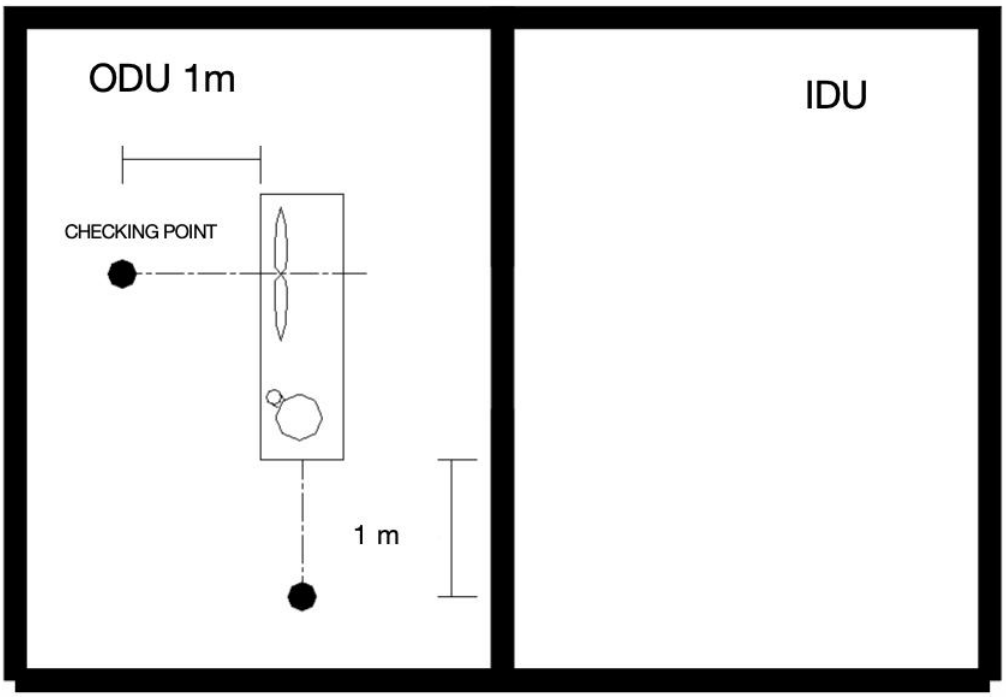
14

Outdoor Unit



Noise Levels

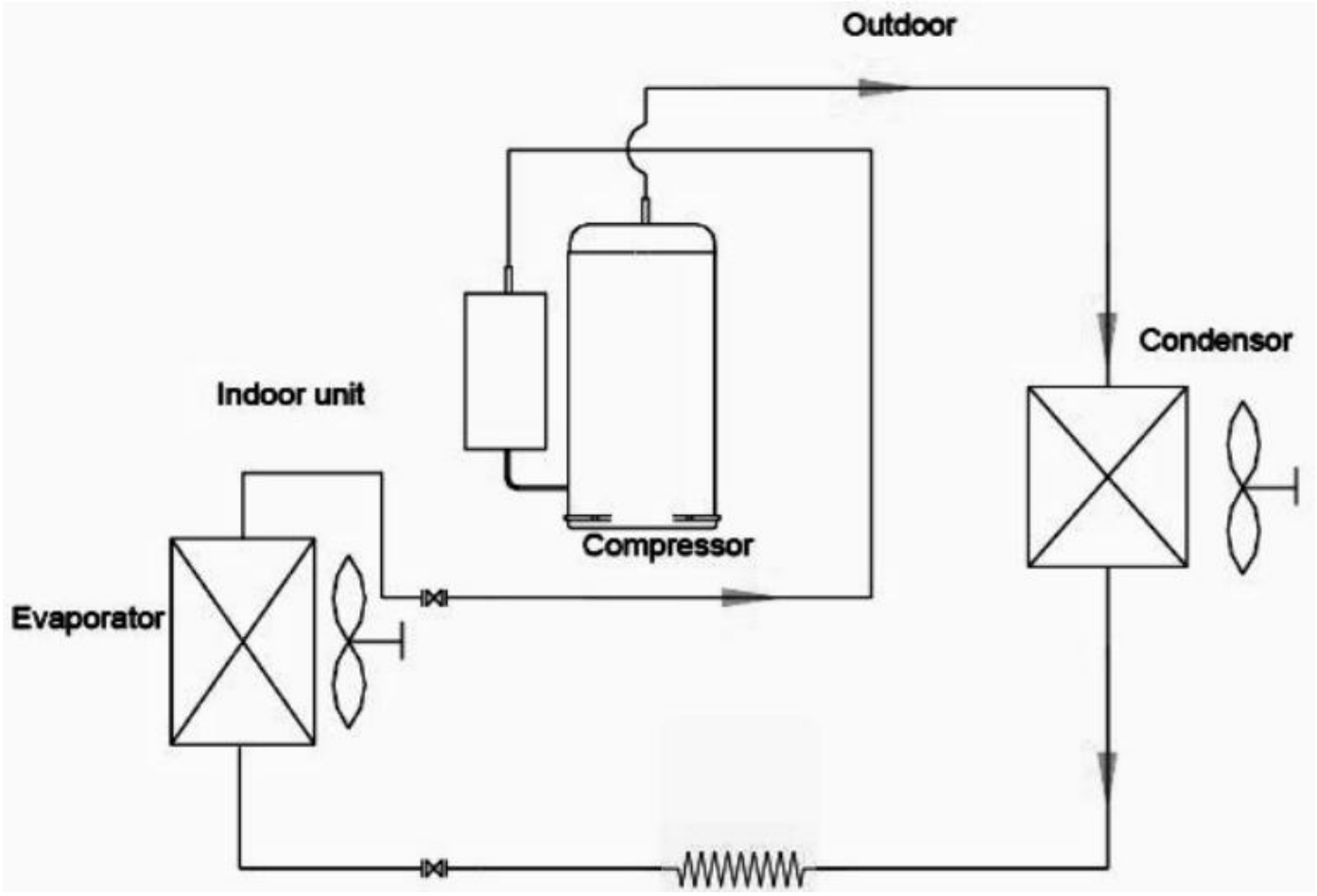
14



Model	Sound Pressure Level dB(A)	Power Supply (V, Ph, Hz)
YN009GLSI24RPG	50	208/230V~/60Hz/1P
YN012GLSI24RPG	52	
YN018GLSI24RPG	53	
YN024GLSI24RPG	54	

System Diagram

15



Thermistor Temperature Characteristics

16

Resistance/Temperature Lists of Temperature Sensors

Temp.	Resistance (KΩ)			Temp.	Resistance (KΩ)			Temp.	Resistance (KΩ)		
°F/°C	Rmax	R(t) Normal	Rmin	°F/°C	Rmax	R(t) Normal	Rmin	°F/°C	Rmax	R(t) Normal	Rmin
-22°F/-30°C	68.080	64.104	60.343	68°F/20°C	6.223	6.083	5.945	158°F/70°C	1.112	1.073	1.035
-20°F/-29°C	64.375	60.666	57.157	70°F/21°C	5.977	5.846	5.716	160°F/71°C	1.079	1.041	1.004
-18°F/-28°C	60.870	57.413	54.139	72°F/22°C	5.742	5.620	5.498	162°F/72°C	1.047	1.010	0.974
-17°F/-27°C	57.579	54.355	51.301	74°F/23°C	5.518	5.404	5.290	163°F/73°C	1.016	0.980	0.944
-15°F/-26°C	54.487	51.480	48.630	75°F/24°C	5.305	5.198	5.091	165°F/74°C	0.988	0.952	0.917
-13°F/-25°C	51.582	48.776	46.115	77°F/25°C	5.100	5.000	4.900	167°F/75°C	0.959	0.924	0.890
-11°F/-24°C	48.850	46.232	43.748	79°F/26°C	4.909	4.811	4.713	169°F/76°C	0.931	0.897	0.864
-9°F/-23°C	46.279	43.836	41.517	81°F/27°C	4.727	4.630	4.533	171°F/77°C	0.904	0.871	0.839
-8°F/-22°C	43.861	41.581	39.415	82°F/28°C	4.552	4.457	4.362	172°F/78°C	0.879	0.846	0.814
-6°F/-21°C	41.585	39.456	37.432	84°F/29°C	4.386	4.292	4.199	174°F/79°C	0.854	0.822	0.791
-4°F/-20°C	39.462	37.473	35.581	86°F/30°C	4.225	4.133	4.042	176°F/80°C	0.830	0.799	0.769
-2°F/-19°C	37.421	35.565	33.798	88°F/31°C	4.072	3.982	3.892	178°F/81°C	0.807	0.776	0.746
-0°F/-18°C	35.519	33.785	32.134	90°F/32°C	3.925	3.836	3.748	180°F/82°C	0.784	0.754	0.725
1°F/-17°C	33.725	32.105	30.561	91°F/33°C	3.784	3.697	3.611	181°F/83°C	0.762	0.733	0.705
3°F/-16°C	32.033	30.520	29.077	93°F/34°C	3.649	3.564	3.479	183°F/84°C	0.742	0.713	0.685
5°F/-15°C	30.437	29.023	27.673	95°F/35°C	3.520	3.436	3.353	185°F/85°C	0.721	0.693	0.666
7°F/-14°C	28.931	27.609	26.347	97°F/36°C	3.395	3.313	3.232	187°F/86°C	0.701	0.674	0.647
9°F/-13°C	27.508	26.273	25.092	99°F/37°C	3.275	3.195	3.116	189°F/87°C	0.682	0.655	0.629
10°F/-12°C	26.165	25.010	23.905	100°F/38°C	3.161	3.082	3.004	190°F/88°C	0.664	0.638	0.613
12°F/-11°C	24.896	23.816	22.782	102°F/39°C	3.051	2.974	2.898	192°F/89°C	0.646	0.620	0.595
14°F/-10°C	23.697	22.687	21.720	104°F/40°C	2.946	2.870	2.795	194°F/90°C	0.629	0.604	0.580
16°F/-9°C	22.562	21.618	20.713	106°F/41°C	2.844	2.770	2.697	196°F/91°C	0.611	0.587	0.563
18°F/-8°C	21.490	20.607	19.759	108°F/42°C	2.748	2.675	2.604	198°F/92°C	0.596	0.572	0.549
19°F/-7°C	20.475	19.649	18.855	109°F/43°C	2.654	2.583	2.513	199°F/93°C	0.580	0.557	0.534
21°F/-6°C	19.515	18.742	17.999	111°F/44°C	2.564	2.494	2.426	201°F/94°C	0.565	0.542	0.520
23°F/-5°C	18.606	17.883	17.187	113°F/45°C	2.478	2.410	2.343	203°F/95°C	0.550	0.528	0.506
25°F/-4°C	17.745	17.068	16.416	115°F/46°C	2.395	2.328	2.263	205°F/96°C	0.536	0.514	0.493
27°F/-3°C	16.930	16.296	15.685	117°F/47°C	2.315	2.250	2.186	207°F/97°C	0.522	0.501	0.480
28°F/-2°C	16.156	15.563	14.991	118°F/48°C	2.238	2.174	2.111	208°F/98°C	0.509	0.488	0.468
30°F/-1°C	15.423	14.868	14.332	120°F/49°C	2.164	2.102	2.041	210°F/99°C	0.497	0.476	0.456

Thermistor Temperature Characteristics

16

Temp.	Resistance (KΩ)			Temp.	Resistance (KΩ)			Temp.	Resistance (KΩ)		
°F/°C	Rmax	R(t) Normal	Rmin	°F/°C	Rmax	R(t) Normal	Rmin	°F/°C	Rmax	R(t) Normal	Rmin
32°F/0°C	14.792	14.270	13.766	122°F/50°C	2.093	2.032	1.972	212°F/100°C	0.484	0.464	0.444
34°F/1°C	14.069	13.582	13.111	124°F/51°C	2.025	1.965	1.906	214°F/101°C	0.472	0.452	0.433
36°F/2°C	13.443	12.987	12.546	126°F/52°C	1.959	1.901	1.844	216°F/102°C	0.460	0.441	0.422
37°F/3°C	12.849	12.422	12.008	127°F/53°C	1.896	1.839	1.783	217°F/103°C	0.449	0.430	0.412
39°F/4°C	12.284	11.885	11.497	129°F/54°C	1.835	1.779	1.724	219°F/104°C	0.437	0.419	0.401
41°F/5°C	11.749	11.375	11.012	131°F/55°C	1.776	1.721	1.668	221°F/105°C	0.427	0.409	0.391
43°F/6°C	11.239	10.889	10.548	133°F/56°C	1.719	1.666	1.614	223°F/106°C	0.416	0.399	0.381
45°F/7°C	10.756	10.428	10.109	135°F/57°C	1.665	1.613	1.562	225°F/107°C	0.406	0.388	0.372
46°F/8°C	10.295	9.988	9.689	136°F/58°C	1.613	1.562	1.512	226°F/108°C	0.395	0.379	0.362
48°F/9°C	9.858	9.570	9.289	138°F/59°C	1.562	1.512	1.463	228°F/109°C	0.386	0.369	0.353
50°F/10°C	9.441	9.172	8.909	140°F/60°C	1.514	1.465	1.417	230°F/110°C	0.376	0.360	0.344
52°F/11°C	9.044	8.792	8.545	142°F/61°C	1.467	1.419	1.372	232°F/111°C	0.367	0.351	0.335
54°F/12°C	8.667	8.431	8.199	144°F/62°C	1.421	1.374	1.328	234°F/112°C	0.357	0.342	0.327
55°F/13°C	8.308	8.087	7.870	145°F/63°C	1.378	1.332	1.287	235°F/113°C	0.349	0.333	0.319
57°F/14°C	7.965	7.758	7.554	147°F/64°C	1.336	1.291	1.247	237°F/114°C	0.340	0.325	0.311
59°F/15°C	7.639	7.445	7.254	149°F/65°C	1.295	1.251	1.208	239°F/115°C	0.332	0.317	0.303
61°F/16°C	7.329	7.147	6.968	151°F/66°C	1.256	1.213	1.171	241°F/116°C	0.324	0.309	0.296
63°F/17°C	7.032	6.862	6.694	153°F/67°C	1.218	1.176	1.135	243°F/117°C	0.316	0.302	0.288
64°F/18°C	6.749	6.590	6.433	154°F/68°C	1.181	1.140	1.100	244°F/118°C	0.308	0.294	0.281
66°F/19°C	6.480	6.331	6.183	156°F/69°C	1.146	1.106	1.067	246°F/119°C	0.301	0.287	0.274
								228°F/120°C	0.293	0.280	0.268

Thermistor Temperature Characteristics

16

Outdoor Unit Sensor Temperature Characteristics

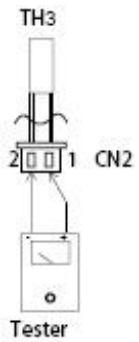
Temp. °F/°C	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)	Temp. °F/°C	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)	Temp. °F/°C	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)
-22°F/-30°C	283.3	322.9	367.7	75°F/24°C	19.36	20.89	22.52	172°F/78°C	2.563	2.654	2.745
-20°F/-29°C	267.4	304.4	346.3	77°F/25°C	18.55	20	21.54	174°F/79°C	2.481	2.567	2.654
-18°F/-28°C	252.5	287.1	307.4	79°F/26°C	17.77	19.14	20.6	176°F/80°C	2.402	2.484	2.567
-17°F/-27°C	238.5	270.9	307.4	81°F/27°C	17.03	18.32	19.7	178°F/81°C	2.327	2.404	2.483
-15°F/-26°C	225.4	255.7	289.8	82°F/28°C	16.32	17.55	18.85	180°F/82°C	2.254	2.327	2.401
-13°F/-25°C	213.1	241.4	273.3	84°F/29°C	15.65	16.81	18.04	181°F/83°C	2.183	2.253	2.323
-11°F/-24°C	201.5	228	257.9	86°F/30°C	15	16.1	17.27	183°F/84°C	2.115	2.182	2.248
-9°F/-23°C	190.6	215.5	243.4	88°F/31°C	14.39	15.43	16.54	185°F/85°C	2.05	2.113	2.176
-8°F/-22°C	180.3	203.6	229.8	90°F/32°C	13.81	14.79	15.34	187°F/86°C	1.985	2.047	2.109
-6°F/-21°C	170.7	192.5	217	91°F/33°C	13.25	14.18	15.17	189°F/87°C	1.922	1.983	2.045
-4°F/-20°C	161.6	182.1	205	93°F/34°C	12.72	13.6	14.54	190°F/88°C	1.861	1.922	1.983
-2°F/-19°C	153.1	172.3	193.7	95°F/35°C	12.21	13.05	13.93	192°F/89°C	1.802	1.862	1.923
0°F/-18°C	145	163.1	183.2	97°F/36°C	11.72	12.52	13.36	194°F/90°C	1.746	1.805	1.865
1°F/-17°C	137.5	154.4	173.2	99°F/37°C	11.26	12.01	12.81	196°F/91°C	1.692	1.75	1.809
3°F/-16°C	130.3	146.2	163.9	100°F/38°C	10.82	11.53	12.29	198°F/92°C	1.639	1.697	1.755
5°F/-15°C	123.6	138.5	155.1	102°F/39°C	10.29	11.07	11.78	199°F/93°C	1.589	1.646	1.703
7°F/-14°C	117.3	131.3	146.8	104°F/40°C	9.986	10.63	11.31	201°F/94°C	1.54	1.596	1.653
9°F/-13°C	111.3	124.4	139	106°F/41°C	9.6	10.21	10.85	203°F/95°C	1.493	1.549	1.604
10°F/-12°C	105.6	118	131.7	108°F/42°C	9.231	9.813	10.42	205°F/96°C	1.448	1.502	1.558
12°F/-11°C	100.3	111.9	124.7	109°F/43°C	8.878	9.43	10	207°F/97°C	1.404	1.458	1.512
14°F/-10°C	95.24	106.2	118.2	111°F/44°C	8.54	9.064	9.612	208°F/98°C	1.362	1.415	1.469
16°F/-9°C	90.49	100.8	112.1	113°F/45°C	8.217	8.714	9.233	210°F/99°C	1.321	1.373	1.426
18°F/-8°C	85.99	95.68	106.3	115°F/46°C	7.908	8.38	8.872	212°F/100°C	1.284	1.335	1.387
19°F/-7°C	81.75	90.86	100.8	117°F/47°C	7.612	8.06	8.526	214°F/101°C	1.245	1.296	1.348
21°F/-6°C	77.74	86.31	95.74	118°F/48°C	7.328	7.754	8.196	216°F/102°C	1.209	1.258	1.309
23°F/-5°C	73.94	82.01	90.88	120°F/49°C	7.057	7.461	7.88	217°F/103°C	1.173	1.222	1.272
25°F/-4°C	70.35	77.95	86.29	122°F/50°C	6.797	7.18	7.578	219°F/104°C	1.139	1.187	1.236
27°F/-3°C	66.96	74.11	81.96	124°F/51°C	6.548	6.912	7.289	221°F/105°C	1.105	1.153	1.202
28°F/-2°C	63.74	70.48	77.87	126°F/52°C	6.309	6.655	7.013	223°F/106°C	1.073	1.12	1.168

Thermistor Temperature Characteristics

16

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

R—Resistance
Resistance at (77°F) 25°C: 20 kΩ



TH3: Outdoor unit discharge pipe sensor

Before measuring resistance, disconnect the connectors as shown above.

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

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