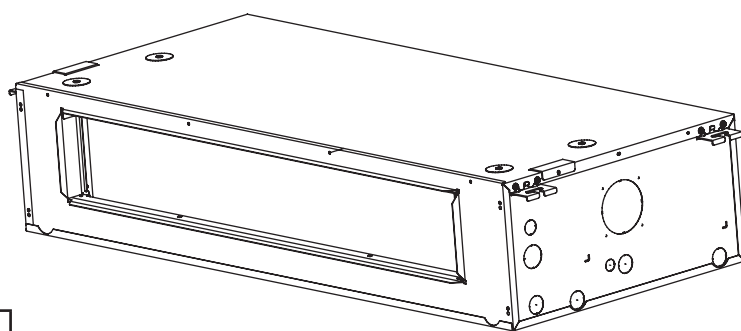


Midea Service Manual **Ceiling-Mounted Air Handler**

EVOX  **TREME
HEAT**

For 18,000 - 36,000 BTU Systems



Units Covered In This Manual

SYSTEM TONS	BTUH	VOLTAGE/ PHASE	AIR HANDLER MODEL
1.5	18,000	115/208/230-1	MAPHE-H18B-2A
2.0	24,000	115/208/230-1	MAPHE-H24B-2A
2.5	30,000	115/208/230-1	MAPHE-H30B-2A
3.0	36,000	115/208/230-1	MAPHE-H36B-2A

NOTE

Electric auxiliary heat module cannot be installed when the power supply is 115V.



A2L

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Safety Precautions

To prevent personal injury, property, or unit damage, adhere to all precautionary measures and instructions outlined in this manual. Before servicing a unit, refer to this service manual and its relevant sections.

Failure to adhere to all precautionary measures listed in this section may result in personal injury, damage to the unit or property, or in extreme cases, death.

WARNING

WARNING indicates a potentially hazardous situation that if not avoided could result in serious personal injury or death.

CAUTION

CAUTION indicates a potentially hazardous situation which if not avoided could result in minor or moderate personal injury, or unit damage.

NOTE

A property-damage-only hazard, meaning no personal injury is possible.

IMPORTANT

Is used to highlight suggestions which will result in enhanced installation, reliability, or operation.

IMPORTANT

Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Have a fire extinguisher available. Consult local building codes and the current editions of the National Electrical Code (NEC) NFPA 70.

IMPORTANT

In Canada, refer to the current editions of the Canadian Electrical Code CSA C22.1. Follow the safety information.

WARNING

ELECTRICAL WARNINGS

- Only use the specified wire. If the wire is damaged, it must be replaced by the manufacturer, service agent, or similarly qualified persons to avoid a hazard.
- The product must be properly grounded at the time of repair, or electric shock may occur.
- For all electrical work, follow all local and national wiring standards, regulations, and the Installation Manual. Connect cables tightly, and clamp them securely to prevent external forces from damaging the terminal. Improper electrical connections can overheat, cause fire, and may also cause shock. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
- All wiring must be properly arranged to ensure that the control board cover can close properly. If the control board cover is not closed properly, it can lead to corrosion and cause the connection points on the terminal to heat up, catch fire, or cause electrical shock.
- Disconnection must be incorporated in the fixed wiring in accordance with the NEC, CEC, or local codes.

- **DO NOT** share the electrical outlet with other appliances. The unit must be installed on a dedicated electrical circuit.

WARNING

WARNINGS FOR PRODUCT INSTALLATION



- Turn off the air conditioner and disconnect the power before performing any installation or repairs. Failure to do so can cause electric shock.
- Installation must be performed by an authorized dealer or specialist according to the installation instructions. Improper installation can cause water damage, electrical hazards, or fire. Contact an authorized service technician for repair or maintenance.
- This appliance shall be installed in accordance with national wiring regulations. Only use the included accessories, parts, and specified parts for installation.
- Using non-standard parts can cause water leakage, electrical shock, and fire, and can cause the unit to fail.
- Install the unit in a firm location that can support the unit's weight. If the chosen location cannot support the unit's weight, or the installation is not done properly, the unit may drop and cause serious injury and damage.
- Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.
- For units that have an auxiliary electric heater, do not install the unit within 3 ft. (1 m) of any combustible materials.
- For the units that have a wireless network function, USB device access, replacement, and maintenance operations must be carried out by professional staff.
- Do not install the unit in a location that may be exposed to combustible gas leaks. **If combustible gas accumulates around the unit, it may cause fire.**
- Do not turn on the power until all work has been completed.
- **When moving or relocating the air conditioner,** consult experienced service technicians for disconnection and reinstallation of the unit.

WARNING

WARNINGS FOR CLEANING AND MAINTENANCE

- Turn off the device and disconnect the power before cleaning. Failure to do so can cause electrical shock.
- Do not clean the air conditioner with excessive amounts of water.
- Do not clean the air conditioner with combustible cleaning agents. Combustible cleaning agents can cause fire or deformation.

WARNING

USING FLAMMABLE REFRIGERANT

1. Installation (Space)
 - That the installation of pipe work shall be kept to a minimum.
 - That pipe work shall be protected from physical damage.

- Where refrigerant pipes shall comply with national gas regulations.
 - That mechanical connections shall be accessible for maintenance purposes.
 - In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.
 - When disposing of the used product, it must be based on national regulations, and properly processed.
2. Servicing
- Any person who is involved with working on or breaking into a refrigerant circuit should hold a currently valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely following an industry-recognized assessment specification.
3. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of a person competent in the use of flammable refrigerants.
4. Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
5. The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance, or an operating electric heater).
6. Be careful that foreign matter(oil, water,etc) does not enter the piping. Also, when storing the piping, securely seal the opening by pinching, taping, etc.
7. Do not pierce or burn.
8. Be aware that refrigerants may not contain an odor.
9. All working procedures that affect safety means shall only be carried out by competent technicians.
10. Appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
11. The appliance shall be stored to prevent mechanical damage from occurring.
12. Joints shall be tested with detection equipment with a capability of 5 g/year of refrigerant or better, with the equipment in standstill and under operation or pressure of at least these standstill or operation conditions after installation. Detachable joints shall NOT be used in the indoor side of the unit (brazed, welded joints could be used).
- Where refrigerant pipes shall comply with national gas regulations.
 - That mechanical connections shall be accessible for maintenance purposes.
 - Be more careful that foreign matter (oil, water, etc.) does not enter the piping. Also, when storing the piping, securely seal the opening by pinching, taping, etc.
 - All working procedures that affect safety means shall only be carried out by competent technicians.
 - Appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
 - Joints shall be tested with detection equipment with a capability of 5 g/year of refrigerant or better, with the equipment in a standstill and under operation or under pressure of at least these standstill or operation conditions after installation. Detachable joints should NOT be used on the indoor side of the unit (brazed, welded joints could be used).
 - In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.
 - LEAK DETECTION SYSTEM installed. The unit must be powered except for service.
 - For the unit with a refrigerant sensor, when the refrigerant sensor detects refrigerant leakage, the indoor unit will display an error code and emit a buzzing sound, the compressor of the outdoor unit will immediately stop, and the indoor fan will start running. The service life of the refrigerant sensor is 15 years. When the refrigerant sensor malfunctions, the indoor unit will display the error code "FHCC".
 - The refrigerant sensor cannot be repaired and can only be replaced by the manufacturer. It shall only be replaced with the sensor specified by the manufacturer.

- 2. When a FLAMMABLE REFRIGERANT is used,** the requirements for installation space of appliance and/or ventilation requirements are determined according to
- the mass charge amount (M) used in the appliance,
 - the installation location,
 - the type of ventilation of the location or the appliance.
 - piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and comply with national and local codes and standards, such as ASHRAE 15, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection before being covered or enclosed.
 - that protection devices, piping, and fittings shall be protected as far as possible against adverse environmental effects, for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris;
 - that piping in refrigeration systems shall be so designed and installed to minimize the likelihood of hydraulic shock damaging the system;
 - that steel pipes and components shall be protected against corrosion with a rustproof coating before applying any insulation;
 - that precautions shall be taken to avoid excessive vibration or pulsation;

Information servicing (For flammable materials)

1. Installation (where refrigerant pipes are allowed)

- Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry-recognized assessment specification.
- Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
- That the installation of pipe work shall be kept to a minimum.
- That pipe work shall be protected from physical damage.

- the minimum floor area of the room shall be mentioned in the form of a table or a single figure without reference to a formula;
- after completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested before refrigerant charging, according to the following requirements:
 - a. The minimum test pressure for the low side of the system shall be the low side design pressure and the minimum test pressure for the high side of the system shall be the high side design pressure, unless the high side of the system can not be isolated from the low side of the system in which case the entire system shall be pressure tested to the low side design pressure.
 - b. The test pressure after removal of the pressure source shall be maintained for at least 1 h with no decrease of pressure indicated by the test gauge, with test gauge resolution not exceeding 5% of the test pressure.
 - c. During the evacuation test, after achieving a vacuum level specified in the manual or less, the refrigeration system shall be isolated from the vacuum pump and the pressure shall not rise above 1500 microns within 10 min. The vacuum pressure level shall be specified in the manual and shall be the lesser of 500 microns or the value required for compliance with national and local codes and standards, which may vary between residential, commercial, and industrial buildings.
- field-made refrigerant joints indoors shall be tightness tested according to the following requirements: The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.

3 . Qualification of workers

Any maintenance, service, and repair operations must require the qualification of the working personnel. Every working procedure that affects safety means shall only be carried out by competent technicians who joined the training and achieved competence should be documented by a certificate. The training of these procedures is carried out by national training organizations or manufacturers that are accredited to teach the relevant national competency standards that may be set in legislation. All training shall follow the ANNEX HH requirements of UL 60335-2-40 4th Edition.

Examples of such working procedures are:

- breaking into the refrigerating circuit;
- opening of sealed components;
- opening of ventilated enclosures.

4. Checks to the area

Before beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the following precautions shall be complied with before conducting work on the system.

5. Work procedure

Works shall be undertaken under a controlled procedure to minimize the risk of flammable gas or vapor being present while the work is being performed.

6. General work area

All maintenance staff and others working in the local area should be instructed on the nature of the work being carried out. Work in confined spaces shall be avoided.

7. Checking for the presence of refrigerant

The area should be checked with an appropriate refrigerant detector before and during work, to ensure the technician is aware of potentially flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. no sparking, adequately sealed or intrinsically safe.

8. Presence of fire extinguisher

If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO₂ fire extinguisher adjacent to the charging area.

9. No ignition sources

No person carrying out work on a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of a fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repair, removal, and disposal, during which refrigerant can be released into the surrounding space. Before work takes place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

10. Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

11. Check the refrigeration equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance. The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

- the actual refrigerant charge is in accordance with the room size within which the refrigerant-containing parts are installed;
- the ventilation machinery and outlets are operating adequately and are not obstructed;
- if an indirect refrigerating circuit is being used, the secondary circuits shall be checked for the presence of refrigerant;
- marking to the equipment continues to be visible and legible, marking and illegible signs shall be corrected;
- refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance that may corrode refrigerant-containing components unless the components are constructed of materials that are inherently resistant to being corroded or are suitably

protected against being so corroded.

12. Checks to electrical devices

Repair and maintenance of electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately it is necessary to continue operation, and adequate temporary solution shall be used.

This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

that capacitors are discharged: this shall be done safely to avoid the possibility of sparking;

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

that there is continuity of earth bonding;

Sealed electrical components shall be replaced if it's damaged; Intrinsically safe components must be replaced if it's damaged.

13. Wiring

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

14. Detection of flammable refrigerants

Under no circumstances shall potential sources of ignition be used in the search for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

The following leak detection methods are deemed acceptable for refrigerant systems. Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed. Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

NOTE

Examples of leak-detection fluids are

- bubble method,
- fluorescent method agents.

If a leak is suspected, all naked flames shall be removed/extinguished.

If leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (using shut-off valves) in a part of the system remote from the leak. See the following instructions for the removal of refrigerant.

15. Removal and evacuation

When breaking into the refrigerant circuit to make repairs - or for any other purpose conventional procedures shall be used. However, for flammable refrigerants best practice must be followed since flammability is a consideration.

The following procedure shall be adhered to:

- safely remove refrigerant following local and national regulations;
- evacuate;
- purge the circuit with inert gas (optional for A2L);
- evacuate (optional for A2L);
- continuously flush or purge with inert gas when using a flame to open the circuit; and open the circuit.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing flammable refrigerants, refrigerant purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to the atmosphere, and finally pulling down to a vacuum (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

16. Charging procedures

In addition to conventional charging procedures, the following requirements shall be followed:

- Works shall be undertaken with appropriate tools only (In case of uncertainty, please consult the manufacturer of the tools for use with flammable refrigerants) Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Ensure that the refrigeration system is earthed before charging the system with refrigerant.
- Label the system when charging is complete (if not already). Extreme care shall be taken not to overfill the refrigeration system.
- Before recharging the system, it shall be pressure tested with oxygen-free nitrogen (OFN). The system shall be leak tested on completion of charging but before commissioning. A follow-up leak test shall be carried out before leaving the site.

17. Decommissioning

Before carrying out this procedure, the technician must be completely familiar with the equipment and all its details. It is recommended good practice that all refrigerants are

recovered safely. Before the task is carried out, an oil and refrigerant sample shall be taken in case analysis is required before the re-use of recovered refrigerant. Electrical power must be available before the task commences.

- a. Become familiar with the equipment and its operation.
- b. Isolate system electrically
- c. Before attempting the procedure ensure that:
 - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
 - all personal protective equipment is available and being used correctly;
 - the recovery process is supervised at all times by a competent person;
 - recovery equipment and cylinders conform to the appropriate standards.
- d. Pump down the refrigerant system, if possible.
- e. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- f. Make sure that the cylinder is situated on the scales before recovery takes place.
- g. Start the recovery machine and operate following instructions.
- h. Do not overfill cylinders (no more than 80 % volume liquid charge)
- i. Do not exceed the maximum working pressure of the cylinder, even temporarily.
- j. When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from the site promptly and all isolation valves on the equipment are closed off.
- k. Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

18. Labelling

Equipment shall be labeled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing FLAMMABLE REFRIGERANTS, ensure that there are labels on the equipment stating the equipment contains FLAMMABLE REFRIGERANT.

19. Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labeled for that refrigerant (i. e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valves and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the

flammable refrigerant. If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.

The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units especially not in cylinders. If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

20. Unventilated areas

- An unventilated area where the appliance using FLAMMABLE REFRIGERANTS is installed shall be so constructed that should any refrigerant leak, it will not stagnate to create a fire or explosion hazard.
- If appliances connected via an air duct system to one or more rooms with A2L REFRIGERANTS are installed in a room with an area less than A_{min} , that room shall be without continuously operating open flames (e.g. an operating gas appliance) or other POTENTIAL IGNITION SOURCES (e.g. an operating electric heater, hot surfaces). A flame-producing device may be installed in the same space if the device is provided with an effective flame arrest.
- Auxiliary devices which may be a POTENTIAL IGNITION SOURCE shall not be installed in the duct work. Examples of such POTENTIAL IGNITION SOURCES are hot surfaces with a temperature exceeding 700 °C and electric switching devices.
- Only auxiliary devices (such as certificated heater kits) approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork.
- For duct-connected appliances, false ceilings or drop ceilings may be used as a return air plenum if a REFRIGERANT DETECTION SYSTEM is provided in the appliance and any external connections are also provided with a sensor immediately below the return air plenum duct joint.
- REFRIGERANT SENSORS for REFRIGERANT DETECTION
- SYSTEMS Shall Only be replaced with sensors specified by the appliance manufacturer.
- LEAK DETECTION SYSTEM installed. The unit must be powered except for service.

21. Transportation, marking, and storage for units that employ flammable refrigerants

- a. **General** - The following information is provided for units that employ FLAMMABLE REFRIGERANTS.
- b. **Transport of equipment containing flammable refrigerants** - Attention is drawn to the fact that additional transportation regulations may exist concerning equipment containing flammable gas. The maximum number of pieces of equipment or the configuration of the equipment permitted to

be transported together will be determined by the applicable transport regulations.

- Cylinders shall be kept upright.

- c. **Marking of equipment using signs** - Signs for similar appliances used in a work area are generally addressed by local regulations and give the minimum requirements for the provision of safety and/or health signs for a work location.

All required signs are to be maintained, and employers should ensure that employees receive suitable and sufficient instruction and training on the meaning of appropriate safety signs and the actions that need to be taken in connection with these signs.

The effectiveness of signs should not be diminished by too many signs being placed together.

Any pictograms used should be as simple as possible and contain only essential details.

- d. **Disposal of equipment using flammable refrigerants** See national regulations.

- e. **Storage of equipment/appliances** - The storage of the appliance should be following the applicable regulations or instructions, whichever is more stringent.

- f. **Storage of packed (unsold) equipment** - Storage package protection should be constructed in such a way that mechanical damage to the equipment inside the package will not cause a leak of the REFRIGERANT CHARGE.

The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.

Features



Compact Size Ceiling-Mounted AHU Easy to Replace Any Old Unit

- Easier Replacement with more space for installation operation.

Easy To Service

Conveniently access the electrical board from the bottom of the unit.



Easy-to-Maintain Design

Easily remove the fan & motor as well as the electrical board & heater assembly



Easy Fault Code Checking

Simply remove two screws to access the error code display

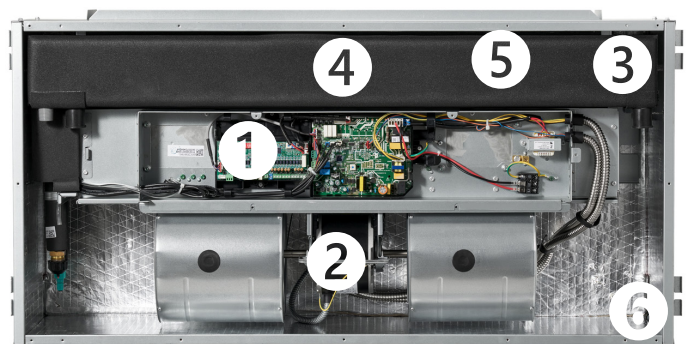


Secure Lock

Additional lock holds PCB cover in place.



Advanced Components



- ① Compatible with 485 or 24V: automatically identifying the control mode, no need for manual conversion.
- ② Constant torque ECM motor provides sufficient airflow of up to 0.8 in. w.c.
- ③ Electronic expansion valve (EEV) control: better throttling for highly efficient operation.
- ④ Optional auxiliary heat kits available up to 25kW.
- ⑤ All-Aluminum Coil.
- ⑥ Quiet Operation – inverter system runs at significantly lower dB(A) level.

Easy Fault Code Checking

- Thanks to advanced mutual data communication technology, the AHU system can intelligently self-detect the failure cause and generate a corresponding code.

Compact Size Ceiling-Mounted AHU Easy to Replace Any Old Unit

- Easily replace other manufacturer's units.

Highest Static Pressure with High Airflow Rate (CFM) Easy to Adapt to Any Existing Ductwork

- The ECM fan motor of the EVOX ceiling-mounted air handler has up to 0.8" static pressure to overcome the static loss due to ductwork design, thus ensuring sufficient airflow delivery regardless of existing duct length.

Dimension Drawing

Unit: inch (mm)

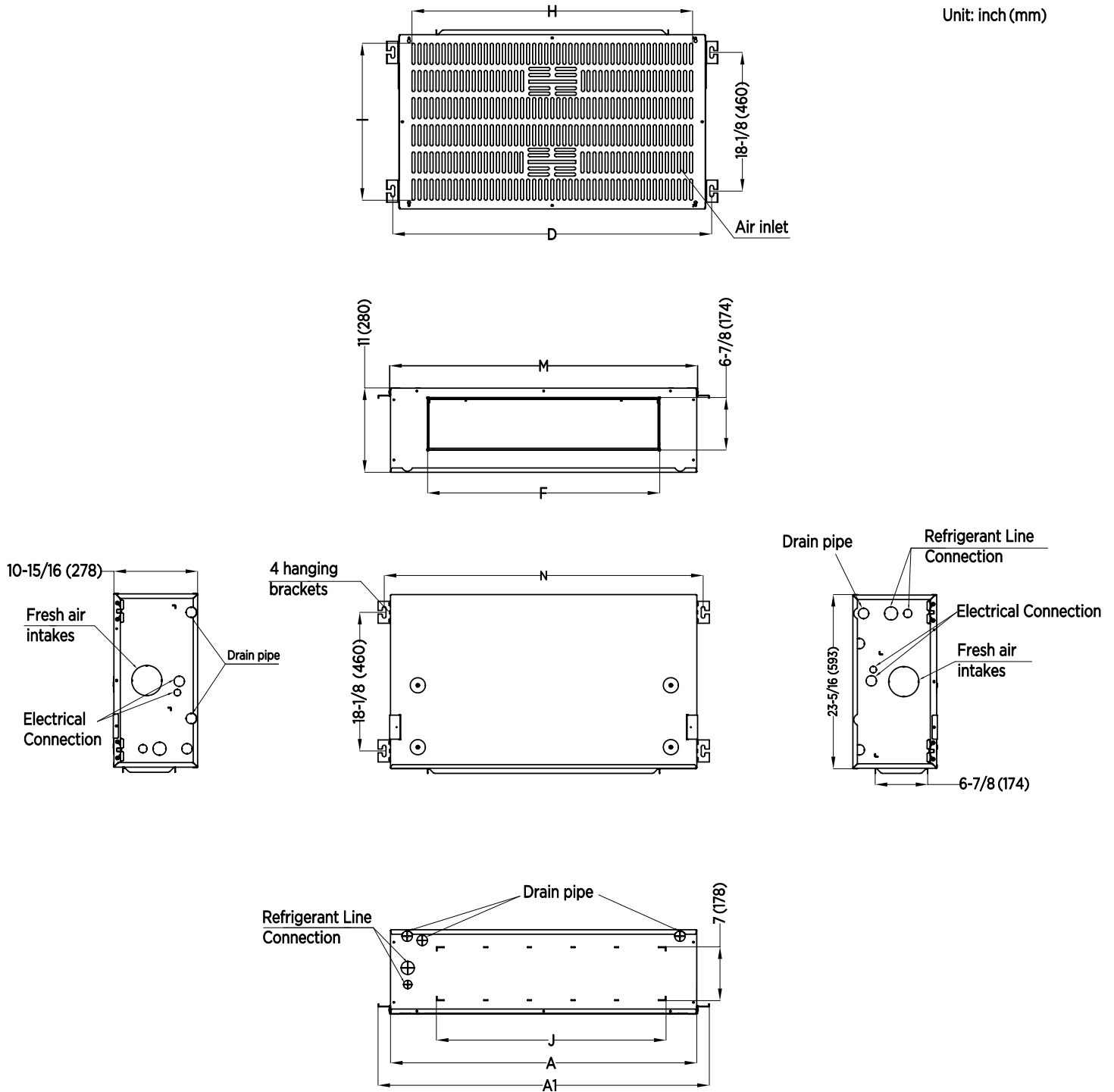


Fig. D-1: Unit Dimensions

Table D-1: Dimensions

Callout	Model			
	18k	24k	30k	36k
	inch (mm)	inch (mm)	inch (mm)	inch (mm)
A	39-15/16 (1,015)	45-7/8 (1,165)	51-15/16 (1,320)	58-7/8 (1,495)
A1	43-1/4 (1,098)	49-1/8 (1,248)	55-1/4 (1,403)	62-1/8 (1,578)
J	30 (761)	35-7/8 (911)	41-15/16 (1,066)	48-7/8 (1,241)
D	41-5/8 (1,057)	47-1/2 (1,207)	53-5/8 (1,362)	60-1/2 (1,537)
F	30-1/4 (769)	36-3/16 (919)	42-5/16 (1,074)	49-3/16 (1,249)
H	36-5/8 (930)	39-3/4 (1,010)	47-3/8 (1,210)	53-15/16 (1,370)
M	40-3/16 (1,020)	46-1/16 (1,170)	52-3/16 (1,325)	59-1/16 (1,500)
N	41-5/8 (1,057)	40-7/16 (1,027)	53-5/8 (1,362)	60-1/2 (1,537)

External Appearance



Product Names And Functions

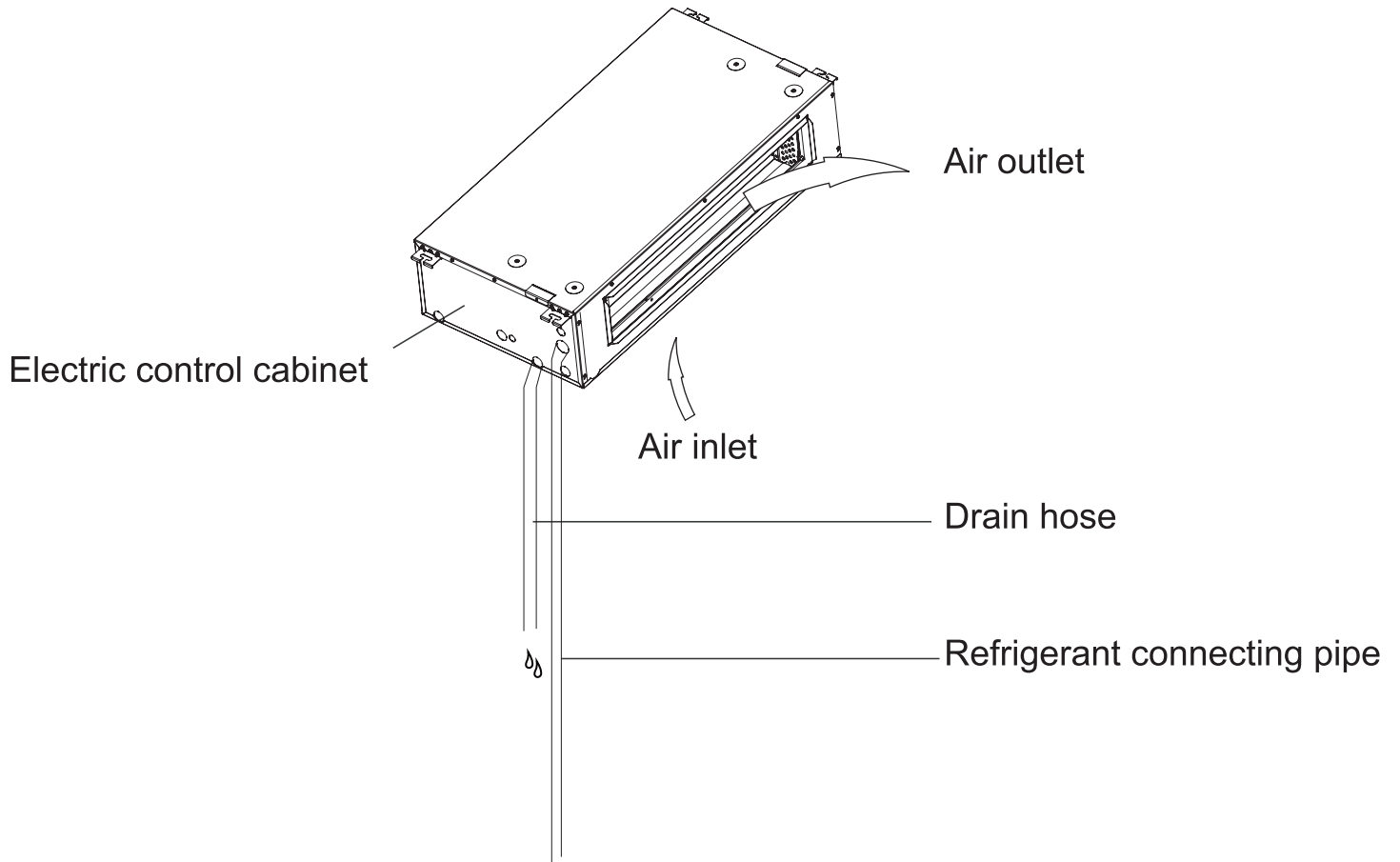


Fig. P-1: External Component Location

Clearances

The distance between the mounted indoor unit should meet the specifications illustrated in the following diagrams.

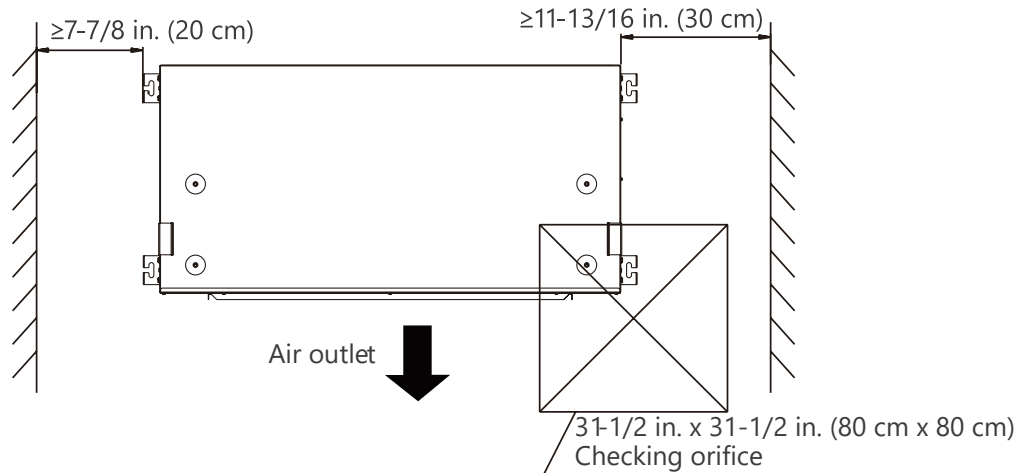


Fig. C-1: Maintenance Clearances

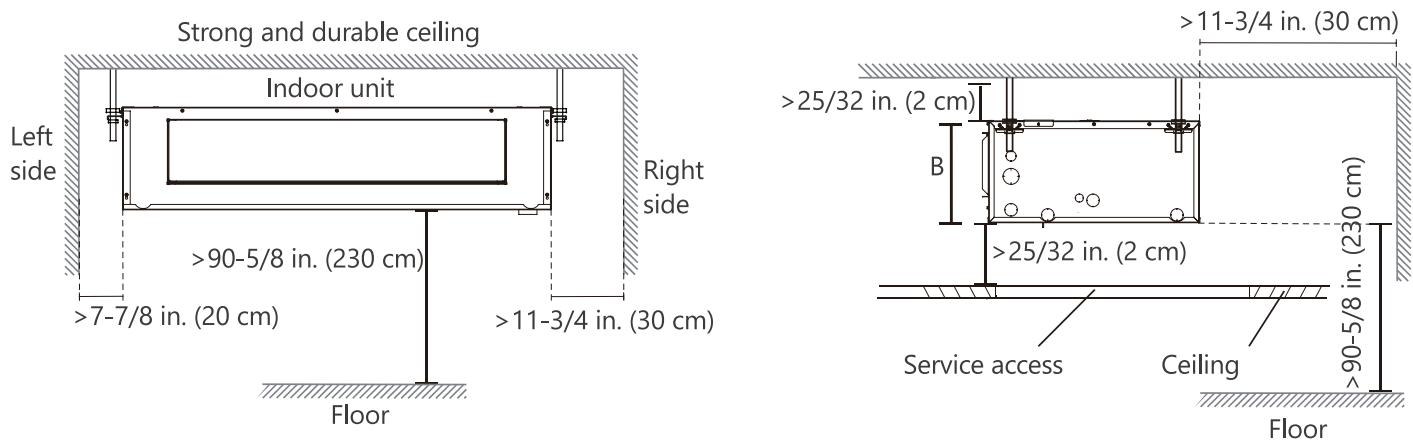


Fig. C-2: Clearance Dimensions

Accessories

The system is shipped with the following accessories. Use all the installation parts and accessories to install the system. Improper installation may result in water leakage, electrical shock, and fire, or cause the equipment to fail. Keep the installation manual in a safe place and do not discard any other accessories until the installation work has been completed.

Table A-1: Included Accessories




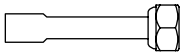





QTY.	Part Name	Part Image
2	Manual	
1	Foam	
2	Flare nut	
2	Braze-to-flare adapter	
1	Adapter cable (For full 24V communication)	

Table A-2: Optional Accessories

Part Name	Part Image
Remote control	
Remote control holder	
Battery	
Wired remote control	

NOTE

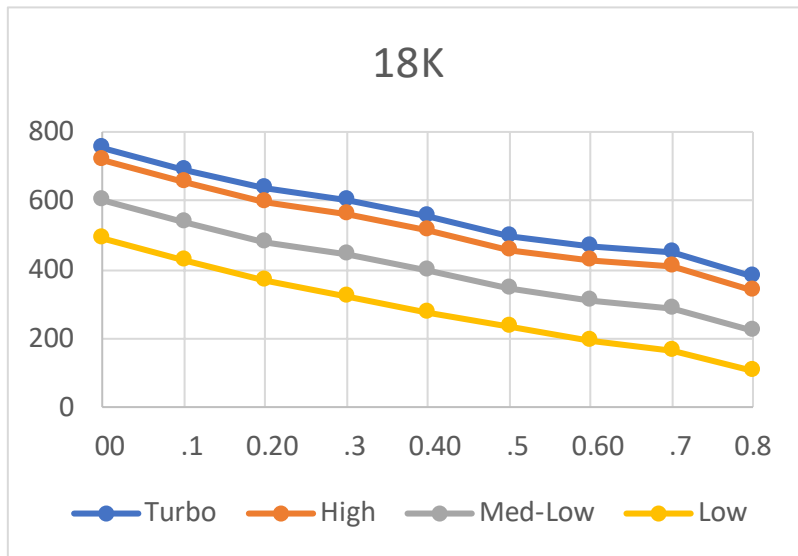
The remote control is only used to adjust the parameters.

Table A-3: Electric Heat Kit Accessories (Optional)

Name	Quantity
Manual	1
Wire terminal label	1
Air circuit breaker	1
Air circuit breaker label	1
Supplementary heater kit wiring diagram	1

Fan Performance

18k Vertical, Horizontal Right, Horizontal Left



Use the remote control.

1. The indoor unit needs to turn off for 5 minutes and then power on (all the settings need to finish within 10 minutes)
2. Keep pushing for 7 seconds with ON/OFF and FAN SPEED together to get into Engineer mode
3. Choose channels 23 (for cooling) and 25 (for heating) with the UP and Down button
4. After choosing channel 23 or 25 then keep pushing ON/OFF for 2 seconds to select -41, -40,....., -1, 0, 1,2,3.....19 20 (reference the matrix list to identify the relative CFM)
5. Push the button OK to confirm the adjustment value, and the display board will display with CS mean success (for setting), then disconnect power after 5 seconds

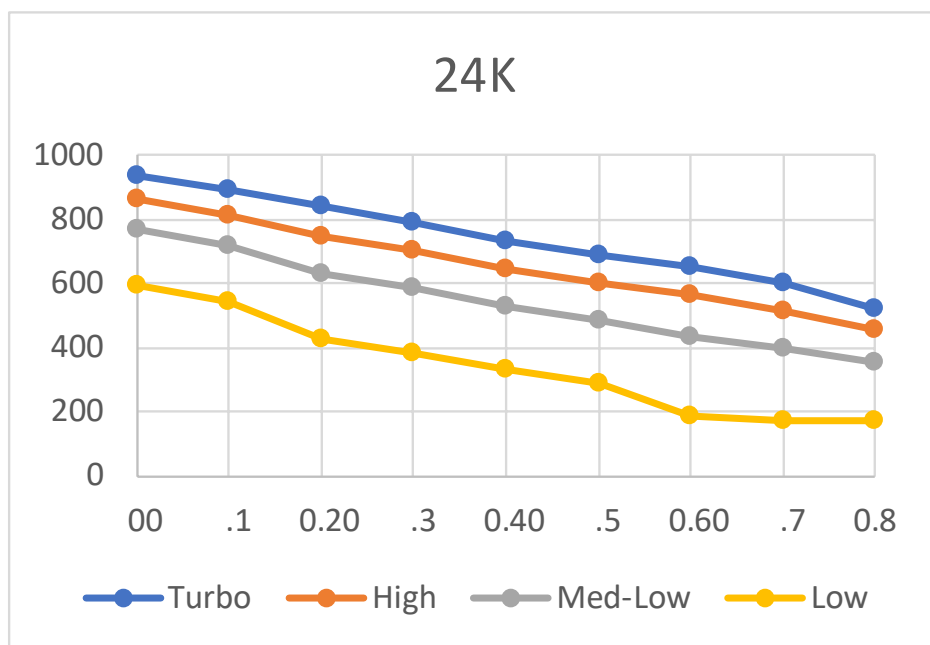
18k Cooling

Cooling	Default	-1	-2	-3	-4	-5	-6	-7	-8	-9~-41	
Turbo	618	598	578	558	538	518	498	478	458	453	
High	576	556	536	516	496	476	456	436	435	435	
Medium	529	509	489	469	449	429	418	418	418	418	
Low	488	468	448	428	408	400	400	400	400	400	
Cooling	Default	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Turbo	618	638	658	678	698	718	738	758	778	798	818
High	576	596	616	636	656	676	696	716	736	756	776
Medium	529	549	569	589	609	629	649	669	689	709	729
Low	488	508	528	548	568	588	608	628	648	668	688
Cooling	Default	+11	+12	+13	+14	+15	+16	+17	+18	+19	+20
Turbo	618	838	858	878	898	918	938	958	971	971	971
High	576	796	816	836	856	876	896	916	936	953	953
Medium	529	749	769	789	809	829	849	869	889	909	929
Low	488	708	728	748	768	788	808	828	848	868	888

18k Heating

Heating	Default	-1	-2	-3	-4	-5	-6~-41				
Turbo	565	545	525	505	485	465	453				
High	541	521	501	481	461	441	435				
Medium	435	418	418	418	418	418	418				
Low	400	400	400	400	400	400	400				
Heating	Default	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Turbo	565	585	605	625	645	665	685	705	725	745	765
High	541	561	581	601	621	641	661	681	701	721	741
Medium	435	455	475	495	515	535	555	575	595	615	635
Low	400	420	440	460	480	500	520	540	560	580	600
Heating	Default	+11	+12	+13	+14	+15	+16	+17	+18	+19	+20
Turbo	565	785	805	825	845	865	885	905	925	945	965
High	541	761	781	801	821	841	861	881	901	921	941
Medium	435	655	675	695	715	735	755	775	795	815	835
Low	400	620	640	660	680	700	720	740	760	780	800

24k Vertical, Horizontal Right, Horizontal Left



Use the remote control.

1. The indoor unit needs to turn off for 5 minutes and then power on (all the settings need to finish within 10 minutes)
2. Keep pushing for 7 seconds with ON/OFF and FAN SPEED together to get into Engineer mode
3. Choose channels 23 (for cooling) and 25 (for heating) with the UP and Down button
4. After choosing channel 23 or 25 then keep pushing ON/OFF for 2 seconds to select -41, -40,....., -1, 0, 1,2,3.....19 20 (reference the matrix list to identify the relative CFM)
5. Push the button OK to confirm the adjustment value, and the display board will display with CS mean success (for setting), then disconnect power after 5 seconds

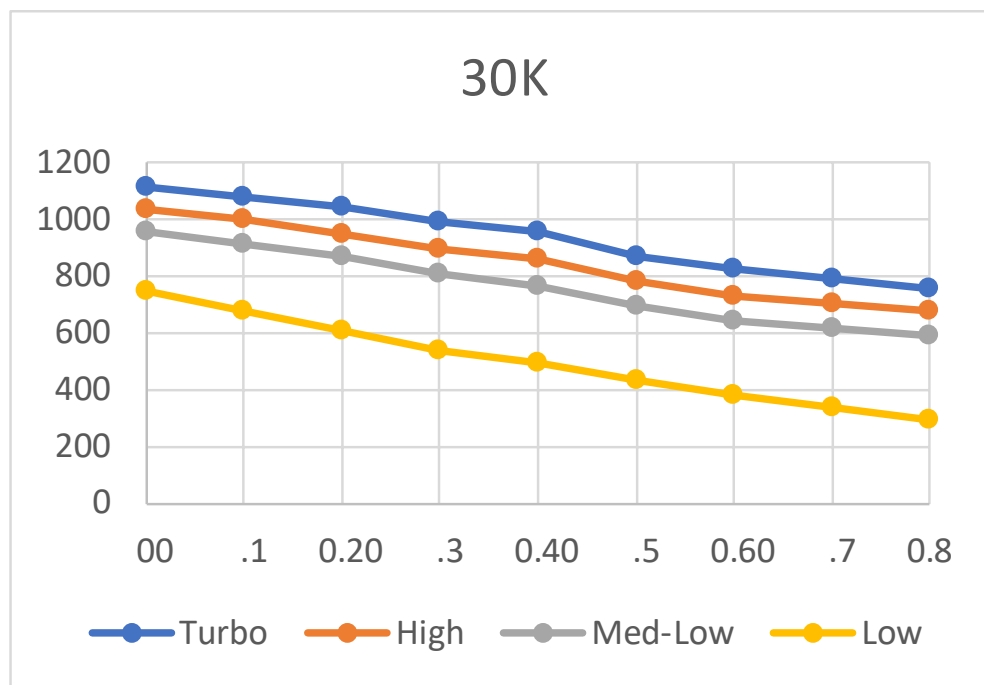
24k Cooling

Cooling	Default	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
Turbo	824	804	784	764	744	724	704	684	664	644	624
High	759	739	719	699	679	659	639	619	599	579	559
Medium	694	674	654	634	614	594	574	554	534	514	494
Low	629	609	589	569	549	529	509	489	469	449	429
Cooling	Default	-11	-12	-13	-14	-15	-16	-17	-18	-19~-41	
Turbo	824	604	584	564	544	524	504	484	464	453	
High	759	539	519	499	479	459	439	435	435	435	
Medium	694	474	454	434	418	418	418	418	418	418	
Low	629	409	400	400	400	400	400	400	400	400	
Cooling	Default	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Turbo	824	844	864	884	904	924	944	964	971	971	971
High	759	779	799	819	839	859	879	899	919	939	953
Medium	694	714	734	754	774	794	814	834	854	874	894
Low	629	649	669	689	709	729	749	769	789	809	829
Cooling	Default	+11	+12	+13	+14	+15~+20					
Turbo	824	971	971	971	971	971					
High	759	953	953	953	953	953					
Medium	694	914	934	935	935	935					
Low	629	849	869	889	909	918					

24k Heating

Heating	Default	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
Turbo	788	768	748	728	708	688	668	648	628	608	588
High	753	733	713	693	673	653	633	613	593	573	553
Medium	641	621	601	581	561	541	521	501	481	461	441
Low	524	504	484	464	444	424	404	400	400	400	400
Heating	Default	-11	-12	-13	-14	-15	-16	-17~-41			
Turbo	788	568	548	528	508	488	468	453			
High	753	533	513	493	473	453	435	435			
Medium	641	421	418	418	418	418	418	418			
Low	524	400	400	400	400	400	400	400			
Heating	Default	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Turbo	788	808	828	848	868	888	908	928	948	968	971
High	753	773	793	813	833	853	873	893	913	933	953
Medium	641	661	681	701	721	741	761	781	801	821	841
Low	524	544	564	584	604	624	644	664	684	704	724
Heating	Default	+11	+12	+13	+14	+15	+16	+17	+18	+19	+20
Turbo	788	971	971	971	971	971	971	971	971	971	971
High	753	953	953	953	953	953	953	953	953	953	953
Medium	641	861	881	901	921	935	935	935	935	935	935
Low	524	744	764	784	804	824	844	864	884	904	918

30k Vertical, Horizontal Right, Horizontal Left



Use the remote control.

1. The indoor unit needs to turn off for 5 minutes and then power on (all the settings need to finish within 10 minutes)
2. Keep pushing for 7 seconds with ON/OFF and FAN SPEED together to get into Engineer mode
3. Choose channels 23 (for cooling) and 25 (for heating) with the UP and Down button
4. After choosing channel 23 or 25 then keep pushing ON/OFF for 2 seconds to select -41, -40,....., -1, 0, 1,2,3.....19 20 (reference the matrix list to identify the relative CFM)
5. Push the button OK to confirm the adjustment value, and the display board will display with CS mean success (for setting), then disconnect power after 5 seconds

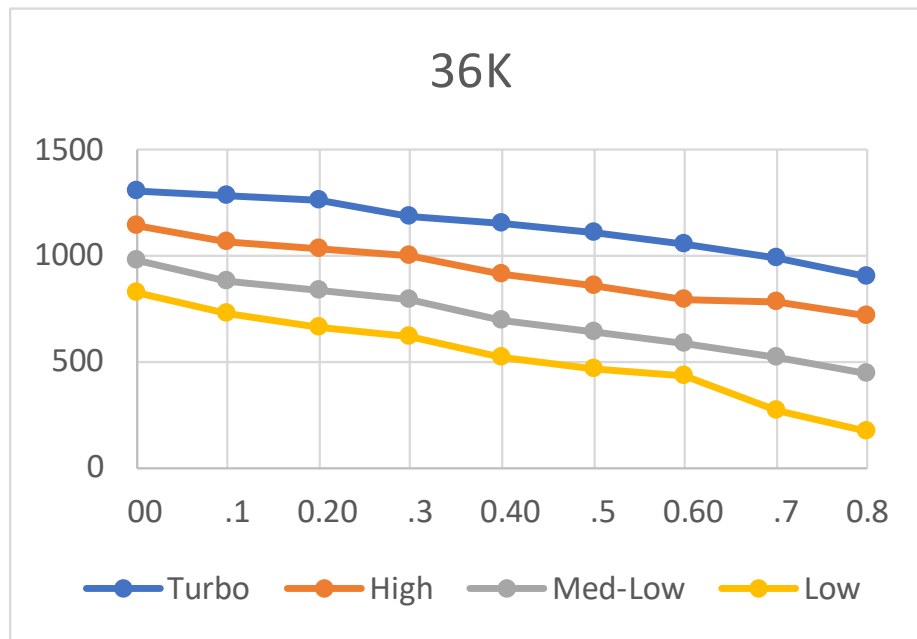
30k Cooling

Cooling	Default	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12
Turbo	988	968	948	928	908	888	868	848	828	808	788	768	748
High	894	874	854	834	814	794	774	754	734	714	694	674	654
Medium	806	786	766	746	726	706	686	666	646	626	606	586	566
Low	541	521	501	481	461	441	421	401	400	400	400	400	400
Cooling	Default	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24
Turbo	988	728	708	688	668	648	628	608	588	568	548	528	508
High	894	634	614	594	574	554	534	514	494	474	454	435	435
Medium	806	546	526	506	486	466	446	426	418	418	418	418	418
Low	541	400	400	400	400	400	400	400	400	400	400	400	400
Cooling	Default	-25	-26	-27~41	+1	+2	+3	+4	+5	+6	+7	+8	+9
Turbo	988	488	468	453	1,008	1,028	1,048	1,068	1,088	1,108	1,128	1,148	1,168
High	894	435	435	435	914	934	954	974	994	1,014	1,034	1,054	1,074
Medium	806	418	418	418	826	846	866	886	906	926	946	966	986
Low	541	400	400	400	561	581	601	621	641	661	681	701	721
Cooling	Default	+10	+11	+12	+13	+14	+15	+16	+17	+18	+19	+20	
Turbo	988	1,188	1,208	1,228	1,248	1,268	1,288	1,308	1,328	1,348	1,365	1,365	
High	894	1,094	1,114	1,134	1,154	1,174	1,194	1,214	1,234	1,254	1,274	1,294	
Medium	806	1,006	1,026	1,046	1,066	1,086	1,106	1,126	1,146	1,166	1,186	1,206	
Low	541	741	761	781	801	821	841	861	881	901	921	941	

30k Heating

Heating	Default	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
Turbo	971	951	931	911	891	871	851	831	811	791	771
High	912	892	872	852	832	812	792	772	752	732	712
Medium	706	686	666	646	626	606	586	566	546	526	506
Low	471	451	431	411	400	400	400	400	400	400	400
Heating	Default	-11	-12	-13	-14	-15	-16	-17	-18	-19	-20
Turbo	971	751	731	711	691	671	651	631	611	591	571
High	912	692	672	652	632	612	592	572	552	532	512
Medium	706	486	466	446	426	418	418	418	418	418	418
Low	471	400	400	400	400	400	400	400	400	400	400
Heating	Default	-21	-22	-23	-24	-25	-26~-41	+1	+2	+3	+4
Turbo	971	551	531	511	491	471	453	991	1011	1031	1051
High	912	492	472	452	435	435	435	932	952	972	992
Medium	706	418	418	418	418	418	418	726	746	766	786
Low	471	400	400	400	400	400	400	491	511	531	551
Heating	Default	+5	+6	+7	+8	+9	+10	+11	+12	+13	+14
Turbo	971	1,071	1,091	1,111	1,131	1,151	1,171	1,191	1,211	1,231	1,251
High	912	1,012	1,032	1,052	1,072	1,092	1,112	1,132	1,152	1,172	1,192
Medium	706	806	826	846	866	886	906	926	946	966	986
Low	471	571	591	611	631	651	671	691	711	731	751
Heating	Default	+15	+16	+17	+18	+19	+20				
Turbo	971	1,271	1,291	1,311	1,331	1,351	1,365				
High	912	1,212	1,232	1,252	1,272	1,292	1,312				
Medium	706	1,006	1,026	1,046	1,066	1,086	1,106				
Low	471	771	791	811	831	851	871				

36k Vertical, Horizontal Right, Horizontal Left



Use the remote control.

1. The indoor unit needs to turn off for 5 minutes and then power on (all the settings need to finish within 10 minutes)
2. Keep pushing for 7 seconds with ON/OFF and FAN SPEED together to get into Engineer mode
3. Choose channels 23 (for cooling) and 25 (for heating) with the UP and Down button
4. After choosing channel 23 or 25 then keep pushing ON/OFF for 2 seconds to select -41, -40,....., -1, 0, 1,2,3.....19 20 (reference the matrix list to identify the relative CFM)
5. Push the button OK to confirm the adjustment value, and the display board will display with CS mean success (for setting), then disconnect power after 5 seconds

36k Cooling

Cooling	Default	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12
Turbo	1,188	1,168	1,148	1,128	1,108	1,088	1,068	1,048	1,028	1,008	988	968	948
High	1,082	1,062	1,042	1,022	1,002	982	962	942	922	902	882	862	842
Medium	971	951	931	911	891	871	851	831	811	791	771	751	731
Low	865	845	825	805	785	765	745	725	705	685	665	645	625
Cooling	Default	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24
Turbo	1,188	928	908	888	868	848	828	808	788	768	748	728	708
High	1,082	822	802	782	762	742	722	702	682	662	642	622	602
Medium	971	711	691	671	651	631	611	591	571	551	531	511	491
Low	865	605	585	565	545	525	505	485	465	445	425	405	400
Cooling	Default	-25	-26	-27	-28	-29	-30	-31	-32	-33	-34	-35	
Turbo	1,188	688	668	648	628	608	588	568	548	454	508	488	
High	1,082	582	562	542	522	502	482	462	442	436	435	435	
Medium	971	471	451	431	418	418	418	418	418	419	418	418	
Low	865	400	400	400	400	400	400	400	400	401	400	400	
Cooling	Default	-36	-37~-41	+1	+2	+3	+4	+5	+6	+7	+8	+9	
Turbo	1,188	468	453	1,208	1,228	1,248	1,268	1,288	1,308	1,328	1,348	1,365	
High	1,082	435	435	1,102	1,122	1,142	1,162	1,182	1,202	1,222	1,242	1,262	
Medium	971	418	418	991	1,011	1,031	1,051	1,071	1,091	1,111	1,131	1,151	
Low	865	400	400	885	905	925	945	965	985	1,005	1,025	1,045	
Cooling	Default	+10	+11	+12	+13	+14	+15	+16	+17	+18	+19	+20	
Turbo	1,188	1,365	1,365	1,365	1,365	1,365	1,365	1,365	1,365	1,365	1,365	1,365	
High	1,082	1,282	1,302	1,322	1,342	1,347	1,347	1,347	1,347	1,347	1,347	1,347	

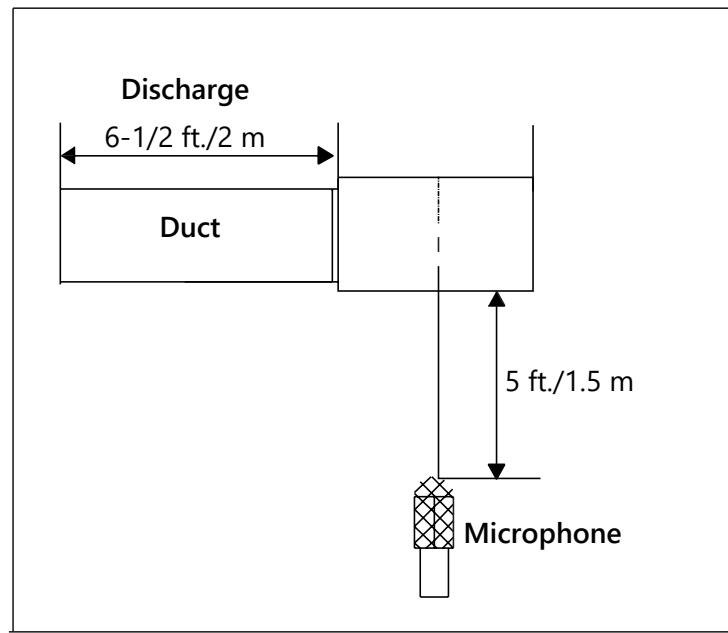
36k Cooling (continued)

Medium	971	1,171	1,191	1,211	1,231	1,251	1,271	1,291	1,311	1,329	1,329	1,329
Low	865	1,065	1,085	1,105	1,125	1,145	1,165	1,185	1,205	1,225	1,245	1,265

36k Heating

Heating	Default	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11
Turbo	1,147	1,127	1,107	1,087	1,067	1,047	1,027	1,007	987	967	947	927
High	1,059	1,039	1,019	999	979	959	939	919	899	879	859	839
Medium	794	774	754	734	714	694	674	654	634	614	594	574
Low	582	562	542	522	502	482	462	442	422	402	400	400
Heating	Default	-12	-13	-14	-15	-16	-17	-18	-19	-20	-21	-22
Turbo	1,147	907	887	867	847	827	807	787	767	747	727	707
High	1,059	819	799	779	759	739	719	699	679	659	639	619
Medium	794	554	534	514	494	474	454	434	418	418	418	418
Low	582	400	400	400	400	400	400	400	400	400	400	400
Heating	Default	-23	-24	-25	-26	-27	-28	-29	-30	-31	-32	-33~-41
Turbo	1,147	687	667	647	627	607	587	567	547	527	507	487
High	1,059	599	579	559	539	519	499	479	459	439	435	435
Medium	794	418	418	418	418	418	418	418	418	418	418	418
Low	582	400	400	400	400	400	400	400	400	400	400	400
Heating	Default	-34	-35~-41	+1	+2	+3	+4	+5	+6	+7	+8	+9
Turbo	1,147	467	453	1,167	1,187	1,207	1,227	1,247	1,267	1,287	1,307	1,327
High	1,059	435	435	1,079	1,099	1,119	1,139	1,159	1,179	1,199	1,219	1,239
Medium	794	418	418	814	834	854	874	894	914	934	954	974
Low	582	400	400	602	622	642	662	682	702	722	742	762
Heating	Default	+10	+11	+12	+13	+14	+15	+16	+17	+18	+19	+20
Turbo	1,147	1,347	1,365	1,365	1,365	1,365	1,365	1,365	1,365	1,365	1,365	1,365
High	1,059	1,259	1,279	1,299	1,319	1,339	1,347	1,347	1,347	1,347	1,347	1,347
Medium	794	994	1,014	1,034	1,054	1,074	1,094	1,114	1,134	1,154	1,174	1,194
Low	582	782	802	822	842	862	882	902	922	942	962	982

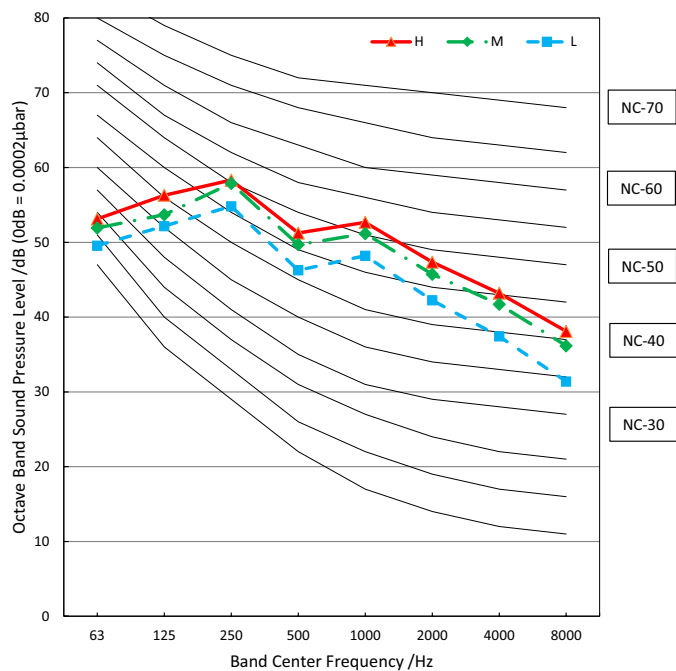
Noise Criterion Curves



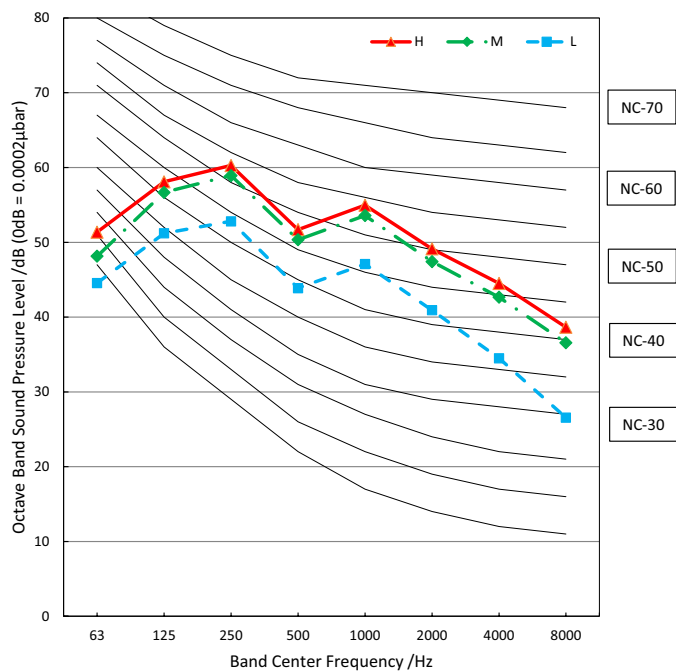
NOTE

- Sound is measured at 5 ft. (1.5 m) away from the center of the unit.
- Data is valid at nominal operation conditions
- Reference acoustic pressure 0 dB = 20 μ Pa
- The sound level will vary depending on various factors, such as the construction (acoustic absorption coefficient) of the room in which the equipment is installed.
- The operating conditions are assumed to be standard.

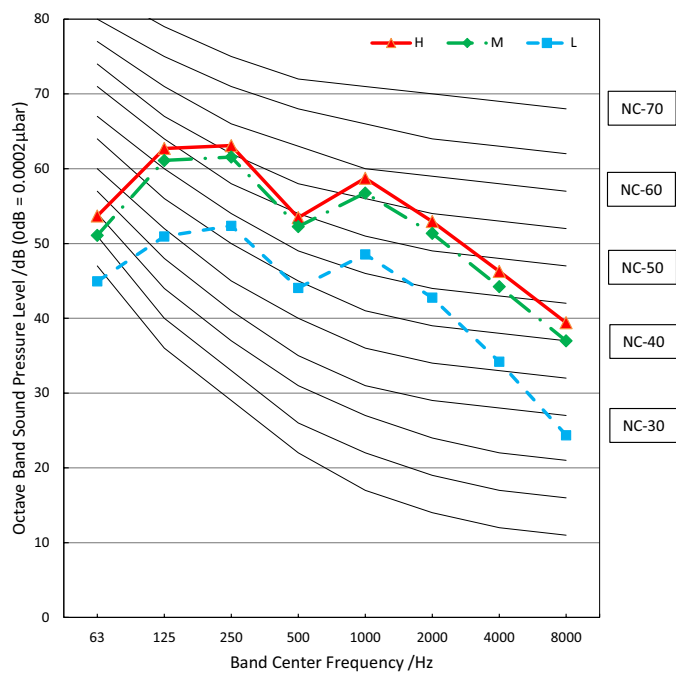
18k



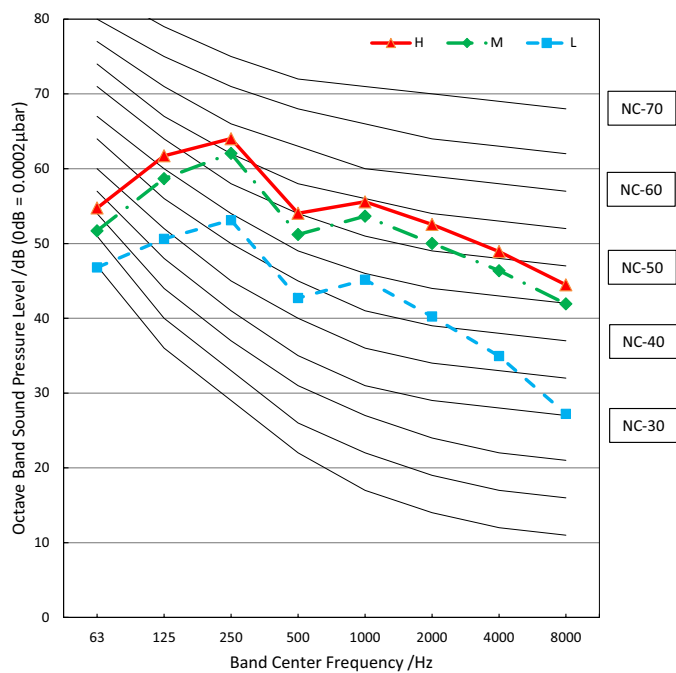
24k



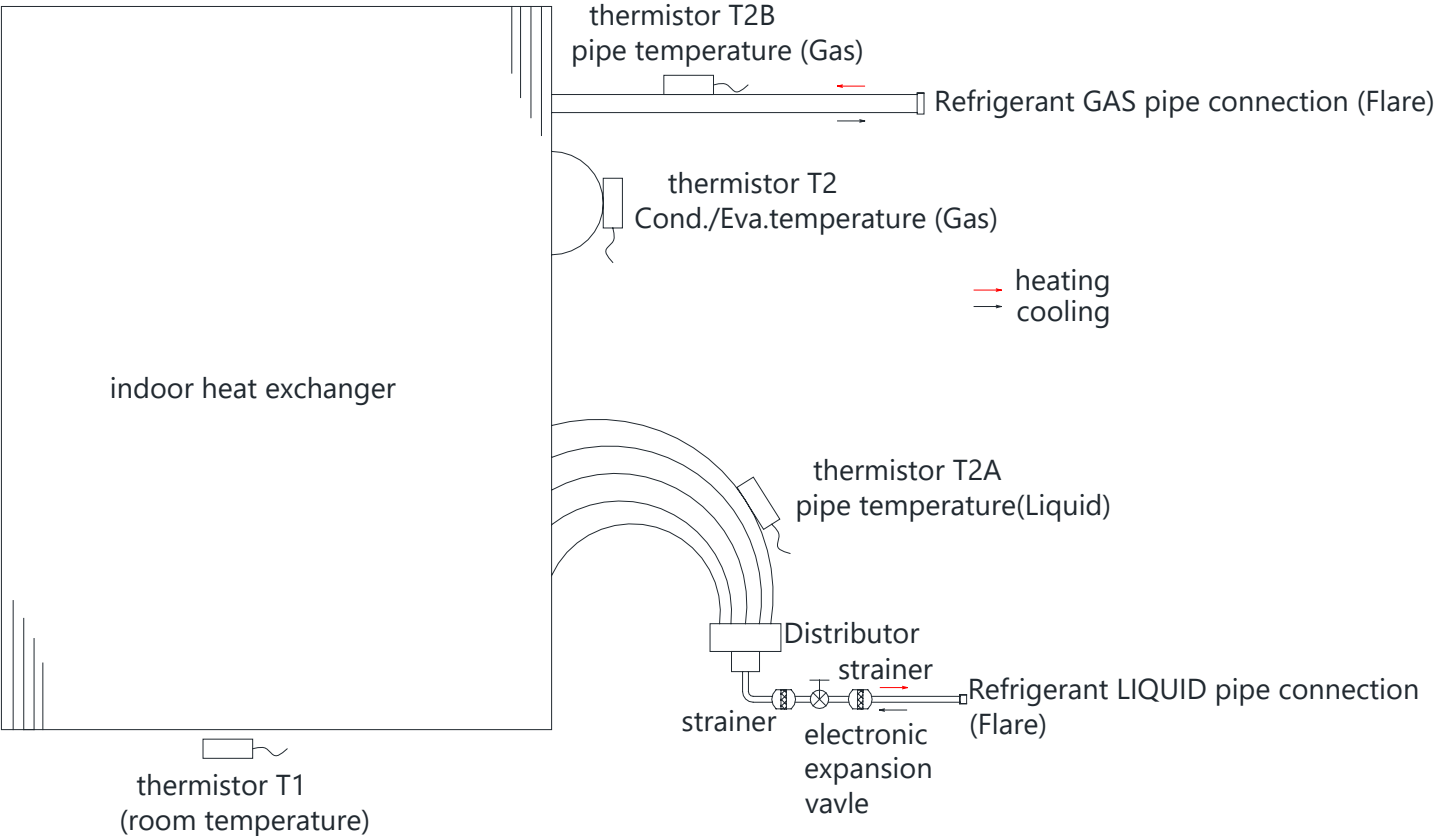
30k



36k



Refrigerant System Diagram



Electrical Wiring Engineering

Electrical Characteristics

IDU Model			18k	24k	30k	36k
Power	Phase		1			
	Frequency And Volt		115/208/230V,60Hz			
Minimum Circuit Ampacity	115V	A	6.0	7.0	8.0	8.0
	208/230V	A	5.0	5.0	6.0	6.0
MOP (Rating of Overcurrent Protective Device)	A		15.0	15.0	15.0	15.0

⚠ CAUTION

Electrical Wiring Precautions

- A qualified electrician should finish all field wiring construction.
- Air conditioning equipment should be grounded according to local electrical regulations.
- A current leakage protection switch should be installed.
- Do not connect the power wire to the terminal of the signal wire.
- When the power wire is parallel with the signal wire, put wires in a separate wire tube and remain at least 11.8 in. /300 mm gap.
- According to the table in the indoor part named “the specification of the power” to choose the wiring, make sure the selected wiring is not smaller than the data shown in the table.
- Select different colors for different wires according to relevant regulations.

24 V Terminal Guide

- Do not use metal wire tubes in a place with acid or alkali corrosion, use a plastic wire tube to replace it.
- There must be no wire connect joint in the wire tube. If the joint is a must, set a connection box at the place.
- The wiring with different voltages should not be in one wire tube.
- Ensure that the color of the wires of the outdoor and terminal No. are the same as those of indoor units respectively.

Electrical Wiring Diagrams

Capacity (Btu/h)	IDU Wiring Diagram
18k	16023000016284
24k	
30k	16023000016286
36k	

24 V Terminal Guide

Terminal	Function
R	24 V Power Connection
C	Common
G	Fan Control
Y1	Low Demand
Y/Y2	High Demand
B	Heating Reversing Valve
W	Heating Control
W1	Stage 1 Electric Heating
W2	Stage 2 Electric Heating
E/AUX	Emergency Heating
DH/BK	Dehumidification/Zoning Control
DS	Reserved Signal
L	System Fault - (24 V output signal)

Wiring Color Guide

THERMOSTAT				INDOOR UNIT	OUTDOOR UNIT
Heat - 2nd stage	W2	WHITE	→	W2	N/C
Emergency Heat - 1st stage	W1/E	BLACK	→	W1	D
		N/C		E	
		N/C		W	W
4 Way Valve	B	ORANGE	→	B	B
Cool - 2nd stage	Y2	BROWN	→	Y2	Y2
Cool - 1st stage	Y	YELLOW	→	Y	Y
Fan	G	GREEN	→	G	G
	L	GRAY	→	L	L
Power Common	C	BLUE	→	C	C
Power	R	RED	→	R	R
	DH	PURPLE	→	DH	N/C

Abbreviation Definitions

Abbreviation	Definition
Y/G	Yellow-Green Conductor
FAN1	Indoor ECM Motor
TO CCM Comm. Bus	Central Controller
T1	Indoor Room Temperature Sensor
T2	Indoor Coil Temperature Sensor
T2A	Indoor Coil Inlet Temperature Sensor
T2B	Indoor Coil Outlet Temperature Sensor

WIRING DIAGRAM

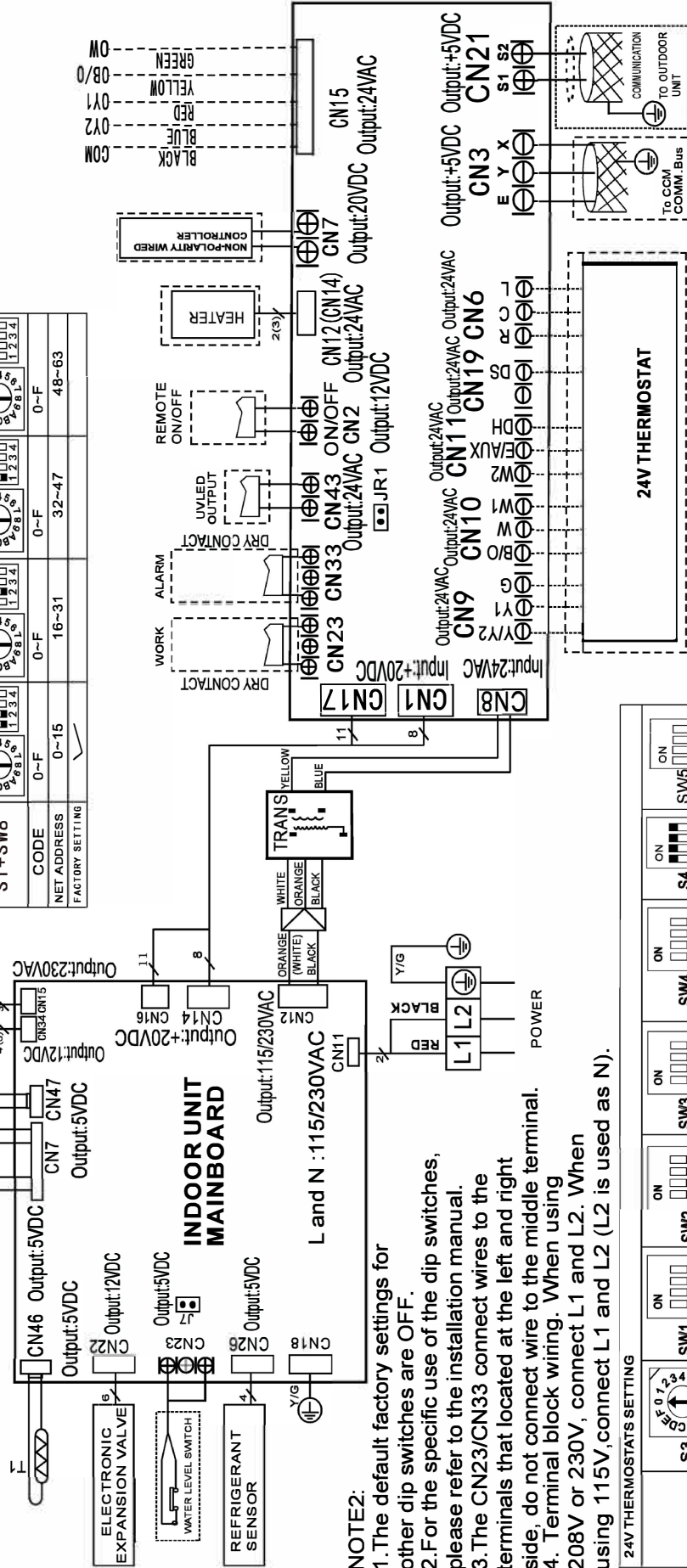
CODE	PART NAME
FAN1	INDOOR ECM MOTOR
T1	ROOM TEMP. SENSOR
T2	COIL TEMP. SENSOR
T2A	INDOOR COIL INLET TEMP. SENSOR
T2B	INDOOR COIL OUTLET TEMP. SENSOR

NOTE1:

1. This symbol indicates the element is optional, the actual shape shall prevail.
2. Remove the short connector of JR1 when using the "ON-OFF" function.
3. Remove the short connector of J7 when using the "WATER LEVEL SWITCH" function.

FOR SETTING POWER(DC MOTOR MODEL ONLY)									
ENC1									
CODE	0	3	5	8	9	A	C	E	
CAPACITY	AUTO	12K	18K	24K	30K	36K	48K	60K	
ACCORDING TO RELATED MODEL									

FOR SETTING NET ADDRESS									
S1+SW8									
CODE	0-F	0-F	0-F	0-F	0-F	0-F	0-F	0-F	0-F
NET ADDRESS	0-15	16-31	32-47	48-63					
FACTORY SETTING									



16023000016284

WIRING DIAGRAM

CODE	PART NAME
FAN1	INDOOR ECM MOTOR
T1	ROOM TEMP. SENSOR
T2	COIL TEMP. SENSOR
T2A	INDOOR COIL INLET TEMP. SENSOR
T2B	INDOOR COIL OUTLET TEMP. SENSOR

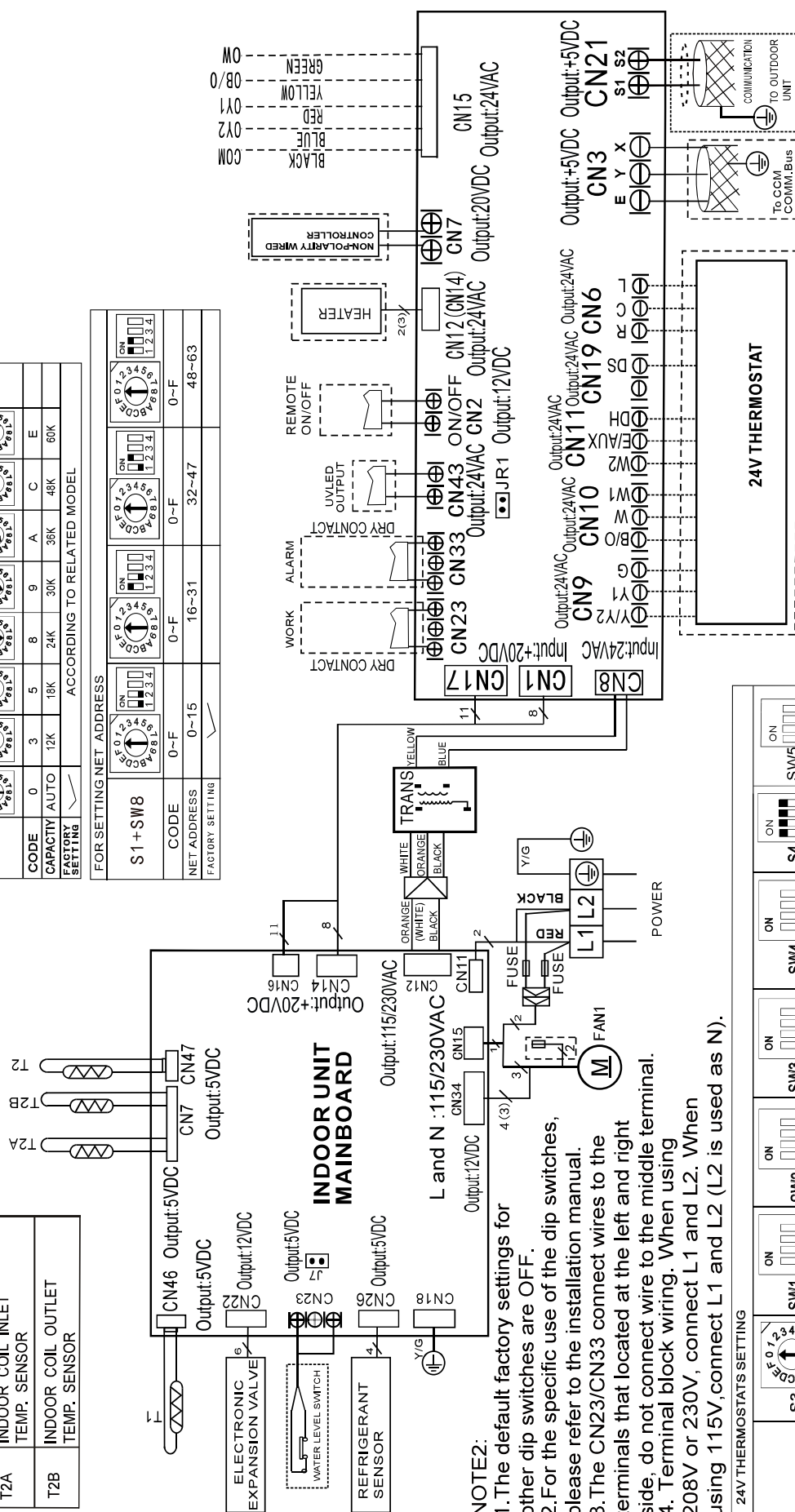
NOTE1:

1. This symbol indicates the element is optional, the actual shape shall prevail.
2. Remove the short connector of JR1 when using the "ON-OFF" function.
3. Remove the short connector of J7 when using the "WATER LEVEL SWITCH" function.

FOR SETTING POWER(DC MOTOR MODEL ONLY)									
ENC1									
CODE	0	3	5	8	9	A	C	E	
CAPACITY	AUTO	12K	18K	24K	30K	36K	48K	60K	
FACTORY SETTING	✓								

FOR SETTING NET ADDRESS									
S1+SW8									
CODE	0-F	0-15	16-31	32-47	48-63				
NET ADDRESS	0-F	0-15	16-31	32-47	48-63				
FACTORY SETTING	✓								

16023000016286



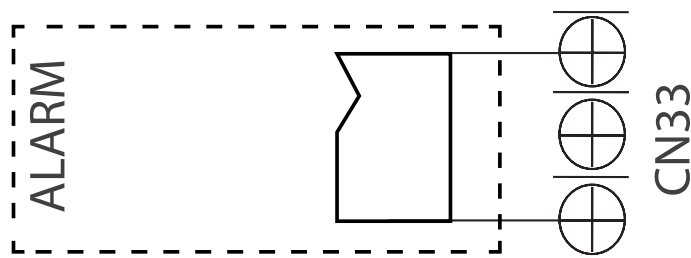
NOTE2:

1. The default factory settings for other dip switches are OFF.
2. For the specific use of the dip switches, please refer to the installation manual.
3. The CN23/CN33 connect wires to the terminals that located at the left and right side, do not connect wire to the middle terminal.
4. Terminal block wiring. When using 208V or 230V, connect L1 and L2. When using 115V, connect L1 and L2 (L2 is used as N).

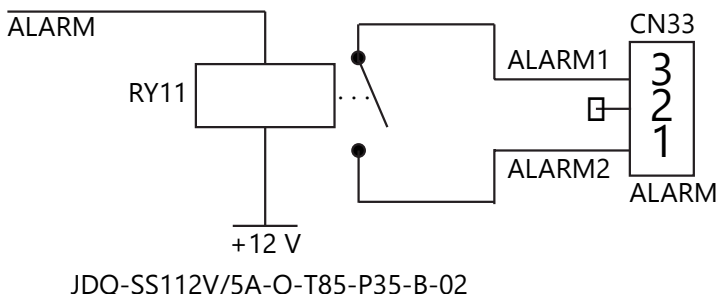
24V THERMOSTAT SETTING

S3	ON	ON	ON	ON	ON	ON	ON	ON	ON
CODE	0-F	0-F	0-F	0-F	0-F	0-F	0-F	0-F	0-F
FACTORY SETTING	✓	✓	✓	✓	✓	✓	✓	✓	✓

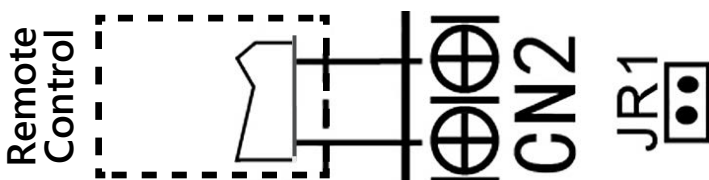
The Fault Warning



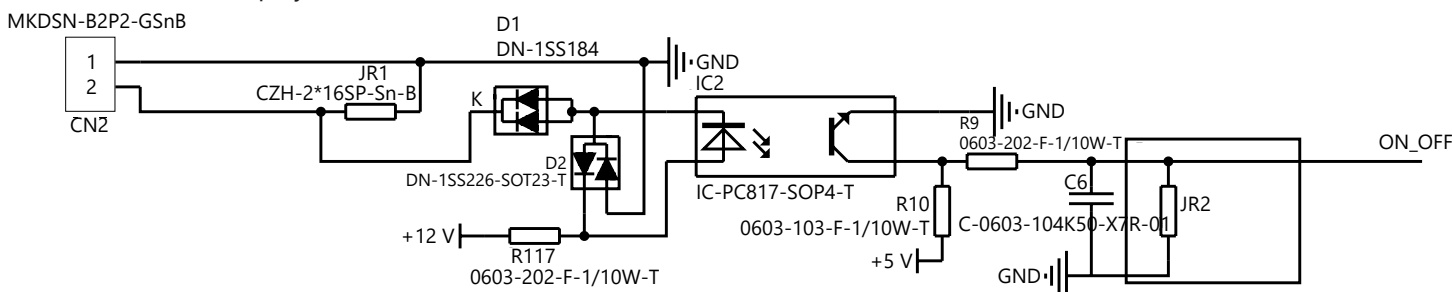
- ### Remote Control (On-Off) Terminal Port Cn2 And Short



Connector Of Jr1

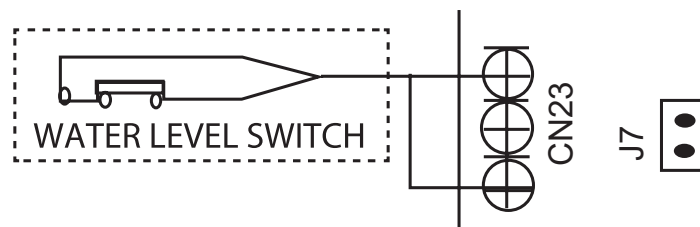


1. Remove the short connector of JR1 when you use the ON-OFF function;
2. When the remote is switched off (OPEN); the unit is off;
3. When the remote switch is on (CLOSE); the unit will be on;
4. When closing/opening the remote switch, the unit would respond to the demand within 2 seconds;
5. When the remote switch is on, you can use the remote controller/ wire controller to select the mode that you want; when the remote switch is off, the unit will not respond to the demand from the remote controller/ wire controller. When the remote is switched off, but the remote control/wired control is on, the CP code will be shown on the display board.



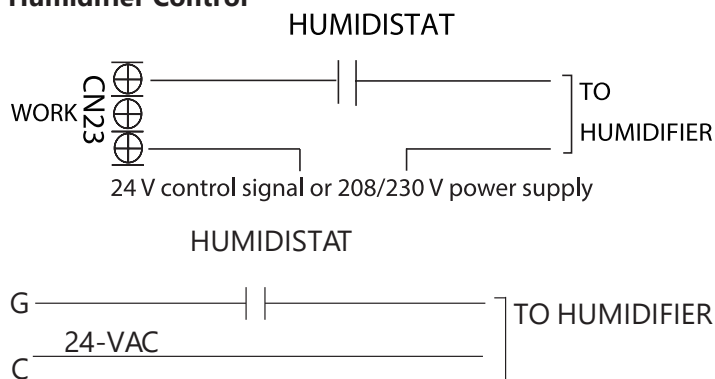
6. The voltage of the port is 12V DC, design Max. current is 5mA.

Condensate Overflow Switch



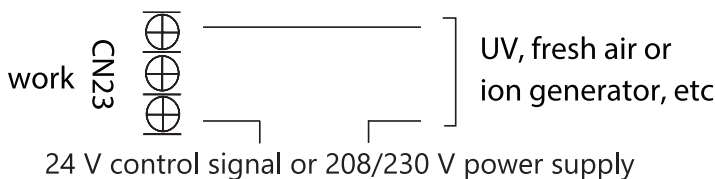
The unit will accommodate a remote condensate overflow switch. To enable, remove jumper J7, and connect the installer-provided condensate overflow device to CN23 per below. When an overflow condition is present, the device should open the connection signaling the unit to turn off the system.

Humidifier Control



To connect a humidifier, utilize the passive signal "WORK" output (CN23) port as well as the G and C wires on the controller, and wire the humidistat and humidifier per the above wiring diagram. When the fan is running, the CN23 relay will be closed, which will allow power to the humidifier when the humidistat is below humidity setpoint. If the thermostat or zone controller has a HUM interface, connect the humidifier directly to the HUM and C ports.

UV, Fresh Air, Or Negative Ion Wiring



The WORK port is linked to the fan. When the fan is running, the relay is closed; if an active 24V signal is required, it can be directly connected to the G and C ports.

Micro-Switch Introduction

FOR SETTING NETADDRESS				
S1+SW8				
CODE	0~F	0~F	0~F	0~F
NETADDRESS	0~15	16~31	32~47	48~63
FACTORY SETTING	✓			

A. Micro-switch S1 and dial-switch SW8 are for address settings when you want to control this unit with a central controller.
Range: 00-63

Network address: The address silkscreen is the NET address, which is composed of a 16-bit address rotary code S1 plus a two-digit DIP switch SW8 [Set during engineering installation, no network function does not need to be set]

When SW8 is 00, the network address value is the value of S1;

When SW8 is 10, the network address value is the value of S1 plus 16;

When SW8 is 01, the network address value is the value of S1 plus 32;

When SW8 is 11, the network address value is the value of S1 plus 48.

Dial Code Selection	Net Address
	S1 + 48
	S1 + 32
	S1 + 16
	S1

FOR SETTING POWER (DC MOTOR MODEL ONLY)								
ENC1								
CODE	0	3	5	8	9	A	C	E
CAPACITY	AUTO	12K	18K	24K	30K	36K	48K	60K
FACTORY SETTING	✓	ACCORDING TO RELATED MODEL						

B. Dial-switch ENC1: The indoor PCB is universally designed for whole series units from 12K to 60 K. This ENC1 setting tells the main program what size the unit is

Range: AUTO, 12K, 18K, 60K

NOTE

AUTO means the indoor unit is equipped with different outdoor units, which can automatically identify the capacity of the outdoor unit, model, mono or multi zone and match the indoor unit parameters.

24 V THERMOSTAT SETTING							
CODE	0~F	ON~OFF	ON~OFF	ON~OFF	ON~OFF	ON~OFF	ON~OFF
FACTORY SETTING	✓	✓	✓	✓	✓	✓	✓

C. Function DIP Switch Settings

Indoor Unit Dial Code

The 24V thermostat mode needs to refer to the following settings:

No.	Dial Code	Control Scenario	Function	ON	OFF	Note
1	SW1-2	1,2,3	Anti-cold blow protection option	NO	[Default] YES	
2	SW1-3	1,2,3	Single cooling / heating and cooling options	Cooling	[Default] Cooling & Heating	
3	SW2-1	1	Compressor Running (demand working with heat pump+ Electric heat)	Compressor slower speed	[Default] Faster Compressor	Only affects compressor, only valid for heating zone control with W1
4	Rotary Switch S3	1,2	Set outdoor temperature Limitation (for auxiliary heating or compressor)	Table A		
5	SW3-1	1	Maximum continuous runtime allowed before system automatically stages up capacity to satisfy set point. This adds 1 to 5°F to the user set point in the calculated control point to increase capacity and satisfy user set point	30 minutes	[Default] 90 minutes	
6	SW3-2	1	Cooling and heating Y/Y2 temperature diferential adjustment.	Compressor slower speed	[Default] Faster Compressor	Only affects compressor
7	SW3-3	1	Compressor Running (demand working with heat pump+ Electric heat)	Compressor slower speed	[Default] Faster Compressor	Only affects compressor, only valid for heating zone control with W2
8	SW3-4	1,3	Fan speed of cooling mode when 24 V Thermostat is applied for.	Turbo	High	
9	SW4-1 SW4-2 SW4-3	1,2,3	Electric heat nominal CFM adjustment	Available settings are 000/001/010/011. Each digit corresponds to an individual switch position. For example [SW4-1 OFF, SW4-2 ON, SW4 -3 OFF] = 010		
10	S4-4	1,3	Default ON	[Default] For single stage supplemental heat, W1 and W2 are connected	For dual stage supplemental heat, W1 and W2 are controlled independently.	
11	S4-2	1,3	DH function selection	[Default] Dehumidification control not available	Dehumidification feature is enabled through thermostat	
12	SW5-3	1,2,3	L or Alarm relay selection	L output 24 V or alarm relay close only when refrigerant sensor fault or R454B refrigerant leakage be detected	[default] L output 24 V or alarm relay close when any fault be detected	
13	SW5-4	1,2,3	R output selection	R stop output 24 V when refrigerant sensor fault or R454B refrigerant leakage be detected	[default] R keep output 24 V even when refrigerant sensor fault or R454B refrigerant leakage be detected	

Indoor Unit Dial Code (continued)

No.	Dial Code	Function	ON	OFF	Note
Control Scenario		Wired Controller S1+S2			
1	SW1-2	Anti-cold blow protection option	NO	[Default] YES	
2	SW1-3	Single cooling/heating and cooling options	Cooling	[Default] Cooling & Heating	
3	Rotary Switch S3	Set outdoor temperature Limitation (for auxiliary heating or compressor)	Table A		
4	SW4-1 SW4-2 SW4-3	Electric heat nominal CFM adjustment	Available settings are 000/001/010/011. Each digit corresponds to an individual switch position. For example [SW4-1 OFF, SW4-2 ON, SW4-3 OFF] = 010		
5	SW5-3	L or Alarm relay selection	L output 24 V or alarm relay close only when refrigerant sensor fault or R454B refrigerant leakage be detected	[default] L output 24 V or alarm relay close when any fault be detected	
6	SW5-4	R output selection	R stop output 24 V when refrigerant sensor fault or R454B refrigerant leakage be detected	[default] R keep output 24 V even when refrigerant sensor fault or R454B refrigerant leakage be detected	
Control Scenario		Full 24 V			
1	SW1-2	Anti-cold blow protection option	NO	[Default] YES	
2	SW1-3	Single cooling/heating and cooling options	Cooling	[Default] Cooling & Heating	
3	SW3-4	Fan speed of cooling mode when 24 V Thermostat is applied for.	Turbo	High	
4	SW4-1 SW4-2 SW4-3	Electric heat nominal CFM adjustment	Available settings are 000/001/010/011. Each digit corresponds to an individual switch position. For example [SW4-1 OFF, SW4-2 ON, SW4-3 OFF] = 010		
5	S4-4	Default ON	[Default] For single stage supplemental heat, W1 and W2 are connected	For dual stage supplemental heat, W1 and W2 are controlled independently.	
6	S4-2	DH function selection	[Default] Dehumidification control not available	Dehumidification feature is enabled through thermostat	
7	SW5-3	L or Alarm relay selection	L output 24 V or alarm relay close only when refrigerant sensor fault or R454B refrigerant leakage be detected	[default] L output 24 V or alarm relay close when any fault be detected	
8	SW5-4	R output selection	R stop output 24 V when refrigerant sensor fault or R454B refrigerant leakage be detected	[default] R keep output 24 V even when refrigerant sensor fault or R454B refrigerant leakage be detected	

Table A

S3	S3 (°F)	S3 (°C)
0	OFF	OFF
1	-22	-30
2	-18	-30
3	-15	-26
4	-11	-24
5	-8	-22
6	-4	-20
7	3	-16
8	10	-12
9	18	-8
A	25	-4
B	32	0
C	36	2
D	39	4
E	43	6
F	46	8

SW4-1	000 is the default 000/001/010/011/100/101/ 110/111, internal machines with different abilities, electric heating, and PSC classification for use.
SW4-2	
SW4-3	

Function combination table of SW1-1 and SW1-4

SW1	Control Type	IDU & ODU Connection	Note
	Wired controller / 24 V thermostat	(S1+S2) / 24 V connection	Auto Discovery
	Wired controller	S1+S2	Scenario 2
	24 V Thermostat	S1+S2	Scenario 1
	24 V Thermostat	24 V connection	Scenario 3

Specific Wiring Methods

WARNING

Please refer to the wiring nameplate for the wiring method. Do not connect the power cord to the communication line, as this may damage the system.

Communication Wiring Sizes

Option	Communication Type	Recommended Cable Size
1	Non-Polarity RS485 Communication (S1 - S2)	20 AWG (stranded shielded)
2	24 V communication	18 AWG 8 conductor thermostat wire

WARNING

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation. Wires should be sized based on NEDC and local codes.



NOTE

- Do not use the thermostat wire for any RS-485 connection between indoor and outdoor units.
- All connections between the indoor and outdoor units must be made as shown in the wiring diagrams.

Power needs to be OFF before dip switch adjustments.

CAUTION

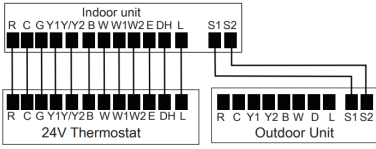


EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation. Be sure to comply with local codes while running wire from the indoor unit to the outdoor unit. Every wire must be connected firmly. Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exist. Ensure all wiring is tightly connected.

No wire should touch the refrigerant tubing, compressor or any moving parts. Disconnecting means must be provided and shall be located within sight and readily accessible from the air conditioner. Connecting cable with conduit shall be routed through the hole in the conduit panel.



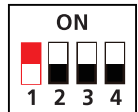
Scenario 1: EVOX Heat Pump and Air Handler 3rd Party 24 V Thermostat

Matchup	Thermostat	Wiring	AHU SW1	ODU SW
Midea AHU+Midea ODU	3rd Party 24 V Thermostat	24 V communication* 	ON 	ON 

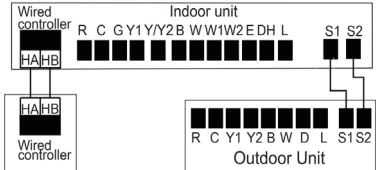
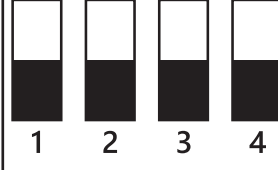
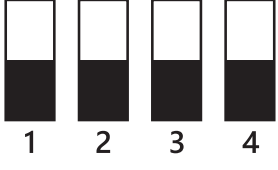
*This is a general wiring diagram. Use the diagram that comes with your selected 24 V thermostat.

Scenario 1 Wiring Diagram

- The IDU and ODU need separate power or are from the ODU. See Step 4 - Power Wiring Connections.
- Bi Communication (IDU SW1-1&-4 and ODU SW-1) auto recognize
- IDU and ODU need 2 non-polarities (5 V RS485 communication through S1 S2)
- IDU and Thermostat Controller Communicate with 24 VAC signal
- Even in retrofit cases, there is no need to change the wire set (use the existing 24 V thermostat wire)
- Factory Default Setting on all Dip Switches are OFF
- IDU SW1 for control optional factory design has automatic recognition (the system will know it is a wired controller signal or 24 V thermostat signal, the DIP switch is just for a verification test)
- When connecting a wired controller and 24 V thermostat will take a 24 V signal as a priority



Scenario 2: EVOX Heat Pump, Air Handler, and RS485 Communication

Matchup	Thermostat	Wiring	AHU SW1	ODU SW
Midea AHU+Midea ODU	Midea Wired Thermostat	Non-polarity RS485 communication 	ON 	ON 

Scenario 2 Wiring Diagram and Dip Switch Settings

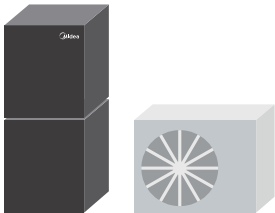

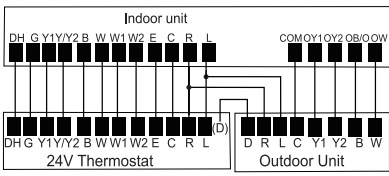
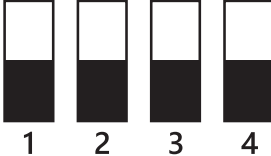
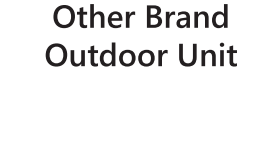
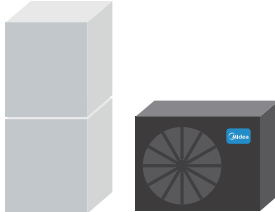

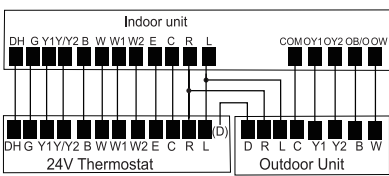
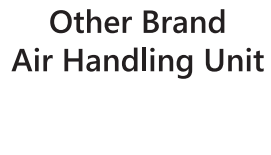
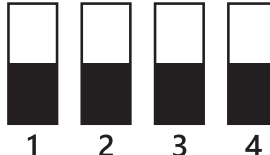
- The IDU and ODU need separate power or are from the ODU. See Step 4 - Power Wiring Connections.
- IDU and ODU need 2 non-polarity (5 V RS485 S1 and S2 communication)
- IDU and Midea wired controller (HA & HB with 20 VDC)

NOTE

HA & HB is RS485 communication and cannot use 16 AWG wire as it will not fit the wired controller.

- Even in the retrofit case we don't need to change the wire set (use the existing 24 V thermostat wire)
- Factory Default Setting on all Dip Switches are OFF
- When connecting a wired controller and 24 V thermostat will take a 24 V signal as a priorit

Scenario 3: Self-Adapt Mode with 3rd Party Equipment

Matchup	Thermostat	Wiring	AHU SW1	ODU SW
Midea AHU+Brand ODU 	3rd Party 24 V Thermostat 	24 V communication* 	ON 	Other Brand Outdoor Unit 
Brand AHU+Midea ODU 	3rd Party 24 V Thermostat 	24 V communication* 	Other Brand Air Handling Unit 	ON 

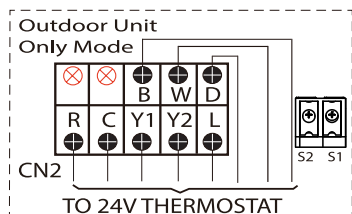
NOTE

For Brand AHU+Midea ODU, the 24V thermostat needs to be connected to a mainboard with a refrigerant sensor, and it should be able to cut off power to the outdoor unit in case of refrigerant leakage. Otherwise, there will be a risk of refrigerant leakage.

Scenario 3 Wiring Diagram and Dip Switch Settings

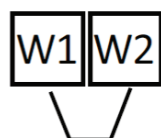
- The IDU and ODU need separate power or are from the ODU. See Step 4 - Power Wiring Connections or the 3rd party unit's instructions.
- IDU and ODU without any wire communication
- IDU and ODU control by 24 V thermostat (24 VAC)
- Factory Default Setting on all Dip Switches is OFF
- When the connected wired controller and 24 V thermostat will take the 24 V signal as a priority

24 V Connection Diagrams

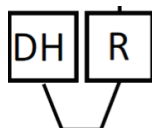


Never Connect 24 V to S1-S2

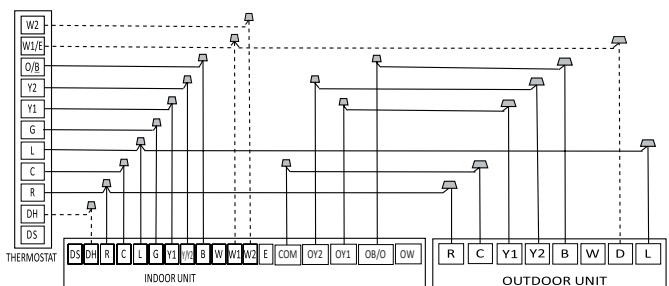
24 V must never be connected to S1 – S2. All wiring must be in compliance with the above scenarios. Incorrect wiring will cause irreversible damage to the control.



Default ON: For single-stage supplemental heat, W1 and W2 are connected.
OFF: W1 and W2 are controlled independently for dual-stage supplemental heat. feature is enabled through the thermostat.



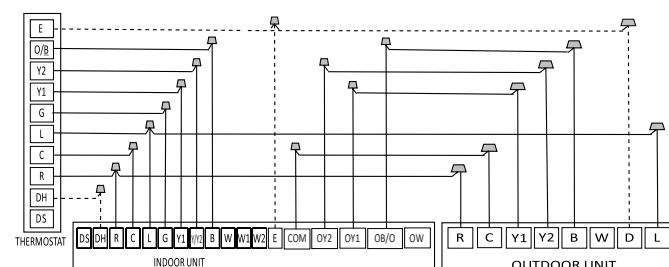
S4-2:
Default ON: Dehumidification control not available.
OFF: The dehumidification feature is enabled through the thermostat.



S4-2 Default on, DH function off.
Turn switch off to activate DH
function.

S4-4 Default on, W1 and W2
shorted for single stage Aux heat
operation. Turn off to separate stages.

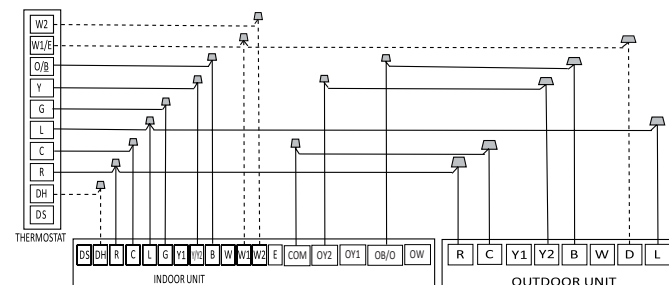
Wiring for 4H and 2C Thermostat



S4-2 Default on, DH function off.
Turn switch off to activate DH
function.

Emergency heating control two groups
of electric heating at the same time

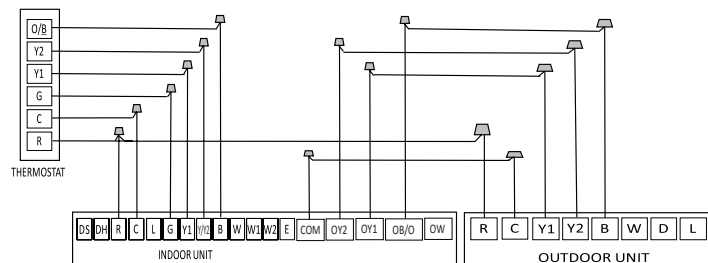
Wiring for 3H and 2C Thermostat



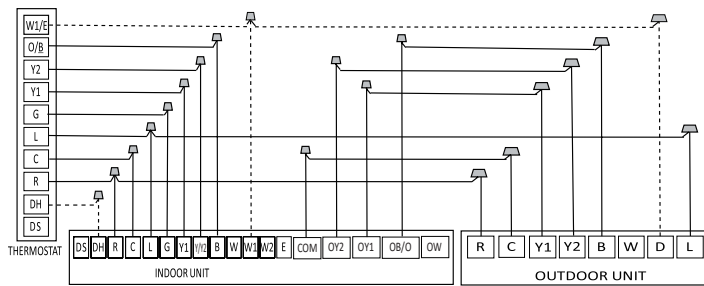
S4-2 Default on, DH function off.
Turn switch off to activate DH
function.

S4-4 Default on, W1 and W2
shorted for single stage Aux heat
operation. Turn off to separate stages.

Wiring for 3H and 1C Thermostat



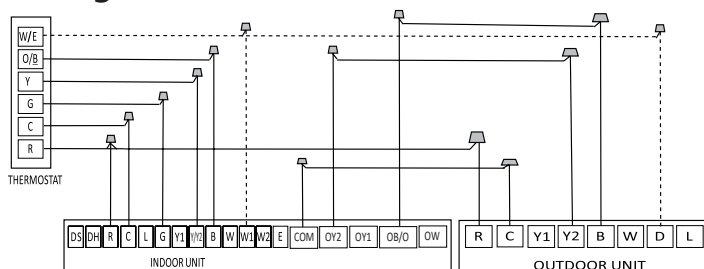
Wiring for 2H and 2C Thermostat No Auxiliary Heat



S4-2 Default on, DH function off.
Turn switch off to activate DH
function.

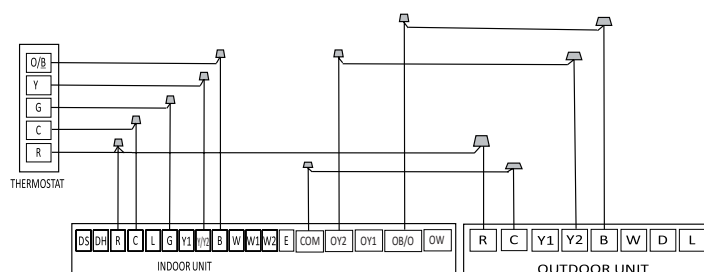
S4-4 Default on, W1 and W2
shorted for single stage Aux heat
operation. Turn off to separate stages.

Wiring for 3H and 2C Thermostat

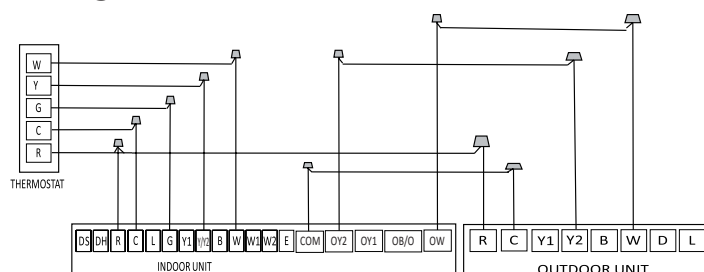


S4-4 Default on, W1 and W2 shorted for single stage Aux heat
operation. Turn off to separate stages.

Wiring for 2H and 1C Thermostat



Wiring for 1H and 1C Thermostat



Wiring for 1H and 1C Thermostat

NOTE

This is the least preferred method of control wiring and should only be used in emergencies. It may not achieve full capacity.

NOTE

If the outdoor condensing unit initiates defrost cycles frequently, then it is recommended to adjust the "thermal balance point" to a temperature that would decrease the recurrence of these cycles and prevent cold air from blowing during the duration of the defrost cycle. The thermal balance point is the outdoor ambient temperature at which the heat pump can no longer provide sufficient heating to the space on its own and compromises the reliability of the compressor.

24 V Signal Chart

		24V input terminal										
Mode	Priority	G	Y1	Y/Y2	B	W	W1	W2	E/AUX	DH	Fan speed	Display
OFF	/	0	0	0	0	0	0	0	0	*	OFF	00
FAN	7	1	0	0	*	0	0	0	0	*	Low	01
Cooling stage 1	6	*	1	0	0	0	0	0	0	1	Mid	02
Cooling stage 2		*	*	1	0	0	0	0	0	1	High	03
Dehumidification 1		*	1	0	0	0	0	0	0	0	Low	04
Dehumidification 2		*	*	1	0	0	0	0	0	0	Low	05
Heat pump stage 1	5	*	1	0	1	0	0	0	0	1	Mid	06
Heat pump stage 2		*	*	1	1	0	0	0	0	1	High	07
Heat pump stage 2		*	*	*	*	1	0	0	0	1	High	
Emergency heat	3	*	0	0	*	0	1	0	0	*	Turbo	12
Emergency heat		*	0	0	*	0	0	1	0	*	Turbo	
Emergency heat		*	0	0	*	0	1	1	0	*	Turbo	12
Emergency heat	4	*	1	0	1	0	1	0	0	1	Turbo	12
Emergency heat		*	1	0	1	0	0	1	0	1	Turbo	
Emergency heat		*	*	1	1	0	1	0	0	1	Turbo	
Emergency heat		*	*	*	*	1	1	0	0	1	Turbo	
Emergency heat		*	*	1	1	0	0	1	0	1	Turbo	
Emergency heat		*	*	*	*	1	0	1	0	1	Turbo	
Emergency heat		*	1	0	1	0	1	1	0	1	Turbo	12
Emergency heat		*	*	1	1	0	1	1	0	1	Turbo	
Emergency heat		*	*	*	*	1	1	1	0	1	Turbo	
Emergency heat	1	*	*	*	*	*	*	*	1	*	Turbo	12
Heating zone control	2	*	1	0	1	0	*	*	0	0	Low	13
Heating zone control		*	*	1	1	0	*	*	0	0	Low	
Heating zone control		*	*	*	*	1	*	*	0	0	Low	

Note:
1: 24V signal
0: No 24V signal
*: 1 or 0.
The AHU will turn off if the 24V input cannot meet the table.

Functions And Features

Safety Features

Indoor fan delayed operation

- When the unit starts, the indoor fan will operate after a period of setting time.
- If the unit is in heating mode, the indoor fan is regulated by the anti-cold wind function.

Sensor redundancy and automatic shutoff

- If one temperature sensor malfunctions, the air conditioner continues operation and displays the corresponding error code, allowing for emergency use.
- When more than one temperature sensor is malfunctioning, the air conditioner ceases operation.

Basic Functions

Abbreviation

Unit Element Abbreviations

Abbreviation	Element
T1	Indoor room temperature
T2	Coil temperature of evaporator
T3	Coil temperature of condenser
T4	Outdoor ambient temperature
TP	Compressor discharge temperature
TS	Setting temperature
Tsc	Adjusted setting temperature

In this manual, such as CDIFTEMP, HDIFTEMP2, TEH2, TCE1, TCE2...etc., they are well-setting parameter of EEPROM.

Fan Mode

When fan mode is activated:

- Temperature control is disabled, and no temperature setting is displayed.
- The indoor fan speed can be set to low, medium, high, turbo, and auto.
- Auto fan: In fan-only mode, AC operates the same as auto fan in cooling mode with the temperature set at 75°F (24°C).
- Under 24V control, when only G signal is available when switching from heating mode or emergency heating mode to fan mode, $T4 < 50^{\circ}\text{F}$ (10°C), the heating mode is sent to the outdoor; when $T4 > 54^{\circ}\text{F}$ (12°C), the normal outdoor control is resumed, and the fan mode is sent to the outdoor.

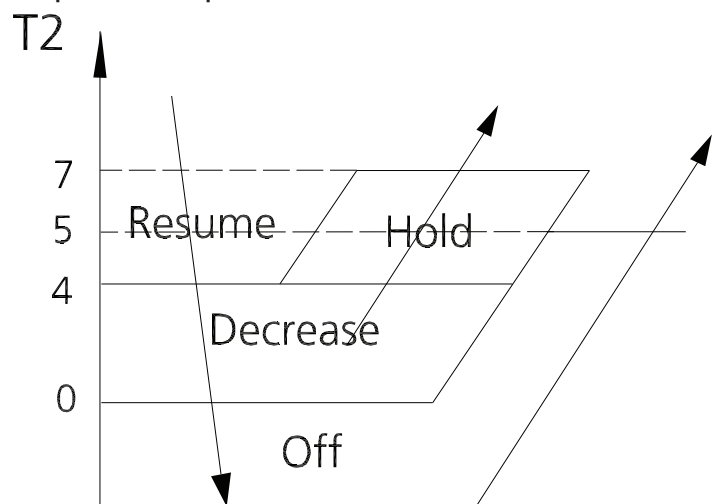
Cooling Mode

Indoor Fan Control

1. In cooling mode, the indoor fan operates continuously. The fan speed can be set to low, medium, high, turbo, and auto.
2. Auto fan action in cooling mode:
 - Descent curve
 - When $T1 - Tsc$ is lower than $6^{\circ}\text{F}/3.5^{\circ}\text{C}$, fan speed reduces to high;
 - When $T1 - Tsc$ is lower than $2^{\circ}\text{F}/1^{\circ}\text{C}$, fan speed reduces to medium;
 - When $T1 - Tsc$ is lower than $1^{\circ}\text{F}/0.5^{\circ}\text{C}$, fan speed reduces to low;
 - Rise curve

- When $T1 - Tsc$ is higher than or equal to $2^{\circ}\text{F}/1^{\circ}\text{C}$, fan speed increases to medium;
- When $T1 - Tsc$ is higher than or equal to $3^{\circ}\text{F}/1.5^{\circ}\text{C}$, fan speed increases to high;
- When $T1 - Tsc$ is higher than or equal to $7^{\circ}\text{F}/4^{\circ}\text{C}$, fan speed increases to turbo.

Evaporator Temperature Protection

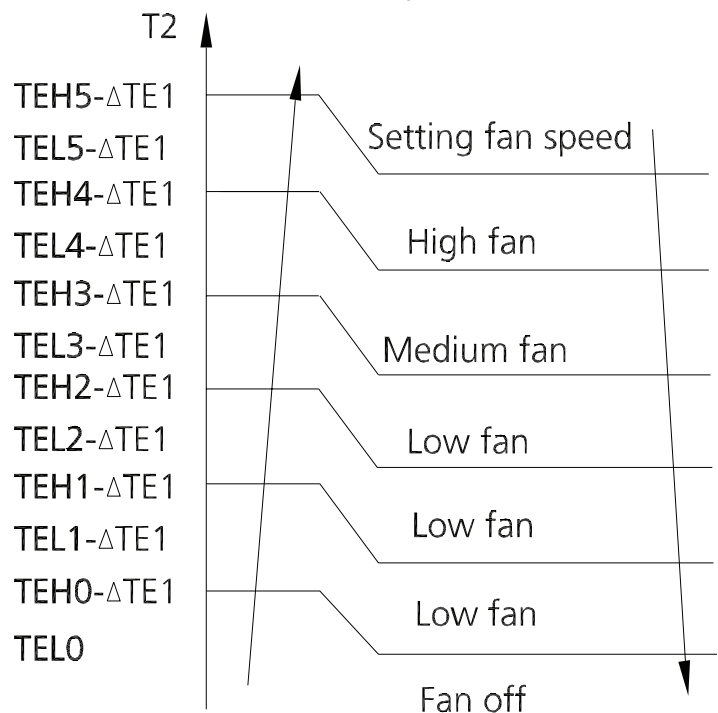


- Off: Compressor stops.
- Decrease: Decrease the running frequency to the lower level per 1 minute.
- Hold: Keep the current frequency.
- Resume: No limitation for frequency.

Heating Mode (Heat Pump Units)

Indoor Fan Control:

1. In heating mode, the indoor fan operates continuously. The fan speed can be set to low, medium, high, turbo, and auto.
- Anti-cold air function
 - The indoor fan is controlled by the indoor temperature $T1$ and indoor unit coil temperature $T2$.

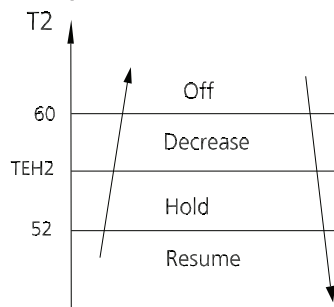


$T1 \leq 66^{\circ}\text{F} (19^{\circ}\text{C})$	$\Delta TE1=0$
$59^{\circ}\text{F} (15^{\circ}\text{C}) \leq 66^{\circ}\text{F} (19^{\circ}\text{C})$	$\Delta TE1= 66^{\circ}\text{F}-T1 (19^{\circ}\text{C}-T1)$
$T1 < 59^{\circ}\text{F} (15^{\circ}\text{C})$	$\Delta TE1= 7^{\circ}\text{F} (4^{\circ}\text{C})$

2. Auto fan action in heating mode:

- Rise curve
 - When T1-Tsc is higher than $-1.5^{\circ}\text{C}/-3^{\circ}\text{F}$, fan speed reduces to high;
 - When T1-Tsc is higher than $0^{\circ}\text{C}/0^{\circ}\text{F}$, fan speed reduces to medium;
 - When T1-Tsc is higher than $0.5^{\circ}\text{C}/1^{\circ}\text{F}$, fan speed reduces to low;
- Descent curve
 - When T1-Tsc is lower than or equal to $0^{\circ}\text{C}/0^{\circ}\text{F}$, fan speed increases to medium;
 - When T1-Tsc is lower than or equal to $-1.5^{\circ}\text{C}/-3^{\circ}\text{F}$, fan speed increases to high;
 - When T1-Tsc is lower than or equal to $-3^{\circ}\text{C}/-5^{\circ}\text{F}$, fan speed increases to turbo.

Evaporator Coil Temperature Protection



- Off: Compressor stops
- Decrease: Decrease the running frequency to the lower level per 20 seconds.
- Hold: Keep the current frequency.
- Resume: No limitation for frequency.

Auto Mode

- This mode can be selected with the remote control and the temperature setting can be adjusted between $61^{\circ}\text{F}\sim 86^{\circ}\text{F} (16^{\circ}\text{C}\sim 30^{\circ}\text{C})$.
- In auto mode, the machine selects cooling, heating, or fan-only mode based on ΔT ($\Delta T = T1-TS$).

ΔT	Running mode
$\Delta T > 4^{\circ}\text{F} (2^{\circ}\text{C})$	Cooling
$-5^{\circ}\text{F} (-3^{\circ}\text{C}) > \Delta T \geq 4^{\circ}\text{F} (2^{\circ}\text{C})$	Fan-only
$\Delta T \leq -5^{\circ}\text{F} (3^{\circ}\text{C})$	Heating*

Heating*: In auto mode, cooling-only models run the fan

- Indoor fan will run at auto fan speed.
- If the machine switches mode between heating and cooling, the compressor will keep stopping for certain time and then choose mode according to ΔT .

Drying Mode

- In drying mode, the AC operates the same as the auto fan in cooling mode.
- All protections are activated and operate the same as they do that in cooling mode.
- Low Room Temperature Protection
- If the room temperature is lower than $50^{\circ}\text{F}/10^{\circ}\text{C}$, the compressor ceases operations and does not resume until the room temperature exceeds $54^{\circ}\text{F}/12^{\circ}\text{C}$.

Forced Operation Function

Press the AUTO/COOL button, the AC will run as below sequence:

Forced auto → Forced cooling → Off



- Forced cooling mode:

The compressor and outdoor fan continue to run and the indoor fan runs at breeze speed. After running for 30 minutes, the AC will switch to auto mode with a preset temperature of $76^{\circ}\text{F} (24^{\circ}\text{C})$.

- Forced auto mode:

Forced auto mode operates the same as normal auto mode with a preset temperature of $76^{\circ}\text{F} (24^{\circ}\text{C})$.

- The unit exits forced operation when it receives the following signals:
 - Switch off
 - Receive the remote signal to change the running mode.

Timer Function

- The timing range is 24 hours.
- Timer On. The machine turns on automatically at the preset time.
- Timer Off. The machine turns off automatically at the preset time.
- Timer On/Off. The machine turns on automatically at the preset On Time and then turns off automatically at the preset Off Time.
- Timer Off/On. The machine turns off automatically at the preset Off Time and then turns on automatically at the preset On Time.
- The timer does not change the unit operation mode. If the unit is off now, it does not start up immediately after the "timer off" function is set. When the setting time is reached, the timer LED switches off and the unit running mode remains unchanged.
- The timer uses relative time, not clock time

Sleep Function

- The sleep function is available in cooling, heating, auto mode or Heat pump + Electric heater.
- The operational process for sleep mode is as follows:
 - When cooling, the set temperature rises by $2^{\circ}\text{F}/1^{\circ}\text{C}$ (to not higher than $86^{\circ}\text{F}/30^{\circ}\text{C}$) every hour. After 2 hours, the temperature stops rising and the indoor fan is fixed at low speed.
 - When heating, the set temperature decreases by $2^{\circ}\text{F}/1^{\circ}\text{C}$ (to not lower than $61^{\circ}\text{F}/16^{\circ}\text{C}$) every hour. After 2 hours, the temperature stops decreasing and the indoor fan is fixed at low speed. Anti-cold wind function takes priority.
 - When in auto mode, the fan speed is also fixed at low speed. After 1 hour, if the actual operation mode is cooling mode, the set temperature will rise by $2^{\circ}\text{F}/1^{\circ}\text{C}$, if it is heating mode, the set temperature will decrease by $2^{\circ}\text{F}/1^{\circ}\text{C}$, if it is fan mode, the set temperature will not change, and the set temperature will not change after two hours of operation.
- The timer setting is available in this mode.

Auto-Restart Function

- The indoor unit has an auto-restart module that allows the unit to restart automatically. The module automatically stores the current settings and in the case of a sudden power failure, will restore those setting automatically within 3 minutes after power returns.

Troubleshooting

WARNING

Be sure to turn off all power supplies or disconnect all wires to avoid electric shock. While checking indoor/outdoor PCBs, please equip yourself with antistatic gloves or wrist strap to avoid damage to the board.

WARNING

Electricity remains in capacitors even when the power supply is off. Ensure the capacitors are fully discharged before troubleshooting.

Indoor Unit Diagnostic Guide

For ease of service, systems are equipped with diagnostic code display LEDs on the indoor and outdoor units. Outdoor diagnostics are displayed on the outdoor unit microprocessor board. The indoor unit may display a few error codes that might relate to the outdoor unit's problems. If possible, always check the diagnostic codes displayed on the indoor unit first. The diagnostic codes displayed on the outdoor units are listed in the outdoor unit manual.

Indoor Unit Diagnostic Codes

Display	Error Information	Solution
EC 07	ODU fan speed out of control	P45
EC 0d	ODU malfunction	P58
EC 5 1	ODU EEPROM parameter error	P43
EC 52	ODU coil temp. sensor (T3) error	P47
EC 53	ODU ambient temp. sensor (T4) error	
EC 54	COMP. discharge temp. sensor (TP) error	
EC 56	IDU coil outlet temp. sensor (T2B) errorMulti-zone)	
EC C 1	Other IDU refrigerant sensor detects leakage (Multi-zone)	P57
EH 00	IDU EEPROM malfunction	P43
EH 03	IDU fan speed out of control	P45
EH 0A	IDU EEPROM parameter error	P43
EH 0b	IDU main control board and display board communication error	P59
EH 0E	Water-level alarm malfunction	P49
EH 3A	External fan DC bus voltage is too low protection	P57
EH 3b	External fan DC bus voltage is too high fault	
EH 60	IDU room temp. sensor (T1) error	P47
EH 6 1	IDU coil temp. sensor (T2) error	P47
EH 62 / EH 66	Evaporator coil inlet temperature sensor T2B is in open circuit or short circuit	TS23
EH 65	Evaporator coil temperature sensor T2A is in opencircuit or short circuit	TS23
EH 6A	Communication malfunction between indoor unit and external fan module	P57
EH C 1	Refrigerant sensor detects leakage	P58
EH C 2	Refrigerant sensor is out of range and leakage is detected	
EH C 3	Refrigerant sensor is out of range	P57
EL 0 1	IDU & ODU communication error	P44
EL 0C	System lacks refrigerant	P47
EL 16	Communication malfunction between adapter board and outdoor main board	P60
FH CC	Refrigerant sensor error	P57
FL 09	Mismatch between the new and old platforms	TS40
PC 00	ODU IPM module protection	TS26
PC 0 1	ODU voltage protection	TS27
PC 02	Compressor top (or IPM) temp. protection	TS32
PC 03	Pressure protection (low or high pressure)	TS29
PC 04	Inverter compressor drive error	TS28
PC 0L	Low ambient temperature protection	TS33
-----	IDUs mode conflict (Multi-zone)	--

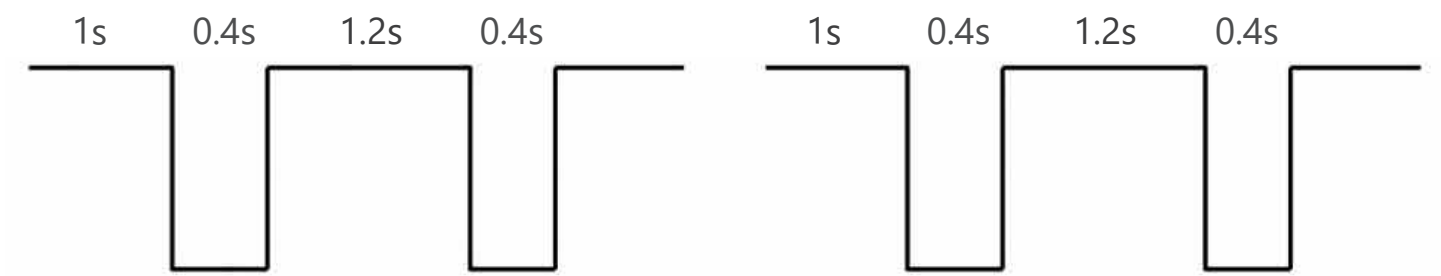
For other errors:

The display board may show a garbled code or a code undefined by the service manual. Ensure that this code is not a temperature reading.

Troubleshooting:

Test the unit using the remote control. If the unit does not respond to the remote, the indoor PCB requires replacement. If the unit responds, the display board requires replacement.

LED flash frequency:



Error Display on Two-Way Communication Wired Controller

Display	Malfunction or Protection	Solution
E H b3	Communication malfunction between wire and master control (for KJR-120X/KJR-120M/KJR-120N series wired controller)	TS34

The other error codes displayed on the wire controller are the same as those on the unit.

Engineering Mode

Information Inquiry

To enter the engineering mode, and check the data of the system (data checking mode), Please take the following steps:

1. Make sure that the AC is on standby status, or working normally in a non-locked condition.
2. Press "Power" + "Fan" buttons together for 7s until the remote controller screen shows "0", and "Auto, Cool, Dry, Heat, Battery" icons will be displayed at the same time.
3. Press the "Up" or "Down" button to choose a different channel number that you want to check (from 0-30) on the remote controller, and then the display will show the parameter value.

Channel	Code	Meaning	Remark
0		Error code	Refer to next list of error code Empty means no error
1	T1	Room temperature	Actual data, °C/°F
2	T2	Indoor coil temperature	Actual data, °C/°F
3	T3	Outdoor coil temperature	Actual data, °C/°F
4	T4	Ambient temperature	Actual data, °C/°F
5	TP	Discharge temperature	Actual data, °C/°F
6	FT	Targeted frequency	Actual data
7	Fr	Actual frequency	Actual data
8	dL	Running current	3.2A=3
9	AC	AC voltage	
10	Sn	Reserved	
11	ra	Reserved	
12	Pr	Indoor air flow	Actual data/10
13	Lr	EXV opening steps	Actual data/8
14	Ir	Indoor fan speed	Actual data/8
15	HU	Humidity (if a sensor there)	Actual data, %
16	TT	Set temperature including compensation	Actual data, °C
17	ra	Reserved	
18	ra	Reserved	
19	Uo	Outdoor DC bus voltage	
20	oT	Target Frequency calculated by indoor	Without limitation
21	TR	Evaporator coil inlet temperature	Actual data, °C/°F
22	Tb	Evaporator coil inlet temperature	Actual data, °C/°F
23~30	ra	Reserved	

Please note that:

- The Channel number indicates a certain parameter value (Check the table below).
- The indoor unit display will show the code for 2s, and then the parameter value.
- In the engineering mode, the other keys or operations are invalid except for the following buttons "Power", "Up", "Down", and "Ok".
- In order to exit from the engineering mode, press "Power" + "Fan" buttons together for 2s to quit Checking and back to the home screen.
- The engineering mode will be exited if there is no valid input data for the 60s. Error code of engineer mode.

Error Codes

Display	Error Information
E400	IDU EEPROM malfunction
E40A	IDU EEPROM parameter error
E401	IDU & ODU communication error
E4bA	Communication error between indoor unit and external fan module
E430	Parameters error of indoor external fan
E435	Phase failure of indoor external fan
E436	Indoor external fan current sampling bias fault
E437	Indoor external fan zero speed failure
E438	Indoor external fan stall failure
E439	Out of step failure of indoor external fan
E43A	Low voltage protection of indoor external fan DC bus
E43b	Indoor external fan DC bus voltage is too high fault
E43E	Indoor external fan overcurrent fault
E43F	Indoor external fan module protection/hardware overcurrent protection
E403	IDU fan speed out of control
E451	ODU EEPROM parameter error
E452	ODU coil temp. sensor (T3) error
E453	ODU ambient temp. sensor (T4) error
E454	COMP. discharge temp. sensor(TP) error
E455	IGBT temperature sensor TH is in open circuit or short circuit
E40d	Outdoor unit malfunction
E460	IDU room temp. sensor (T1) error
E461	IDU coil temp. sensor(T2) error
E471	Outdoor external fan overcurrent fault
E475	Outdoor external fan module protection/hardware overcurrent protection
E472	Outdoor external fan phase failure
E474	Outdoor external fan current sampling bias fault
E473	Zero speed failure of outdoor unit DC fan
E407	ODU fan speed out of control(
E4b5	Intelligent eye communication failure
E40C	Refrigerant leak detected
E40E	Water-level alarm malfunction
E40F	Intelligent eye malfunction
F407	Communication malfunction between indoor unit and auto-lifting panel
P400	ODU IPM module protection
P410	Over low voltage protection
P411	Over voltage protection
P412	DC voltage protection
P402	Top temperature protection of compressor or High temperature protection of IPM module
P440	Communication error between outdoor main chip and compressor driven chip

Error Codes (continued)

Display	Error Information
PC41	Current Input detection protection
PC42	Compressor start error
PC43	Lack of phase (3 phase) protection
PC44	Outdoor unit zero speed protection
PC45	341PWM error
PC46	Compressor speed malfunction
PC49	Compressor over current protection
PC06	Compressor discharge temperature protection
PC08	Outdoor current protection
PH09	Anti-cold air in heating mode
PC0F	PFC module malfunction
PC30	System overpressure protection
PC31	System pressure is too low protection
PC03	Pressure protection
PC0L	Outdoor low ambient temperature protection
PH90	Evaporator coil temperature over high protection
PH91	Evaporator coil temperature over low Protection
PC0A	Condenser high temperature protection
PH0C	Indoor unit humidity sensor failure
LH00	Frequency limit caused by T2
LH30	Indoor external fan current limit
LH31	Indoor external fan voltage limit
LC01	Frequency limit caused by T3
LC02	Frequency limit caused by TP
LC05	Frequency limit caused by voltage
LC03	Frequency limit caused by current
LC06	Frequency limit caused by PFC
LC30	Frequency limit caused by high pressure
LC31	Frequency limit caused by low pressure
LH07	Frequency limit caused by remote controller
--	IDUs mode conflict(match with multi outdoor unit)
nA	No malfunction and protection

Advanced Function Setting

To enter the engineering mode, and check the advanced function settings, please take the following steps:

If you want to check the current functions set value (Presetting Page):

1. Firstly, you need to disconnect the power supply from the unit and wait for 1 minute.
2. Then connect the power supply again to the unit (the unit should be under the standby state).
3. Press "Power" + "Fan" buttons together for 7s until the remote controller screen shows "0", and "Auto, Cool, Dry, Heat, Battery" icons will be displayed at the same time.
4. Press "Up" or "Down" button to choose different channel number that you want to check (from 0-30) on the remote controller.
5. Then Press the "Power" button for 2s until the remote controller screen shows "Ch".
6. Press "OK" button to query the current function set value while the remote controller shows "CH", and the function set value will be shown on the indoor unit display.

If you want to change the current functions set value:

1. Firstly, you need to disconnect the power supply from the unit and wait for 1 minute.
2. Then connect the power supply again to the unit (the unit should be under the standby state).
3. Press "Power" + "Fan" buttons together for 7s until the remote controller screen shows "0", and "Auto, Cool, Dry, Heat, Battery" icons will be displayed at the same time.
4. Press the "Up" or "Down" button to choose different channel number that you want to change (from 0-30) on the remote controller.
5. Then Press the "Power" button for 2s until the remote controller screen shows "Ch".
6. Press the "Up" or "Down" button to choose the desired set value from the screen of the remote control.
7. Then Press "OK" to send the new set value to the indoor unit, and the indoor unit will display "CS", which means that the new set value is uploaded successfully.
8. Finally, disconnect the power supply from the unit, and wait for 10 minutes, then connect it again.

Please note that:

1. The Channel number indicates a certain function, and each number will be shown on the indoor unit screen indicates the current function set value (Check the table below).
2. In the engineering mode, the other keys or operations are invalid except for the following buttons "Power", "Up", "Down", and "Ok".
3. To set a new set value successfully, you need to finish the steps (from 2 to 7) within 1 minute only.
4. The engineering mode will be exited if there is no valid input data for the 60s.
5. To exit from the engineering mode, please follow the following steps:
 - Press the "Power" button for 2s press until the remote controller screen shows "0".
 - Then Press "Power" + "Fan" buttons together for 2s to quit the engineering mode and back to the home screen.

Advanced Function Parameter Definitions

Channel	Function	Parameter Value Meaning	Remark
0	Capacity setting (Btu/h)	1-100K	
1	Auto-restart function	0 – Inactive 1 – Active	
2	Fan control when Ts reached	1- Fan stop 2 - Fan runs at lowest RPM 3 - Fan runs at setting RPM 4 - Fan stops for 4 mins and runs for 1mins 5 - Fan stops for 8 mins and runs for 1mins 6 - Fan stops for 16 mins and runs for 1mins 7 - Fan stops for 24 mins and runs for 1mins 8 - Fan stops for 48 mins and runs for 1mins 9 - Fan stops for 15 mins and runs for 2.5mins 10 - Fan stops for 30 mins and runs for 2.5mins 11 - Fan stops for 60 mins and runs for 2.5 12- Fan runs at setting RPM, but stop if choose Automatic speed 13- Fan runs at the lowest speed, but stop if choose Automatic speed	
3	Mode lock	CH–Cooling and heating (all modes) HH–Heating only (Heating + Fan only) CC–Cooling only (Cooling + Drying + Fan only) nU–Cooling and heating without Auto	Remote controller will change as well.

Advanced Function Parameter Definitions (continued)

Channel	Function	Parameter Value Meaning	Remark
4	Lowest setting temperature	16-24	Remote controller will change as well.
5	Highest setting temperature	25-30	Remote controller will change as well.
6	Reserved	Nothing to set	
7	/	Nothing to set	
8	/	Nothing to set	
9	/	Nothing to set	
10	/	Nothing to set	
11	Min. frequency limitation in cooling mode	10, 11, 12, ..., 49, 50, -- (Cancel)	
12	Min. frequency limitation in heating mode	10, 11, 12, ..., 49, 50, -- (Cancel)	
13	Max frequency selection in T4 limitation of Zone6	20, 21, 22, ..., 149, 150, -- (Cancel)	
14	/	Nothing to set	
15	Frequency selection of outdoor forced-operation	10, 11, 12, ..., 249, 250, -- (Cancel)	
16	One button reset	rS – Reset	
17	nA	Nothing to set	
18	Capacity setting(kW)	23,26,32,35,51,72,120,-- (Cancel)	
19	Max. frequency selection in cooling mode	40, 41, 42, ..., 83, 84, -- (Cancel)	
20	Max. frequency selection in heating mode	40, 41, 42, ..., 83, 84, -- (Cancel)	Without limitation
21	Cooling temperature compensation	-3.0, -2.5, -2.0, ..., 3.0, 3.5, -- (Cancel)	
22	Heating temperature compensation	-6.5, -6.0, -5.5, ..., 0.5, 1.0, 1.5, ..., 7.0, 7.5, -- (Cancel)	
23	Fan volume selection in cooling	Fan volume will add set data*20cfm.	
24	Reserved	Nothing to set	
25	Fan volume selection in heating	Fan volume will add set data*20cfm.	
26	Reserved	Nothing to set	
27	Defrosting type	A0–Normal defrosting A1–Enhanced defrosting	
28	Anti-cold air Stop Fan Temperature	16~28	
29	Reserved	Nothing to set	
30	Reserved	Nothing to set	

Error Diagnosis and Troubleshooting Without Error Code

WARNING

Be sure to turn off the unit before any maintenance to prevent damage or injury.

Remote maintenance

SUGGESTION: When troubles occur, please check the following points with customers before field maintenance.

No.	Problem	Solution
1	The unit will not start	P38-P39
2	The power switch is on, but the fans will not start	P38-P39
3	The temperature on the display board cannot be set	P38-P39
4	The unit is on, but the wind is not cold (hot)	P38-P39
5	The unit runs but shortly stops	P38-P39
6	The unit starts up and stops frequently	P38-P39
7	Unit runs continuously but insufficient cooling (heating)	P38-P39
8	Cool cannot change to heat	P38-P39
9	The unit is noisy	P38-P39

Field maintenance

No.	Problem	Solution
1	Unit will not start	P40-P41
2	Compressor will not start but fans run	P40-P41
3	Compressor and condenser (outdoor) fan will not start	P40-P41
4	Evaporator (indoor) fan will not start	P40-P41
5	Condenser (Outdoor) fan will not start	P40-P41
6	Unit runs, but shortly stops	P40-P41
7	Compressor short-cycles due to overload	P40-P41
8	High discharge pressure	P40-P41
9	Low discharge pressure	P40-P41
10	High suction pressure	P40-P41
11	Low suction pressure	P40-P41
12	Unit runs continuously but insufficient cooling	P40-P41
13	Too cool	P40-P41
14	Compressor is noisy	P40-P41
15	Horizontal louver can not revolve	P40-P41

Remote Troubleshooting

1.Remote Maintenance	Electrical Circuit							Refrigerant Circuit						
Possible causes of trouble	Power failure	The main power tripped	Loose connections	Faulty transformer	The voltage is too high or too low	The remote control is powered off	Broken remote control	Dirty air filter	Dirty condenser fins	The setting temperature is higher/lower than the room's(cooling/heating)	The ambient temperature is too high/low when the mode is cooling/heating	Fan mode	SILENCE function is activated(optional function)	Frosting and defrosting frequently
Unit will not start	☆	☆	☆	☆										
The power switch is on but fans will not start			☆	☆	☆									
The temperature on the display board cannot be set						☆	☆							
Unit is on but the wind is not cold(hot)										☆	☆	☆		
Unit runs, but shortly stops					☆					☆	☆			
The unit starts up and stops frequently					☆						☆			☆
Unit runs continuously but insufficient cooling(heating)								☆	☆	☆	☆		☆	
Cool cannot change to heat														
Unit is noisy														
Test method / remedy	Test voltage	Close the power switch	Inspect connections - tighten	Change the transformer	Test voltage	Replace the battery of the remote control	Replace the remote control	Clean or replace	Clean	Adjust the setting temperature	Turn the AC later	Adjust to cool mode	Turn off SILENCE function.	Turn the AC later

Remote Troubleshooting (continued)

1.Remote Maintenance	Others					
Possible causes of trouble	Heavy load condition	Loosen hold down bolts and / or screws	Bad airproof	The air inlet or outlet of either unit is blocked	Interference from cell phone towers and remote boosters	Shipping plates remain attached
Unit will not start						
The power switch is on but fans will not start					☆	
The temperature on the display board cannot be set						
Unit is on but the wind is not cold(hot)						
Unit runs, but shortly stops						
The unit starts up and stops frequently				☆		
Unit runs continuously but insufficient cooling(heating)	☆		☆	☆		
Cool can not change to heat						
Unit is noisy		☆				☆
Test method / remedy	Check heat load	Tighten bolts or screws	Close all the windows and doors	Remove the obstacles	Reconnect the power or press ON/OFF button on remote control to restart operation	Remove them

Field Troubleshooting

2.Field Maintenance		Refrigerant Circuit																	Others					
Possible causes of trouble	Compressor stuck	Shortage of refrigerant	Restricted liquid line	Dirty air filter	Dirty evaporator coil	Insufficient air through evaporator coil	Overcharge of refrigerant	Dirty or partially blocked condenser	Air or incompressible gas in refrigerant cycle	Short cycling of condensing air	High temperature condensing medium	Insufficient condensing medium	Broken compressor internal parts	Inefficient compressor	Expansion valve obstructed	Expansion valve or capillary tube closed completely	Leaking power element on expansion valve	Poor installation of feeler bulb	Heavy load condition	Loosen hold down bolts and / or screws	Shipping plates remain attached	Poor choices of capacity	Contact of piping with other piping or external plate	
	Unit will not start																							
	Compressor will not start but fans run	☆																						
	Compressor and condenser (outdoor) fan will not start																							
	Evaporator (indoor) fan will not start																							
	Condenser (Outdoor) fan will not start																							
	Unit runs, but shortly stops		☆	☆				☆	☆							☆	☆							
	Compressor short-cycles due to overload		☆					☆	☆															
	High discharge pressure							☆	☆	☆	☆	☆												
	Low discharge pressure		☆											☆										
	High suction pressure							☆						☆				☆	☆					
	Low suction pressure		☆	☆	☆	☆	☆								☆	☆	☆							
	Unit runs continuously but insufficient cooling		☆	☆	☆	☆	☆		☆	☆	☆			☆					☆			☆		
	Too cool																							
	Compressor is noisy							☆						☆						☆	☆		☆	
	Horizontal louver can not revolve																							
	Test method / remedy	Replace the compressor	Leak test	Replace restricted part	Clean or replace	Clean coil	Check fan	Change charged refrigerant volume	Clean condenser or remove obstacle	Purge, evacuate and recharge	Remove obstruction to air flow	Remove obstruction in air or water flow	Remove obstruction in air or water flow	Replace compressor	Test compressor efficiency	Replace valve	Replace valve	Replace valve	Fix feeler bulb	Check heat load	Tighten bolts or screws	Remove them	Choose AC of lager capacity or add the number of AC	Rectify piping so as not to contact each other or with external plate

Field Troubleshooting (continued)

2.Field Maintenance	Electrical Circuit															
Possible causes of trouble	Power failure	Blown fuse or varistor	Loose connections	Shorted or broken wires	Safety device opens	Faulty thermostat / room temperature sensor	Wrong setting place of temperature sensor	Faulty transformer	Shorted or open capacitor	Faulty magnetic contactor for compressor	Faulty magnetic contactor for fan	Low voltage	Faulty stepping motor	Shorted or grounded compressor	Shorted or grounded fan motor	
	☆	☆	☆	☆	☆			☆								
				☆		☆			☆	☆				☆		
				☆		☆				☆						
				☆					☆		☆				☆	
				☆		☆			☆		☆				☆	
										☆		☆				
											☆					
						☆	☆									
				☆	☆									☆		
	Test method / remedy	Test voltage	Inspect fuse type & size	Inspect connections - tighten	Test circuits with tester	Test continuity of safety device	Test continuity of thermostat / sensor & wiring	Place the temperature sensor at the central of the air inlet grille	Check control circuit with tester	Check capacitor with tester	Test continuity of coil & contacts	Test continuity of coil & contacts	Test voltage	Replace the stepping motor	Check resistance with multimeter	Check resistance with multimeter

Quick Maintenance by Error Code

If you do not have the time to test which specific parts are faulty, you can directly change the required parts according to the error code.

You can find the parts to be replaced by the error code in the following table.

Part Requiring Replacement	Error Code										
	EH00,' EH0A	EL01	EH03	EH60	EH61	EH62,' EH66	EH65	EL0C	EH01,' EH02	EH0E	EH0b
Indoor PCB	√	√	√	√	√	√	√	√	x	√	√
Outdoor PCB	x	√	x	x	x	x	x	x	x	x	x
Indoor fan motor	x	x	√	x	x	x	x	x	x	x	x
T1 sensor	x	x	x	√	x	x	x	x	x	x	x
T2 sensor	x	x	x	x	√	x	x	√	x	√	x
T2B sensor	x	x	x	x	x	√	x	x	x	x	x
T2A sensor	x	x	x	x	x	x	√	x	x	x	x
Magnet ring	x	√	x	x	x	x	x	x	x	x	x
Compressor	x	x	x	x	x	x	x	x	x	x	x
Additional refrigerant	x	x	x	x	x	x	x	√	√	√	x
Water-level switch	x	x	x	x	x	x	x	x	x	√	x
Water pump	x	x	x	x	x	x	x	x	x	√	x
Display board	x	x	x	x	x	x	x	x	x	x	√

Part Requiring Replacement	Error Code											
	EC54	EC51	EC52	EC53	EC56	EC07	PC00	PC01	PC02	PC04	PC03	FHCC,' EH03
Indoor PCB	x	x	x	x	x	x	x	x	x	x	x	√
Outdoor PCB	√	√	√	√	√	√	√	√	√	√	√	x
Outdoor fan motor	x	x	x	x	x	√	√	x	√	√	x	x
T3 sensor	x	x	√	x	x	x	x	x	x	x	x	x
T4 sensor	x	x	x	√	x	x	x	x	x	x	x	x
TP sensor	√	x	x	x	x	x	x	x	x	x	x	x
T2B sensor	x	x	x	x	√	x	x	x	x	x	x	x
Refrigerant sensor	x	x	x	x	x	x	x	x	x	x	x	√
Reactor sensor	x	x	x	x	x	x	x	√	x	x	x	x
Compressor	x	x	x	x	x	x	√	x	x	√	x	x
IPM module board	x	x	x	x	x	x	√	√	√	√	x	x
Pressure protector	x	x	x	x	x	x	x	x	x	x	√	x
Additional refrigerant	x	x	x	√	x	x	x	x	x	x	√	x

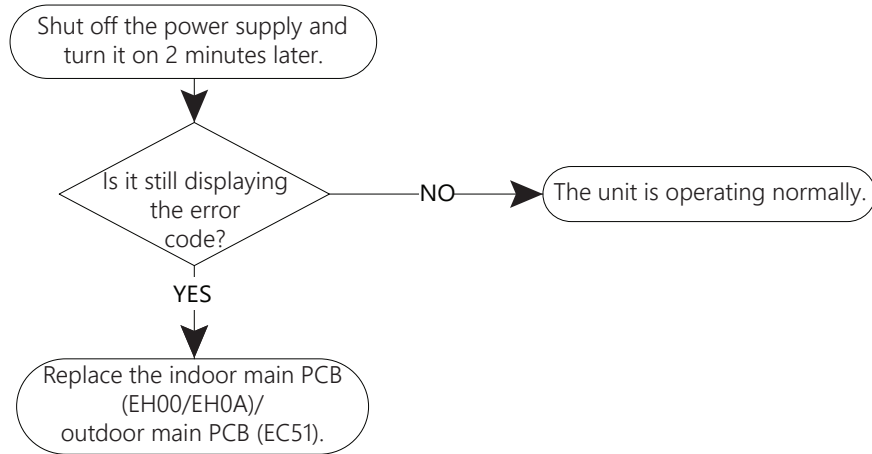
Troubleshooting by Error Code

EH00/ EH0A / EC51 (EEPROM Malfunction Error Diagnosis and Solution)

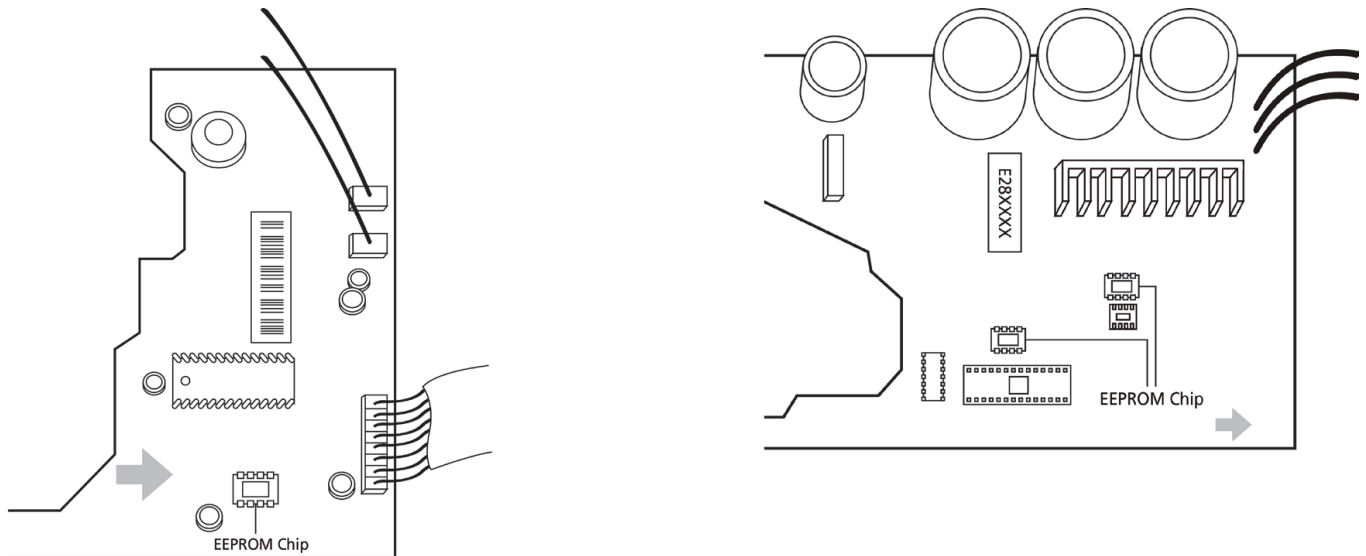
Description: The indoor or outdoor PCB main chip does not receive feedback from the EEPROM chip. Recommended parts to prepare:

- Indoor PCB
- Outdoor PCB

Troubleshooting and repair:



EEPROM Definition: A read-only memory whose contents can be erased and reprogrammed using a pulsed voltage. The location of the EEPROM chip on the indoor and outdoor PCB is shown in the following two images:



These pictures are only for reference, actual appearance may vary.

Troubleshooting and repair of compressor driven chip EEPROM parameter error and communication error between outdoor main chip and compressor driven chip are same as EC51.

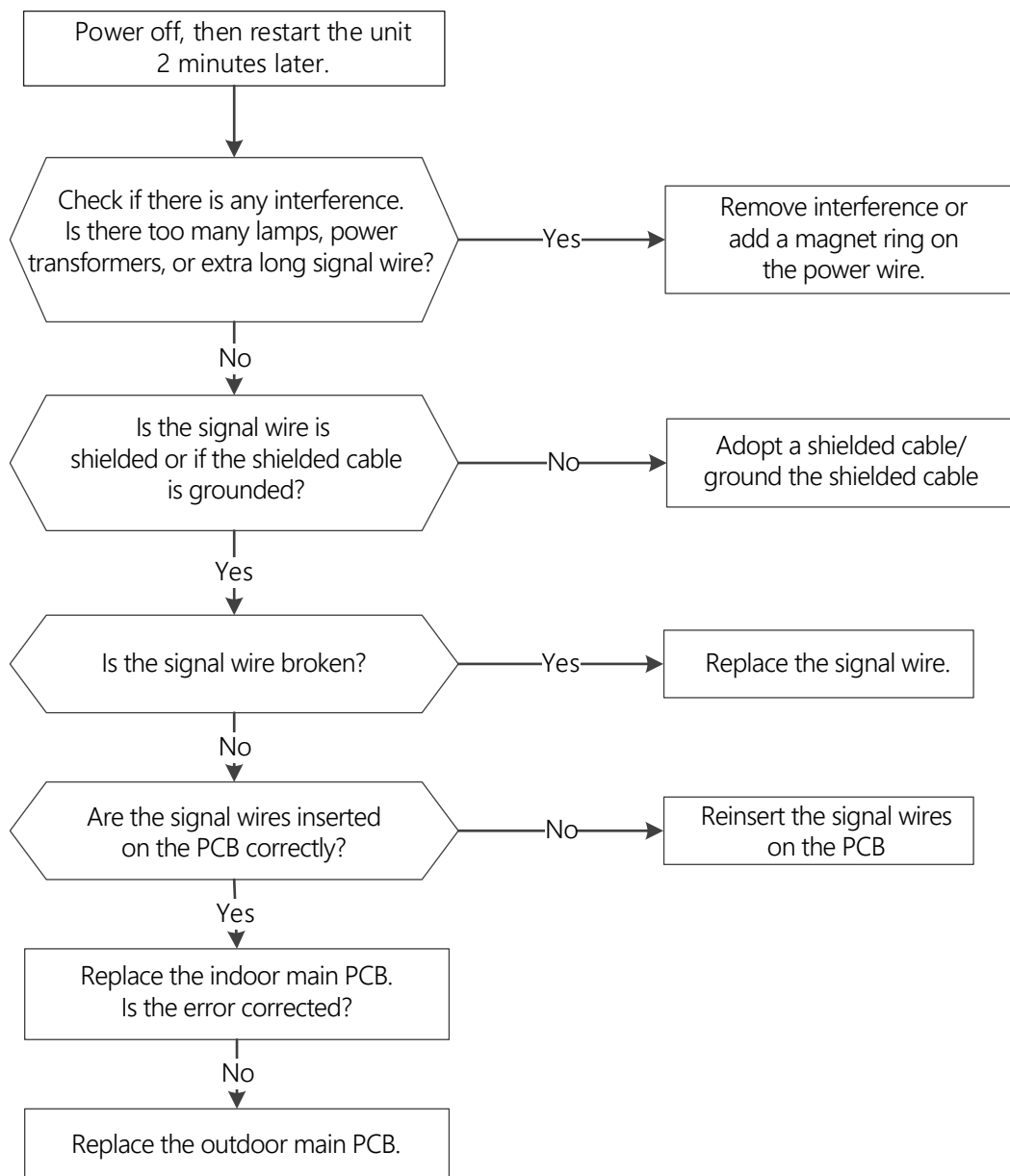
EL01 (Indoor and Outdoor Unit Communication Error Diagnosis and Solution)

Description: The indoor unit cannot communicate with the outdoor unit

Recommended parts to prepare:

- Signal wires
- Magnet ring
- Indoor PCB
- Outdoor PCB

Troubleshooting and repair:



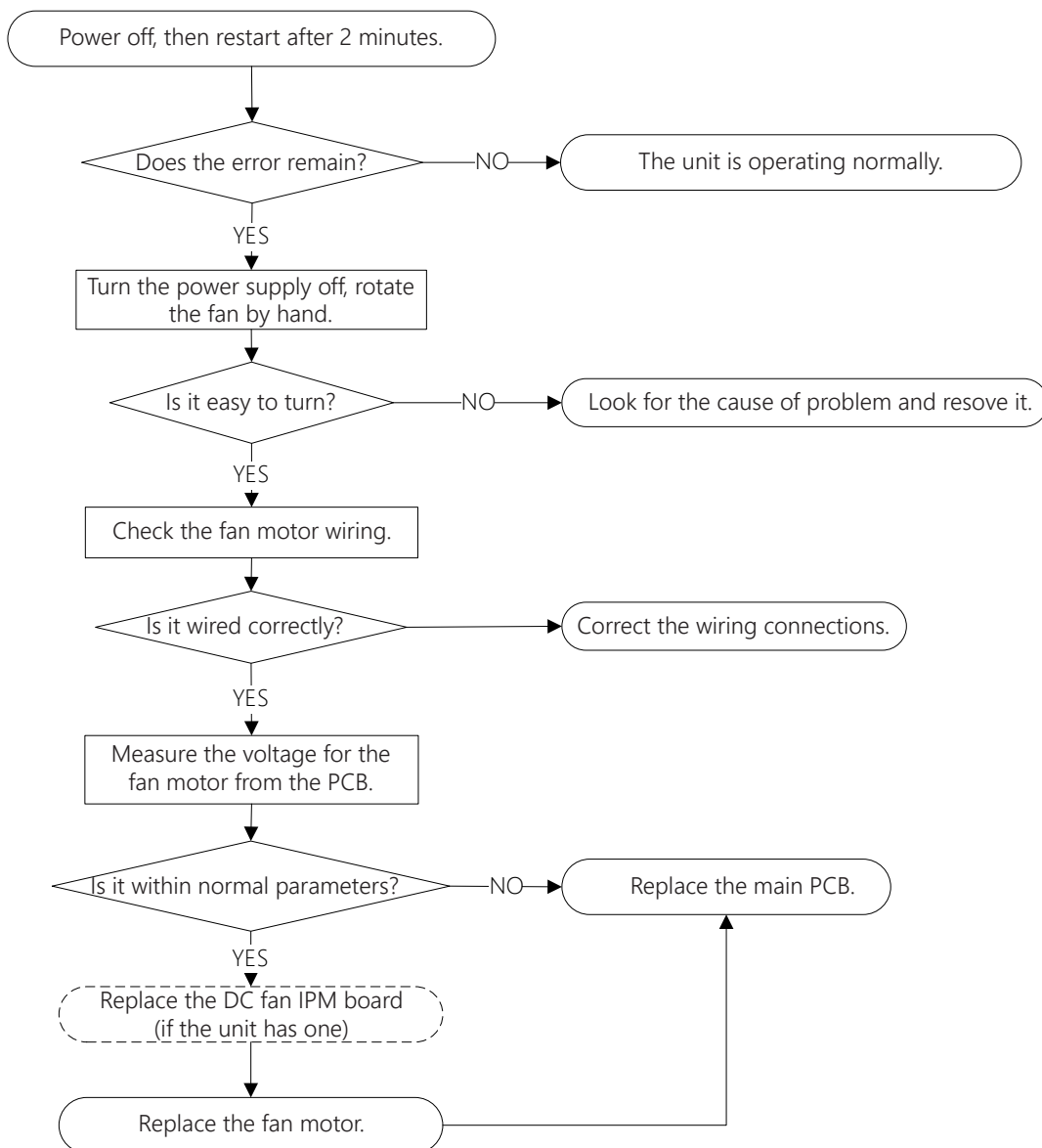
EH03 / EC07 (Fan Speed Is Operating Outside of Normal Range Diagnosis and Solution)

Description: When indoor/outdoor fan speed is kept too low or too high for a certain time, the unit ceases operation and the LED displays the failure.

Recommended parts to prepare:

- Connection wires
- Fan assembly
- Fan motor
- PCB

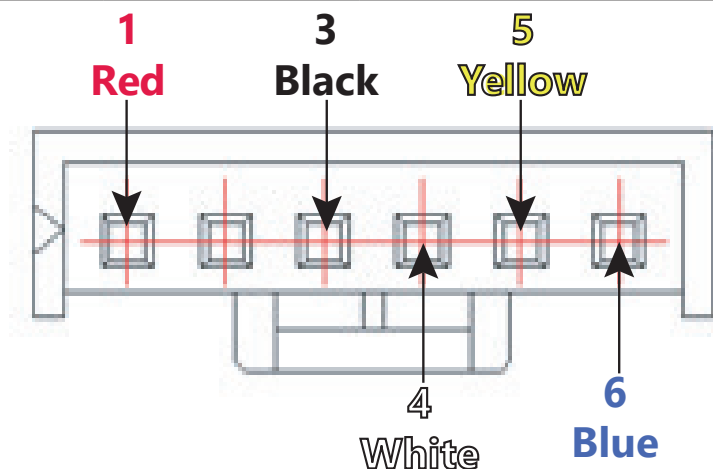
Troubleshooting and repair:



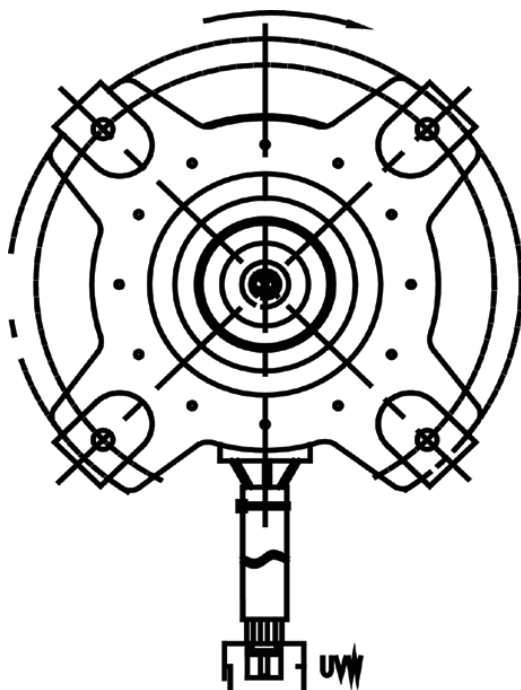
Index:**1. Indoor or Outdoor DC Fan Motor (control chip is in the fan motor)**

Power on and when the unit is on standby, measure the voltage of pin1-pin3, and pin4-pin3 in the fan motor connector. If the voltage value is not in the range shown in the table below, the PCB must have problems and need to be replaced.

No.	Color	Signal	Voltage
1	Red	VS/VM	192 V~380 V
2	---	---	---
3	Black	GND	0 V
4	White	VCC	13.5~16.5 V
5	Yellow	VSP	0~6.5 V
6	Blue	FG	13.5~16.5 V

**2. Outdoor DC Fan Motor (control chip is in outdoor PCB)**

Release the UVW connector. Measure the resistance of U-V, U-W, and V-W. If the resistance is not equal, the fan motor must have problems and must be replaced. Otherwise, the PCB must have problems and need to be replaced.



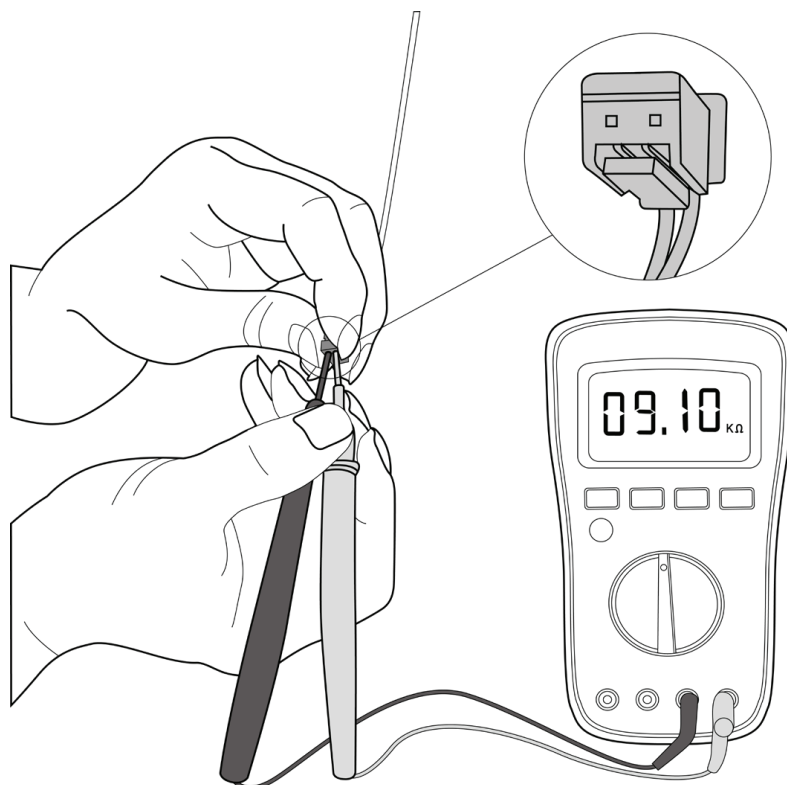
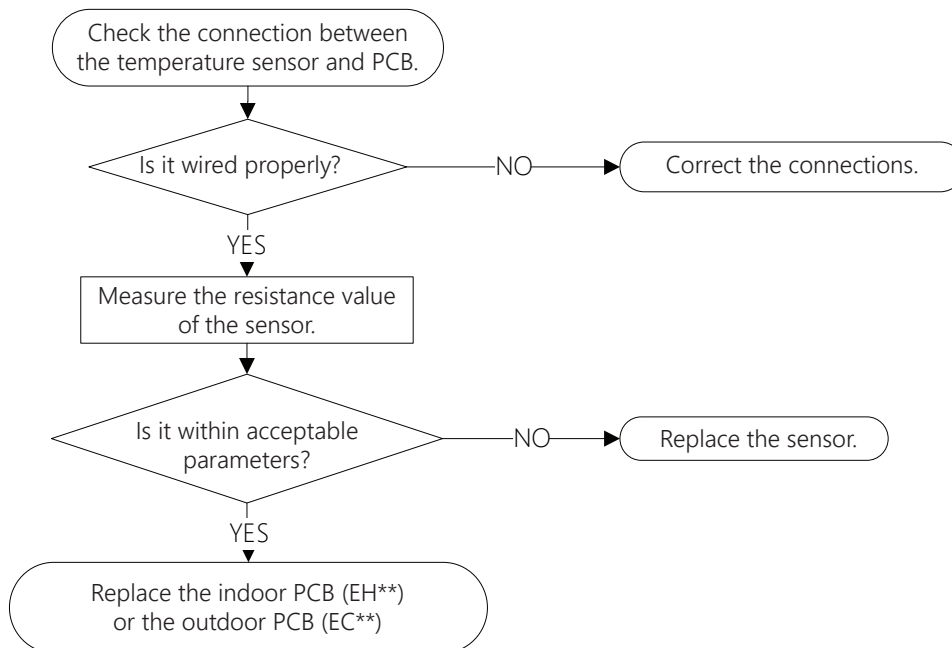
EH60/EH61/EH62/EH66/EH65/EC53/EC52/EC54/EC56 (Open Circuit or Short Circuit of Temperature Sensor Diagnosis and Solution)

Description: If the sampling voltage is lower than 0.06V or higher than 4.94V, the LED displays failure.

Recommended parts to prepare:

- Connection wires
- Sensors
- PCB

Troubleshooting and repair:



This picture and the value on the display are only for reference, actual appearance and value may vary.

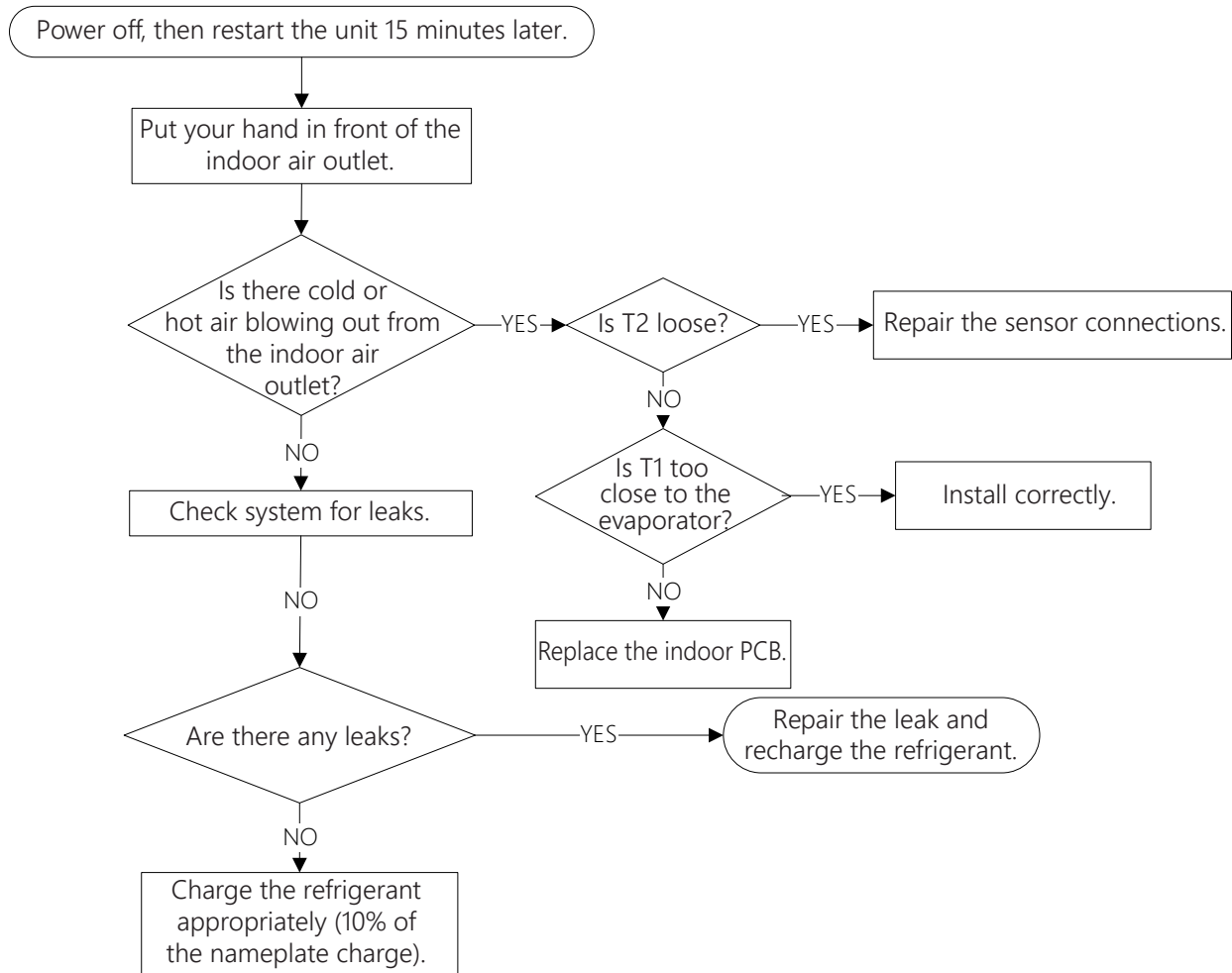
EL0C (System lacks refrigerant Diagnosis and Solution)

Description: Judging the abnormality of the refrigeration system according to the number of compressor stops and the changes in operating parameters caused by excessive exhaust temperature.

Recommended parts to prepare:

- Indoor PCB
- Additional refrigerant

Troubleshooting and repair:



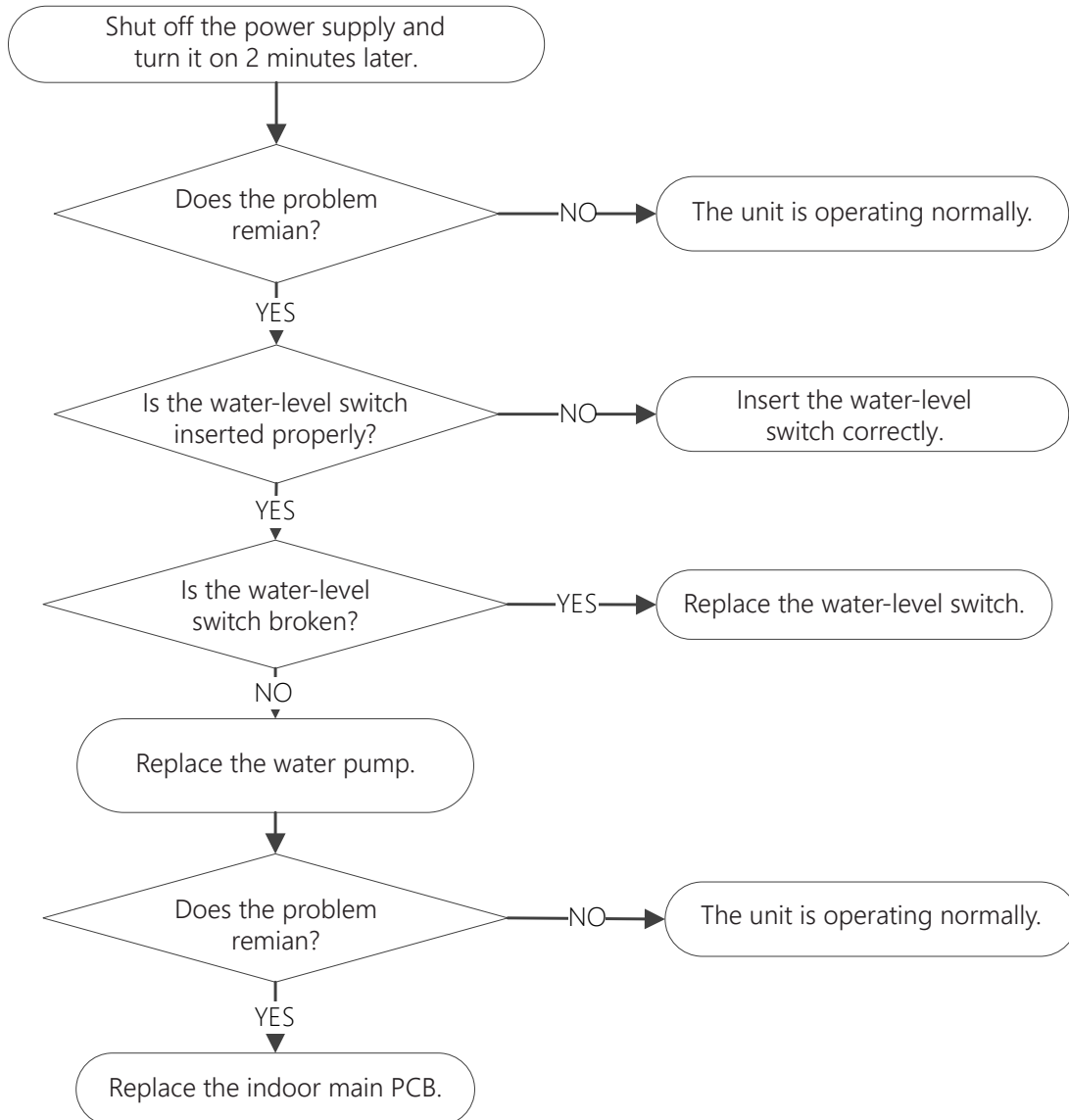
EH0E (Water-Level Alarm Malfunction Diagnosis and Solution)

Description: If the sampling voltage is not 5V, the LED displays the failure code.

Recommended parts to prepare:

- Connection wires
- Water-level switch
- Water pump
- Indoor PCB

Troubleshooting and repair:



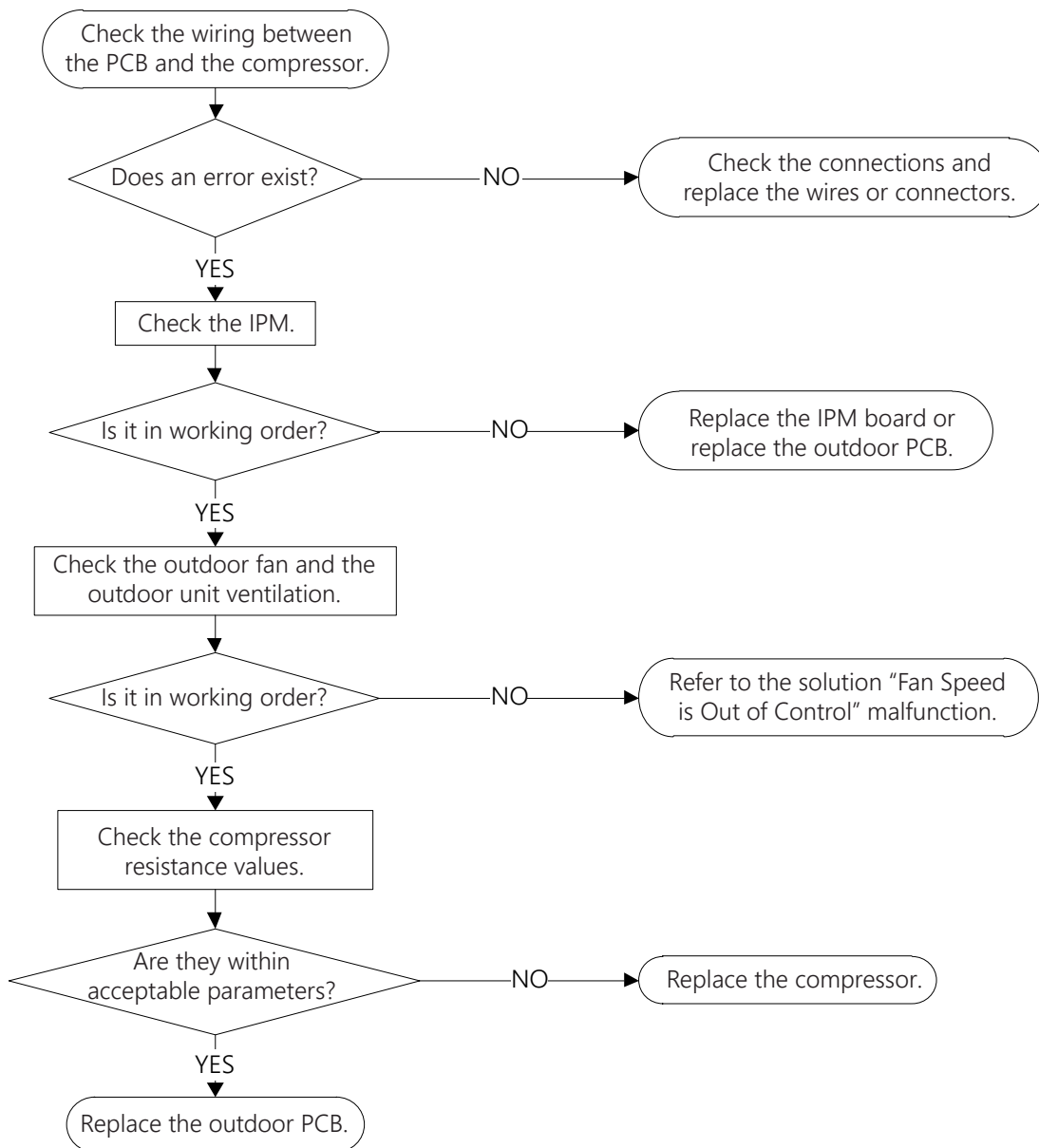
PC00 (ODU IPM module protection Diagnosis and Solution)

Description: When the voltage signal to the IPM sent to the compressor drive chip is abnormal, the display LED shows "PC00" and the AC turns off.

Recommended parts to prepare:

- Connection wires
- IPM module board
- Outdoor fan assembly
- Compressor
- Outdoor PCB

Troubleshooting and repair:



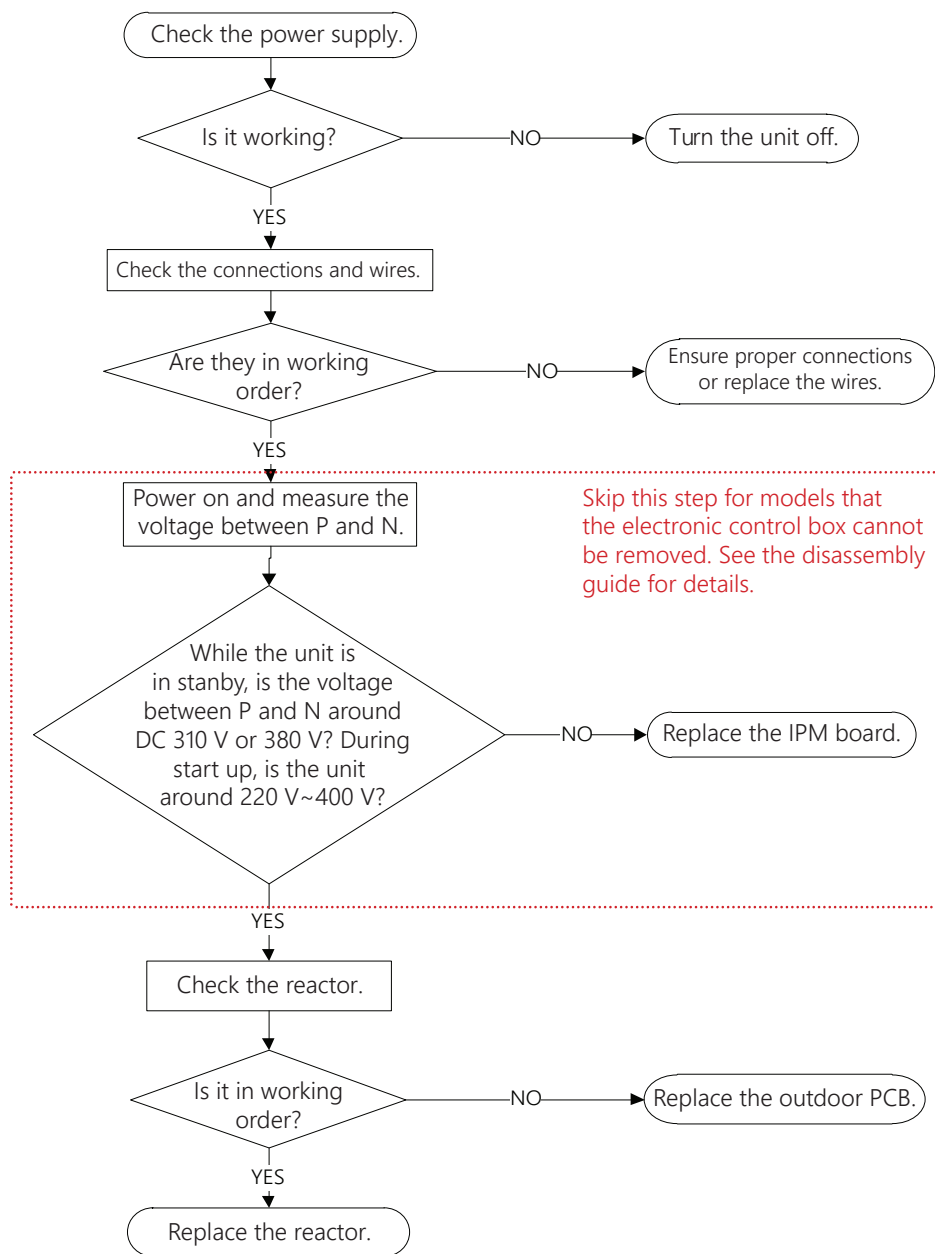
PC01 (ODU voltage protection Diagnosis and Solution)

Description: Abnormal voltage increases or decreases are detected by checking the specified voltage detection circuit.

Recommended parts to prepare:

- Power supply wires
- IPM module board
- PCB
- Reactor

Troubleshooting and repair:



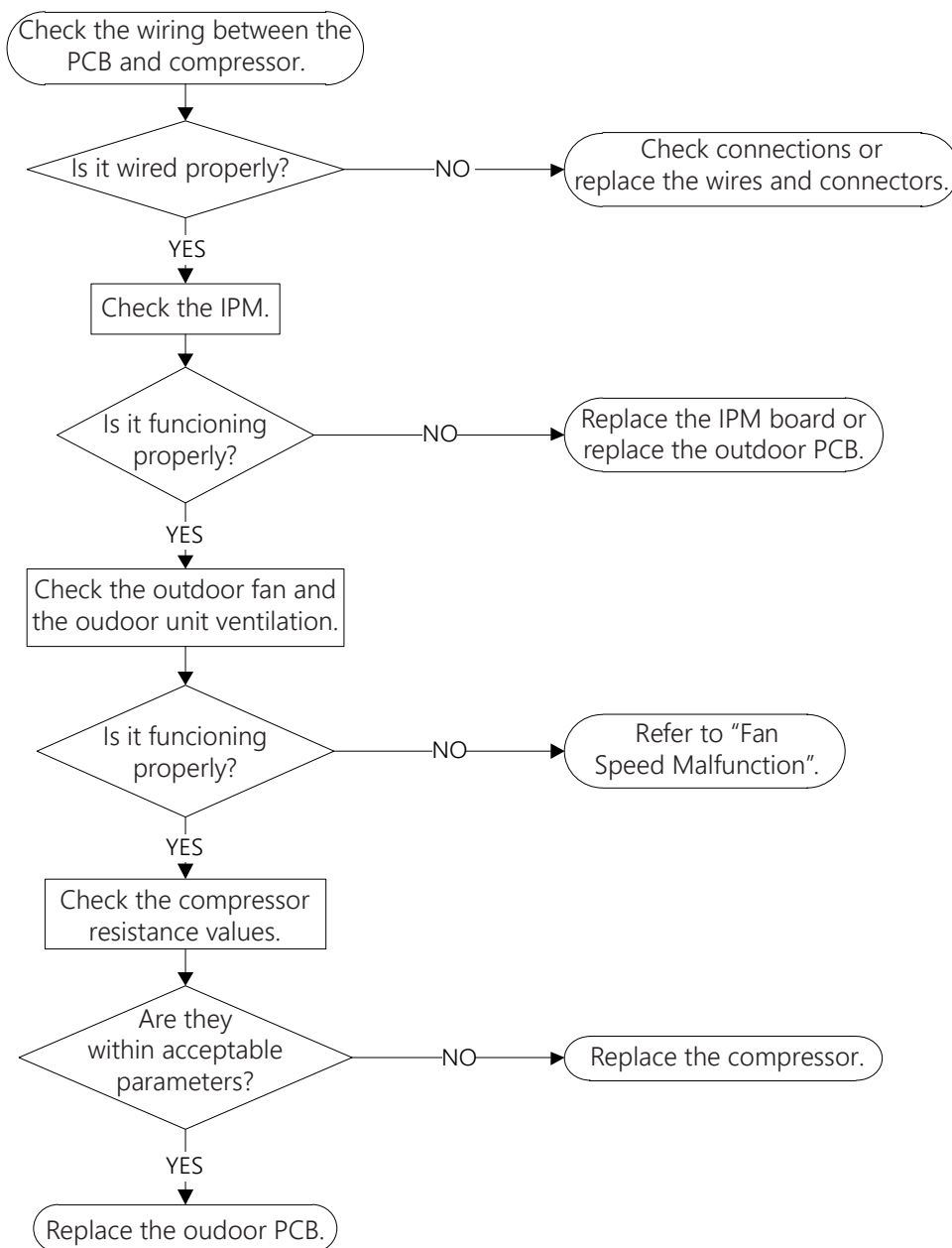
PC04 (Inverter compressor drive error Diagnosis and Solution)

Description: An abnormal inverter compressor drive is detected by a special detection circuit, including communication signal detection, voltage detection, compressor rotation speed signal detection, and so on.

Recommended parts to prepare:

- Connection wires
- IPM module board
- Outdoor fan assembly
- Compressor
- Outdoor PCB

Troubleshooting and repair:



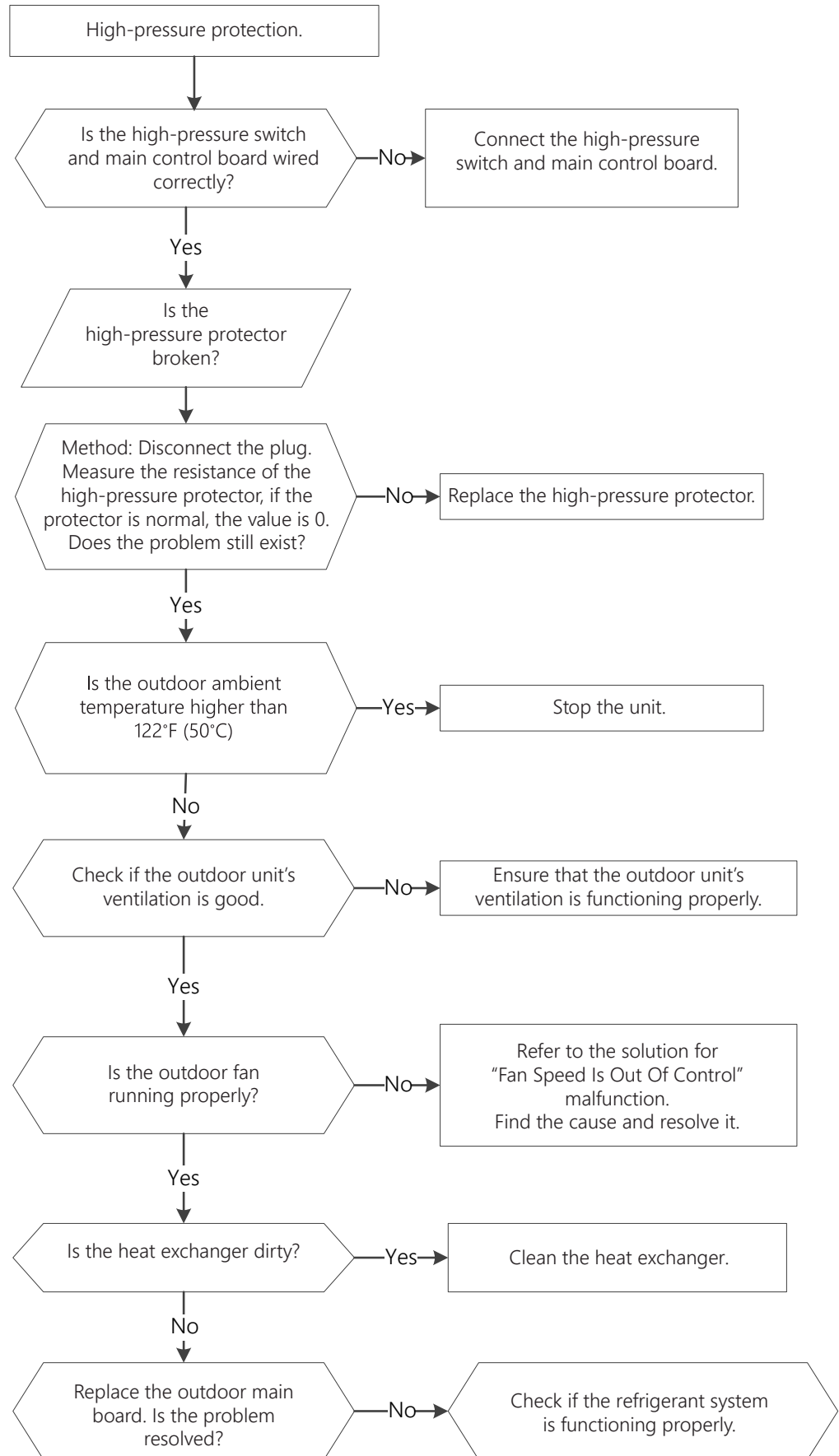
PC03 (Pressure protection (low or high pressure) Diagnosis and Solution)

Description: The outdoor pressure switch cut off the system because the high pressure is higher than 4.4 MPa or the outdoor pressure switch cut off the system because the low pressure is lower than 0.13 MPa, the LED displays the failure code.

Recommended parts to prepare:

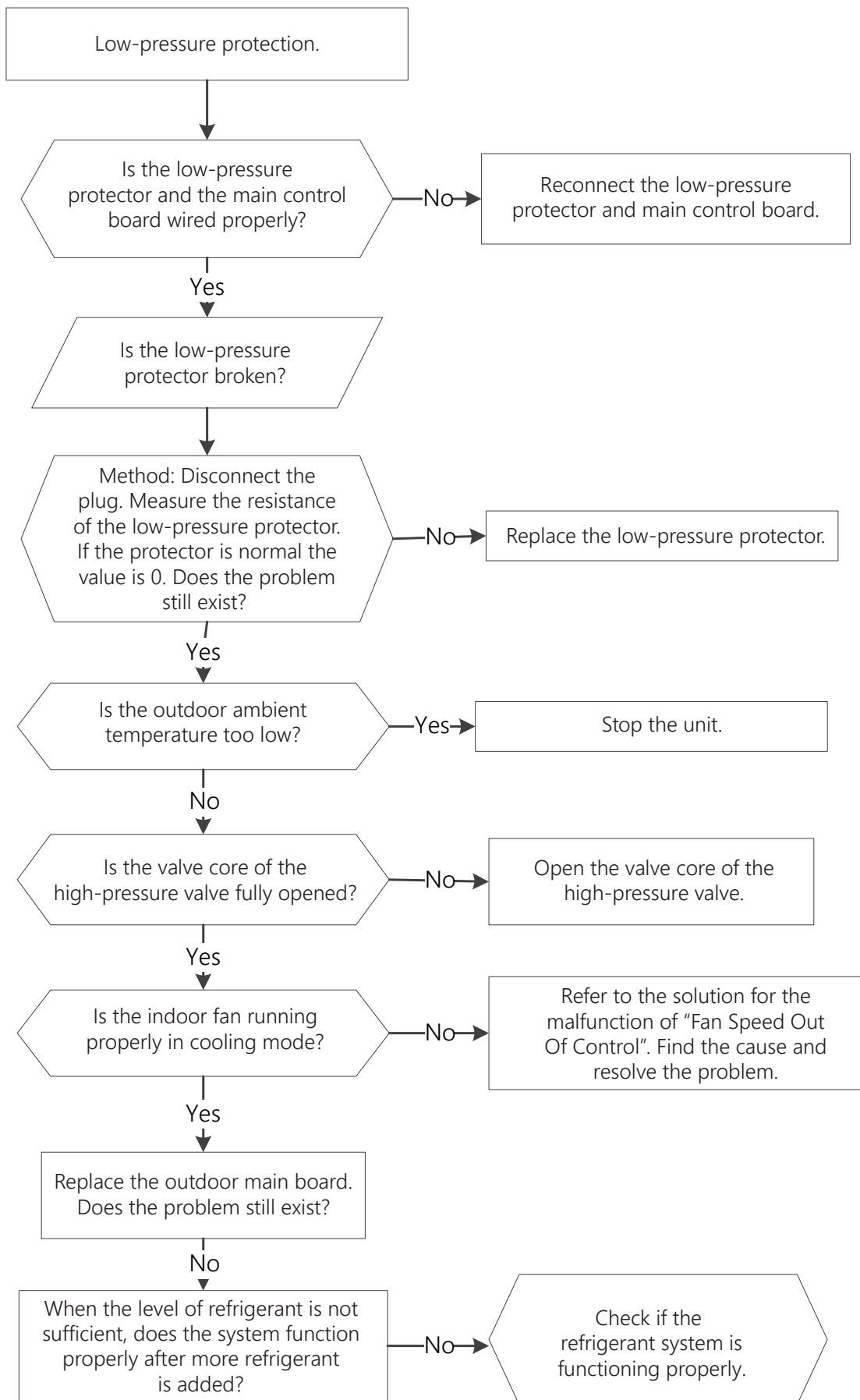
- Connection wires
- Pressure switch
- Outdoor fan
- Outdoor main PCB
- Refrigerant

Troubleshooting and repair:



Continued on the next page.

Continued from the previous page.



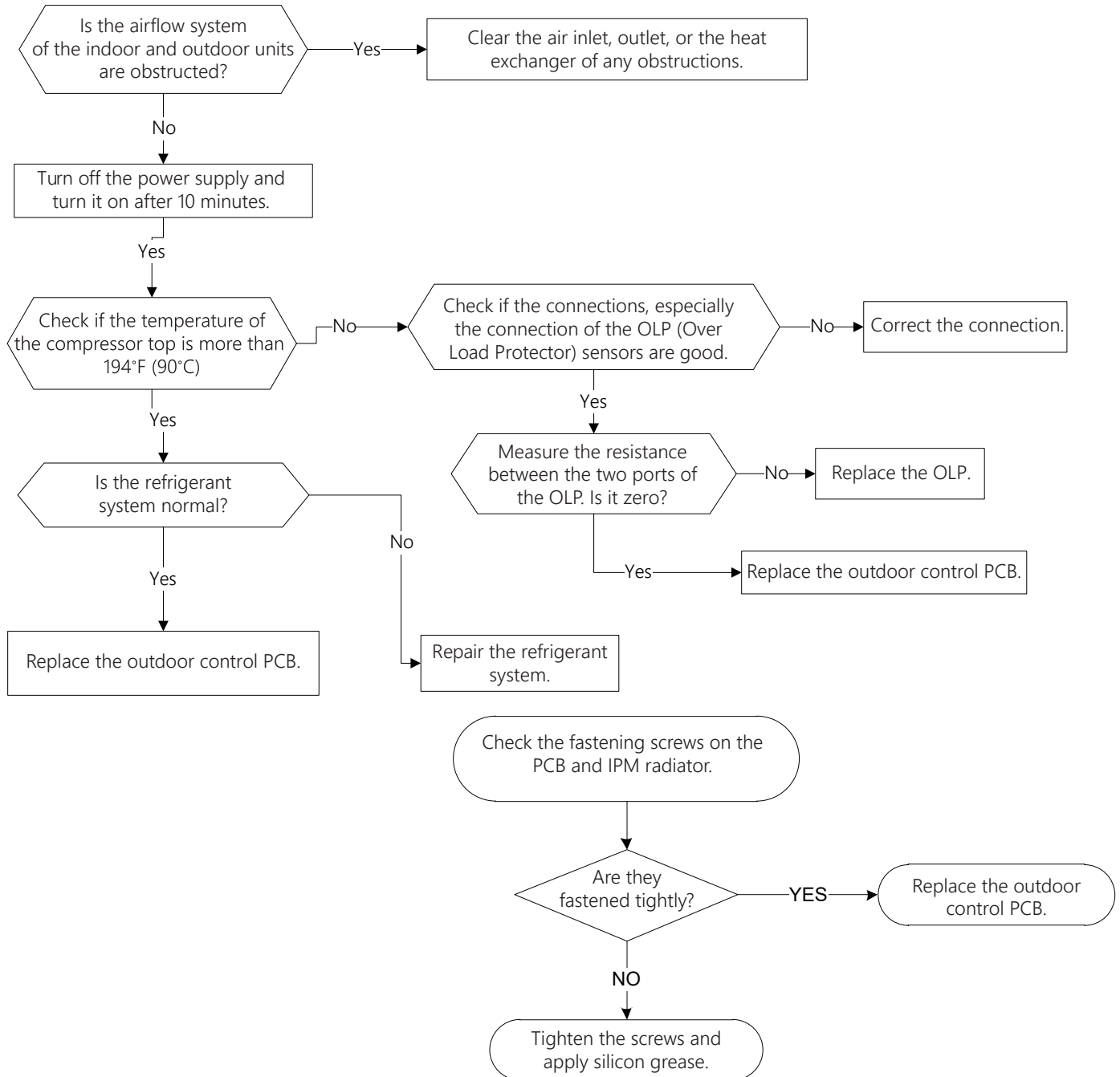
PC02(Compressor top (or IPM) temp. protection diagnosis and solution)

Description: For some models with overload protection, If the sampling voltage is not 5 V, the LED will display the failure. If the temperature of the IPM module is higher than a certain value, the LED displays the failure code. Models without overload protection should be diagnosed according to the second flowchart.

Recommended parts to prepare:

- Connection wires
- Outdoor PCB
- IPM module board
- High-pressure protector
- System blockages

Troubleshooting and repair:



PC0L (Low ambient temperature protection)

Description: It is a protection function. When the compressor is off, the outdoor ambient temperature (T4) is lower than -31°F (-35°C) for 10 seconds, the AC will stop and display the failure code.

When the compressor is on, the outdoor ambient temperature (T4) is lower than -40°F (-40°C) for 10 seconds, the AC will stop and display the failure code.

When the outdoor ambient temperature (T4) is no lower than -25.6°F (-32°C) for 10 seconds, the unit will exit protection.

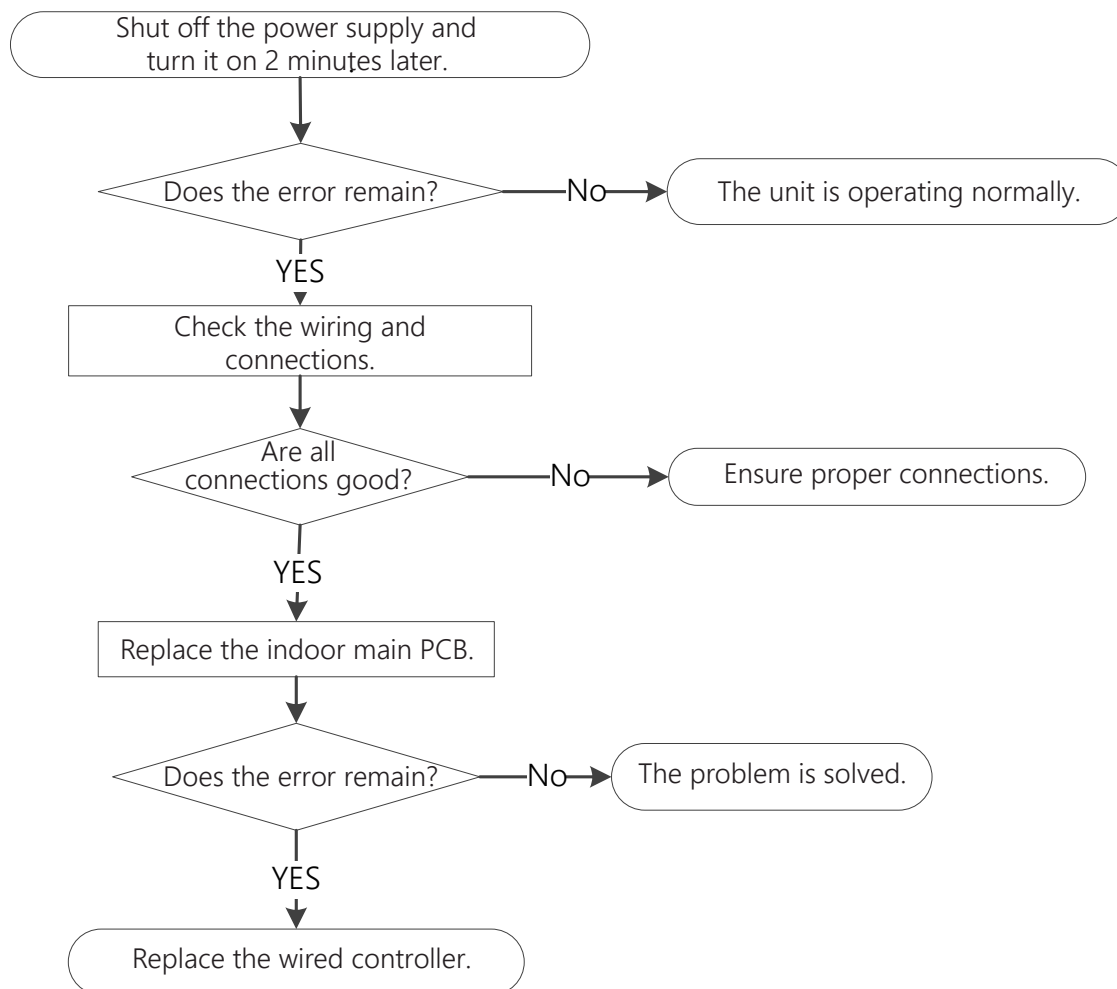
EHb3 (Communication malfunction between the wire and master control) Diagnosis and Solution

Description: If Indoor PCB does not receive feedback from the wired controller, the error is displayed on the wired controller

Recommended parts to prepare:

- Connection wires
- Indoor PCB
- Wired controller

Troubleshooting and repair:



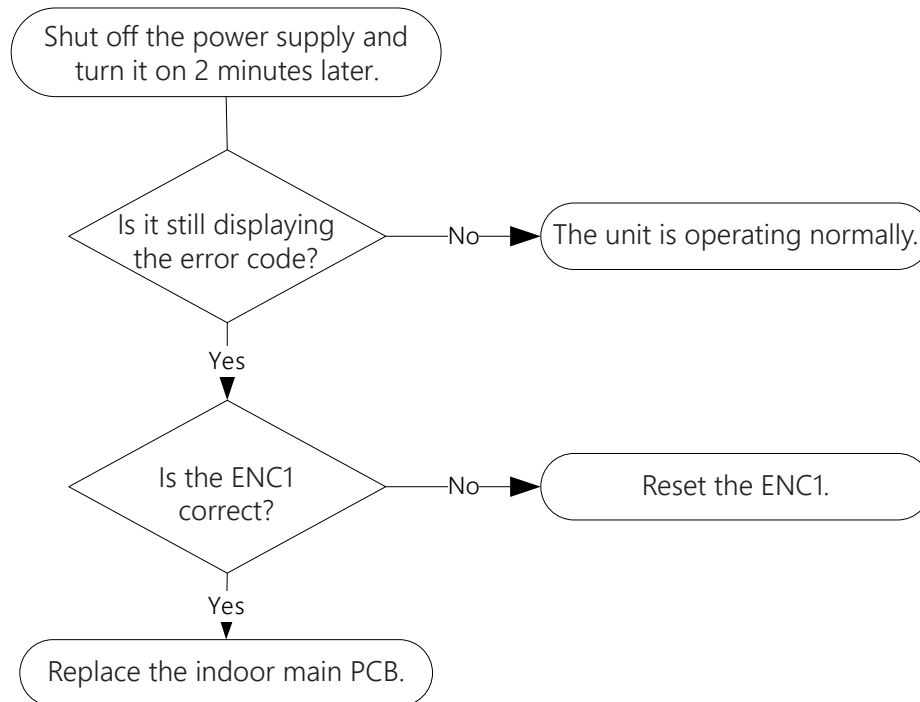
EHbA (Communication malfunction between indoor unit and external fan module)/ EH3A (External fan DC bus voltage is too low protection)/ EH3b (External fan DC bus voltage is too high fault) diagnosis and solution

Description: The indoor unit does not receive feedback from the external fan module for 150 seconds. or Indoor unit receives abnormal increases or decreases in voltage from external fan module.

Recommended parts to prepare:

- Indoor main PCB

Troubleshooting and repair:



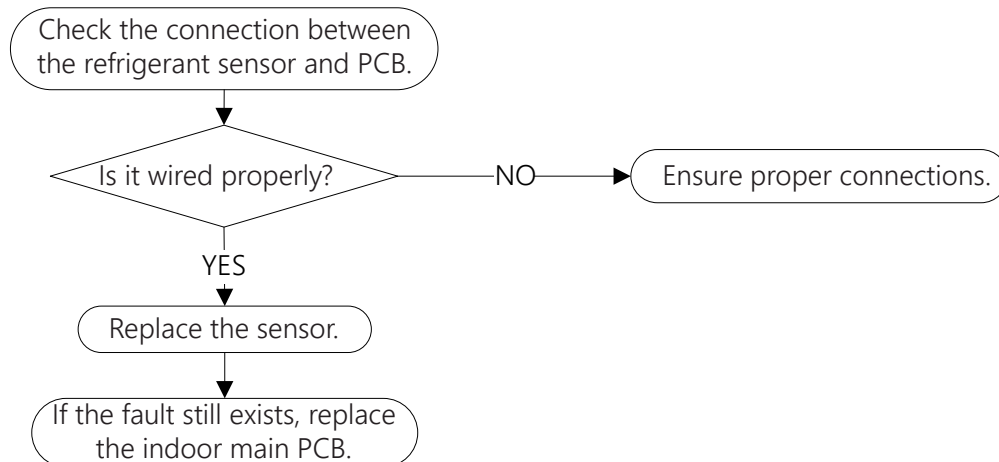
FHCC (Refrigerant sensor error) or EHC3 (Refrigerant sensor is out of range) diagnosis and solution

Description: The indoor unit receives fault signal for 10 seconds or indoor unit does not receive feedback from the refrigerant sensor for 150 seconds.

Recommended parts to prepare:

- Connection wires
- Sensors
- Indoor main PCB

Troubleshooting and repair:



EHC1 (Refrigerant sensor detects leakage) or EHC2 (Refrigerant sensor is out of range and leakage is detected) diagnosis and solution

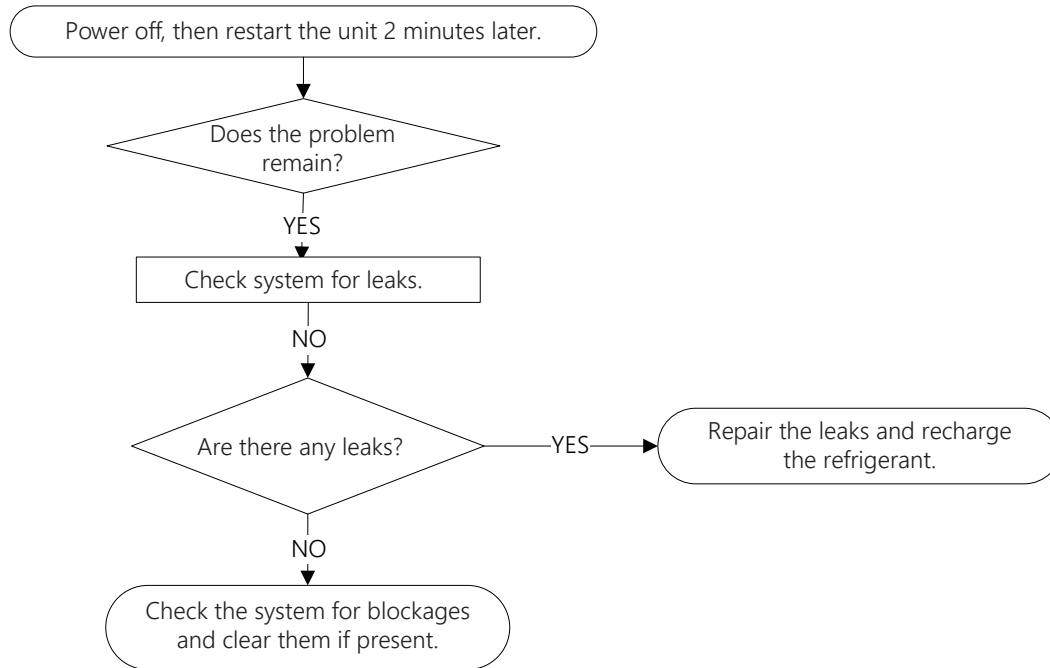
Description:

The refrigerant sensor detects a concentration higher than or equal to 10%*LFL for 10 seconds or the refrigerant sensor detects a concentration higher than or equal to 20%*LFL or the multi-model receives the refrigerant leakage protection fault sent by the outdoor unit.

Recommended parts to prepare:

- Additional refrigerant

Troubleshooting and repair:



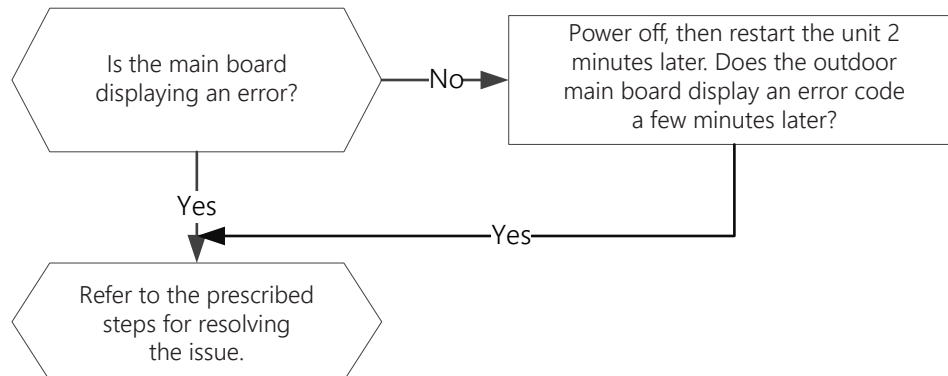
EC0d (ODU malfunction Diagnosis and Solution)

Description: The indoor unit detects the outdoor unit has an error.

Recommended parts to prepare:

- Outdoor unit

Troubleshooting and repair:



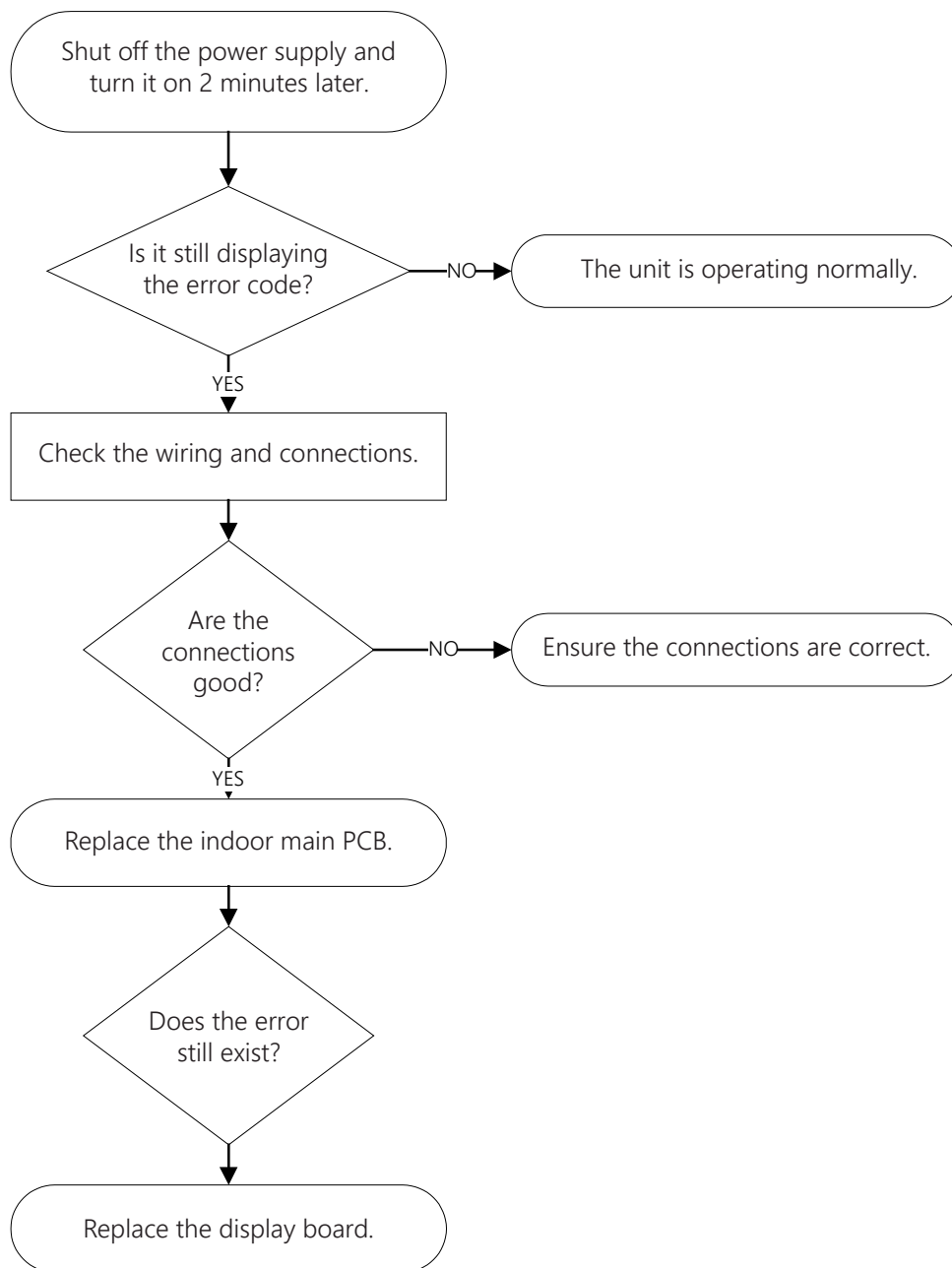
EH0b (IDU main control board and display board communication error diagnosis and solution)

Description: Indoor PCB does not receive feedback from the display board.

Recommended parts to prepare:

- Communication wire
- Indoor PCB
- Display board

Troubleshooting and repair:



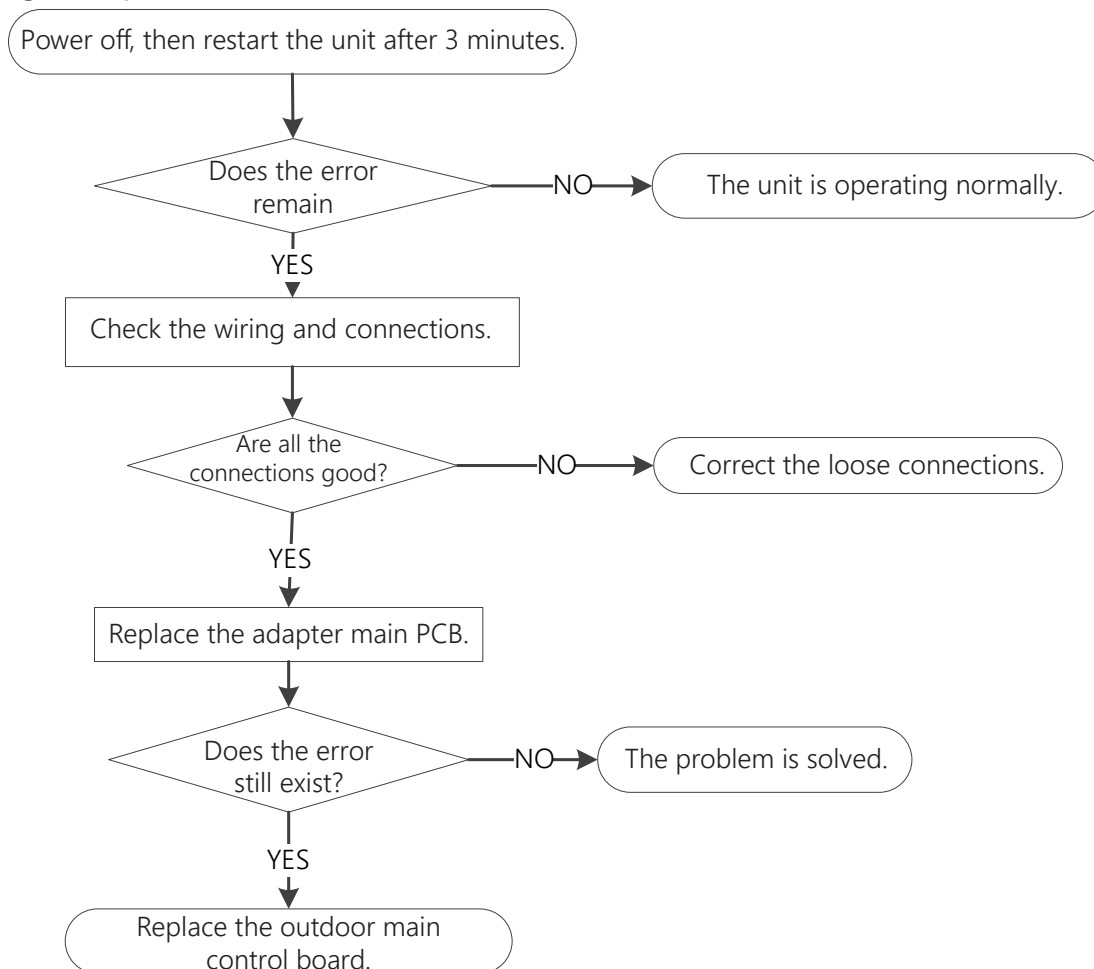
EL16 (Communication malfunction between adapter board and outdoor main board diagnosis and solution)

Description: The adapter PCB cannot detect the main control board.

Recommended parts to prepare:

- Connection wires
- Adapter board
- Outdoor main PCB

Troubleshooting and repair:



FL09 (Mismatch between the new and old platforms diagnosis and solution)

Description: The indoor and outdoor units are mismatched, the LED displays this code. Please replace the matching indoor or outdoor unit.

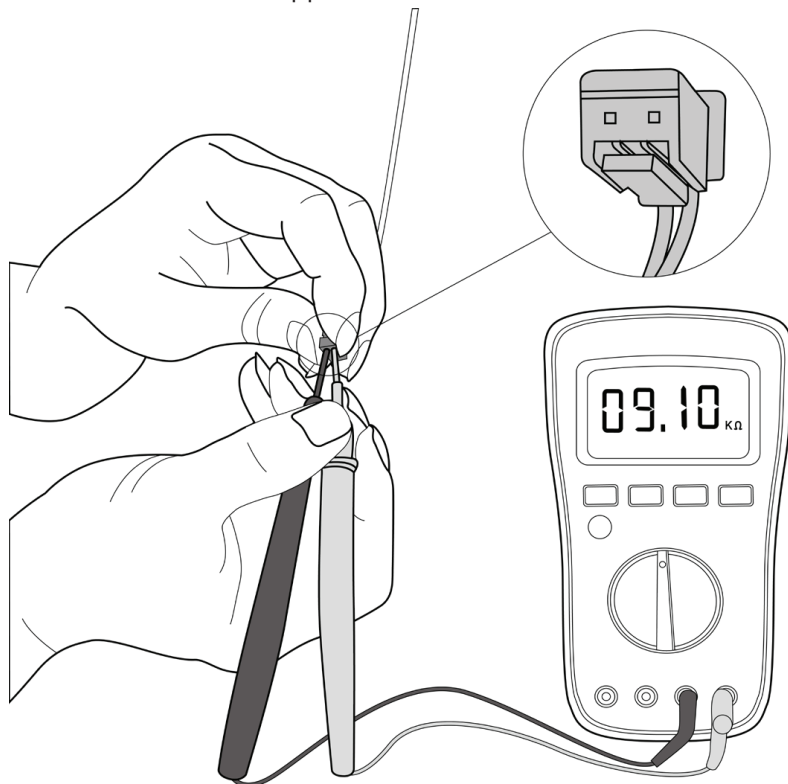
Check Procedures

Temperature Sensor Check

WARNING

Be sure to turn off all power supplies or disconnect all wires to avoid electric shock. Operate after the compressor and coil have returned to normal temperature in case of injury.

1. Disconnect the temperature sensor from the PCB (Refer to Indoor Disassembly and Outdoor Disassembly).
2. Measure the resistance value of the sensor using a multimeter.
3. Check the corresponding temperature sensor resistance value table in the Appendix.



This picture and the value on the display are only for reference, actual appearance and value may vary.

Appendix

Temperature Sensor Resistance Value Table for TP (°C --K)

°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm
-20	-4	542.7	20	68	68.66	60	140	13.59	100	212	3.702
-19	-2	511.9	21	70	65.62	61	142	13.11	101	214	3.595
-18	0	483	22	72	62.73	62	144	12.65	102	216	3.492
-17	1	455.9	23	73	59.98	63	145	12.21	103	217	3.392
-16	3	430.5	24	75	57.37	64	147	11.79	104	219	3.296
-15	5	406.7	25	77	54.89	65	149	11.38	105	221	3.203
-14	7	384.3	26	79	52.53	66	151	10.99	106	223	3.113
-13	9	363.3	27	81	50.28	67	153	10.61	107	225	3.025
-12	10	343.6	28	82	48.14	68	154	10.25	108	226	2.941
-11	12	325.1	29	84	46.11	69	156	9.902	109	228	2.86
-10	14	307.7	30	86	44.17	70	158	9.569	110	230	2.781
-9	16	291.3	31	88	42.33	71	160	9.248	111	232	2.704
-8	18	275.9	32	90	40.57	72	162	8.94	112	234	2.63
-7	19	261.4	33	91	38.89	73	163	8.643	113	235	2.559
-6	21	247.8	34	93	37.3	74	165	8.358	114	237	2.489
-5	23	234.9	35	95	35.78	75	167	8.084	115	239	2.422
-4	25	222.8	36	97	34.32	76	169	7.82	116	241	2.357
-3	27	211.4	37	99	32.94	77	171	7.566	117	243	2.294
-2	28	200.7	38	100	31.62	78	172	7.321	118	244	2.233
-1	30	190.5	39	102	30.36	79	174	7.086	119	246	2.174
0	32	180.9	40	104	29.15	80	176	6.859	120	248	2.117
1	34	171.9	41	106	28	81	178	6.641	121	250	2.061
2	36	163.3	42	108	26.9	82	180	6.43	122	252	2.007
3	37	155.2	43	109	25.86	83	181	6.228	123	253	1.955
4	39	147.6	44	111	24.85	84	183	6.033	124	255	1.905
5	41	140.4	45	113	23.89	85	185	5.844	125	257	1.856
6	43	133.5	46	115	22.89	86	187	5.663	126	259	1.808
7	45	127.1	47	117	22.1	87	189	5.488	127	261	1.762
8	46	121	48	118	21.26	88	190	5.32	128	262	1.717
9	48	115.2	49	120	20.46	89	192	5.157	129	264	1.674
10	50	109.8	50	122	19.69	90	194	5	130	266	1.632
11	52	104.6	51	124	18.96	91	196	4.849			
12	54	99.69	52	126	18.26	92	198	4.703			
13	55	95.05	53	127	17.58	93	199	4.562			
14	57	90.66	54	129	16.94	94	201	4.426			
15	59	86.49	55	131	16.32	95	203	4.294			
16	61	82.54	56	133	15.73	96	205	4.167			
17	63	78.79	57	135	15.16	97	207	4.045			
18	64	75.24	58	136	14.62	98	208	3.927			
19	66	71.86	59	138	14.09	99	210	3.812			

Other Temperature Sensors Resistance Value Table (°C – K)

°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm
-20	-4	115.266	20	68	12.643	60	140	2.358	100	212	0.630
-19	-2	108.146	21	70	12.056	61	142	2.272	101	214	0.611
-18	0	101.517	22	72	11.5	62	144	2.191	102	216	0.594
-17	1	96.342	23	73	10.973	63	145	2.112	103	217	0.577
-16	3	89.587	24	75	10.474	64	147	2.037	104	219	0.560
-15	5	84.219	25	77	10	65	149	1.965	105	221	0.544
-14	7	79.311	26	79	9.551	66	151	1.896	106	223	0.529
-13	9	74.536	27	81	9.124	67	153	1.830	107	225	0.514
-12	10	70.170	28	82	8.720	68	154	1.766	108	226	0.500
-11	12	66.090	29	84	8.336	69	156	1.705	109	228	0.486
-10	14	62.276	30	86	7.971	70	158	1.647	110	230	0.473
-9	16	58.708	31	88	7.624	71	160	1.591	111	232	0.460
-8	18	56.369	32	90	7.295	72	162	1.537	112	234	0.447
-7	19	52.244	33	91	6.981	73	163	1.485	113	235	0.435
-6	21	49.316	34	93	6.684	74	165	1.435	114	237	0.423
-5	23	46.573	35	95	6.400	75	167	1.387	115	239	0.412
-4	25	44	36	97	6.131	76	169	1.341	116	241	0.401
-3	27	41.588	37	99	5.874	77	171	1.291	117	243	0.390
-2	28	39.824	38	100	5.630	78	172	1.254	118	244	0.380
-1	30	37.199	39	102	5.397	79	174	1.213	119	246	0.370
0	32	35.202	40	104	5.175	80	176	1.174	120	248	0.360
1	34	33.327	41	106	4.964	81	178	1.136	121	250	0.350
2	36	31.564	42	108	4.763	82	180	1.100	122	252	0.341
3	37	29.906	43	109	4.571	83	181	1.064	123	253	0.332
4	39	28.346	44	111	4.387	84	183	1.031	124	255	0.324
5	41	26.878	45	113	4.213	85	185	0.998	125	257	0.316
6	43	25.495	46	115	4.046	86	187	0.967	126	259	0.308
7	45	24.193	47	117	3.887	87	189	0.937	127	261	0.300
8	46	22.566	48	118	3.735	88	190	0.908	128	262	0.292
9	48	21.809	49	120	3.590	89	192	0.880	129	264	0.285
10	50	20.718	50	122	3.451	90	194	0.852	130	266	0.278
11	52	19.689	51	124	3.318	91	196	0.826	131	268	0.271
12	54	18.718	52	126	3.192	92	198	0.801	132	270	0.264
13	55	17.801	53	127	3.071	93	199	0.777	133	271	0.258
14	57	16.934	54	129	2.959	94	201	0.754	134	273	0.251
15	59	16.116	55	131	2.844	95	203	0.731	135	275	0.245
16	61	15.342	56	133	2.738	96	205	0.709	136	277	0.239
17	63	14.618	57	135	2.637	97	207	0.688	137	279	0.233
18	64	13.918	58	136	2.540	98	208	0.668	138	280	0.228
19	66	13.263	59	138	2.447	99	210	0.649	139	282	0.222

System Pressure Table-R454B

Pressure			Temperature		Pressure			Temperature	
Kpa	bar	PSI	°C	°F	Kpa	bar	PSI	°C	°F
58.196	0.58	8.44	-60	-76	935.23	9.35	135.64	8	46.4
61.517	0.62	8.92	-59	-74.2	963.75	9.64	139.78	9	48.2
64.988	0.65	9.43	-58	-72.4	992.93	9.93	144.01	10	50
68.615	0.69	9.95	-57	-70.6	1,022.8	10.23	148.34	11	51.8
72.402	0.72	10.50	-56	-68.8	1,053.3	10.53	152.76	12	53.6
76.354	0.76	11.07	-55	-67	1,084.5	10.85	157.29	13	55.4
80.478	0.80	11.67	-54	-65.2	1,116.4	11.16	161.91	14	57.2
84.776	0.85	12.30	-53	-63.4	1149	11.49	166.64	15	59
89.256	0.89	12.95	-52	-61.6	1,182.3	11.82	171.47	16	60.8
93.923	0.94	13.62	-51	-59.8	1,216.3	12.16	176.40	17	62.6
98.781	0.99	14.33	-50	-58	1,251.1	12.51	181.45	18	64.4
103.84	1.04	15.06	-49	-56.2	1,286.6	12.87	186.60	19	66.2
109.1	1.09	15.82	-48	-54.4	1,322.8	13.23	191.85	20	68
114.56	1.15	16.61	-47	-52.6	1,359.9	13.60	197.23	21	69.8
120.25	1.20	17.44	-46	-50.8	1,397.7	13.98	202.71	22	71.6
126.15	1.26	18.30	-45	-49	1,436.3	14.36	208.31	23	73.4
132.28	1.32	19.18	-44	-47.2	1,475.7	14.76	214.02	24	75.2
138.64	1.39	20.11	-43	-45.4	1,515.9	15.16	219.85	25	77
145.24	1.45	21.06	-42	-43.6	1557	15.57	225.82	26	78.8
152.09	1.52	22.06	-41	-41.8	1,598.9	15.99	231.89	27	80.6
159.18	1.59	23.09	-40	-40	1,641.6	16.42	238.09	28	82.4
166.54	1.67	24.15	-39	-38.2	1,685.2	16.85	244.41	29	84.2
174.15	1.74	25.26	-38	-36.4	1,729.7	17.30	250.86	30	86
182.04	1.82	26.40	-37	-34.6	1775	17.75	257.43	31	87.8
190.2	1.90	27.59	-36	-32.8	1,821.3	18.21	264.15	32	89.6
198.65	1.99	28.81	-35	-31	1,868.4	18.68	270.98	33	91.4
207.39	2.07	30.08	-34	-29.2	1,916.5	19.17	277.95	34	93.2
216.42	2.16	31.39	-33	-27.4	1,965.6	19.66	285.08	35	95
225.76	2.26	32.74	-32	-25.6	2,015.5	20.16	292.31	36	96.8
235.41	2.35	34.14	-31	-23.8	2,066.5	20.67	299.71	37	98.6
245.37	2.45	35.59	-30	-22	2,118.4	21.18	307.24	38	100.4
255.67	2.56	37.08	-29	-20.2	2,171.3	21.71	314.91	39	102.2
266.29	2.66	38.62	-28	-18.4	2,225.2	22.25	322.73	40	104
277.25	2.77	40.21	-27	-16.6	2,280.2	22.80	330.70	41	105.8
288.56	2.89	41.85	-26	-14.8	2,336.1	23.36	338.81	42	107.6
300.22	3.00	43.54	-25	-13	2,393.2	23.93	347.09	43	109.4
312.24	3.12	45.28	-24	-11.2	2,451.3	24.51	355.52	44	111.2
324.63	3.25	47.08	-23	-9.4	2,510.4	25.10	364.09	45	113
337.39	3.37	48.93	-22	-7.6	2,570.7	25.71	372.84	46	114.8
350.54	3.51	50.84	-21	-5.8	2,632.1	26.32	381.74	47	116.6
364.08	3.64	52.80	-20	-4	2,694.7	26.95	390.82	48	118.4
378.02	3.78	54.83	-19	-2.2	2,758.3	27.58	400.04	49	120.2
392.37	3.92	56.91	-18	-0.4	2,823.2	28.23	409.46	50	122
407.13	4.07	59.05	-17	1.4	2,889.3	28.89	419.04	51	123.8
422.31	4.22	61.25	-16	3.2	2,956.5	29.57	428.79	52	125.6
437.92	4.38	63.51	-15	5	3025	30.25	438.72	53	127.4

System Pressure Table-R454B (continued)

Pressure			Temperature		Pressure			Temperature	
Kpa	bar	PSI	°C	°F	Kpa	bar	PSI	°C	°F
453.98	4.54	65.84	-14	6.8	3,094.7	30.95	448.83	54	129.2
470.47	4.70	68.23	-13	8.6	3,165.7	31.66	459.13	55	131
487.43	4.87	70.69	-12	10.4	3,238.1	32.38	469.63	56	132.8
504.84	5.05	73.22	-11	12.2	3,311.7	33.12	480.30	57	134.6
522.73	5.23	75.81	-10	14	3,386.7	33.87	491.18	58	136.4
541.1	5.41	78.48	-9	15.8	3,463	34.63	502.25	59	138.2
559.95	5.60	81.21	-8	17.6	3,540.7	35.41	513.52	60	140
579.31	5.79	84.02	-7	19.4	3,619.9	36.20	525.00	61	141.8
599.16	5.99	86.90	-6	21.2	3,700.5	37.01	536.69	62	143.6
619.54	6.20	89.85	-5	23	3,782.7	37.83	548.61	63	145.4
640.43	6.40	92.88	-4	24.8	3,866.3	38.66	560.74	64	147.2
661.86	6.62	95.99	-3	26.6	3,951.5	39.52	573.10	65	149
683.82	6.84	99.18	-2	28.4	4,038.3	40.38	585.69	66	150.8
706.34	7.06	102.44	-1	30.2	4,126.8	41.27	598.52	67	152.6
729.41	7.29	105.79	0	32	4,217	42.17	611.60	68	154.4
753.06	7.53	109.22	1	33.8	4,309	43.09	624.95	69	156.2
777.28	7.77	112.73	2	35.6	4,402.9	44.03	638.56	70	158
802.08	8.02	116.33	3	37.4	4,498.7	44.99	652.46	71	159.8
827.48	8.27	120.01	4	39.2	4,596.5	45.97	666.64	72	161.6
853.49	8.53	123.78	5	41	4,696.5	46.97	681.15	73	163.4
880.11	8.80	127.64	6	42.8	4,798.9	47.99	696.00	74	165.2
907.35	9.07	131.60	7	44.6	4,904.1	49.04	711.25	75	167



Important!

Product Warranty Information

The Warranty Registration below is a requirement to print a warranty certificate. You're not mandated to register your products to enjoy the Midea Standard Warranty; however, registration is highly recommended. Registering your warranty within 60 days ensures easy access to support and service when needed.

The design and specifications may change without prior notice in order to enhance the product. For detailed information, please consult your sales agency or the manufacturer. Any updates to the manual will be posted on the service website, so be sure to check for the latest version.

United States



<https://www.mideacomfort.us/registration.html>

Canada



<https://www.mideacomfortna.ca/registration.html>