

Midea Installation Manual Ceiling Mounted Air Handler

EVOX  **TREME
HEAT**

For 18,000 - 36,000 BTU Systems



NOTE

Read the entire instruction manual before starting the installation. Images are for illustration purposes only. Actual models may differ slightly.



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



Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

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Safety Considerations

It is crucial to read the Safety Precautions Before Operation and Installation. Neglecting these instructions may lead to serious damage or injury. The severity of potential damage or injuries is categorized as either a WARNING or CAUTION.

WARNING

Hazards or unsafe practices that may result in severe personal injury or death.

CAUTION

Hazards or unsafe practices may result in minor personal injury or property damage. Carefully follow the precautions because they are essential to guarantee the safety of the equipment.

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.

WARNING

State of California Proposition 65 Warning (US Only)
This product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

WARNING

Improper installation, adjustment, alteration, service, maintenance, or use can cause an explosion, fire, electrical shock, or other conditions that may cause death, personal injury, or property damage. Consult a qualified installer, service agency, distributor, or branch for information or assistance. The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with kits or accessories when installing.

IMPORTANT

Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Have a fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions in the literature and labels attached to the unit. 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

This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless
EVOX Extreme Heat Ceiling Mounted Air Handler

they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

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 installation, 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.
- If connecting power to fixed wiring, an all-pole disconnection device must be incorporated into the fixed wiring following the wiring rules.
- If the SUPPLY CORD is damaged, it must be replaced by the manufacturer, service agent, or similarly qualified Technician to avoid a hazard.



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.
- Check the electric wire, water, and gas pipeline layout inside the wall, floor, and ceiling before installation. Do not implement drilling unless you confirm safety with the user, especially for the hidden power wire. An electron probe can be used to test whether a wire is passing by at the drilling location, to prevent physical

injury or death caused by insulation broken cords.

- Excessive Weight Hazard - Use two or more people when moving and installing the unit. Failure to do so can result in back or other types of injury.
- Check the power supply before installation. Ensure that the power supply is reliably grounded following local, state, and National Electrical Codes. If not, for example, if the ground wire is detected charged, installation is prohibited before it is rectified. Otherwise, there is a risk of fire and electric shock, causing physical injury or death.
- Contact an authorized service provider for repair or maintenance of this unit. This appliance shall be installed following 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.
- The first 36 in. of supply air plenum and ductwork must be constructed of sheet metal as required by NFPA 90B. The supply air plenum or duct must have a solid sheet metal bottom directly under the unit with no openings, registers, or flexible air ducts located in it. If flexible supply air ducts are used, they may be located only in the vertical walls of the rectangular plenum, a minimum of 6 in. from the solid bottom. A metal plenum or duct may be connected to the combustible floor base, if not, it must be connected to the unit supply duct exposed to the supply air opening from the downflow unit. Exposing combustible (non-metal) material to the supply opening of a downflow unit can cause a fire resulting in property damage, personal injury, or death.

Exception warning to downflow:

Installations on concrete floor slab with supply air plenum and ductwork completely encased must be not less than 2 in. of concrete (See NFPA 90A). When using the unit with an electrical heater, the switch is used only for the electrical heater on the front of the panel.

- 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 1 m (3 ft.) 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.
- How to install the appliance to its support, please read



the information for details in the "indoor unit installation" and "outdoor unit installation" sections.

WARNING

TAKE NOTE OF FUSE SPECIFICATIONS

The air conditioner's circuit board (PCB) may be designed with a fuse to provide overcurrent protection. This fuse must be replaced with an identical component.

The specifications of the fuse are printed on the circuit board, for example: T3.15 AL/250 VAC, T5 AL/250 VAC, T3.15 A/250 VAC, T5 A/250 VAC, T20 A/250 VAC, T30 A/250 VAC, etc.

The specifications of the fuse, if equipped, are printed on the circuit board, examples of such are T5 A/250 VAC and T10 A/250 VAC.

NOTE

Only the blast-proof ceramic fuse can be used.

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 a used product, it must be processed according to national regulations.
2. Service
 - 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: EVOX Extreme Heat Ceiling Mounted Air Handler

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 0.2 oz./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).

NOTE

About Fuse Specifications

The air conditioner's circuit board (PCB) may be designed with a fuse to provide overcurrent protection. This fuse must be replaced with an identical component.

The specifications of the fuse, if equipped, are printed on the circuit board, examples of such are T5A/250VAC and T10A/250VAC.

NOTE

About Refrigerant

- A certified technician must perform product uninstallation and recycling.
- Proper record-keeping of all checks is strongly recommended when the unit is checked for leaks.

The allowed static pressure range of the air conditioner on the side refers to Table S-1.

Table S-1: Allowed Static Pressure Ranges

Model	18-24K	30-36K
The static pressure allowed by the product	≤ 0.8 in.- w.c. (200 Pa)	
Note: The maximum functional total external static pressure can not exceed 0.80 in. WC or 200 Pa. The airflow reduces significantly beyond 0.80 in. WC or 200 Pa. System design should allow for the increased resistance of filters as they become dirty.		

For R454B refrigerant charge amount and minimum room area:

The machine you purchased may be one of the types in the table below. The indoor and outdoor units are designed to be used together, and the indoor unit is connected via an air duct system to one or more rooms. Please check the machine you purchased. The height of the room cannot be less than 7.3 ft./2.2 m, and the minimum room area for operating or storage should be as specified in the following table:

Table S-2: Approved Matchups

Product Type	Capacity (208/230 V)	Air Handler Unit	Outdoor Unit
AHU Regular Heat Series	18K	MAPHE-H18B-2A	MO1BE-H18B-2A
	24K	MAPHE-H24B-2A	MO1BE-H24B-2A
	30K	MAPHE-H30B-2A	MO1BE-H30B-2A
	36K	MAPHE-H36B-2A	MO1BE-H36B-2A
AHU Extreme Heat Series	18K	MAPHE-H18B-2A	MO1HE-H18B-2A
	24K	MAPHE-H24B-2A	MO1HE-H24B-2A
	30K	MAPHE-H30B-2A	MO1HE-H30B-2A
	36K	MAPHE-H36B-2A	MO1SE-H36B-2A

Table S-3: Minimum Room Area Requirements

Mc or MREL [oz./kg]	T _{Amin} [ft. ² /m ²]	Mc or MREL [oz./kg]	T _{Amin} [ft. ² /m ²]	Mc or MREL [oz./kg]	T _{Amin} [ft. ² /m ²]	Mc or MREL [oz./kg]	T _{Amin} [ft. ² /m ²]
$\leq 62.7/1.776$	12/1.1	134/3.8	126/11.67	211.6/6.0	198/18.43	289.2/8.2	271/25.18
63.5/1.8	60/5.53	141.1/4	132/12.29	218.7/6.2	205/19.04	296.3/8.4	278/25.8
70.5/2	66/6.14	148.1/4.2	139/12.9	225.8/6.4	212/19.66	303.4/8.6	284/26.41
77.6/2.2	73/6.76	155.2/4.4	145/13.51	232.8/6.6	218/20.27	310.4/8.8	291/27.63
84.6/2.4	79/7.37	162.2/4.6	152/14.13	239.9/6.8	225/20.88	317.5/9.0	298/27.64
91.7/2.6	86/7.99	169.3/4.8	159/14.74	246.9/7.0	231/21.5	324.5/9.2	304/28.26
98.8/2.8	93/8.6	176.4/5	165/15.36	254/7.2	238/22.11	331.6/9.4	311/28.87
105.8/3	99/9.21	183.4/5.2	172/15.97	261/7.4	245/22.73	338.6/9.6	317/29.48
112.9/3.2	106/9.83	190.5/5.4	179/16.58	268.1/7.6	251/23.34	345.7/9.8	324/30.10
119.9/3.4	112/10.44	197.5/5.6	185/17.2	275.1/7.8	258/23.96	352.7/10.0	331/30.71
127/3.6	119/11.06	204.6/5.8	192/17.81	282.2/8.0	264/24.57		
Area formula	T_{Amin} is the required minimum area of the total conditioned space connected by air ducts in ft. ² /m ² Mc is the actual refrigerant charge in the system in oz./kg MREL is the refrigerant releasable charge in oz./kg hinst is the height of the bottom of the appliance relative to the floor of the room after installation. WARNING: The minimum room area or minimum room area of conditioned space is based on releasable charge and total system refrigerant charge.						

NOTE

If the actual room size does not fit the abovementioned conditions, please refer to the upper-level condition. Ex. we provide suggestions for a room size of 400 sq. ft., if the room size is 450 sq. ft., please refer to the 500 sq. ft. requirement.

When the unit detects a refrigerant leak, the minimum airflow of the indoor unit is as indicated in Table S-4:

Table S-4: Minimum Leak Airflow

Model	18K	24K	30K	36K
Nominal air volume	400 CFM (680 m ³ /h)	400 CFM (680 m ³ /h)	453 CFM (770 m ³ /h)	529 CFM (900 m ³ /h)

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.

- 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;

- 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 lessor 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 of 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

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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 of 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. Cabling

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. 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.

21. 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 are 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 that may be a POTENTIAL IGNITION SOURCE shall not be installed in the ductwork. 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 kit) 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.

Table S-5: Explanation of symbols displayed on the indoor unit or outdoor unit

	WARNING	This symbol shows that this appliance used a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	CAUTION	This symbol shows that the operation manual should be read carefully.
	CAUTION	This symbol shows that service personnel should be handling this equipment referencing the installation manual.
	CAUTION	This symbol shows that information is available such as the operating manual or installation manual.




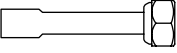
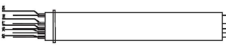


Caution: Risk of fire/flammable materials

Installation 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)	

NOTE

Some models have magnetic rings in the accessories, install them on the connective cable between the indoor unit and outdoor unit, and approach the outdoor unit.

Table A-2: Optional Accessories

QTY.	Part Name	Part Image
1	Remote controller	
2	Battery	
1	Wired remote control	

NOTE

The wired system control functions as an IR receiver for the handheld remote, if the remote is not used it must be retained with the indoor unit to adjust parameters, and for troubleshooting.

Unpacking

Carefully unpack the unit and inspect the contents for damage. If any damage is found at the time of delivery, proper notification and claims should be made with the carrier. Check the rating plate to ensure the model number and voltage, plus any kits match with what you ordered.

 **CAUTION**

The manufacturer should be notified within 5 days of any discrepancy or parts shortage.

1. Remove the upper foam.

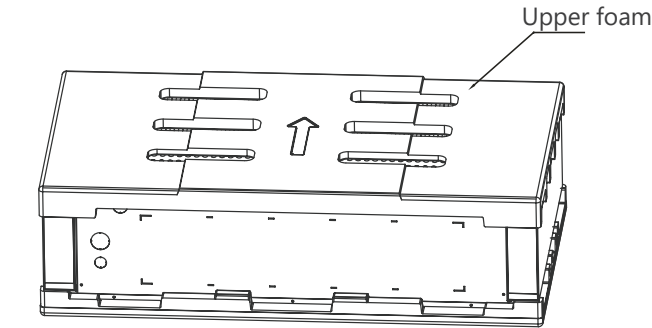


Fig. A-1: Remove the Upper Foam

2. Unscrew the 12 screws of the air inlet channel panel.

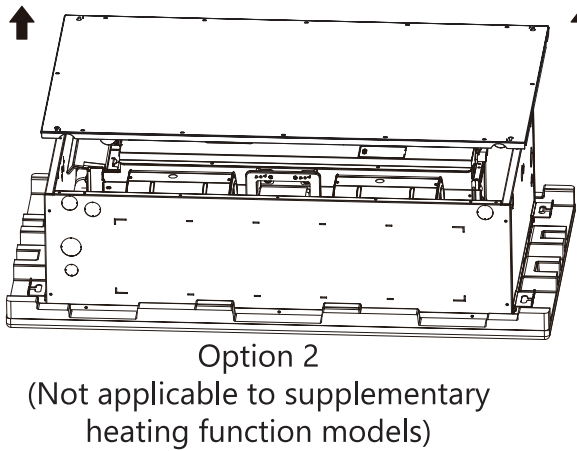
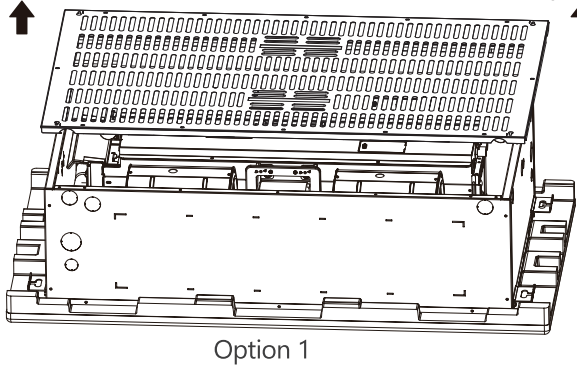


Fig. A-2: Open air inlet channel panel

3. For models with packing foam and pearl cotton, the packing foam and pearl cotton need to be removed.

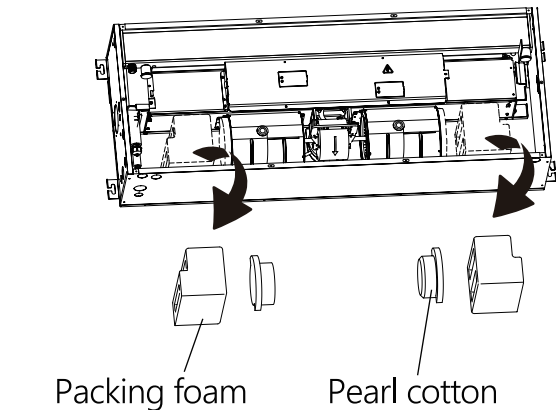
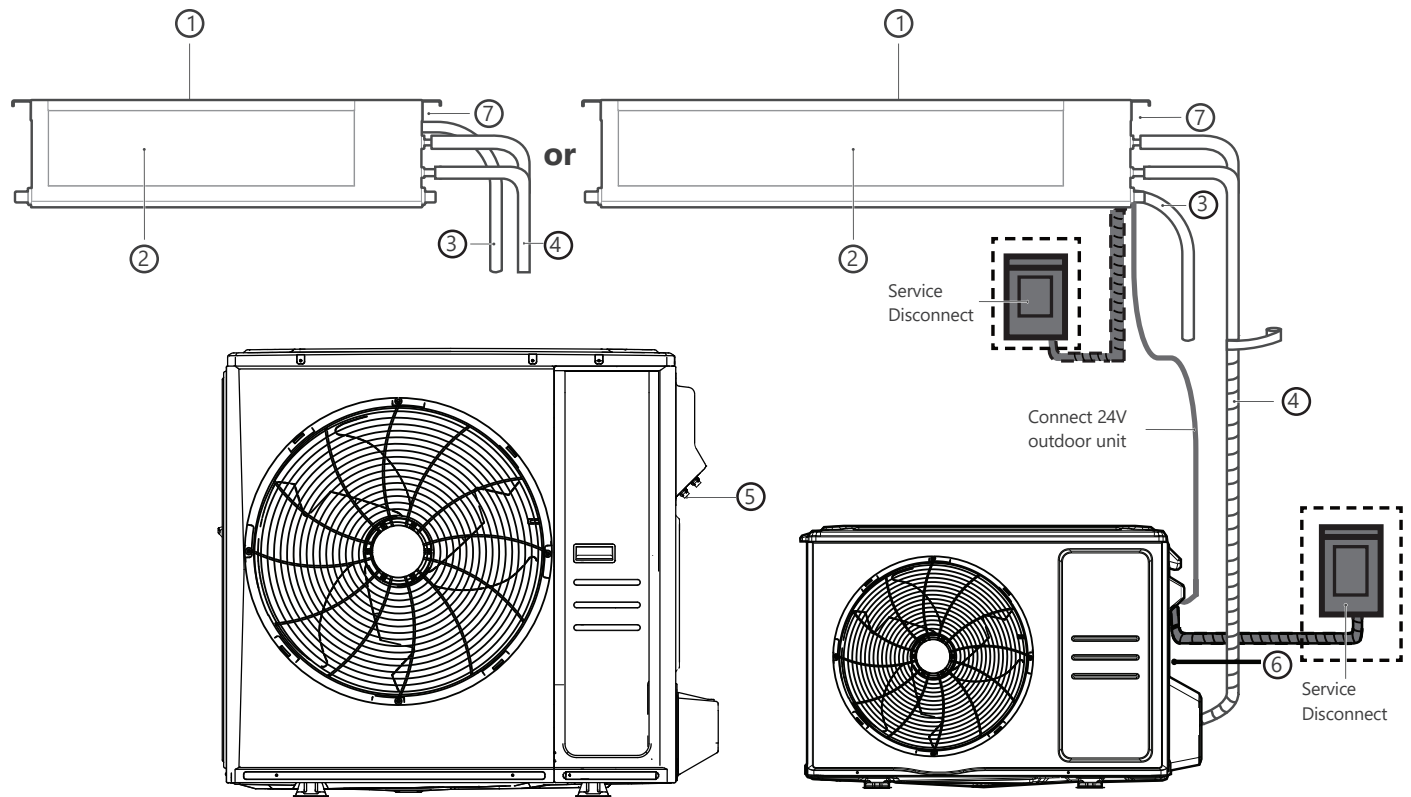


Fig. A-3: Remove Packing Foam and Cotton
EVOX Extreme Heat Ceiling Mounted Air Handler

Product Overview



NOTE: Service Disconnect shall be selected as required by Local, regional, and national codes.

- | | | |
|--------------|--------------------|----------------------------|
| ① Air inlet | ④ Connecting pipe | ⑦ Electric control cabinet |
| ② Air outlet | ⑤ Outdoor Unit (A) | |
| ③ Drainpipe | ⑥ Outdoor Unit (B) | |

Fig. P-1: Component Location

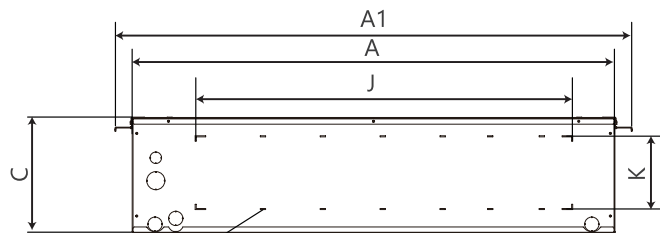
NOTE

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

The installation must be performed following the requirements of local and national standards. The installation may be slightly different in different areas.

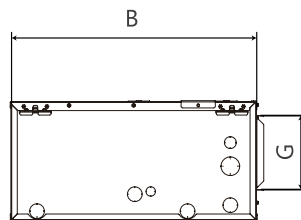
Dimensions

Air outlet dimensions



Optional return air cutout
(Not applicable to supplementary
heating function models)

KNOCKOUT FOR DUCTED RETURN
(Requires remote filter grille - field supplied)
(Ducted return requires non-louvered panel)



Air inlet dimensions

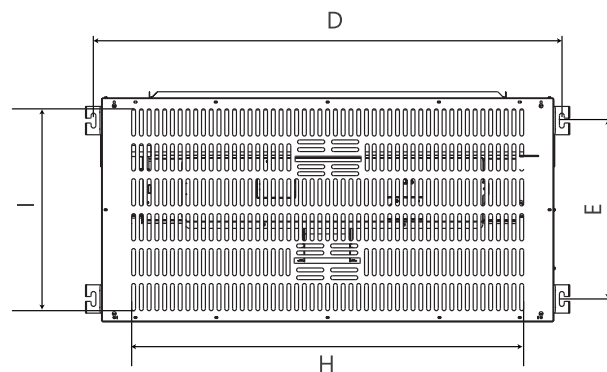
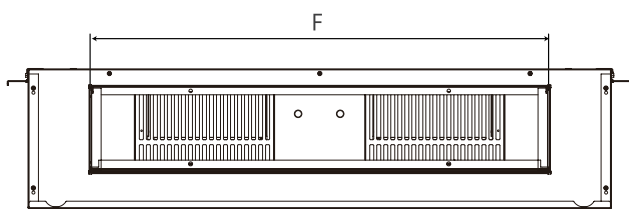


Fig. D-1: Unit Dimensions

Please refer to the diagrams to locate the four positioning screw bolt holes on the ceiling. Be sure to mark the places where you will drill ceiling hook holes.

Table D-1: Dimensions

Unit: inches (mm)

Model	Outline Dimension						Size Of Mounted Lug		Air Outlet Opening Size		Air Return Opening Size	
	A	A1	B	C	J	K	D	E	F	G	H	I
18K (53)	39-15/16 (1015)	43-1/4 (1098)	23-3/8 (593)	10-15/16 (278)	29-15/16 (761)	7 (178)	41-5/8 (1057)	18-1/8 (460)	30-5/16 (769)	6-7/8 (174)	38-3/8 (975)	21-1/8 (536)
24K (70)	45-7/8 (1165)	46-7/16 (1180)	23-3/8 (593)	10-15/16 (278)	35-7/8 (911)	7 (178)	47-1/2 (1207)	18-1/8 (460)	36-3/16 (919)	6-7/8 (174)	44-5/16 (1125)	21-1/8 (536)
30K (88)	52 (1320)	55-1/4 (1403)	23-3/8 (593)	10-15/16 (278)	42 (1066)	7 (178)	53-5/8 (1362)	18-1/8 (460)	42-5/16 (1074)	6-7/8 (174)	50-3/8 (1280)	21-1/8 (536)
36K (105)	58-7/8 (1495)	62-1/8 (1578)	23-3/8 (593)	10-15/16 (278)	48-7/8 (1241)	7 (178)	60-1/2 (1537)	18-1/8 (460)	49-3/16 (1249)	6-7/8 (174)	57-1/4 (1455)	21-1/8 (536)

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



The unit can be installed in two different airflow configurations.



Installation Requirements

NOTE

Before installing the indoor unit, you must choose an appropriate location. The following are standards that will help you choose an appropriate location for the unit.

⚠ WARNING

DO NOT INSTALL IN THE FOLLOWING LOCATIONS:



- Rooms with high humidity, such as bathrooms or laundry rooms
- Areas with caustic gases in the air, such as hot springs.



- Areas with strong electromagnetic waves.
- Areas that experience power fluctuations, such as factories



- Coastal areas with high salt content in the air.



- Areas with oil drilling or fracking.



- Areas that store flammable materials or gas.
- Kitchens that use natural gas



- Areas where there may be detergent or other corrosive gases in the air, such as bathrooms, or laundry rooms.



- Areas where the air inlet and outlet may be obstructed.
- Enclosed spaces, such as cabinets



- The danger of explosion. Keep flammable materials and vapors, such as gasoline, away from the air handler.

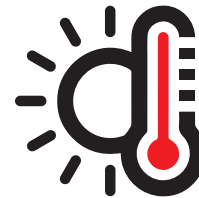
⚠ WARNING

THE UNIT MUST BE INSTALLED IN A LOCATION THAT MEETS THE FOLLOWING REQUIREMENTS:



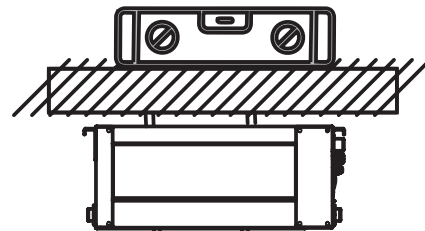
Ample Room

- Enough room for installation and maintenance.
- Enough room for the connecting pipe and drainpipe.



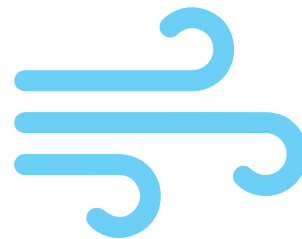
Away From Heat

There is no direct radiation from heaters.



Must Support the Weight of the Indoor Unit

The ceiling is horizontal, and its structure can sustain the weight of the indoor unit.



Unrestricted Airflow

The air inlet and outlet are not blocked.

NOTE

Models with a cooling capacity of 18,000 Btu only apply to one room.

Installation

Step 1 - Hang the Unit

1. Please turn the product face down and lift the mounting bracket onto the 4 pre-assembled suspension screws, locking them with nuts.

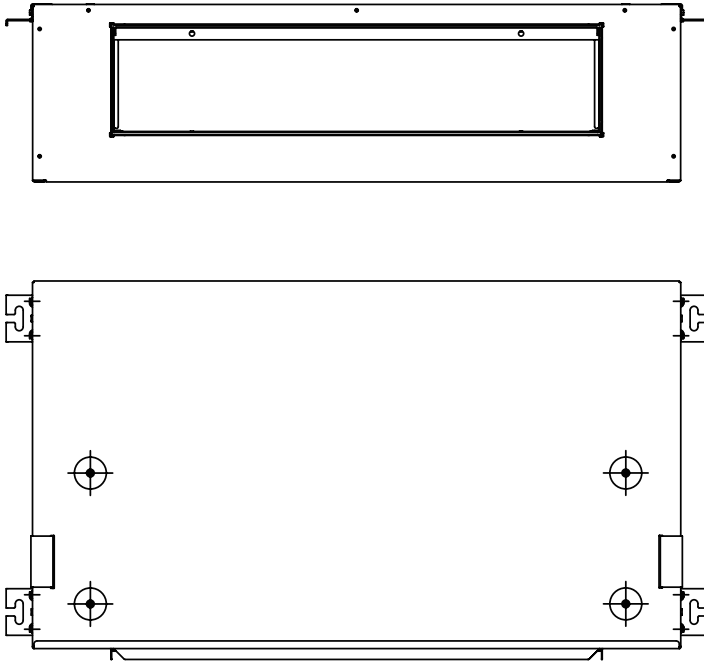


Fig. 1-1: Mounting Bracket Location

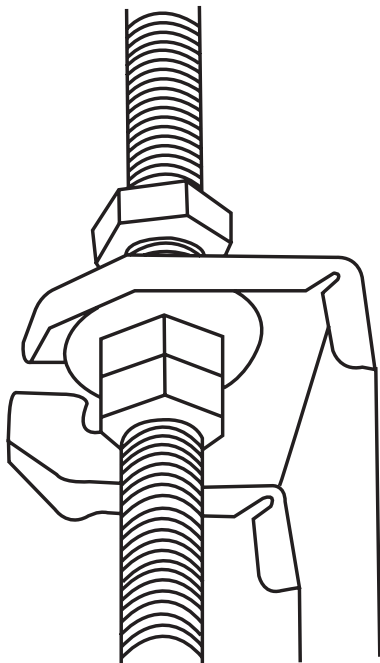


Fig. 1-2: Tighten the Suspension Bolts

2. Adjust the level for correct drainage.

Step 2 - Drain Piping

Connect The Drainpipe

The drainpipe is used to drain water away from the unit. Improper installation may cause unit and property damage

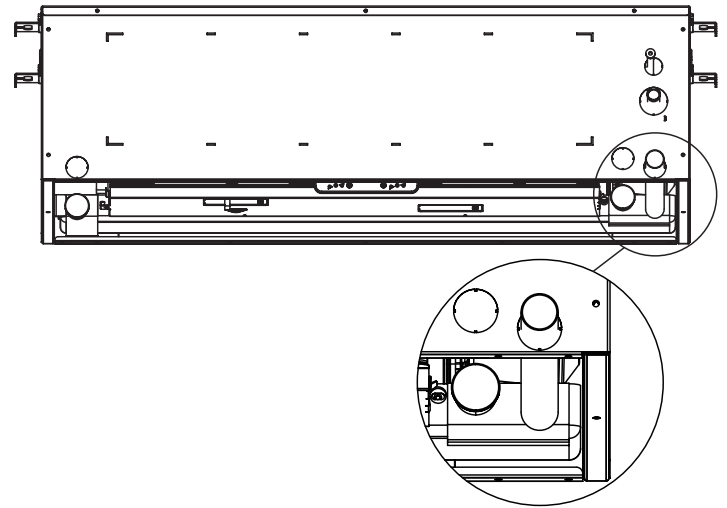


Fig. 2-1: Drainpipe Connections

⚠ CAUTION

- Insulate all piping to prevent condensation, which could lead to water damage.
- If the drainpipe is bent or installed incorrectly, water may leak and cause a water-level switch malfunction.
- In HEAT mode, the outdoor unit will discharge water. Ensure the drain hose is placed appropriately to avoid water damage and slippage.
- **DO NOT** pull the drainpipe forcefully. This could disconnect it.

NOTE

Purchasing Pipes

Installation requires a polyethylene tube (exterior diameter = 3.7-3.9 cm, interior diameter = 3.2 cm), which can be obtained at your local hardware store or dealer.

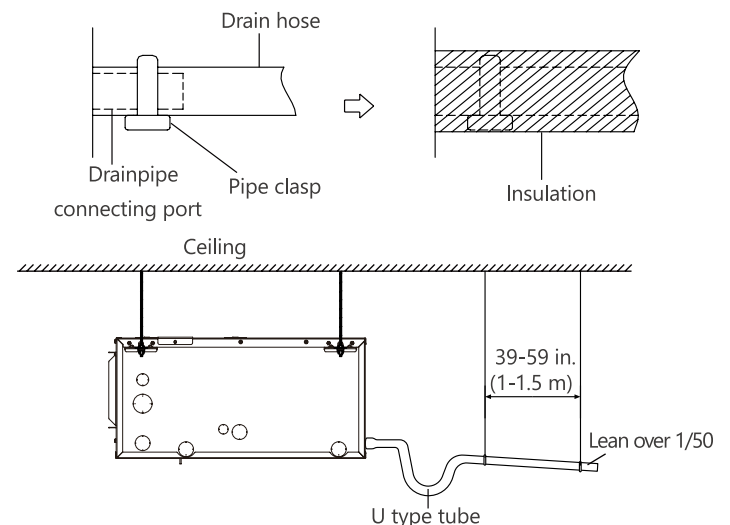


Fig. 2-2: Attach the Drainhose

Indoor Drainpipe Installation

1. Attach the mouth of the drain hose to the unit's outlet pipe. Sheath the mouth of the hose and clip it firmly with a pipe clasp.
2. Cover the drainpipe with heat insulation to prevent condensation and leakage.
3. These units operate with negative pressure at the drain connections and a drain trap is required. The trap needs to be installed as close to the unit as possible. Make sure the top of the trap is below the connection to the drain pan to allow complete drainage of the pan.
4. **DO NOT** pull the drainpipe forcefully. This could disconnect it.

NOTE

- When using an extended drainpipe, tighten the indoor connection with an additional protection tube. This prevents it from pulling loose.
- The drainpipe should slope downward at a gradient of at least 1/100 to prevent water from flowing back into the air conditioner.
- To prevent the pipe from sagging, space hanging wires every 39-59 in. (1-1.5 m).
- If the outlet of the drainpipe is higher than the body's pump joint, use a lift pipe for the indoor unit's exhaust outlet. The lift pipe must be installed no higher than 21.7 in. (55 cm) from the ceiling board. The distance between the unit and the lift pipe must be less than 7.9 in. (20cm). Incorrect installation could cause water to flow back into the unit and flood.
- To prevent air bubbles, keep the drain hose level or slightly tilted up (3 in./<75 mm).

NOTE

A secondary drain or external drain pan can be mandatory, please refer to the local code.

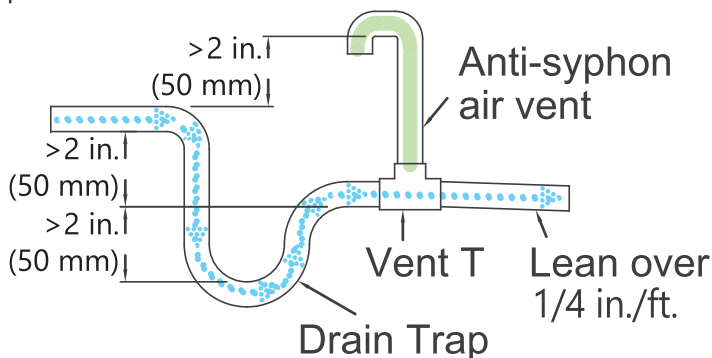


Fig. 2-4: Air Vent Arrangement

After Connecting the Wiring Check for Leaks

1. Start the cooling operation.
2. Gradually pour approximately 1 L of water through the air discharge outlet, and check for leaks.

Step 3 - Duct Connection

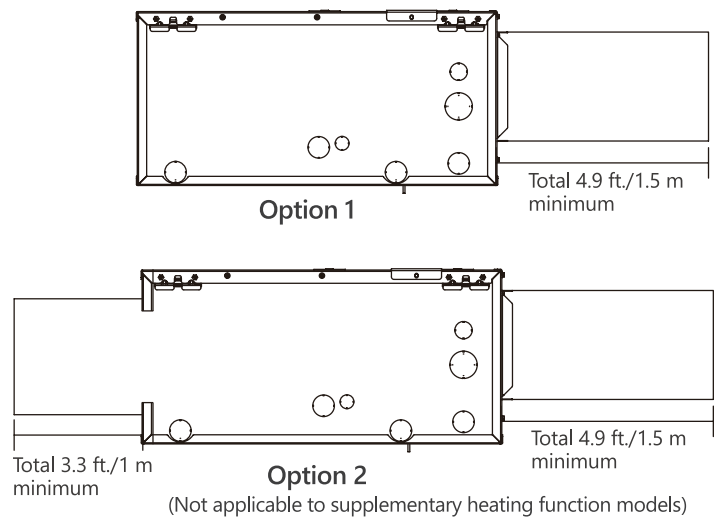


Fig. 3-1: Connection of Duct

NOTE

Duct Connection Requirements

- It should be assembled following the instructions.
- It should be insulated and use a Vapor Barrier.
- It should be Flexible suspension mounted and not fastened.
- It should be fabricated and installed following local and/or national codes.
- Air supply and return may be handled in one of several ways best suited to the installation (See Table D-1 for dimensions for duct inlet and outlet connections). Most problems with combination cooling systems can be linked to improperly designed or installed duct systems. It is therefore essential to the success of an installation that the duct system be properly designed and installed. Use flexible duct collars to minimize the transmission of vibration/noise into the conditioned space. Where the return air duct is short, or where sound could potentially be a problem, a sound-absorbing liner should be used inside the duct.
- The duct must be insulated where it runs through an unconditioned space during the cooling season.
- The use of a vapor barrier is recommended to prevent the absorption of moisture from the surrounding air into the insulation.
- The supply air duct connection should be properly sized using a transition to match the unit opening.
- All ducts should be suspended using flexible hangers and never fastened directly to the structure.
- This unit is not designed for non-ducted (free blow) applications.
- Ductwork should be fabricated and installed following local and/or national codes.

Field ductwork must comply with the National Fire Protection Association NFPA 90A, NFPA 90B, and any applicable local ordinance.

Do not under any circumstances, connect return ductwork to any other heat-producing device such as a fireplace insert, stove, etc. Unauthorized use of such devices may result in

fire, carbon monoxide poisoning, explosion, personal injury, or property damage.

Sheet metal ductwork run in unconditioned spaces must be insulated and covered with a vapor barrier. Fibrous ductwork may be used if constructed and installed following SMACNA Construction Standard on Fibrous Glass Ducts. Ductwork must comply with the National Fire Protection Association as tested by U/L Standard 181 for Class I Air Ducts. Check local codes for requirements on ductwork and insulation.

- The duct system must be designed within the range of external static pressure the unit is designed to operate against. The airflow system must be adequate. Make sure supply and return ductwork, grills, special filters, accessories, etc. are accounted for in total resistance. See airflow performance tables in this manual.
- Design the duct system following all the local installation codes.
- Supply plenum is attached to the ¾ in. duct flanges supplied with the unit. Attach flanges around the blower outlet.
- **IMPORTANT:** If an elbow is included in the plenum close to the unit, it must not be smaller than the dimensions of the supply duct flange on the unit.
- **IMPORTANT:** The front flange on the return duct if connected to the blower casing must not be screwed into the area where the power wiring is located. Drills or sharp screw points can damage the insulation on wires located inside the unit.
- Secure the supply and return ductwork to the unit flanges, using proper fasteners for the type of duct used, and tape the duct-to-unit joint as required to prevent air leaks.
- The condensate drain line must be routed to a location such that the user will see the condensate discharge.

Airflow Performance

Airflow performance data is based on cooling performance with a coil and no filter in place. Select the performance table for the appropriate unit size external static applied to the unit allows operation within the minimum and maximum limits shown in the table below for both cooling and electric heat operation.

Table 3-1: Airflow Performance

Model	Static pressure	External Static Pressure (in.w.c.)				
		0	0.2	0.3	0.5	0.8
18K	Dialling code	-8	-2	0	4	8
	Turbo	602	603	600	594	604
	Watts(W)	96	131	139	195	254
	High	563	556	559	552	563
	Watts(W)	85	116	124	177	231
	Med-Low	451	441	441	437	444
	Watts(W)	51	81	93	135	182
	Low	338	330	324	327	325
	Watts(W)	35	53	74	98	131
24K	Dialling code	-9	-3	0	3	10
	Turbo	808	805	795	796	800
	Watts(W)	169	185	193	214	217
	High	750	706	706	716	762
	Watts(W)	101	147	170	211	312
	Med-Low	626	609	589	593	648
	Watts(W)	69	112	138	165	242
	Low	496	434	383	375	358
	Watts(W)	46.1	74.5	92.5	101.4	165
30K	Dialling code	-8	-2	0	5	11
	Turbo	997	986	989	995	910
	Watts(W)	169	229	276	332	381
	High	919	895	895	901	888
	Watts(W)	139	194	248	289	360
	Med-Low	846	810	795	853	865
	Watts(W)	115	163	203	269	348
	Low	635	554	541	593	663
	Watts(W)	57	85	109	174	265
36K	Dialling code	-8	-3	0	3	9
	Turbo	1216	1229	1234	1206	1035
	Watts(W)	221	291	326	393	413
	High	1052	1042	1016	1018	1006
	Watts(W)	153	197	238	297	398
	Med-Low	875	822	808	771	772
	Watts(W)	96	133	158	202	262
	Low	721	647	634	629	580
	Watts(W)	60	97	117	150	215

Step 4 - Refrigerant Piping Connections

WARNING

All field piping must be completed by a licensed technician and must comply with local and national regulations.

- When the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration in the room from exceeding the safety limit in the event of refrigerant leakage. If the refrigerant leaks and its concentration exceeds its proper limit, hazards due to lack of oxygen may result.
- When installing the refrigeration system, ensure that air, dust, moisture, or foreign substances do not enter the refrigerant circuit. Contamination in the system may cause poor operating capacity, high pressure in the refrigeration cycle, explosion, or injury.
- Ventilate the area immediately if there is refrigerant leakage during the installation. Leaked refrigerant gas is both toxic and may be flammable. Ensure there is no refrigerant leakage after completing the installation work.

NOTE

Pipes are not included in the accessories, and you need to purchase them separately from the local dealer. Insulate both the gas and liquid piping to prevent condensation.

IMPORTANT

Use refrigeration grade tubing **ONLY**. No other type of tubing may be used. The use of other types of tubing will void the manufacturer's warranty.

- The minimum refrigerant line length between the indoor and outdoor unit is 10 ft. (3 m).
- Do not open the service valves or remove the protective caps from the tubing ends until all connections are made.
- Bend the tubing with bending tools to avoid kinks and flat spots.
- Keep the tubing free of dirt, sand, moisture, and other contaminants to avoid damaging the refrigerant system.
- Once the pipes are flared at both ends or before

brazing them, purge them with nitrogen to remove dirt and moisture before connecting them to an indoor or outdoor unit.

- Insulate both suction and liquid lines separately with insulation size as per Table 8-1.

CAUTION

DO NOT install the connecting pipe until both the indoor and outdoor units have been installed.

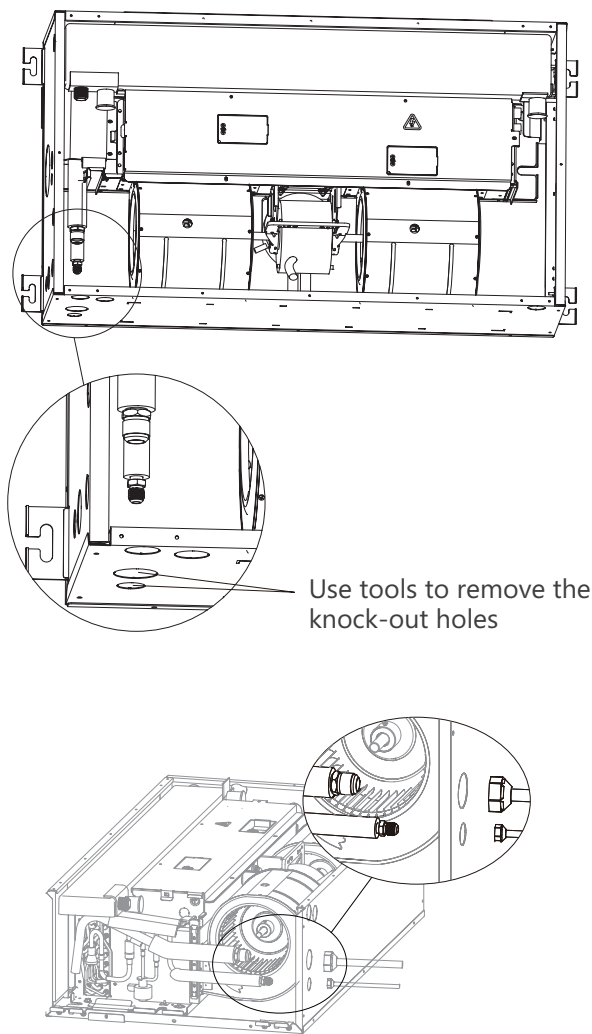


Fig. 4-1: Connect the refrigerant pipe

Table 4-1: Piping Sizes

Air Handler Unit Model	Air Handler Unit Connection (in. flare)		Adapter Required at Air Handler Unit (in. flare to braze)	Outdoor Model	Outdoor Unit Connection (in. flare)		Adapter Required at Outdoor Unit (in. flare to flare or braze)
18K/24K	Liquid	3/8	3/8 flare→3/8 braze	18K (Regular Heat)	Liquid	3/8	3/8 flare→3/8 braze
	Gas	3/4	3/4 flare→3/4 braze		Gas	5/8	5/8 flare→3/4 flare 5/8 flare→3/4 braze
30K/36K	Liquid	3/8	3/8 flare→3/8 braze	18K (Extreme Heat)/24K /30K/36K	Liquid	3/8	3/8 flare→3/8 braze
	Gas	3/4	3/4 flare→3/4 braze		Gas	3/4	3/4 flare→3/4 braze

Cut pipes

When preparing refrigerant pipes, take extra care to cut and flare them properly. This will ensure efficient operation and minimize the need for future maintenance.

1. Measure the distance between the indoor and outdoor units.
2. Using a pipe cutter, cut the pipe a little longer than the measured distance.
3. Make sure the pipe is cut at a perfect 90° angle.

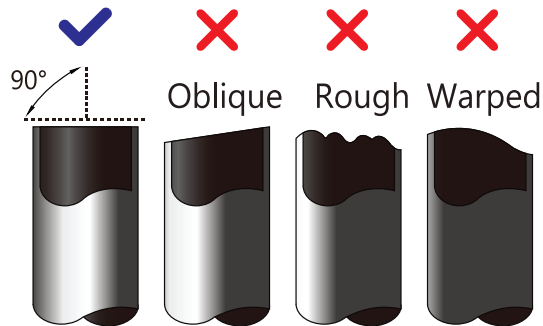


Fig. 4-2: Correct Pipe Cutting

NOTE

DO NOT DEFORM PIPE WHILE CUTTING

Be extra careful not to damage, dent, or deform the pipe while cutting. This will drastically reduce the heating efficiency of the unit.

4. Remove the Burrs

Burrs can affect the air-tight seal of the refrigerant piping connection. Therefore, they must be completely removed. To remove:

- a. Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
- b. Using a reamer or deburring tool, remove all burrs from the cut section of the pipe

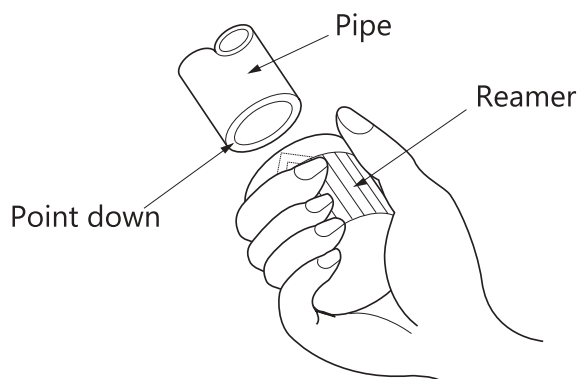


Fig. 4-3: Reamer Tool

5. Flare the Pipe Ends.

Proper flaring is essential to achieving an airtight seal.

- a. After removing the burrs from the cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
- b. Sheath the pipe with insulating material.
- c. Place the factory flare nut on the pipe facing the proper direction. Make sure they are facing the right

direction. Once the ends are flared, it is impossible to put them on or change their direction.

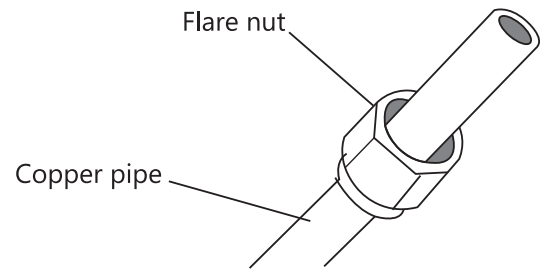


Fig. 4-4: Copper pipe and flare nut

- d. Remove the PVC tape from the ends of the pipe when ready to perform the flaring work.
- e. Clamp the flare block on the end of the pipe. The end of the pipe must extend beyond the flare form.

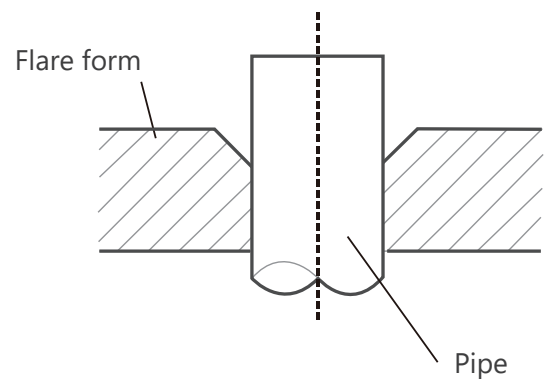


Fig. 4-5: Flare Form

- f. Place the flaring tool onto the form.
- g. Turn the handle of the flaring tool clockwise until the pipe is fully flared. Flare the pipe following the dimensions in Table 4-2.

Fig. 4-6: Flare Shape

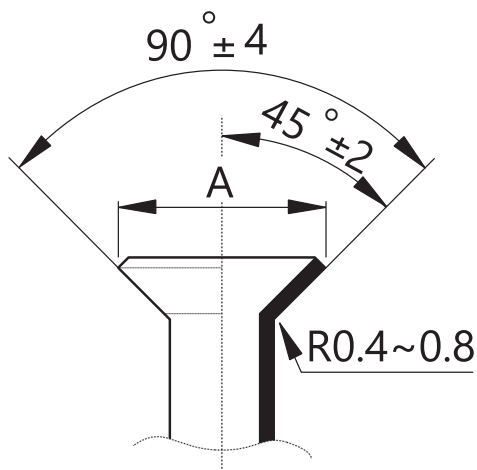


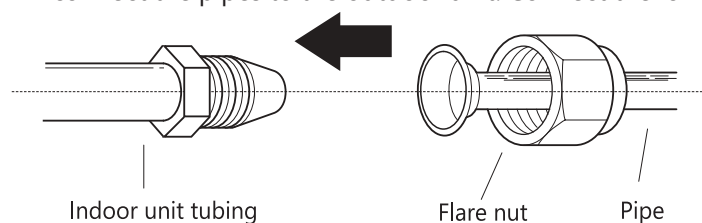
Table 4-2: Flare Dimensions/Tightening Torque

Pipe Size Outside Diameter	Flare Dimensions (A)
in. (mm)	in. (mm)
Ø1/4 (6.35)	11/23 - 23/64 (~9.1)
Ø3/8 (9.52)	1/2 - 33/64 (~13.2)
Ø1/2 (12.7)	41/64 - 31/32 (~16.6)
Ø5/8 (15.88)	49/64 - 35/32 (~19.7)
Ø3/4 (19.05)	-

Tightening Torque for Flare Nuts

Pipe Size Outside Diameter	Tightening Torque
in. (mm)	ft. - lbs.
Ø1/4 (6.35)	13.0 - 18.0
Ø3/8 (9.52)	24.6 - 30.4
Ø1/2 (12.7)	39.8 - 47.7
Ø5/8 (15.88)	45.4 - 59.3
Ø3/4 (19.05)	7.15 - 87.5

- h. Remove the flaring tool and flare block, then inspect the end of the pipe for cracks and even flaring.
6. Connect the Pipes
Connect the copper pipes to the indoor unit first, then connect the pipes to the outdoor unit. Connect the low-



pressure pipe first, then connect the high-pressure pipe.
a. Align the center of the two pipes that you will connect.

Fig. 4-7: Align the center of the two pipes

- b. Tighten the flare nut as much as possible by hand.
c. Using a wrench, grip the nut on the unit tubing.
d. While firmly gripping the nut, use a torque wrench to tighten the flare nut according to the torque values listed in Table 4-2.

NOTE

Use both a spanner and a torque wrench when connecting or disconnecting pipes to/from the unit.

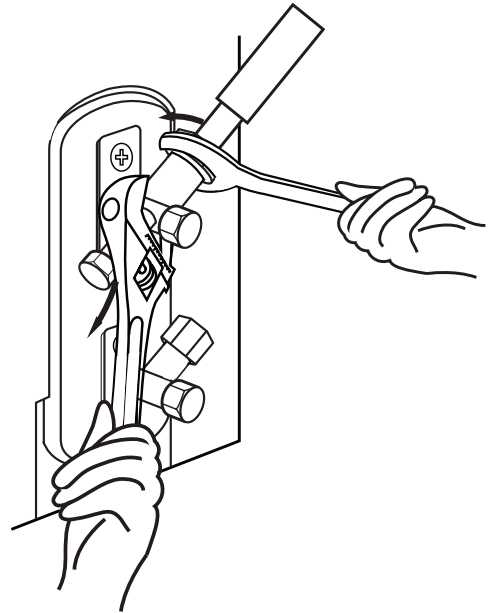


Fig. 4-8: Spanner and Backup Wrench

All tubing bends should be performed with a properly sized tubing bender to prevent kinking or damaging the tubing.

- e. While firmly gripping the nut, use a torque wrench to tighten the flare nut according to the torque values listed in Table 4-2.

Ensure to wrap insulation around the piping. Direct contact with the bare piping may result in burns or frostbite.

- Make sure the pipe is properly connected.
- Over-tightening may damage the bell mouth and under-tightening may lead to leakage.

NOTE

MINIMUM BEND RADIUS

Carefully bend the tubing in the middle according to the diagram below. DO NOT bend the tubing over 90° or more than 3 times. Use care when bending pipe, do not kink pipe.

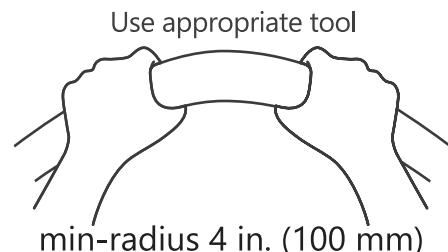


Fig. 4-9: Bend the Tubing

- f. Thread this line set through the wall and connect it to the outdoor unit.
g. Insulate the suction line, including the outdoor unit valves.

Check to make sure there is no refrigerant leak after completing the installation work.

If there is a refrigerant leak, ventilate the area immediately

EVOX Extreme Heat Ceiling Mounted Air Handler

and evacuate the system (refer to the Air Evacuation section of this manual).

8. Brazing Adapter (Optional)

When flare to braise adapter is used, follow these steps:

- Refer to the liquid line and gas line connection O.D. sizes in Table 4-1 based on the model being installed. Cut and deburr the tubing (review "Remove the Burrs" in Step 4) to prepare it for brazing. Set up the nitrogen apparatus and connect it to the outside unit to flow nitrogen while brazing. Braze the tubing and any fittings to obtain a proper seal.
- Insulate the suction line completely, including the outdoor unit valves.

9. Pressure test the piping:

- Adjust the nitrogen apparatus to pressurize the system. Pressure test the system to a maximum of 500 psig for at least 60 minutes.

Only use Dry Nitrogen to pressure test refrigerant systems. The use of other gases can result in injury, property damage, or death.

10. Use a nitrogen regulator.

- Attach the low side gauge hose to the 5/16" Schrader valve on the outdoor unit service valve.
- Attach the charging hose to the regulator on the dry nitrogen tank.
- Preset the nitrogen regulator to 550 psi.
- Slowly pressurize the line set until the low side gauge reads 500 psi. Do not exceed 550 psi.
- Close all the valves on the nitrogen tank and gauges.
- Allow the pressure test to stand for a minimum of 60 minutes.
- If the pressure goes down in the 60-minute delay, leak check the tubing and flare fittings to identify the source of the leak. Return to Step C, above.
- If the pressure holds, release the nitrogen and proceed with "Step 4 - Air Evacuation".

Leak Detection System

WARNING

PERSONAL INJURY OR PROPERTY DAMAGE HAZARD

Failure to follow proper R-454B mitigation system installation instructions can result in property damage, personal injury, or death. If any fault codes are listed, please troubleshoot to prevent system malfunction.

The units come equipped with a factory-wired R454B leak detection and dissipation system to ensure safe operation during a leak. The system consists of a bracket, a PCB, an A2L Detection Sensor, and a drain pan clip. Failure to install this system will result in potentially hazardous conditions and improper equipment operation and void all system warranties and liabilities.

All units are shipped with the A2L Detection Sensor located on the back side of the slope coil.

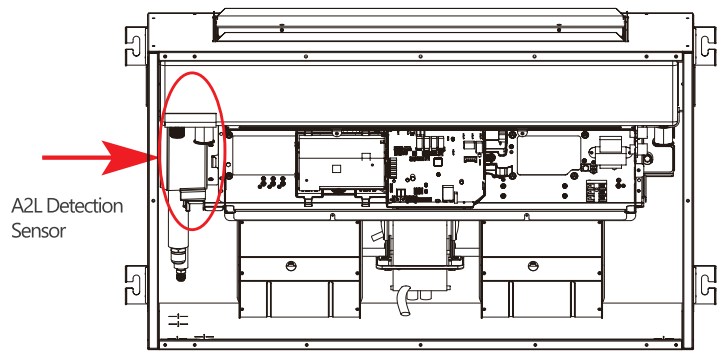


Fig. LD-1: Leak Detector Location

The A2L Detection Sensor is attached to a wiring harness that connects the sensor to the control board.

CAUTION

The refrigerant leakage sensor can only use the factory model, or the specified model indicated in the corresponding manual.

The R454B refrigerant leakage sensor must be used to activate the refrigerant shut-off device, the alarm device, incorporated circulation airflow, or other emergency controls, which shall give an electrical signal at a pre-determined alarm set point in response to the leaked refrigerant.

The location of leak sensors shall be chosen with the different installation scenarios. Please refer to the indoor unit installation manual for specific requirements. The installation of the refrigerant leakage sensor shall allow access for checking, repair, or replacement by an authorized person.

The refrigerant leakage sensor shall be installed so its function can be verified easily. The refrigerant leakage sensor should be protected to prevent tampering or unauthorized resetting of the pre-set value.

If the refrigerant leakage sensor detects a refrigerant leak, the fan will be turned on to the maximum, the compressor will stop running. You should immediately leave the leak area and notify a professional for handling.

The service life of the refrigerant sensor is 15 years, and it should be replaced after the service life.

WARNING

LEAK DETECTION SYSTEM installed on the indoor unit. The unit must be powered except for service. Continuous air circulation is required for proper functioning. The unit must be powered except for service. This unit is equipped with electrically powered safety measures. For optimal performance, the refrigerant leakage sensor must remain powered continuously after installation, except during service.

Confirmation of Indoor Unit

Table CIU-1: Units Without Electric Heat

Unit Size	Volts-Phase	Rated Current	MCA (Minimum Circuit Ampacity)	Branch Circuit	
				Min. Wire Size AWG	Fuse/CKT BKR Amps
18K	115/208/230 V-1*	115 V: 4.0 A 208/230 V: 3.5 A	115 V: 6.0 A 208/230 V: 5.0 A	16#	15.0
24K		115 V: 5.5 A 208/230 V: 3.5 A	115 V: 7.0 A 208/230V: 5.0A		
30K		115 V: 6.4 A 208/230 V: 4.5 A	115 V: 8.0 A 208/230 V: 6.0 A		
36K		115 V: 6.4 A 208/230 V: 4.5 A	115 V: 8.0 A 208/230 V: 6.0 A		

*The default voltage of the units is 208-230 V. If you need to switch to 115 V, please refer to the Installation Guide For AHU Using 115 V Power Supply in appendix.

Use copper wire only to connect the unit. If other than uncoated (non-plated) 75°C copper wire (solid wire for 10 AWG and smaller, stranded wire for larger than 10 AWG) is used consult applicable tables of the National Electric Code (ANSI/NFPA 70).

NOTE

The specifications may be different between different models, please refer to the indoor unit's nameplate. Choose the cable type according to the local electrical codes and regulations. Please choose the right cable size according to the Minimum Circuit Ampacity indicated on the nameplate of the unit.

Step 5 - Power Wiring Connections

⚠ WARNING

BEFORE PERFORMING ANY ELECTRICAL WORK, READ THESE WARNINGS.

- All wiring must comply with local and national electrical codes and regulations and must be installed by a licensed electrician.
- All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
- If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.
- Power voltage should be within 90-110% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.
- Installation of an external surge suppressor at the outdoor disconnect is recommended.
- Power must be connected, a switch or circuit breaker that disconnects all poles and has a contact separation of at least 1/8 in. (3 mm) must be incorporated into the fixed wiring. The qualified technician must use an approved circuit breaker or switch.
- Only connect the unit to an individual branch circuit. Do not connect another appliance to that circuit.
- Make sure to properly ground the air conditioner.
- Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
- Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.
- To avoid getting an electric shock, never touch the

electrical components soon after the power supply has been turned off. After turning off the power, always wait 10 minutes or more before you touch the electrical components.

- Make sure that you do not cross your electrical wiring with your signal wiring. This may cause distortion, interference or possibly damage to circuit boards.
- No other equipment should be connected to the same power circuit.
- Connect the outdoor wires before connecting the indoor wires.

⚠ WARNING

BEFORE PERFORMING ANY ELECTRICAL OR WIRING WORK, TURN OFF THE MAIN POWER TO THE SYSTEM.

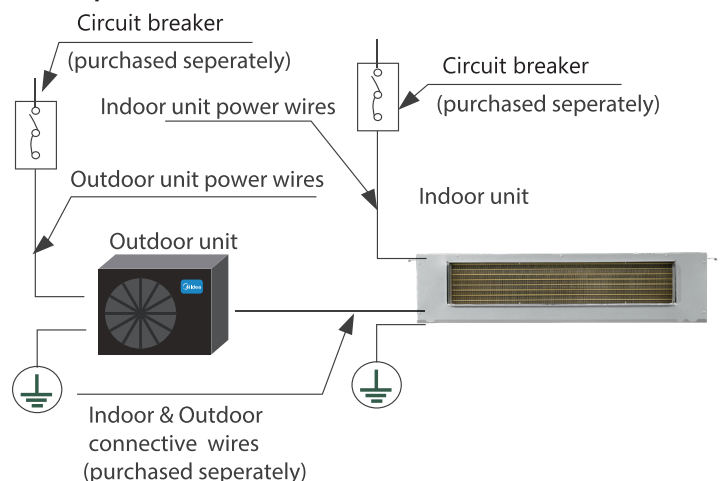


Fig. 5-1: Wiring Overview

EVOX Extreme Heat Ceiling Mounted Air Handler

NOTE

The diagrams are for explanation purposes only. Your machine may be slightly different. The actual diagram shall prevail.

Service Disconnect shall be selected as required by Local, regional, and national codes.

CAUTION

- While connecting the wires, please strictly follow the wiring diagram.
- The refrigerant circuit can become very hot. Keep the interconnection cable away from the copper tube.

Prepare the cable for connection.

1. Using wire strippers, strip the insulating jacket from both ends of the signal cable to reveal about 6 in. (150 mm) of the wire.
2. Strip the insulation from the ends of the wires
3. Open the control box cover. Using a screwdriver, remove the cover of the electric control box from your indoor unit.

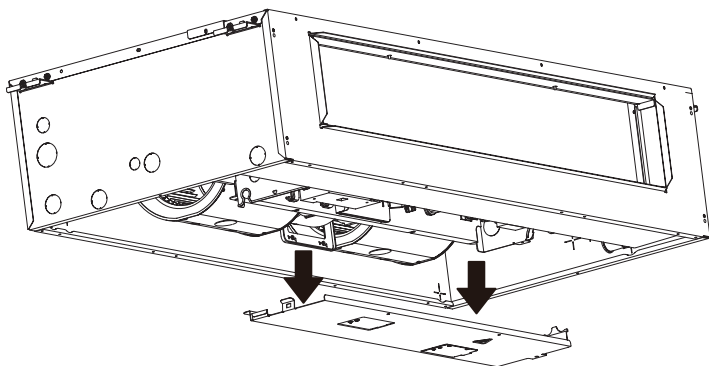


Fig. 5-2: Remove Electrical Cover

Connect the wires to the terminals.

4. Thread the power cable and the signal cable through the wire outlet.
5. Match the wire colors/labels with the labels on the terminal block. Firmly screw the wires of each wire to its corresponding terminal. Refer to the Serial Number and Wiring Diagram located on the cover of the electric control box Terminal block wiring. When using 208 V or 230 V, connect L1 and L2. When using 115 V, connect L1 and L2 (L2 is used as N).

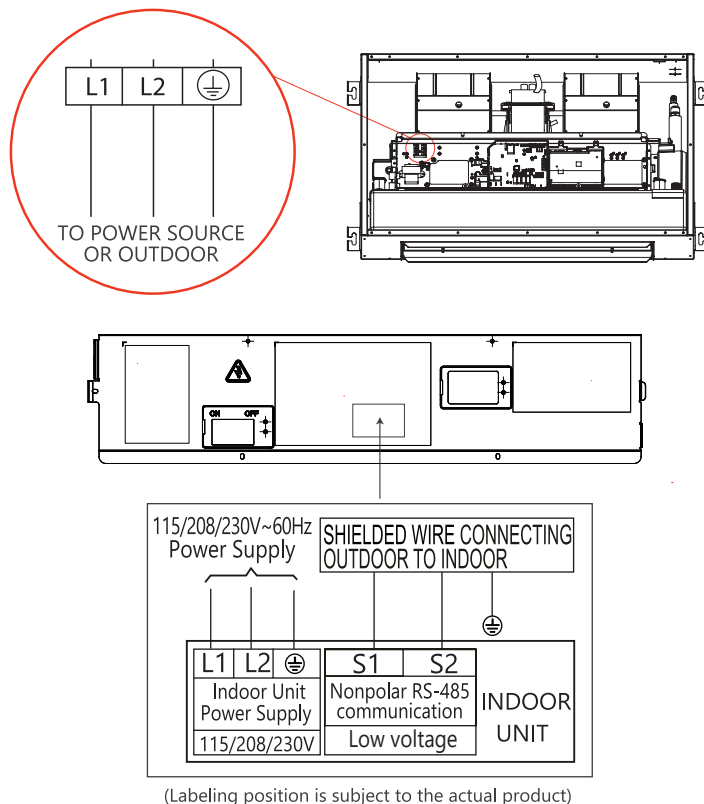


Fig. 5-3: Indoor Wiring Diagram

WARNING

ISOLATE THE POWER SUPPLY LEADS AND COMMUNICATION LEADS BY THE STRAIN RELIEF AND KEEP POWER SUPPLY LEADS AWAY FROM COMMUNICATION LEADS.

6. Clamp down the cable with the cable clamp. The cable must not be loose or pull on the U-lugs.
7. Reattach the electric box cover.
8. Clamp down the cable with the cable clamp. The cable must not be loose or pull on the U-lugs.
9. Reattach the electric box cover.

CAUTION

- While connecting the wires, please strictly follow the wiring diagram.
- The refrigerant circuit can become very hot. Keep the interconnection cable away from the copper tube.
- The holes on the cover of the electronic control box must be threaded through with armored wires.

WARNING

The motor has two pairs of plugs. The red color indicates that the motor is connected to the plug when powered by 115 V, and the white color indicates that the motor is connected to the plug when powered by 230 V (default is connected to the white pair of plugs). When using a 208-230 V power supply, this part remains unchanged; When using a 115 V power supply, the motor wiring requires the use of a 115 V motor pair plug. The white motor pair plug needs

to be removed, and the red motor pair plug needs to be connected. When the motor is plugged in red, the internal power supply must be 115V. If it is powered by a 208-230 V power supply, the motor will be damaged.

OUTDOOR UNIT WIRING

WARNING

Before performing any electrical or wiring work, turn off the main power to the system.

Prepare the cable for connection.

1. You must first choose the right cable size.
2. Using wire strippers, strip the rubber jacket from both ends of the signal cable to reveal approximately 5.9 in. (150mm) of wire.
3. Strip the insulation from the ends.
4. Stranded wire requires u-lugs or ring terminals to be crimped onto the ends of the wire.

NOTE

- When connecting the wires, strictly follow the wiring diagram found inside the electrical box cover.
- Choose the cable type according to the local electrical switches and regulations.
- Please choose the right cable size according to the Minimum Circuit Ampacity indicated on the nameplate of the unit.

Prepare the cable for connection.

1. Remove the wire cover from the unit by loosening the 3 screws.
2. Remove caps from the conduit panel.
3. Mount the conduit tubes (not included) on the conduit panel.

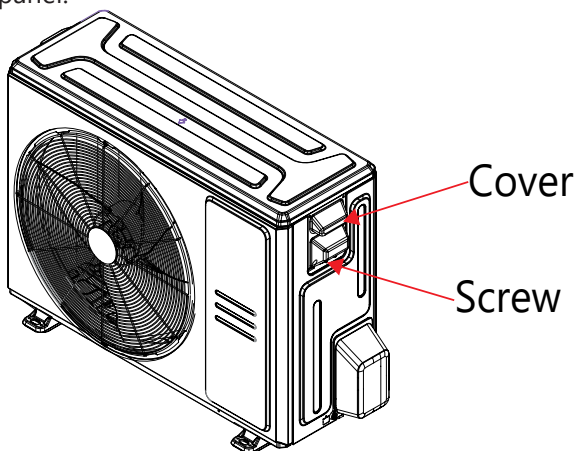


Fig. 5-4: Remove Electrical Cover

4. Properly connect both the power supply and low-voltage lines to the corresponding terminals on the terminal block.
5. Ground the unit in accordance with NEC or CEC and local electrical codes.
6. Be sure to size each wire allowing several inches longer than the required length for wiring.

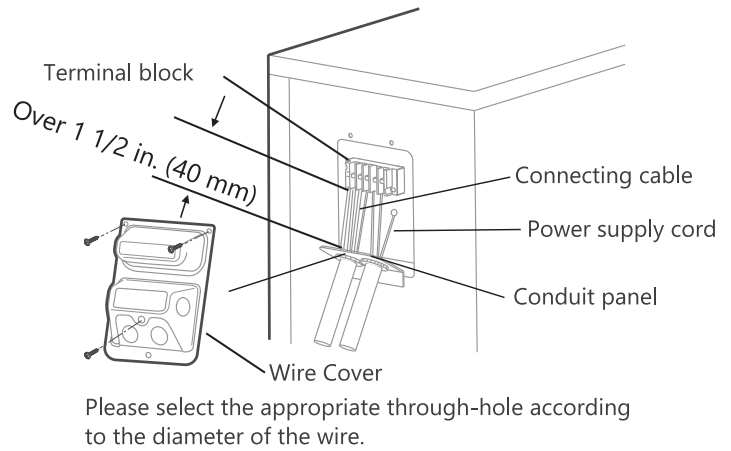


Fig. 5-5: Field Wiring Conduit Location

7. Use the lock nuts to secure the conduit.
8. Reinstall the field wiring cover.

WARNING

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. Therefore, ensure all wiring is tightly connected. No wire should be allowed to 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. The connecting cable with the conduit shall be routed through a hole in the conduit panel.

An approved and listed fitting must be used to securely affix conduit in accordance with NEC and local codes.

WARNING

Wiring

All wires must be sized per NEC (National Electrical Code) or CEC (Canadian Electrical Code) and local codes. See Table AP-3 MCA (minimum circuit amps) and MOP (maximum overcurrent protection) to correctly size the wires and the disconnect fuse or breakers respectively.

Step 6 - Specific Wiring Methods

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.

Table 6-1: 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

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 Fig. 6-3

Power needs to be OFF before dip switch adjustments.

⚠ WARNING

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.

Table 6-2: 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

Note

The adapter cable must be used when applying the full 24 V communication scheme. This will stop the operation of the outdoor unit for safety if refrigerant leakage happens. The following wiring diagram are suitable for the AHU and ODU with 24 V thermostat.

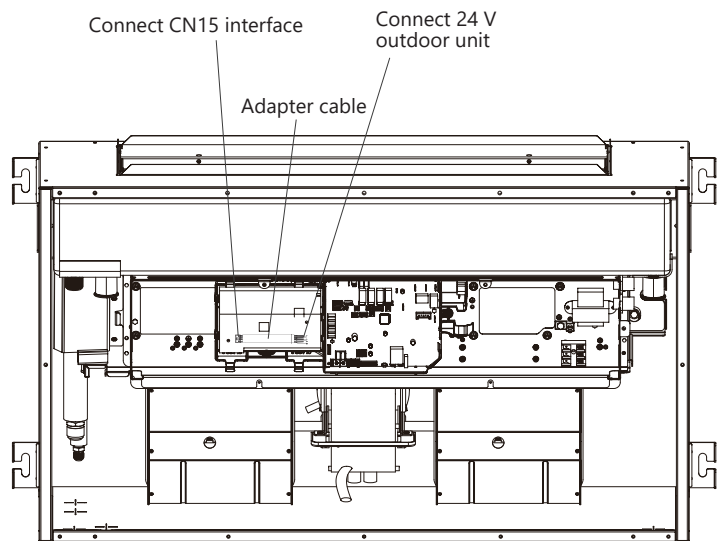
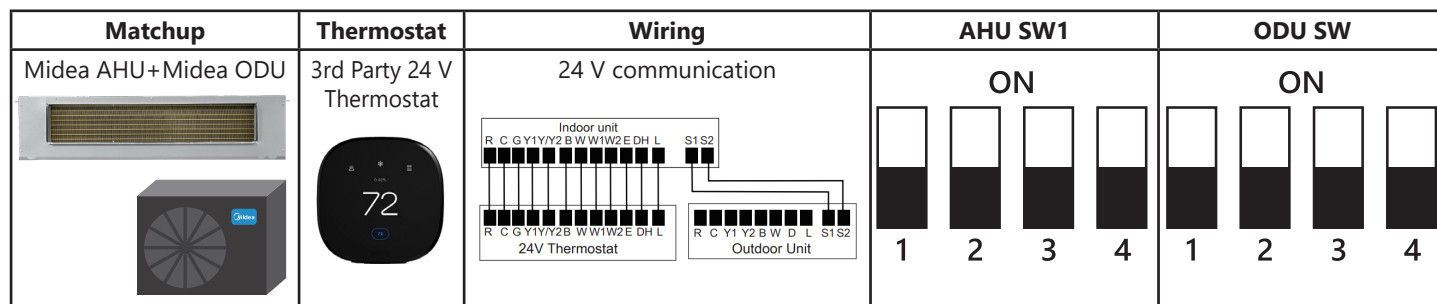


Fig. 6-1: 24 V Wiring Location

NOTE

The adapter cable must be used when the full 24V communication scheme is applied. That will stop the operation of outdoor for safety if the refrigerant leakage happens.

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



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

Fig. 6-2: Scenario 1 Wiring Diagram and Dip Switch Settings

- 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
- 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

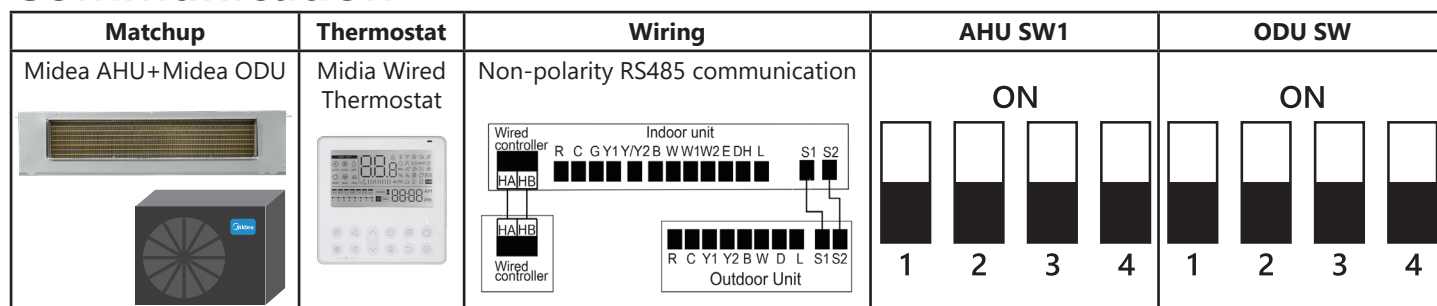


Fig. 6-3: Scenario 2 Wiring Diagram

- 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 priority

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

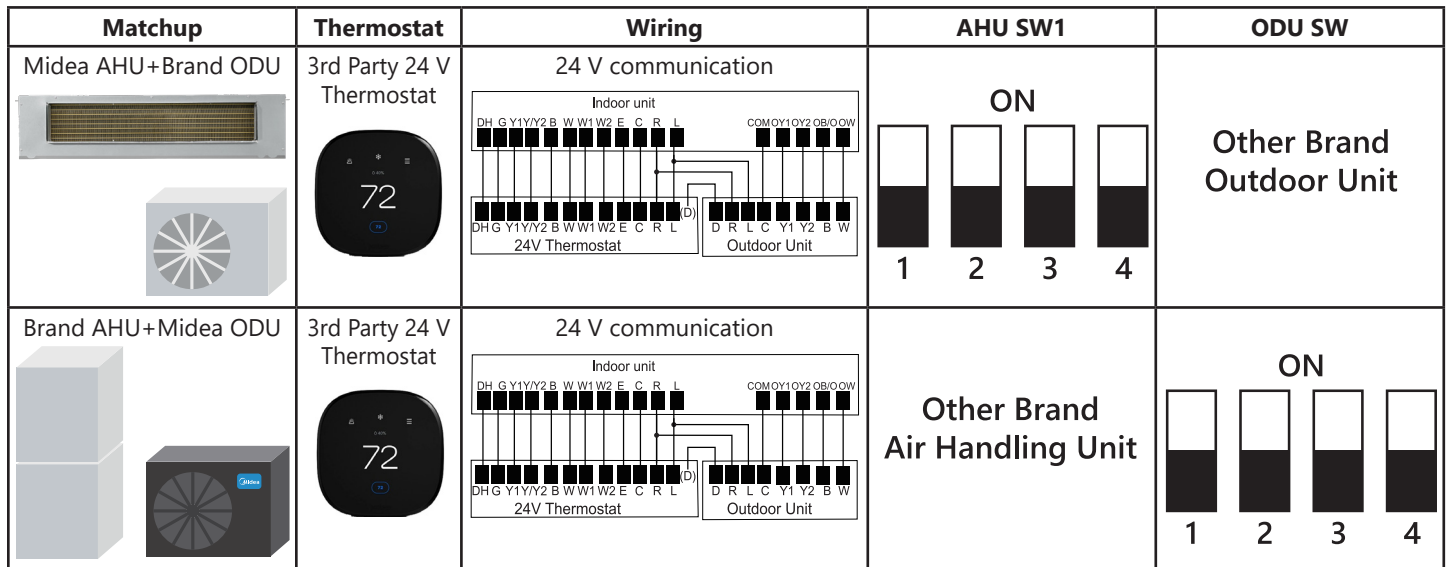


Fig. 6-4: Scenario 3 Wiring Diagram and Dip Switch Settings

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.

- 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

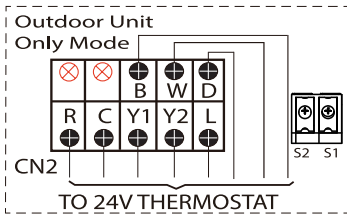
24 V Connection Diagrams

Table 6-4: Control Logic

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

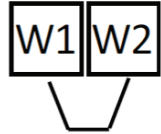
NOTE

Terminal D is now energized when the outdoor unit goes into defrost mode and can be used to enable electric heat. This feature is unavailable when the outdoor unit communicates with the indoor unit via non-polarity RS485 Communication S1-S2.



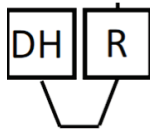
24 V must never be connected to S1 – S2. All wiring must be in compliance with the above scenarios. Incorrect wiring will cause irreversible damage to the control.

Fig. 6-5: Never Connect 24 V to S1-S2



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.

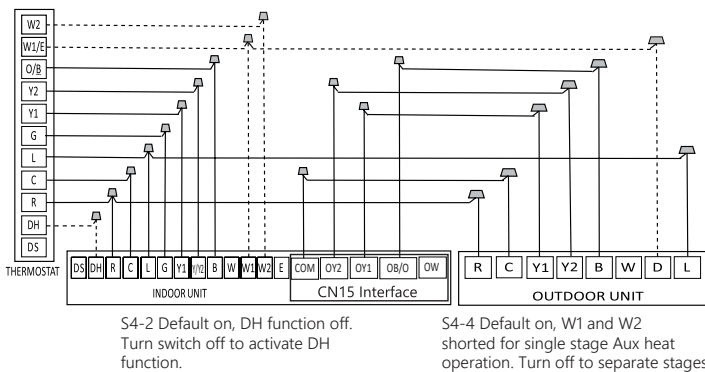


Fig. 6-6: Wiring for 4H and 2C Thermostat

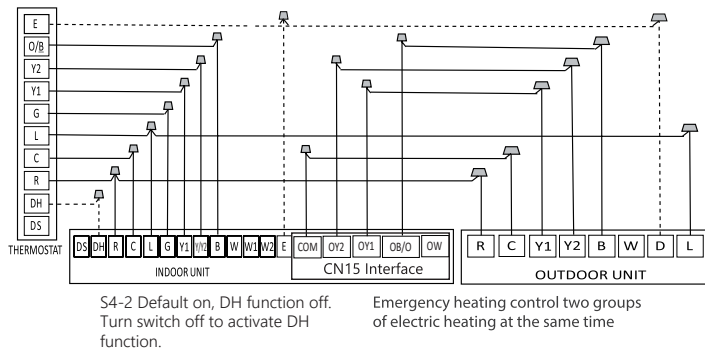


Fig. 6-5: Wiring for 3H and 2C Thermostat

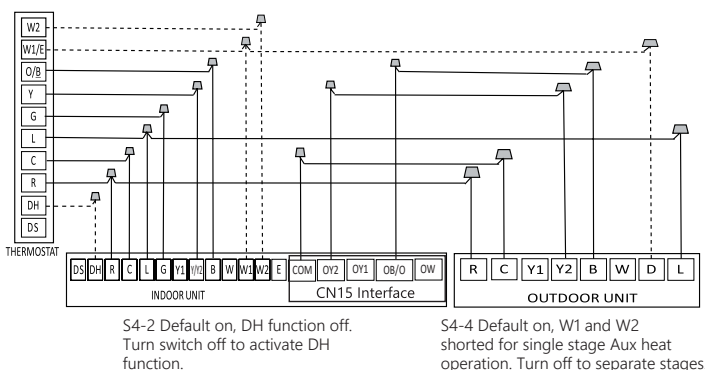


Fig. 6-7: Wiring for 3H and 1C Thermostat

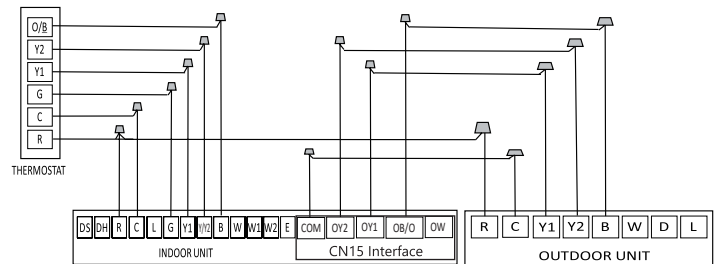


Fig. 6-8: Wiring for 2H and 2C Thermostat No Auxiliary Heat

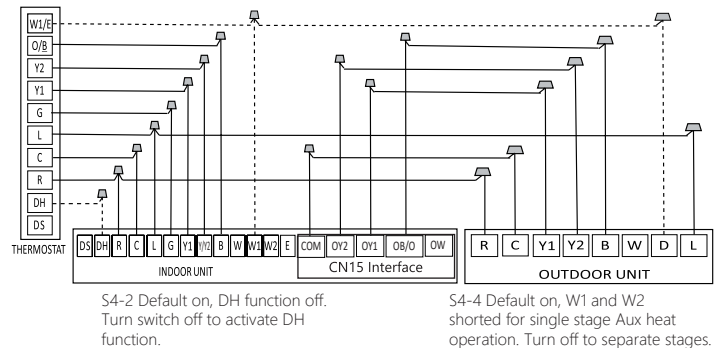


Fig. 6-9: Wiring for 3H and 2C Thermostat

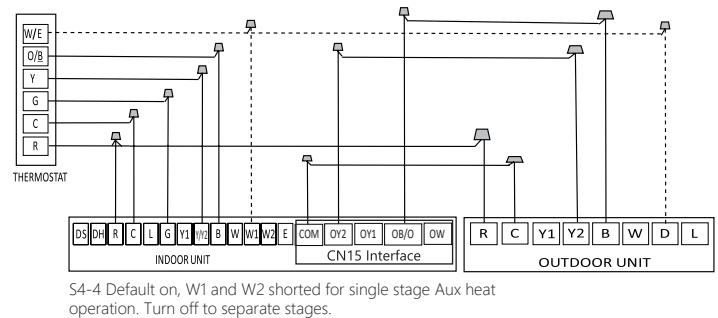
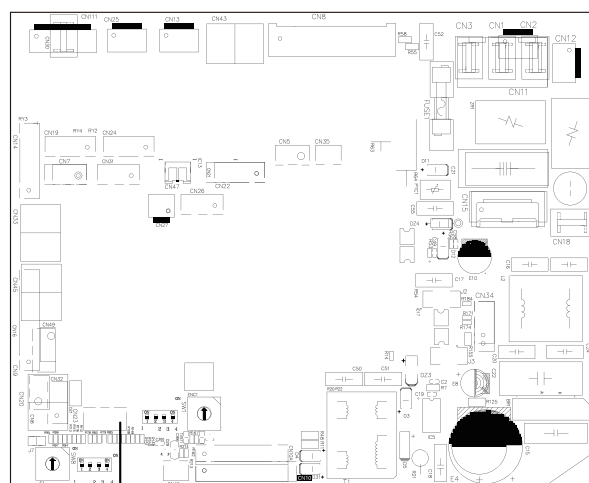


Fig. 6-10: Wiring for 2H and 1C Thermostat

Optional Function Wiring



Condensate overflow switch interface location

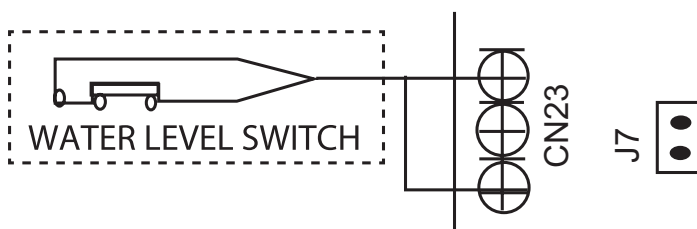


Fig. 6-13: Condensate Overflow Location

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.

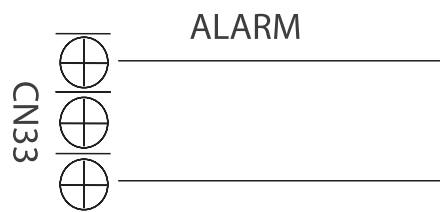


Fig. 6-14: Alarm Wiring

Alarm output:

An alarm output (CN33) can be utilized if actions are required when a fault is present. This is a passive outlet port, so you will need to input a voltage signal. The relay is normally open for normal operation and closed when the fault condition is active.

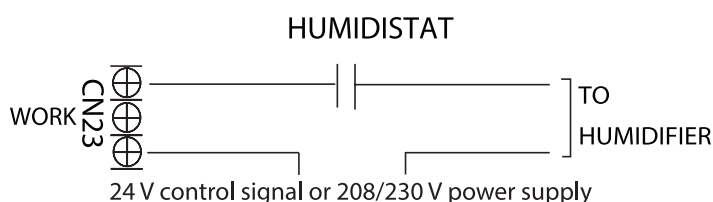


Fig. 6-15: Humidifier Wiring

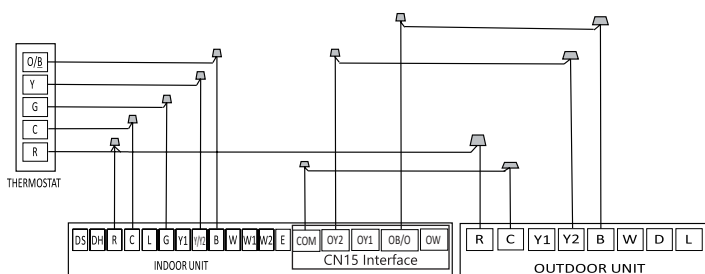


Fig. 6-11: Wiring for 1H and 1C Thermostat

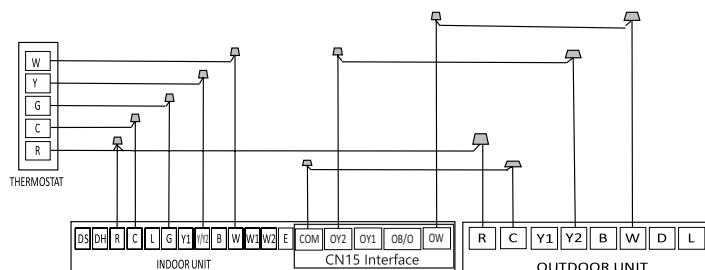


Fig. 6-12: Wiring for 1H and 1C Thermostat

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.

Humidifier control:

To connect a humidifier, utilize the passive signal "WORK" output (CN23) port as well as the R 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 the 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 ion generator wiring

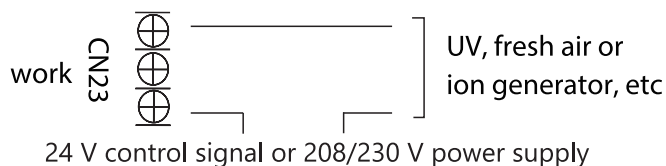


Fig. 6-16: Clean Air Wiring

UV, fresh air, or ion generator:

The WORK port is linked to the fan. When the fan is running, the relay is closed.

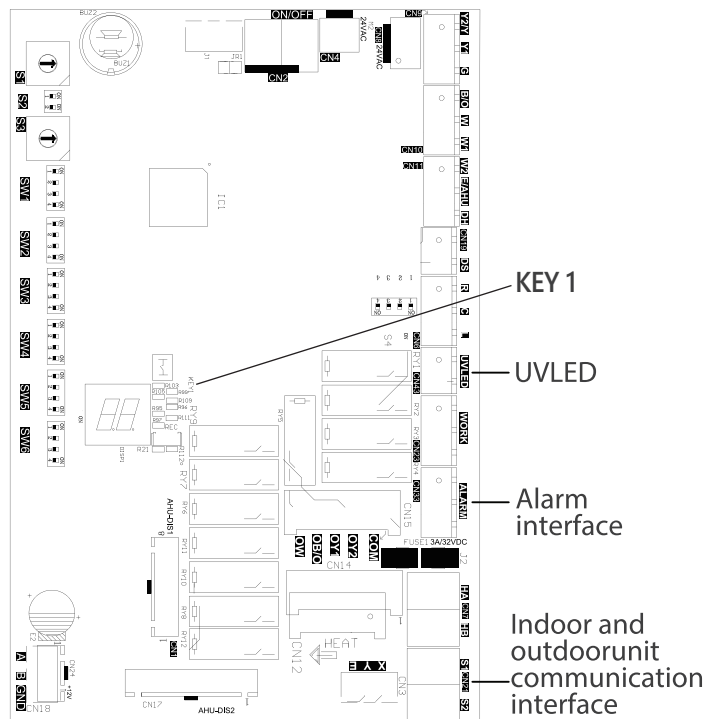


Fig. 6-17: Interface Wiring Locations

LED Display

The control displays unit status as well as any active fault codes on the LED display. If the unit is functioning normally, the LED will display the current temperature setpoint. When a fault code is active, the display will flash quickly the active fault code. Please refer to the fault code table located in the troubleshooting section of the manual for detailed fault code information.

KEY1 Instructions (For Wired Controller only)

- Press KEY1 to enter the forced automatic mode, press KEY1 again to enter the forced cooling mode (LED display FC), and press KEY1 again to shut down.
- Long press KEY1 under forced cooling mode (LED display FC) 5s to enter forced defrost mode.

Dip Switch Definitions

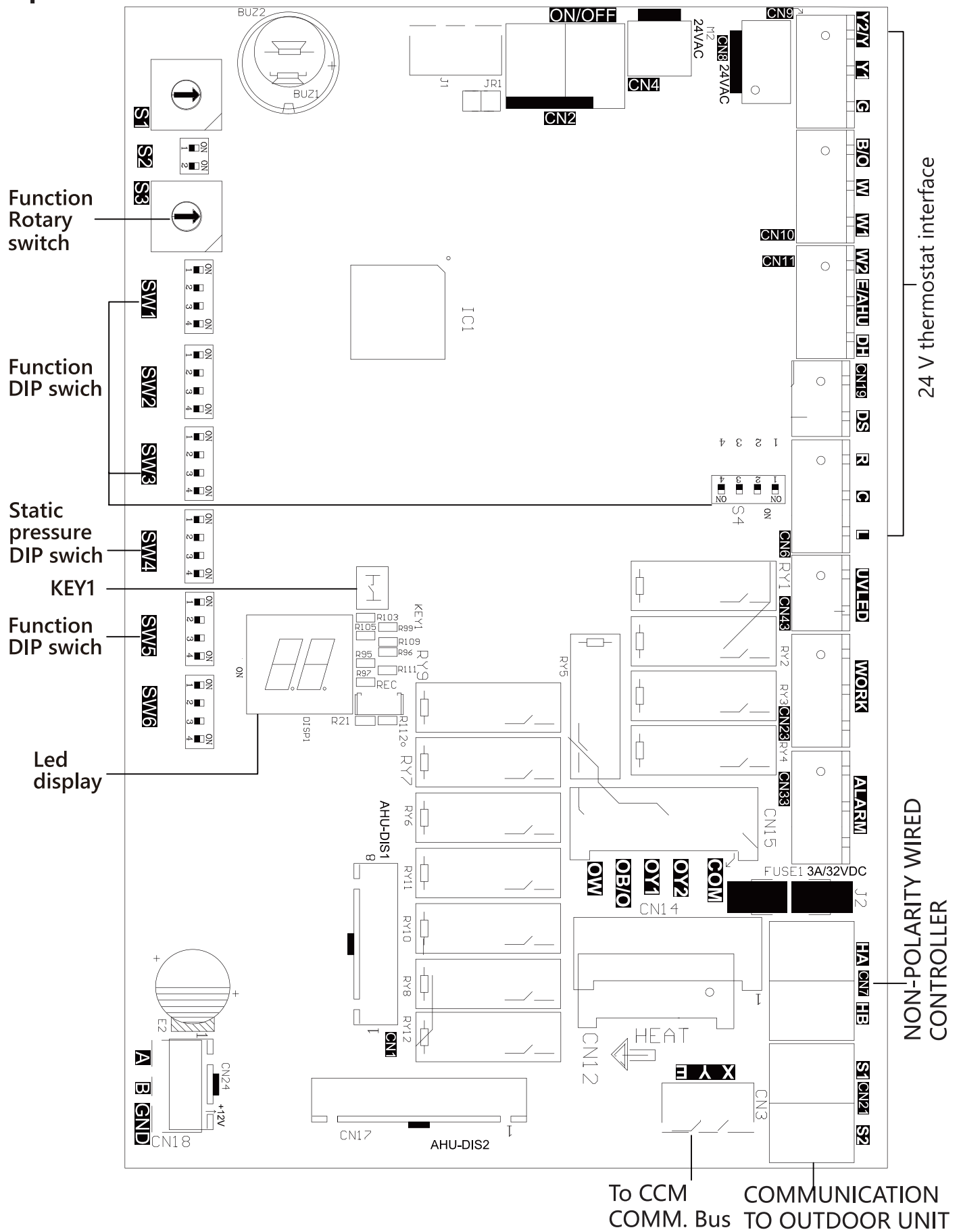


Fig 6-18: Dip Switch Layout
EVOX Extreme Heat Ceiling Mounted Air Handler

Function DIP switch settings:

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

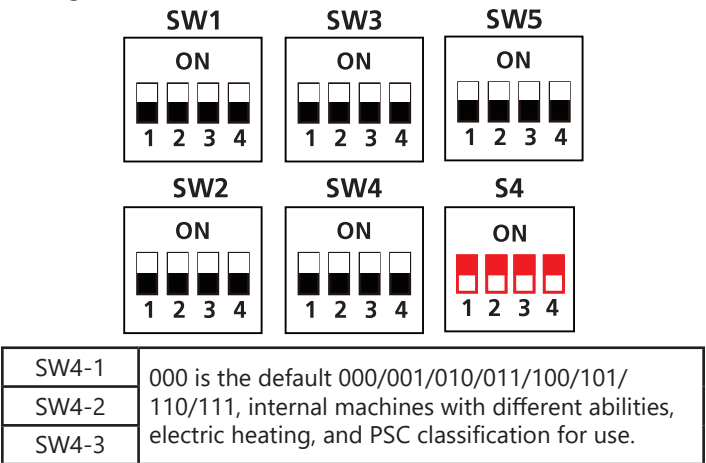


Fig. 6-19: 24 V Thermostat Settings

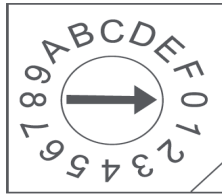
Table 6-5: Function combination table of SW1-1 and SW1-4

SW1	Control Type	IDU & ODU Connection	Note
<div>ON<div><div></div><div></div><div></div><div></div></div><div>1 2 3 4</div></div>	Wired controller / 24 V thermostat	(S1+S2) / 24 V connection (S1+S2) / 24 V connection	Auto Discovery
<div>ON<div><div></div><div></div><div></div><div></div></div><div>1 2 3 4</div></div>	Wired controller	S1+S2	Scenario 2
<div>ON<div><div></div><div></div><div></div><div></div></div><div>1 2 3 4</div></div>	24 V Thermostat	S1+S2	Scenario 1
<div>ON<div><div></div><div></div><div></div><div></div></div><div>1 2 3 4</div></div>	24 V Thermostat	24 V connection	Scenario 3

Table 6-6: Indoor Unit Dial Code

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 differential 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	

Control Scenario	24 V Tstat, S1+S2	1
	Wired Controller S1+S2	2
	Full 24 V	3



Address DIP switch:

Address dialing S1+SW8: When the user uses the centralized controller, address dialing is required.

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 dialing code is not connected), the network address value is the value of S1.

When SW8 is 10 (corresponding to the switch of the hardware connected to the 10K resistor), the network address value is S1 plus 16.

Determined by dial code SW8 1-10K 2-5.1K

When SW8 is 01 (corresponding to the dialing code of the 5.1K resistor connected to the hardware is turned on), the network address value is the value of S1 plus 32.

When SW8 is 11 (all dialing codes are on), the network address value is the value of S1 plus 48.

Table 6-7: Determined by dial code SW8 1-10K 2-5.1K





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

Table 6-8: Table A

S3	S3 (°F)	S3 (°C)
O	OFF	OFF
1	-22	-30
2	-18	-28
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

Step 7 - Air Evacuation

Please refer to the outdoor unit manual for details.

Step 8 - Insulate the Piping

After the unit is installed and tested, wrap the piping and brass fittings with foam tape.

You will need to wrap all the connected copper pipes into the insulation.

Wrap insulation around the piping. Direct contact with the bare piping may result in burns or frostbite. Ensure the pipe is properly connected. Over-tightening may damage the bell mouth and under-tightening may lead to leakage.

Insulation material selection for refrigerant pipe

- The burning performance should be over 248°F/120°C.
- Choose insulation materials according to local laws.

Table 8-1: Recommended Insulation Thickness

Humidity < 80% RH	Humidity ≥ 80% RH
3/8 in./10 mm	5/8 in./15 mm

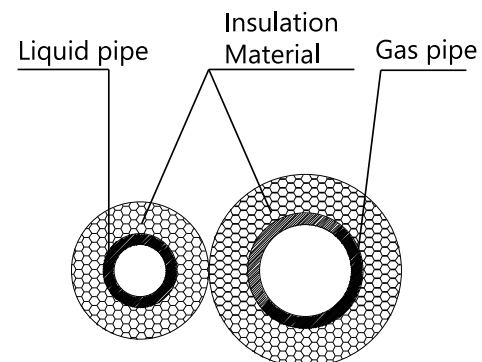


Fig. 8-1: Insulate Both Pipes Separately

- Gas and liquid pipes must be insulated separately. Insulating them together will decrease the performance

of the air conditioner.

- The insulation material at the joint pipe shall be 2-4 in./5-10 cm longer than the gap of the insulation material.
- The insulation material at the joint pipe shall be inserted into the gap of the insulation material.
- The joint pipe's insulation material shall be tightly banded to the gas and liquid pipes.

Be sure not to bind the insulation material or over-tighten it, this may compress the air in the material, cause bad insulation, and cause early decay of the material.

Insulation of drainage pipe

The temperature of condensate drainage water is very low. If the insulation is not enough, it will form dew and leak. This can cause damage to ceilings or walls.

Insulation material selection for drainage pipe

- The insulation material should be made of flame retardant material, and the flame retardancy of the material should be selected according to the local law.
- The thickness of the insulation layer is usually above 3/8 in. / 10 mm.
- Use specific glue to paste the seam of insulation material, and then bind with adhesive tape. The width of the tape shall not be less than 2 in./5 cm.
- The single pipe should be insulated before connecting to another pipe, the joint part should be insulated after the drainage test.
- There should be no insulation gap between the insulation material.

Test Run



Failure to perform the test run may result in unit damage, property damage, or personal injury.

Before the Test Run

A test run must be performed after the entire system has been completely installed. Confirm the following points before performing the test:

- a. Indoor and outdoor units are properly installed.
- b. Piping and wiring are properly connected.
- c. No obstacles near the inlet and outlet of the unit that might cause poor performance or product malfunction.

- d. The refrigeration system does not leak.
- e. The drainage system is unimpeded and draining to a safe location.
- f. Heating insulation is properly installed.
- g. Grounding wires are properly connected.
- h. Length of the piping and additional refrigerant capacity have been recorded.
- i. Power voltage is the correct voltage for the air conditioner

Test run Instructions

1. Open both the liquid and gas service valves.
2. Turn on the main power switch and allow the unit to warm up.
3. Set the air conditioner to COOL mode.
4. For the Indoor Unit
 - a. Double-check to see if the room temperature is being registered correctly.
 - b. Check to see that the drainage system is unimpeded and draining smoothly.
 - c. Ensure there is no vibration or abnormal noise during operation.
5. For the Outdoor Unit
 - a. Check to see if the refrigeration system is leaking.
 - b. Make sure there is no vibration or abnormal noise during operation.
 - c. Ensure the wind, noise, and water generated by the unit do not disturb your neighbors or pose a safety hazard.
6. Drainage Test
 - a. Ensure the drainpipe flows smoothly. New buildings should perform this test before finishing the ceiling.
 - b. Turn on the main power switch and run the air conditioner in COOL mode.
 - c. Check to see that the water is discharged. It may take up to one minute before the unit begins to drain depending on the drainpipe.
 - d. Make sure that there are no leaks in any of the piping.
 - e. Stop the air conditioner. Turn off the main power switch and reinstall the test cover.

NOTE

If the unit malfunctions or does not operate according to your expectations, please refer to the Troubleshooting section of the Service Manual before calling customer service.

Appendix

Table AP-1: Air Volume Table

Capacity	External Static Pressure Range	Fan speed	Electric heater kit	24V thermostat		Wired controller		Airflow volume (CFM)
				DIP Switch	24 V terminal engaged	DIP Switch	Mode	
18K (1.5 Ton)	0-0.8 in. w.c.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	618
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	576
		Cooling Medium	—	—	Y1	—	Cool	529
		Cooling Low	—	—	—	—	Cool	488
		Heat Pump Turbo	—	—	—	—	Heat	565
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	541
		Heat Pump Medium	—	—	Y1	—	Heat	435
		Heat Pump Low	—	—	—	—	Heat	400
		Emergency heat	10KW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	AUX	653
		Emergency heat	8KW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	AUX	624
		Emergency heat	5KW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	AUX	594
		Emergency heat	3KW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	AUX	565
24K (2 Ton)	0-0.8 in. w.c.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	824
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	759
		Cooling Medium	—	—	Y1	—	Cool	694
		Cooling Low	—	—	—	—	Cool	629
		Heat Pump Turbo	—	—	—	—	Heat	788
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	753
		Heat Pump Medium	—	—	Y1	—	Heat	641
		Heat Pump Low	—	—	—	—	Heat	524
		Emergency heat	10KW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	AUX	871
		Emergency heat	8KW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	AUX	841
		Emergency heat	5KW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	AUX	818
		Emergency heat	3KW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	AUX	788
30K (2.5 Ton)	0-0.8 in. w.c.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	988
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	894
		Cooling Medium	—	—	Y1	—	Cool	806
		Cooling Low	—	—	—	—	Cool	541
		Heat Pump Turbo	—	—	—	—	Heat	971
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	912
		Heat Pump Medium	—	—	Y1	—	Heat	706
		Heat Pump Low	—	—	—	—	Heat	471
		Emergency heat	10KW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	AUX	1088
		Emergency heat	8KW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	AUX	1029
		Emergency heat	5KW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	AUX	976
		Emergency heat	3KW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	AUX	918

Table AP-1: Air Volume Table (continued)

Capacity	External Static Pressure Range	Fan speed	Electric heater kit	24V thermostat		Wired controller		Airflow volume (CFM)
				DIP Switch	24 V terminal engaged	DIP Switch	Mode	
36K (3 Ton)	0-0.8 in. w.c.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	1188
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	1082
		Cooling Medium	—	—	Y1	—	Cool	971
		Cooling Low	—	—	—	—	Cool	865
		Heat Pump Turbo	—	—	—	—	Heat	1147
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	1059
		Heat Pump Medium	—	—	Y1	—	Heat	794
		Heat Pump Low	—	—	—	—	Heat	582
		Emergency heat	10KW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	AUX	1306
		Emergency heat	8KW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	AUX	1241
		Emergency heat	5KW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	AUX	1176
		Emergency heat	3KW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	AUX	1112

NOTE

The constant airflow volume motor is applied. So, the airflow volume is constant at all ESP within the stated range.

Table AP-2: 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.

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.

Table AP-3: Indoor Unit Diagnostic Codes

Display	Error Information
EC 07	ODU fan speed out of control
EC 0d	ODU malfunction
EC 51	ODU EEPROM parameter error
EC 52	ODU coil temp. sensor (T3) error
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 C1	Other IDU refrigerant sensor detects leakage (Multi-zone)
EH 00	IDU EEPROM malfunction
EH 03	IDU fan speed out of control
EH 0A	IDU EEPROM parameter error
EH 0b	IDU main control board and display board communication error
EH 0E	Water-level alarm malfunction
EH 3A	External fan DC bus voltage is too low protection
EH 3b	External fan DC bus voltage is too high fault
EH 60	IDU room temp. sensor (T1) error
EH 61	IDU coil temp. sensor(T2) error
EH 62 / EH 66	Evaporator coil inlet temperature sensor T2B is in open circuit or short circuit
EH 65	Evaporator coil temperature sensor T2A is in opencircuit or short circuit
EH 6A	Communication malfunction between indoor unit and external fan module
EH C1	Refrigerant sensor detects leakage
EH C2	Refrigerant sensor is out of range and leakage is detected
EH C3	Refrigerant sensor is out of range
EL 01	IDU & ODU communication error
EL 0C	System lacks refrigerant
EL 16	Communication malfunction between adapter board and outdoor main board
FH CC	Refrigerant sensor error
FL 09	Mismatch between the new and old platforms
PC 00	ODU IPM module protection
PC 01	ODU voltage protection
PC 02	Compressor top (or IPM) temp. protection
PC 03	Pressure protection (low or high pressure)
PC 04	Inverter compressor drive error
PC 0L	Low ambient temperature protection
-- --	IDUs mode conflict(Multi-zone)

Installation Guide For AHU Using 115 V Power Supply

1. Remove the cover.

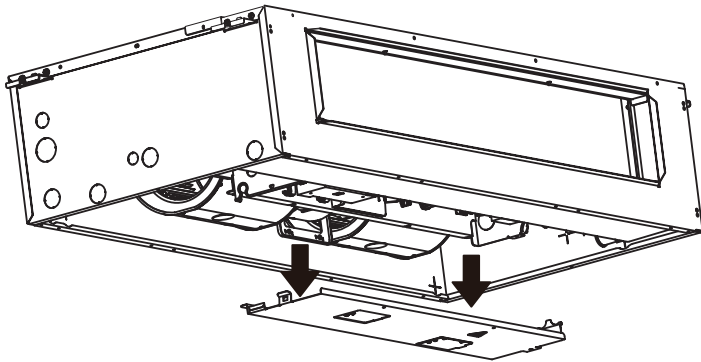


Fig. AP-1: Open the Cover

2. When using a 115 V power supply, the fan motor wiring requires the use of a 115 V fan motor pair plug. At this time, the white fan motor pair plug needs to be removed, and the red fan motor pair plug needs to be connected.

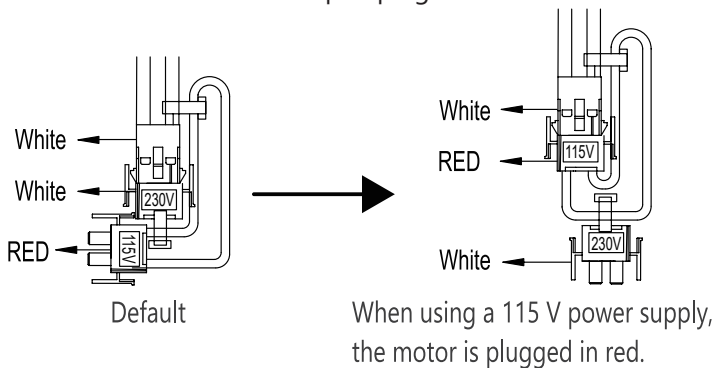


Fig. AP-2: Switch the Red Wire to 115 V

3. Remove the blue connector from the control board CN12.

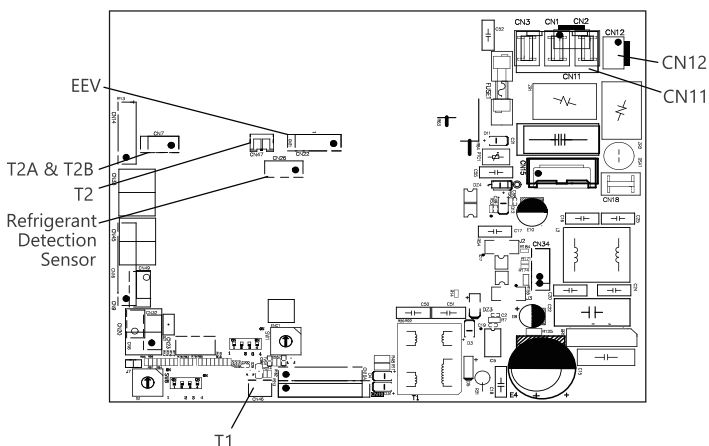


Fig. AP-3: Unplug Sensor From Control Board

4. Remove the red connector from the 24V transformer.

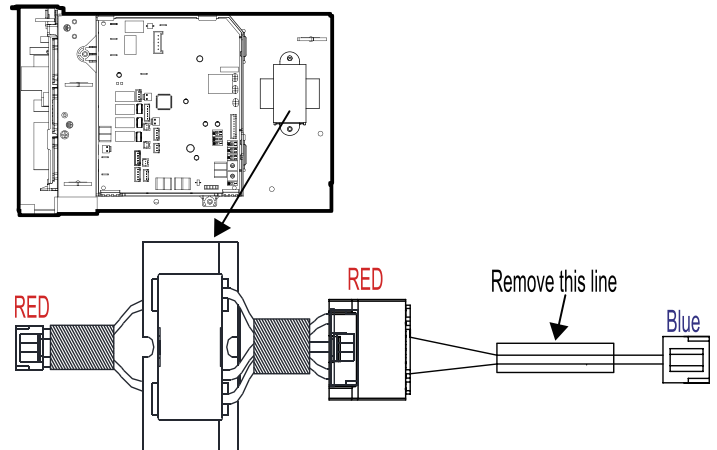


Fig. AP-4: Remove the Red Connector

5. Take the 24V transformer connection wire out from the accessory package. Connect the red connector of the transformer to the white connector and the blue connector to the control board CN12.

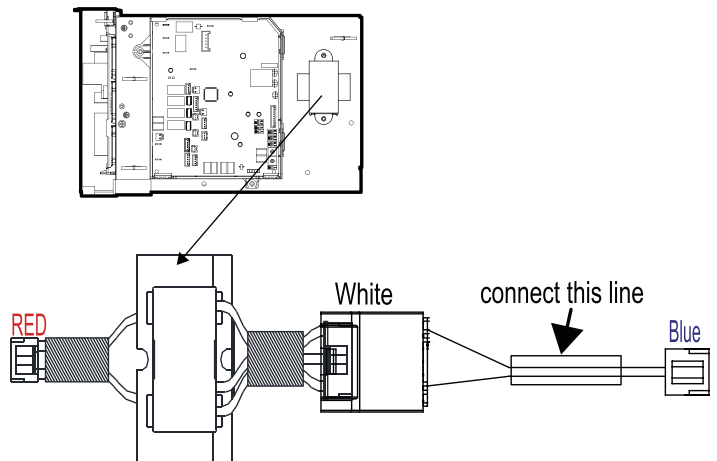


Fig. AP-5: Unplug CN12 Connector

Engineering Mode Access Conditions

When the unit is switched on or in standby mode and not locked, press and hold the key combination "On/Off+Air Speed" for 7 seconds.

1. In engineering mode, when the number code is 23, press and hold the "On/Off" key for 2 seconds to enter the air volume adjustment dialing code for cooling, display Ch, press the "OK" key to query the air volume adjustment value of cooling, and press the up and down keys to select the air volume adjustment dialing code for cooling, then press the "OK" key; press the "On/Off" key for 2 seconds to exit. Press "OK" key again; press "On/Off" key for 2 seconds to exit.

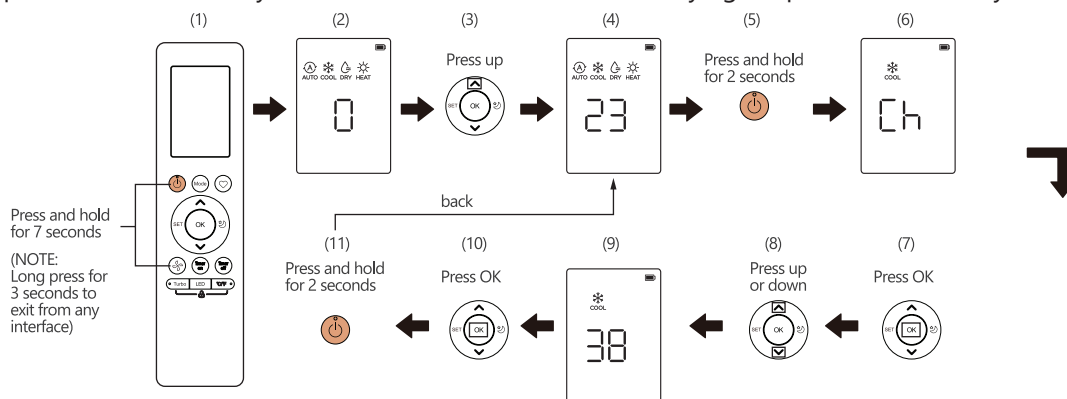


Fig. AP-6: Air Volume Adjustment for Cooling

2. In engineering mode, when the number code is 25, long press "On/Off" key for 2 seconds to enter the air volume adjustment dialing code setting for heating, display Ch, press "OK" key to query the air volume adjustment value for heating, and then press "Up" and "Down" key to select the air volume adjustment dialing code for heating, and then press "OK" key, long press "On/Off" key for 2 seconds to exit. Then press "OK" key; long press 2 seconds "on/off" key to exit.

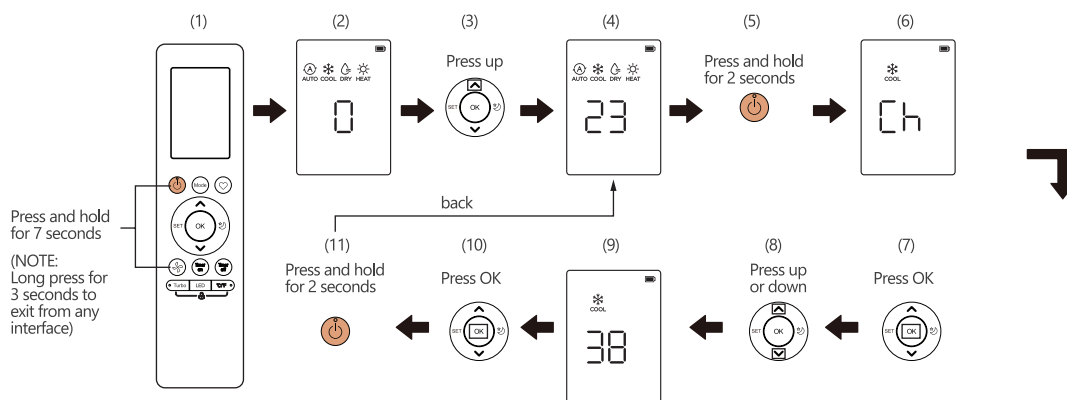


Fig. AP-7: Air Volume Adjustment for Heating

Table AP-4: Dialling Code

Model	Static pressure	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
18K	Dialling code	-8	-3	-2	0	2	4	6	7	8
	Nominal air volume	602	594	603	600	594	594	609	610	604
24K	Dialling code	-9	-6	-3	0	1	3	4	7	10
	Nominal air volume	808	790	805	795	790	796	778	820	819
30K	Dialling code	-8	-3	-2	0	3	5	7	8	11
	Nominal air volume	997	981	986	989	996	995	992	986	910
36K	Dialling code	-8	-5	-3	0	1	3	5	7	9
	Nominal air volume	1216	1226	1229	1234	1233	1206	1228	1186	1035



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>