This product utilizes **R-454B** *refrigerant*

MRCOOL® UNIVERSAL® Series Split System

INSTALLATION & OWNER'S MANUAL

MODELS:

UAH18*-O
UHP18*-O



Read this manual carefully before installation and keep it where the operator can easily find it for future reference.

Due to updates and constantly improving performance, the information and instructions within this manual are subject to change without notice.

Version Date: September 25, 2025
Please visit www.mrcool.com/documentation to ensure you have the latest version of this manual.

MRCOOL®
COMFORT MADE SIMPLE

CONTENTS

1 SAFETY 2
2 PACKING LIST 9
3 INDOOR UNIT INSTALLATION 10
3.1 Product Overview 10
3.2 Installation Location 11
3.3 Installation Preparation & Precautions 12
3.4 Installation Mounting Positions 18
3.5 Airflow Directions 18
3.6 Wire & Piping Connections 19
3.7 Vertical Installation 22
4 REFRIGERANT PIPING CONNECTION 23
5 CONFIRMATION OF INDOOR UNIT 26
5.1 Units without Electric Heat 26
6 OUTDOOR UNIT INSTALLATION 27
6.1 Location Selection 27
6.2 Drain Fitting 28
6.3 Anchor Outdoor Unit 29
7 ELECTRICAL CONNECTIONS 31
7.1 Wiring Precautions 31
7.2 Wiring Overview 31
7.3 Outdoor Unit Wiring 32
7.4 Indoor Unit Wiring 33
7.5 Specific Wiring Methods 33
7.6 DIP Switch Definitions 37
8 AIR EVACUATION 44
8.1 Preparations & Precautions 44
8.2 Evacuation Instructions 44
9 TEST RUN 45
9.1 Before Test Run 45
9.2 Test Run Instructions 45
10 POST-INSTALLATION 46
10.1 Care & Maintenance 46
10.2 Troubleshooting 47
10.3 24V Signal Chart 49
10.4 Error Display (Indoor Unit) 50
10.5 Error Display (Wired Controller) 51
10.6 Error Display (Outdoor Unit) 51
10.7 Quick Maintenance by Error Code 52

Safety Precautions

Read Before Using

Incorrect usage may cause serious damage or injury.

The symbols below are used throughout this manual to indicate instructions that should be followed closely or actions that should be avoided to prevent death, injury, and/or property damage.

WARNING	Indicates a medium level of risk which, if not avoided, may result in death or serious injury.
CAUTION	Indicates a low degree of risk which, if not avoided, may result in minor or moderate injury.
NOTICE	Indicates important information but not danger.

WARNINGS FOR PRODUCT INSTALLATION

INSTALLATION MUST BE PERFORMED BY AN AUTHORIZED DEALER OR SPECIALIST. DEFECTIVE INSTALLATION CAN CAUSE WATER LEAKAGE, ELECTRICAL SHOCK, OR FIRE.

******ELECTRICAL WORK MUST BE COMPLETED BY A QUALIFIED ELECTRICAL TECHNICIAN******

- ***DO NOT*** **install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it could cause fire.**
- ***DO NOT*** **turn on the power until the installation and all work has been completed.**
- ***DO NOT*** **install a unit equipped with an auxiliary electric heater within 3 ft (1 m) of any combustible materials.**

1. Turn off the unit and disconnect the power before performing any installation or repairs. Failure to do so can cause electric shock.
2. Installation must be performed according to the installation instructions. Improper installation could cause water leakage, electrical shock, fire, and could void the warranty. Contact an authorized service technician for repair or maintenance of this unit. This appliance must be installed in accordance with national wiring regulations.
3. Only use the included accessories, parts, and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, fire, and/or failure of the unit.
4. Install the unit in a firm location that can support the unit's weight. If the location cannot support the unit's weight, or the installation is not done properly, the unit may drop and cause serious injury and damage.
5. Install the drainage piping according to the instructions in this manual. Improper drainage could cause water damage to your home and/or property.
6. When moving or relocating the air conditioner, consult experienced service technicians for disconnection and re-installation of the unit.
7. For detailed information of how to install the indoor and outdoor units to their respective supports, please refer to the indoor unit installation and outdoor unit installation sections of this manual.
8. For units with a wireless network function, the USB device access, replacement, and maintenance operations must be carried out by professional staff.
9. Refer to details further in this manual regarding installing the unit to its support.

WARNINGS FOR PRODUCT USE

- ⊘ ***DO NOT*** **insert fingers, rods, or other objects into the air inlet or outlet. This could cause injury, since the fan may be rotating at high speeds.**
- ⊘ ***DO NOT*** **use flammable sprays such as hair spray, lacquer or paint near the unit, as this could cause fire and/or an explosion.**
- ⊘ ***DO NOT*** **operate the unit in places near or around combustible gases. Emitted gas may collect around the unit and cause an explosion.**
- ⊘ ***DO NOT*** **allow children to play with the appliance. Children must be supervised around the unit at all times.**
- ⊘ ***DO NOT*** **operate the unit in a room where it could be exposed to excessive amounts of water, such as a bathroom or laundry room. Exposure to excessive water amounts can cause the electrical components to short circuit.**
- ⊘ ***DO NOT*** **expose your body directly to direct cool airflow from the unit for a prolonged period of time.**

1. If the unit operates abnormally (emits strange noises or a burning smell), immediately turn off the unit and disconnect the power in order to avoid electric shock, fire, and/or injury. Call your local dealer, or MRCOOL® tech support at (270) 366-0457, for further assistance.
2. If the air conditioner is used together with burners or other heating devices, thoroughly ventilate the room in order to avoid an oxygen deficiency.
3. In certain functional environments (such as kitchens and server rooms etc.), the use of specially designed air-conditioning units is highly recommended.
4. This appliance can be used by children (8 years and older) and persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge if they have been given instruction concerning the use of the appliance and understand the hazards involved.
5. Improper installation, adjustment, alteration, service, or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional HVAC installer, service agency, or the gas supplier.

ELECTRICAL WARNINGS

******ELECTRICAL WORK MUST BE COMPLETED BY A QUALIFIED ELECTRICAL TECHNICIAN******

- ⊘ ***DO NOT*** **share the power supply with other appliances. The unit must be installed on a dedicated electrical circuit. An improper or insufficient power supply could cause fire and/or electrical shock.**

1. The product must be properly grounded during installation or electrical shock could occur.
2. Appropriate wiring standards, regulations, and the installation manual must be followed for all electrical work.
3. If connecting power to fixed wiring, an all-pole disconnection device must be incorporated in the fixed wiring in accordance with the wiring rules.
4. For all electrical work, fuse the specified cables. Connect cables tightly and clamp them securely to prevent external forces from damaging the terminal. Improper electrical connections could overheat, causing fire and/or electrical shock.
5. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
6. All wiring must be properly arranged to ensure that the control board cover can close properly. If the control board cover is not properly closed, it can lead to corrosion and cause the connection points on the terminal to heat up, catch fire, or cause electrical shock.
7. Only use the specified wire. If the wire is damaged, it must be replaced by the manufacturer, its service agent, or similarly qualified person in order to avoid a hazard.
8. Disconnection must be incorporated in the fixed wiring in accordance with the NEC, CEC, or local codes.

WARNINGS FOR CLEANING & MAINTENANCE

- ⊘ ***DO NOT*** **clean the unit with excessive amounts of water.**
- ⊘ ***DO NOT*** **clean unit with combustible cleaning agents, as these could cause deformation and/or fire.**

1. Turn off the device and disconnect the power before cleaning. Failure to do this could result in electrical shock.

TAKE NOTE OF FUSE SPECIFICATIONS

- The unit's circuit board (PCB) is designed with a fuse to provide over-current protection. This fuse must be replaced with an identical component if the existing fuse is blown.
- The specifications of the fuse are printed on the circuit board, examples of such are T3.15AL/250VAC, T5AL/250VAC, T3.15A/250VAC, T5A/250VAC, T20A/250VAC, T30A/250VAC, etc.
- **NOTE:** Only blast-proof ceramic fuses can be used.

CAUTION

- ⊘ ***DO NOT*** **allow the air conditioner to operate for extended periods of time with the doors or windows open, or in very high humidity.**
- ⊘ ***DO NOT*** **operate the air conditioner with wet hands, as this could cause electric shock.**
- ⊘ ***DO NOT*** **use device for any other purpose than its intended use.**
- ⊘ ***DO NOT*** **climb onto or place objects on top of the outdoor unit.**

1. Make sure that water condensation can drain smoothly and unhindered from the unit.
2. Turn off the unit and disconnect the power if the unit will not be used for an extended period of time.
3. As with any mechanical equipment, contact with sharp metal edges can result in personal injury. Ensure care is taken when handling the unit and any of its accessories by wearing gloves and protective clothing.

NOTE ON FLUORINATED GASES:

1. This unit contains fluorinated greenhouse gases.
2. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself.
3. Service, maintenance, and repair of this unit must be performed by a certified technician.
4. Product un-installation and recycling must be performed by a certified technician.
5. When checking the unit for leaks, maintain proper record-keeping of all checks.

NOTE ON STATIC PRESSURE:

The allowed static pressure range of the air conditioner on site refers to the table below:

Model	24K	30-36K	48-60K
Pressure	0-1.0 in.wc. (0-250Pa)	0-1.0 in.wc. (0-250Pa)	0-0.8 in.wc. (0-200Pa)

Units: Inch of Water Column (Pascals)

NOTE: The maximum functional total external static pressure cannot exceed the above range values. The airflow reduces significantly with pressures above and beyond the maximum value. The system design should allow for the increased resistance of filters as they become dirty.

The data below represents the static pressures at full required air flow used for AHRI testing:

Model	24K	30-36K	48-60K
Pressure	0.5 in.wc. (125Pa)	0.5 in.wc. (125Pa)	0.5 in.wc. (125Pa)

FLAMMABLE REFRIGERANT WARNINGS

1. The installation of pipe-work should be kept to a minimum and should be protected from physical damage.
2. Refrigerant pipes should comply with national gas regulations.
3. All mechanical connections and ventilation openings should be kept clear of obstruction.
4. Utilize proper disposal processes based on national regulations.
5. Any person 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.
6. 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.
7. Do not use any means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
8. The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance, or an operating electric heater).
9. Do not allow foreign matter (oil, water, etc.) to enter the piping, and securely seal the opening by pinching, taping, etc.
10. Do not pierce or burn.
11. Refrigerants may not contain an odor.
12. Working procedures that affect safety should only be carried out by competent persons.
13. The unit should be stored in a well-ventilated area where the room size corresponds to the room area as specific for operation, and should be stored so as to prevent potential mechanical damage from occurring.
14. Joints should be tested with detection equipment with a capability of 5 g/year of refrigerant or better, with the equipment in standstill and under operation or under a pressure of at least these standstill or operation conditions after installation. Detachable joints should NOT be used in the indoor side of the unit (brazed, welded joint could be used).
15. A leak detection system is installed. The unit must be powered except for service. For units with a refrigerant sensor, 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 should only be replaced with the sensor specified by the manufacturer.
16. Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repairs to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.
17. Work should be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.
18. All maintenance staff and others working in the local area should be instructed on the nature of work being carried out. Avoid work in confined spaces.
19. The area should be checked with an appropriate refrigerant detector prior to 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.
20. If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment should be on site and readily available. Have a dry power or CO2 fire extinguisher adjacent to the charging area.
21. No person carrying out work in relation to a refrigerating system which involves exposing any pipe work should use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing, and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking 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 should be displayed.
22. 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.

FLAMMABLE REFRIGERANT WARNINGS

23. Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manfacturer's maintenance ad service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance. The following checks should 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 should be checked for the presence of refrigerant;
    - marking to the equipment continues to be visible and legible, marking and signs that are illegible should be corrected;
    - refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.
24. Repair and maintenance to 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 but it is necessary to continue operation, an adequate temporary solution should be used.
25. Initial safety checks should include:
    - that capacitors are discharged: this should be done in a safe manner to avoid the possibility of sparking;
    - that there are no live electrical components and wiring are exposed while charging, recovering, or purging the system;
    - that there is continuity of earth bonding.
26. Sealed electrical components should be replaced if damaged.
27. Intrinsically safe components should be replaced if damaged.
28. Check that wiring 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.
29. Under no circumstances should 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) should 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 should be calibrated to the refrigerant employed, and the appropriate percentage of gas (25% minimum) is confirmed. Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine may react with the refrigerant and corrode the copper work. Examples of leak detection fluids are the bubble method, fluorescent method agents, etc. If a leak is suspected, all naked flames should be removed/extinguished. If a leakage of refrigerant is found which requires brazing, all of the refrigerant should be recovered from the system, or isolated (by means of shut-off valves) in a part of the system remote from the leak. See the following instructions of removal of refrigerant.

30. When breaking into the refrigerant circuit to make repairs, or for any other purpose, conventional procedures should be used. However, for flammable refrigerants, it is even more vital to follow best practice. The following procedure should be adhered to:
    - safely remove refrigerant following local and national regulations;
    - evacuate;
    - purge the circuit with inert gas;
    - evacuate;
    - continuously flush or purge with inert gas when using flame to open circuit;
    - open the circuit

FLAMMABLE REFRIGERANT WARNINGS

31. The refrigerant charge should be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For units containing flammable refrigerants, the system should 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 should be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process should be repeated until no refrigerant is within the system. When the final oxygen-free nitrogen charge is used, the system should be vented down to atmospheric pressure to enable work to take place. The outlet for the vacuum pump should not be close to any potential ignition sources, and ventilation should be available.
32. In addition to conventional charging procedures, the following requirements should be followed:
    - Work should 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 shot as possible to minimize the amount of refrigerant contained in them.
    - Cylinders should be kept upright.
    - Ensure that the refrigeration system is grounded prior to charging the system with refrigerant.
    - Label the system when charging is complete (if not already).
    - Extreme care should be taken not to overfill the refrigeration system.
    - Prior to recharging the system, it should be pressure tested with oxygen-free nitrogen (OFN). The system should be leak-tested on completion of charging but prior to commissioning. A follow-up leak test shall be carried out prior to leaving the site.
33. Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is good recommended practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample should be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.
    a. Become familiar with the equipment and its operation.
    b. Isolate the 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 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 in accordance with 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 equipment are removed from the site promptly and all isolation valves on the equipment are closed off.
    k. Recovered refrigerant should not be charged into another refrigeration system unless it has been cleaned and checked.
34. Equipment shall be labeled stating that it has been decommissioned and emptied of refrigerant. The label should be dated and signed. For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

FLAMMABLE REFRIGERANT WARNINGS

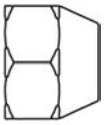
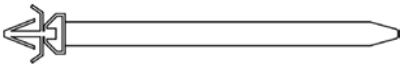
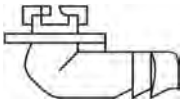
35. When removing refrigerant from a system, either for servicing or decommissioning, it is good recommended practice that all refrigerants are removed safely. When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used should be 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 valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs. The recovery equipment should be in good working order with a set of instructions concerning the equipment that is at hand and should 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 should be available and in good working order. Hoses should be complete with leak-free disconnect couplings and in good condition. The recovered refrigerant should 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 and 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 should not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it should be carried out safely.
36. An unventilated area where the appliance using flammable refrigerants is installed should be constructed so that should any refrigerant leak, it will not stagnate so as to create a fire or explosion hazard. If appliances connected via an air duct system to one or more rooms below the ventilation requirements, that room should never contain potential ignition sources. A flame-producing device may be installed in the space if the device is provided with an effective flame arrest. Auxiliary devices which may be a potential ignition source should not be installed in the duct work. Examples of such are hot surfaces with a temperature exceeding 1292°F (700°C) and electric switching devices. Only auxiliary devices (such as a certified heater kit) approved by the manufacturer or declared suitable with the refrigerant should be installed in connecting ductwork. False 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 should only be replaced with sensors specified by the manufacturer. A leak detection system is installed. The unit must be powered except for service.
37. Transport of equipment containing flammable refrigerants should comply with transportation regulations.
38. Marking of equipment using signs should comply with local regulations.
39. Disposal of equipment using flammable refrigerants should comply with national regulations.
40. Storage of equipment/appliances should be in accordance with the manufacturer's instructions.
41. Storage of packed (unsold) equipment should be constructed so 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.

Symbols Displayed on Indoor & Outdoor Unit		
	**WARNING**	This symbol shows that this appliance uses 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 a service personnel should be handling this equipment with reference to the installation manual.
	**CAUTION**	
	**CAUTION**	This symbol shows that information is available such as the operating manual or installation manual.

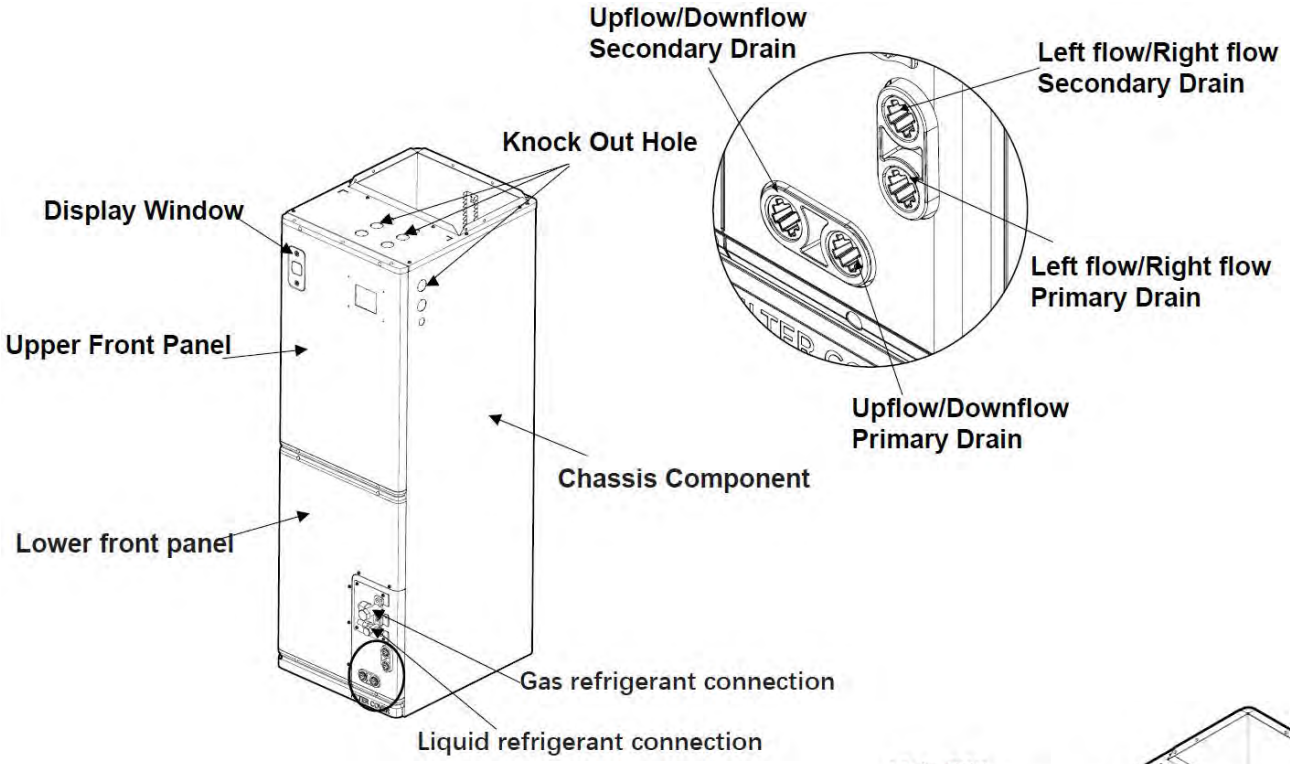
2 PACKING LIST

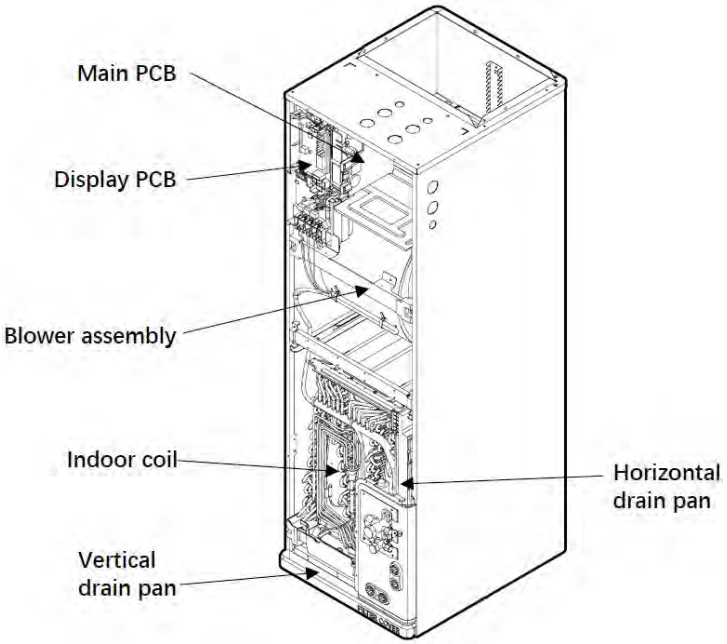
2-Packing List

The listing below shows the accessories and parts (these may vary depending on purchase & options). Use all of the installation parts and accessories to install the system. Improper installation may result in water leakage, electrical shock, fire, and/or equipment failure.

PART	LOOKS LIKE	QUANTITY
Installation & Owner's Manual		1
Cable Ties (Type A)		4
Insulation Sleeve		2
Flare Nut		2
Braze to Flare Adapter		2
Reusable Zip Ties (Type B)		2
Adapter Cable (For full 24V communication)		1
Drain Joint		1
Seal Ring (Will vary per condenser)		1

3.1 Product Overview





Operating Conditions

Use the system under the following temperatures for safe and effective operation. If the unit is used under different conditions, it may malfunction or become less efficient.

	Cool Mode	Heat Mode	
Room Temperature	60°F - 90°F (16°C - 32°C)	32°F - 86°F (0°C - 30°C)	50°F - 90°F (10°C - 32°C)
Outdoor Temperature	-22°F - 122°F (-30°C - 50°C)	-22°F - 75°F (-30°C - 24°C)	32°F - 122°F (0°C - 50°C)

For units with auxiliary electric heater: When the outside temperature is below 32°F (0°C), we strongly recommend keeping the outdoor unit powered at all times to prevent damage to equipment.

NOTE: Room relative humidity should be less than 80%. IF the unit operates in excess of this figure, the surface of the unit may attract condensation.

3 INDOOR UNIT INSTALLATION

! CAUTION

Install the indoor and outdoor units, cables, and wires at least 3-1/5ft (1m) from televisions or radios to prevent static or image distortion. Depending on the appliances, a 3-1/5ft (1m) distance may not be sufficient. **The indoor unit must be electrically grounded per national and local electrical codes.**

3.2 Installation Location

Do NOT install the unit in the following locations:



Environments with excessive moisture, which can corrode the equipment, electrical components, and cause electrical shorts.



Areas with strong electromagnetic waves.



Coastal areas with high salt content in the air.



Areas that store flammable materials or gas.



Areas were 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.



Areas with oil drilling or fracking.

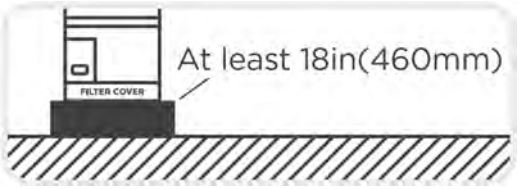


Areas with danger of explosion. Keep flammable materials & vapors, such as gasoline, away from air handler.

Unit location MUST meet the following requirements:



☑ Securely install the indoor unit on a structure that can support its weight. If the structure is too weak, the unit may fall and cause personal injury, unit and property damage, or death.



☑ Place air handler so that heating elements are at least 18in (460mm) above the floor for a garage installation. Failure to follow these instructions can result in death, explosion, or fire.



☑ Enough room for installation and maintenance.

☑ Enough room for the connecting pipe and drainpipe.



☑ The structure that the equipment is suspended from must support the weight of the indoor unit.

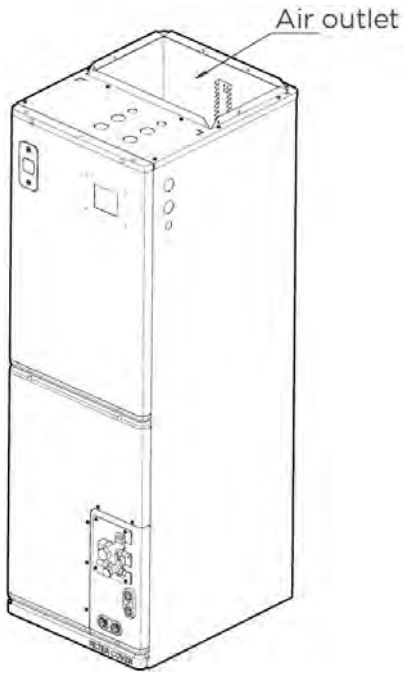
WARNING

There must be an airtight seal between the bottom of the air handler and the return air plenum. Use fiberglass sealing strips, foil duct tape, caulking, or equivalent sealing method between the plenum and the air handler cabinet to ensure a tight seal. Return air must not be drawn from a room where this air handler or any gas-fueled appliance (i.e., water heater), or carbon monoxide-producing device (i.e., wood fireplace) is installed.

3.3 Installation Preparation & Precautions

WARNING

- Please apply sealant around the places where the wires, refrigerant pipes, and condensate pipes enter the cabinet.
- Use duct tape or flexible sealant to seal closed any space around the holes where the drain lines exit the cabinet. Warm air must not be allowed to enter through any gaps or holes in the cabinet.



NOTE: Remove all accessories and packing in the air outlet before installation.

Ductwork Acoustical Treatment

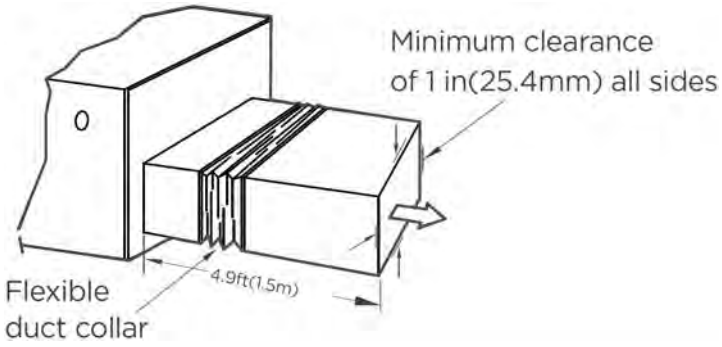
- Metal duct systems that do not have a 90 degree elbow and 10ft (3m) of main duct to first branch takeoff may require internal acoustical lining.
- As an alternative, fibrous ductwork may be used if constructed and installed in accordance with the latest edition of the SMACNA construction standard on fibrous glass ducts.
- Both acoustical and fibrous ductwork shall comply with the National Fire Protection Association as tested by UL Standard 181 for Class 1 air ducts.
- The air supply and reutrn may be handled in one of several ways; whichever situation is best suited for the installation. A large number of issues encountered with split-system installations can be linked to improperly designed or installed duct systems. It is therefore very important that the duct system be properly designed and installed.
- Use of flexible duct collars is recommended to minimize the transmission of vibration/noise into the conditioned space. Where the air duct is short, or where sound is liable to be a problem, sound absorbing glass fiber should be used inside the duct. Insulation of duct work must be installed according to local codes and best practices. The supply air duct should be properly sized by use of a transition to match the unit opening. This unit is not designed for non-ducted (free blow) applications.

NOTE: Duct work should be fabricated and installed in accordance with local and/or national codes.

3 INDOOR UNIT INSTALLATION

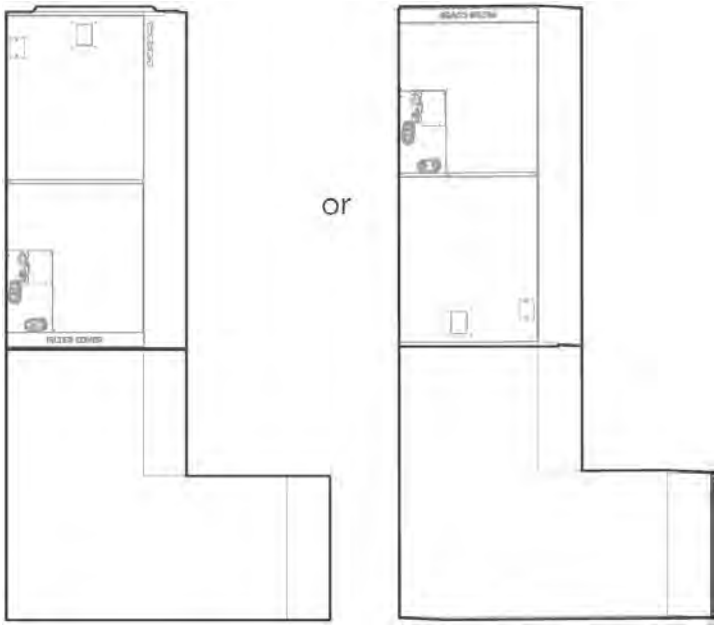
Indoor Unit Clearance Requirements

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



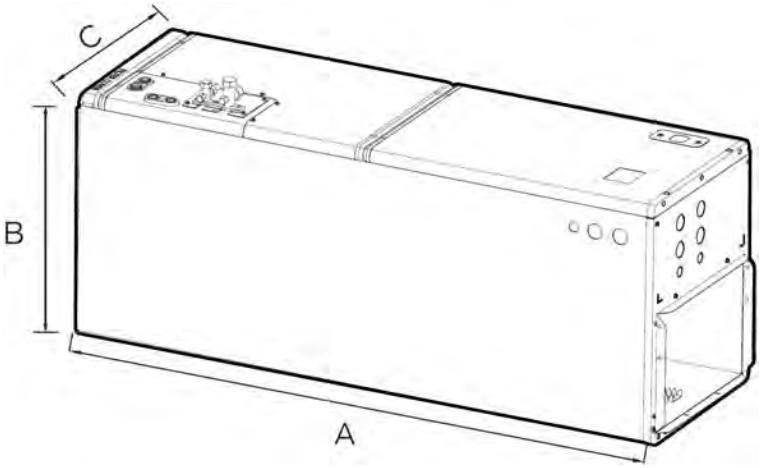
Outlet side pipe length: 4.9 ft. (1.5m)

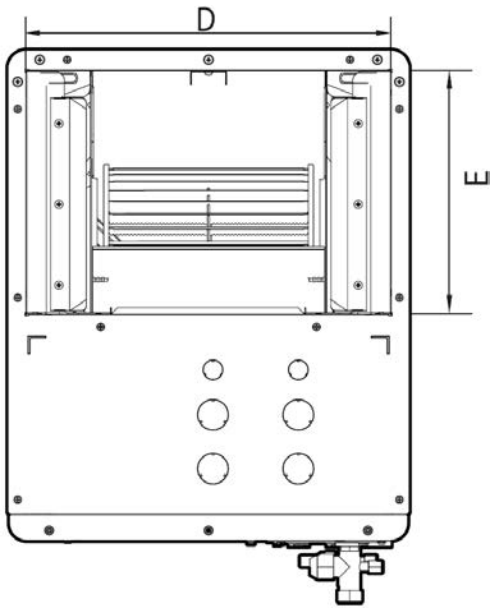
Vertical Installations



Mounting instructions: When installed vertically (upflow or downflow), the lower end of the air outlet needs to be connected to the L-shaped metal air duct and fastened by screws. If return air is to be ducted, install duct flush with floor. Set unit on floor over opening. All return air must pass through coil.

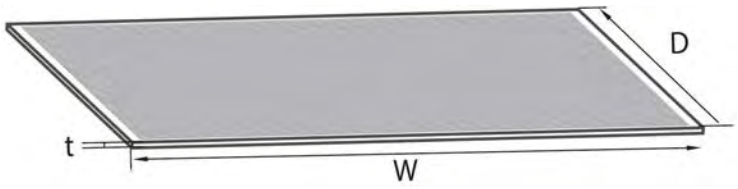
Dimensions





Dimensions	Model Capacity (BTU/H)		
	24K	30K/36K	48K/60K
Length of A	49-3/4 in (1263 mm)	54 in (1371 mm)	56 in (1421 mm)
Length of B	21-1/2 in (546 mm)	21-1/2 in (546 mm)	21-1/2 in (546 mm)
Length of C	14-1/2 in (368 mm)	17-1/2 in (445 mm)	21-1/2 in (546 mm)
Length of D	13 in (330 mm)	16 in (407 mm)	20 in (508 mm)
Length of E	10-1/4 in (273 mm)	10-1/4 in (273 mm)	10-1/4 in (273 mm)

Filter Dimensions

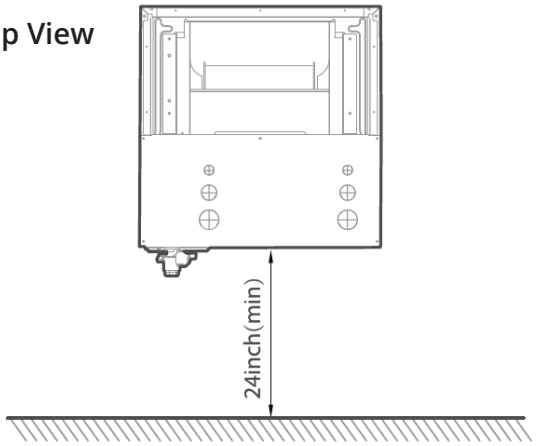


Filter must meet the requirements of UL900.

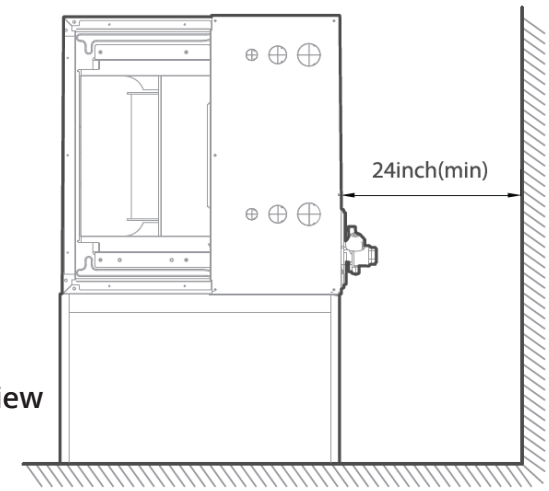
Model Capacity (BTU/H)	Width (W)	Depth (D)	Thickness (t)
24K	12 in (305 mm)	20 in (508 mm)	1 in (25 mm)
30K/36K	16 in (406 mm)	20 in (508 mm)	1 in (25 mm)
48K/60K	20 in (508 mm)	20 in (508 mm)	1 in (25 mm)

Installation Position Requirements

Top View



Vertical installations



Side View

Horizontal installations

Note on Ductwork & Connections

- Air supply and return can be handled in one of several ways depending on which is best suited for the type of installation. Please see the dimensions on the previous page to determine duct inlet and outlet connection sizes to match the air handler. The vast majority of problems encountered with combination cooling systems can be linked to improperly designed or installed ductwork. For this reason, it is highly important that the duct system be properly designed and installed.
- The use of flexible duct collars will minimize the transmission of vibration and noise into the conditioned space. In an installation where the return air duct is short, or where sound is likely to be a problem, a sound absorbing liner should be used inside the duct.
- Insulation of the ductwork is a requirement anywhere it runs through an uncooled space during the cooling season.
- The use of a vapor barrier is recommended to prevent absorption of moisture from the surrounding air into the insulation.
- The supply air duct should utilize a properly sized transition in order 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 in accordance with local and/or national codes.

! CAUTION

- A field-fabricated secondary drain pan (not included), with a drain pipe to the outside of the building is required in all installations over a finished living space or in any area that may be damaged by overflow from the main drain pan. **NOTE: A secondary drain pan is required for horizontal installations.**
- This unit is not designed for non-ducted (free-blow) applications. Electric heat kit elements and/or blower is easily accessible without ductwork and creates a safety hazard that could result in electric shock and/or personal injury.

Room Size Restriction

The units are connected via an air duct to one or more rooms, the bottom of the air outlet of the air duct in the room should be at a height ≥7.3 ft (2.2m) from the floor. In UL/CSA 60335-2-40, the R454B refrigerant belongs to mildly flammable refrigerants, which will limit the room area of the system service. Similarly, the total amount of refrigerant in the system should be less than or equal to the maximum allowable refrigerant charge, which depends on the room area serviced by the system.

SECTION TERMINOLOGY

Mc: the actual refrigerant charge in the system
A: the actual room area where the appliance is installed
Amin: the required minimum room area
Mmax: the allowable maximum refrigerant charge in a room
Qmin: the minimum circulation airflow
Anvmin: the minimum opening area for connected rooms
TAmin: the total area of the conditioned space (for appliances serving one or more rooms with an air duct system)
TA: The total area of the conditioned space connected by air ducts.

Refrigerant Charge and Room Area Limitations

For the purpose of determination of room area (A) when used to calculate the maximum allowable refrigerant charge (mmax) in an unventilated space, the following shall apply.

The room area (A) shall be defined as the room area enclosed by the projection to the floor of the walls, partitions and doors of the space in which the appliance is installed. Spaces connected by only drop ceilings, ductwork, or similar connections shall not be considered a single space.

For units mounted higher than 6 ft (1.8m), spaces divided by partition walls which are no higher than 5.3ft/1.6m shall be considered a single space.

For fixed appliances, rooms on the same floor and connected by an open passageway between the spaces can be considered a single room when determining compliance to Amin, if the passageway complies with all of the following:

- it is a permanent opening
- it extends to the floor
- it is intended for people to walk through

For fixed appliances, the areas of the adjacent rooms, on the same floor, connected by a permanent opening in the walls and/or doors between occupied spaces, including gaps between the wall and the floor, can be considered a single room when determining compliance to Amin, provided all of the following are met:

- the space shall have appropriate openings
- the minimum opening area for natural ventilation Anvmin shall not be less than the following:

Height of Outlet/m	A/m²	Mc/kg	Mmax/kg	Anvmin/m²
2.2	5	5.0	2.685	0.045
2.2	6	5.0	2.941	0.042
2.2	7	5.0	3.177	0.038
2.2	8	5.0	3.396	0.035
2.2	9	5.0	3.602	0.031
2.2	10	5.0	3.797	0.028
2.2	11	5.0	3.983	0.024
2.2	12	5.0	4.160	0.020
2.2	13	5.0	4.330	0.016
2.2	14	5.0	4.493	0.013
2.2	15	5.0	4.651	0.009
2.2	16	5.0	4.803	0.005
2.2	17	5.0	4.951	0.001

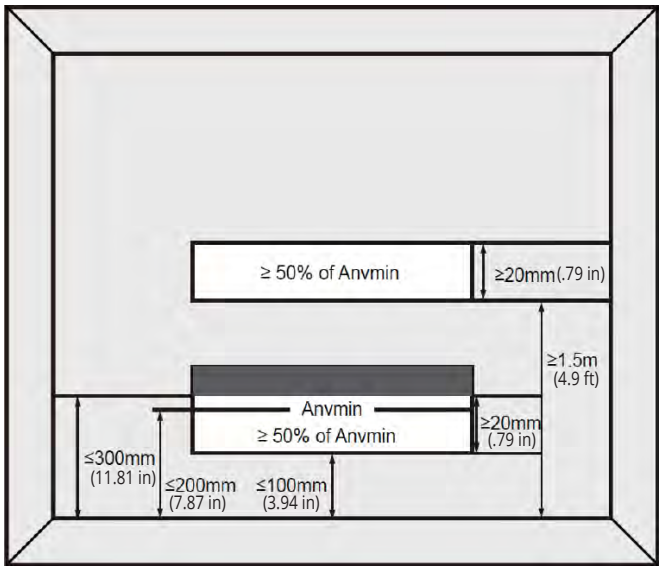
NOTE

Take the Mc=5.0kg as an example. For appliances serving one or more rooms with an air duct system, the room area calculation should be determined based on the total area of the conditioned space (TA) connected by ducts taking into consideration that the circulating airflow distributed to all the rooms by the appliance integral indoor fan will mix and dilute the leaking refrigerant before entering any room.

Opening Conditions for Connected Rooms

When the openings for connected rooms are required, the following conditions should be applied:

- the area of any openings above 11.81in (300mm) from the floor should not be considered in determining compliance with Anvmin.
- at least 50% of the required opening area Anvmin should be below 7.87in (200mm) from the floor.
- the bottom of the lowest openings should not be higher than the point of release when the unit is installed and not more than 3.94in (100mm) from the floor.
- openings are permanent openings which cannot be closed (for openings extending to the floor, the height should not be less than .79in (20mm) above the surface of the floor covering)
- A second higher opening should be provided. The total size of the second opening should not be less than 50% of the minimum opening area for Anvmin and should be at least 4.9ft (1.5m) above the floor. (NOTE: The requirement for the second opening can be met by drop ceilings, ventilation ducts, or similar arrangements that provide an airflow path between the connected rooms.)
- The room into which refrigerant can leak, plus the connected adjacent room(s) should have a total area of no less than TAmin.
- The room in which the unit is installed should not be less than 20% TAmin.



454B Refrigerant Charge Amount & Minimum Room Area

The unit matches the following table. The indoor and outdoor units are designed to be used together. Refer to the unit you purchased. The minimum room area of operating or storage should be as specified in the following table:

Model	Indoor Unit	Outdoor Unit
24K (208/230V)	UAH18024-O	UHP18024-O
30K (208/230V)	UAH18030-O	UHP18030-O
36K (208/230V)	UAH18036-O	UHP18036-O
48K (208/230V)	UAH18048-O	UHP18048-O
60K (208/230V)	UAH18060-O	UHP18060-O

M_C or M_{REL} [oz/kg]	TAmin [ft²/m²]	M_C or M_{REL} [oz/kg]	TAmin [ft²/m²]	M_C or M_{REL} [oz/kg]	TAmin [ft²/m²]	M_C or M_{REL} [oz/kg]	TAmin [ft²/m²]
<=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	152/14.3	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

TAmin is the required minimum room area in ft²/m².

Mc is the actual refrigerant charge in the system in oz/kg.

M_{REL} is the refrigerant charge in the system in oz/kg.

h_{inst} is the height of the bottom of the unit 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.

When the unit detects a refrigerant leak, the minimum airflow of the indoor unit is as follows:

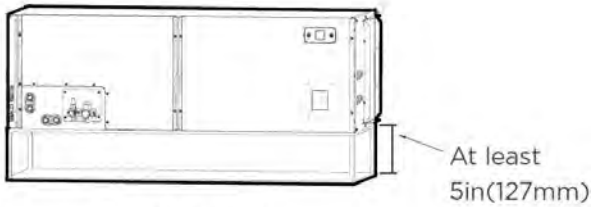
Model	24K	30K	36K	48K	60K
Nomimal Air Volume	400CFM (680m³/h)	447CFM (760m³/h)	541CFM (920m³/h)	706CFM (1200m³/h)	824CFM (1400m³/h)

3.4 Installation Mounting Positions

The unit can be installed in a Vertical (downflow or upflow) or a Horizontal (right or left) configuration.



Vertical up

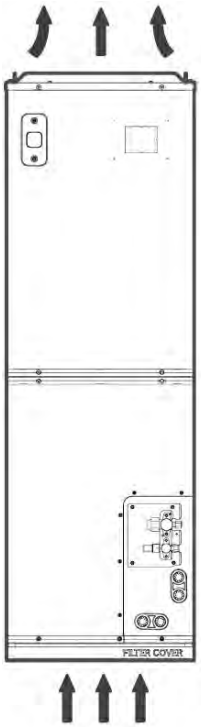


Horizontal

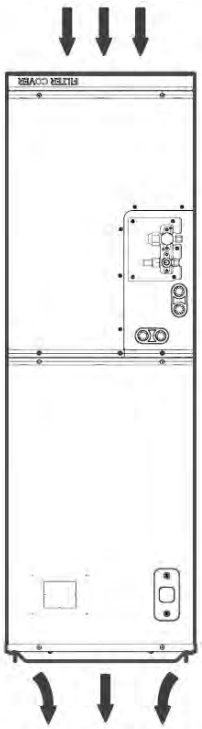
NOTE

- Vertical Up and Horizontal Left installation does not require a change to the direction of the evaporator.
- For Horizontal installation, a secondary drain pan (not supplied) must be installed.

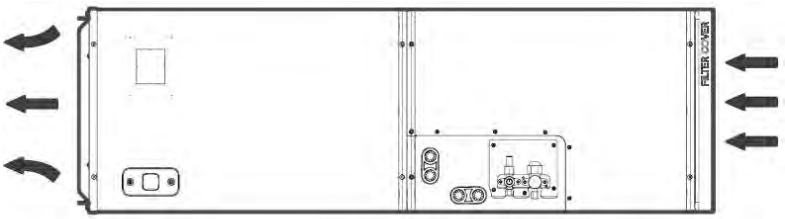
3.5 Airflow Directions



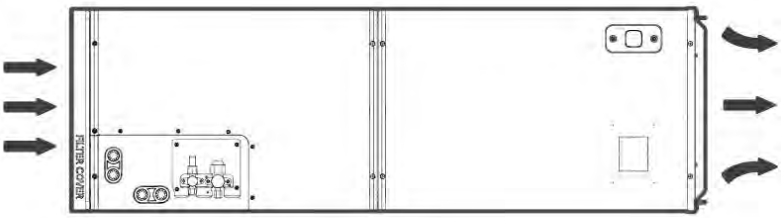
Upflow



Downflow



Left flow



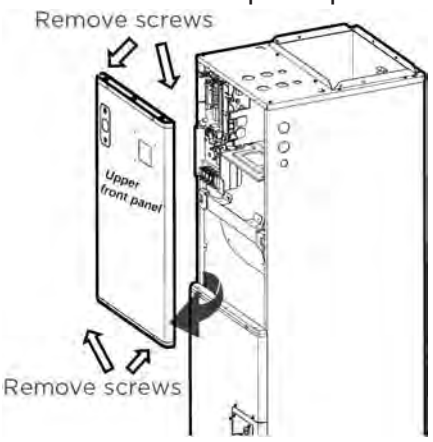
Right flow

NOTE

- The unit can be installed vertical up and horizontal right with no need to change the direction of the evaporator.
- The unit may be installed in upflow, downflow, left flow, or right flow orientations.

3.6 Wire & Piping Connections

Follow these steps to perform an **upflow** and **horizontal right** installation:

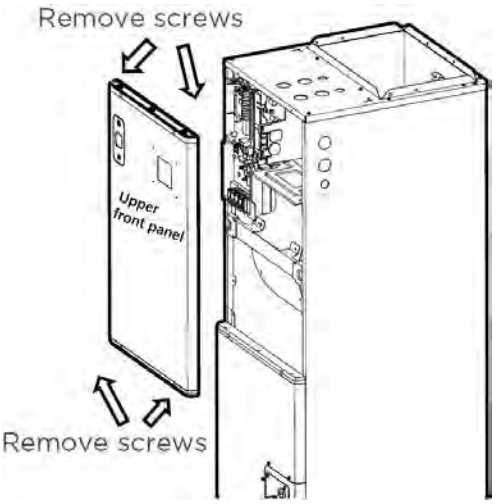


Step 1:
Remove the four screws and open the upper front panel.

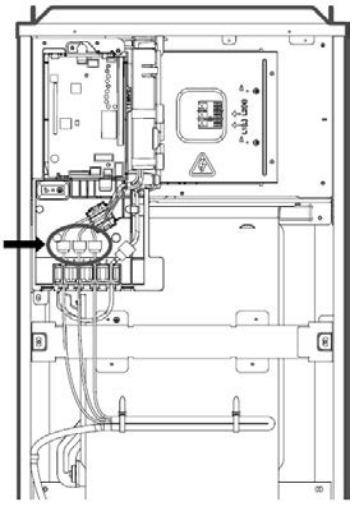
Step 2:
Connect the wires according to the wiring diagram.

Step 3:
Connect the pipes and install the drainage pipes.

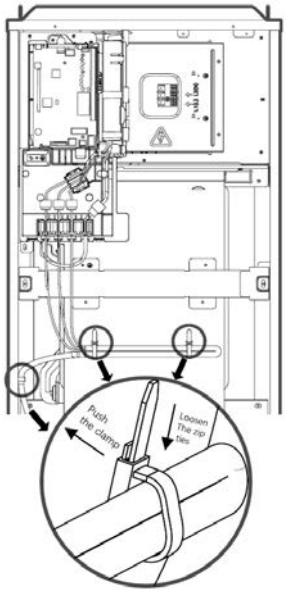
The steps below detail the installation of a **downflow** or **horizontal left** indoor unit once it has been securely mounted in place.



1. Remove the four screws and open the upper front panel.

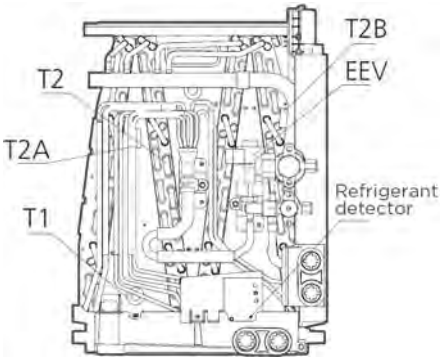


2. Disconnect the connectors.

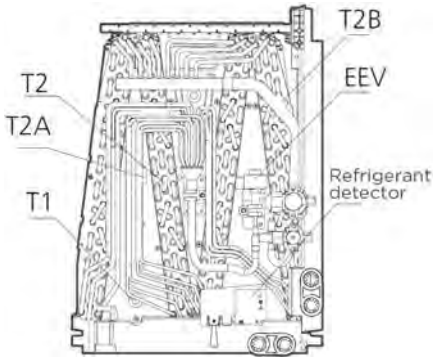


3. Loosen three zip ties (reusable).

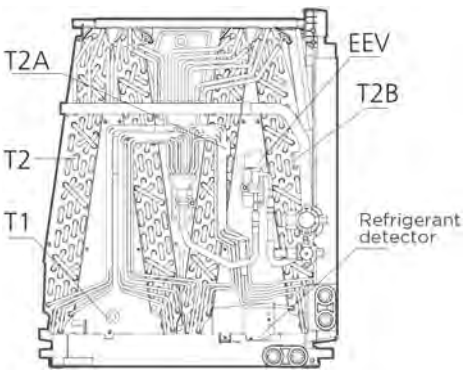
4. Identify the position of the evaporator's temperature sensor.



24K Model

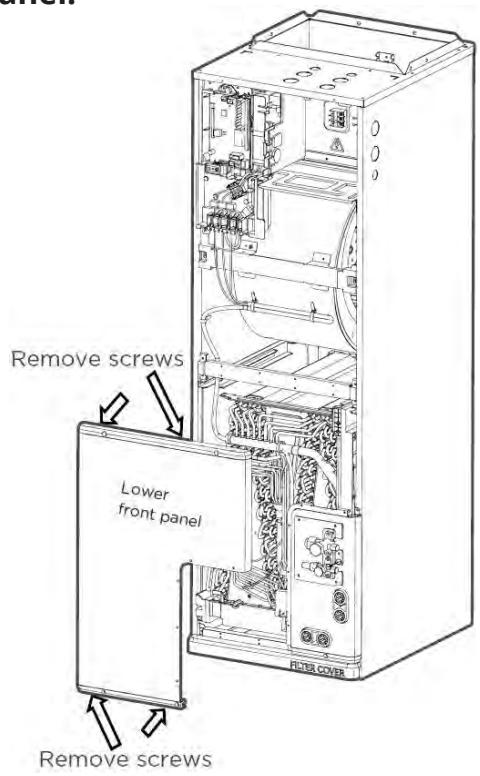


30K-36K Model

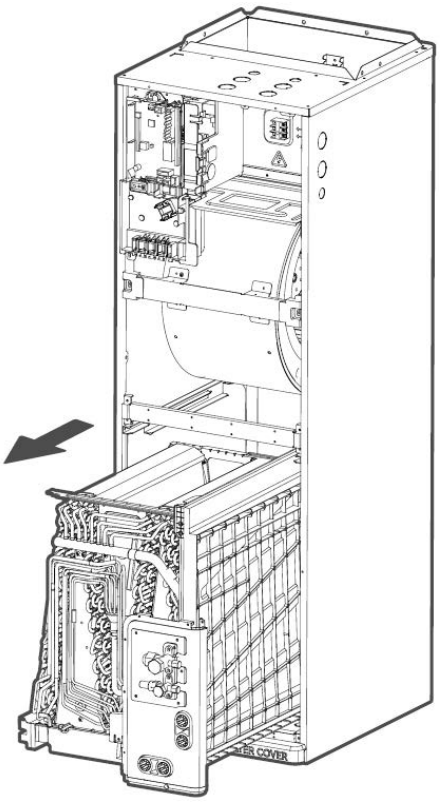


48-60K Model

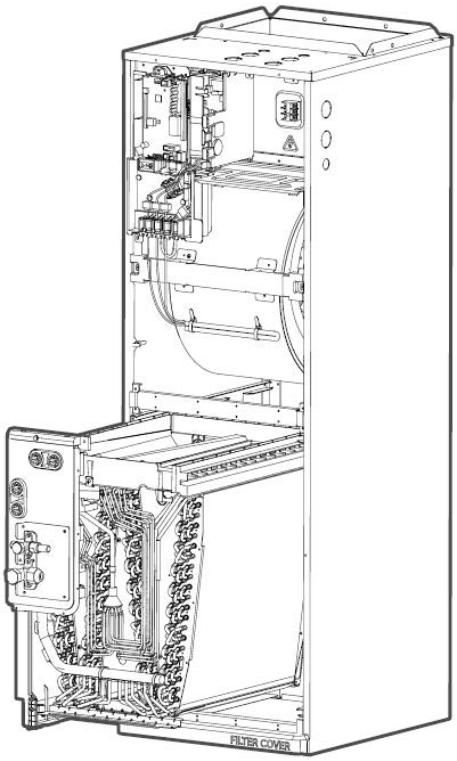
5. Remove the four screws and open the lower front panel.



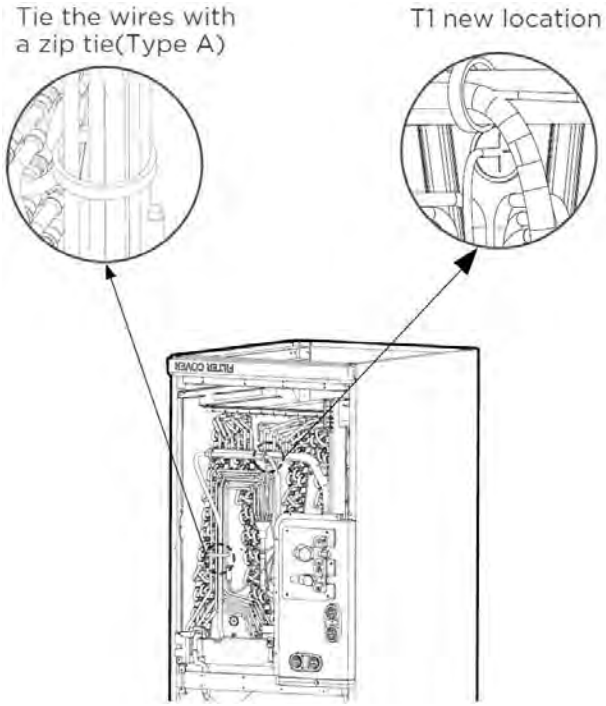
6. Take out the evaporator and drain pan and rotate 180° (when your equipment needs to be in a vertical down configuration).

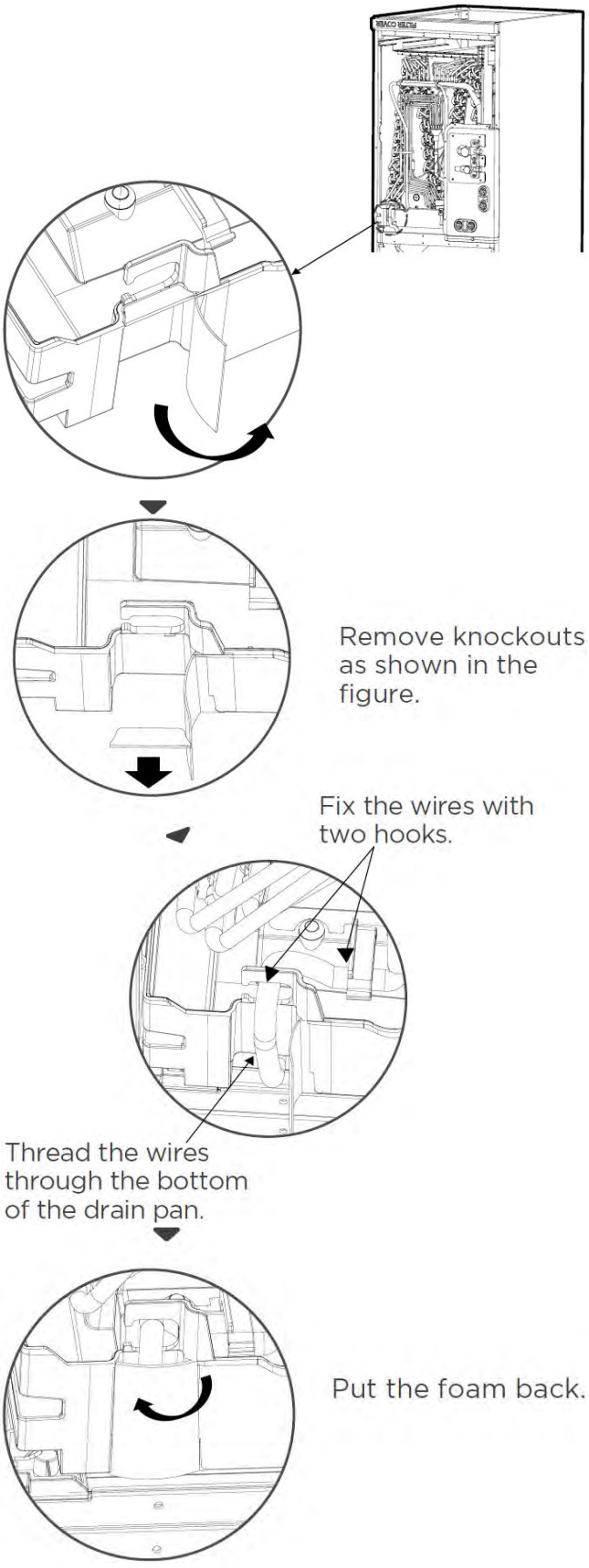


7. Reinstall the evaporator and drain pan.



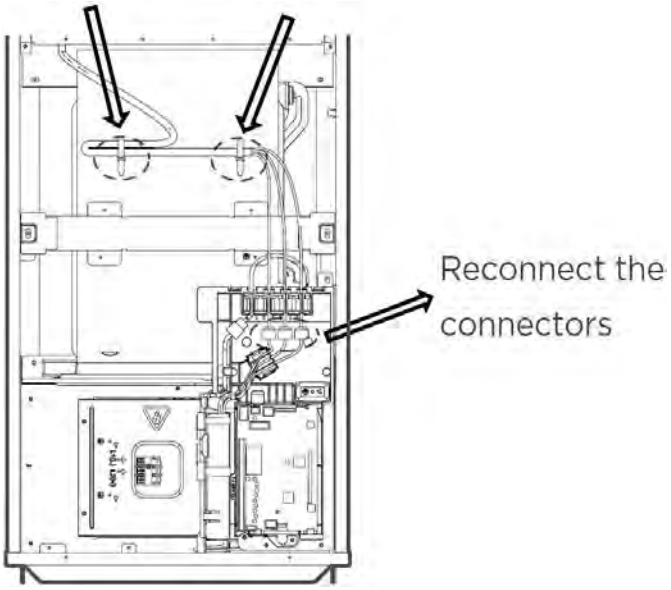
8. Relocate the wires in the coil module.





NOTE: The wire body needs to pass through the wire groove from the drain pan and attach to the hook of the drain pan.

9. Relocate the wires in the fan module.



10. Connect the wires according to the wiring diagram.

11. Reassemble the upper and lower front panel.

! CAUTION

- Insulate all piping to prevent condensation, which could lead to water damage.
- The drainpipe is used to drain water away from the unit. 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 that the drain hose is placed in an appropriate area to avoid water damage and icy conditions on walkways.
- **DO NOT** pull the drainpipe forcefully. This could disconnect it.

NOTE: If installed above a finished living space, a secondary drain pan (as required by many building codes), must be installed under the entire unit and its condensate drain line must be routed to a location such that the user will see the condensate discharge.

NOTICE ON PIPE PURCHASING

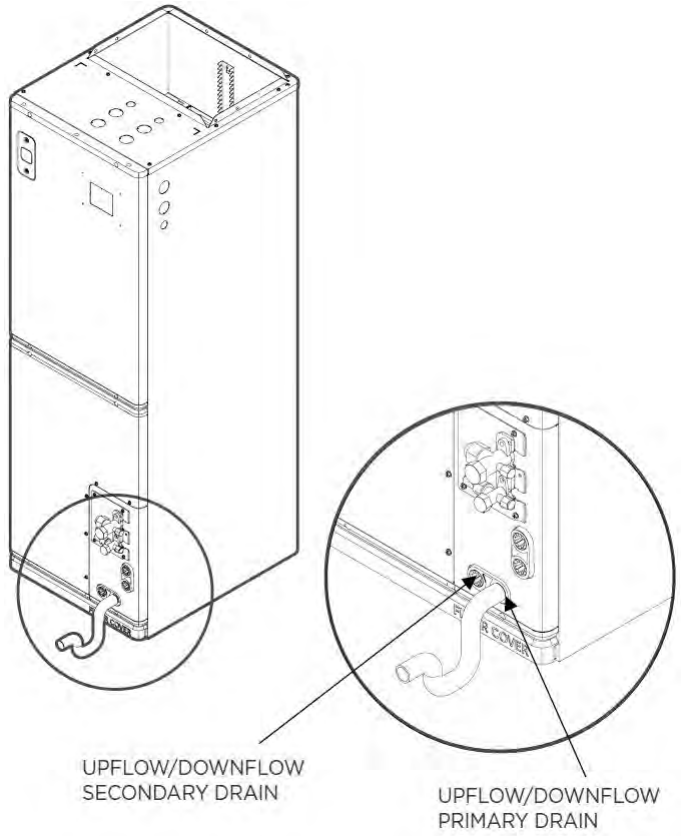
Installation requires PVC pipe or other suitable material per local and national codes. These can be found at your local hardware store or dealer.

WARNING

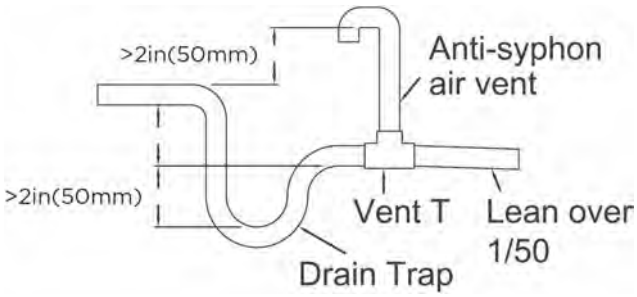
- After removing the drain pan plug(s), check the drain hole(s) to verify that the drain opening is fully clear and free of any debris. Also check to ensure no debris has fallen into the drain pan during installation that could plug the drain opening. Apply sealant around the exiting drain pipe and the liquid and suction lines to prevent the infiltration of humid air.
- On units of this type in which the blower "draws" in air rather than "blows" air through the coil, traps must be installed in the condensate drain lines (primary and auxiliary, if used). Traps prevent the blower from drawing air through the drain lines into the air supply.

3.7 Vertical Installation

The unit operates with a negative pressure at the drain connections and a drain trap is required. The trap must 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.



NOTE: A secondary drain or external drain pan may be mandatory. Please refer to local codes.



NOTICE

Horizontal runs must also have an anti-siphon air vent (standpipe) installed ahead of the horizontal run to eliminate air trapping.

NOTE ON DRAINPIPE INSTALLATION:

- The figure shows how to trap or plug all drains during vertical discharge.
- The figure shows how to trap or plug all drains during right-hand discharge.
- The seal plug is supplied and should be screwed tightly by hand only.
- Incorrect installation could cause water to flow back into the unit and flood.

CAUTION

- The drainpipe outlet should be at least 2 in (5 cm) above the ground.
- If it touches the ground, the unit may become blocked and malfunction.

4 REFRIGERANT PIPING CONNECTION

WARNING ON REFRIGERANT PIPING

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

- When the air conditioner is installed in a small room, precautions 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.

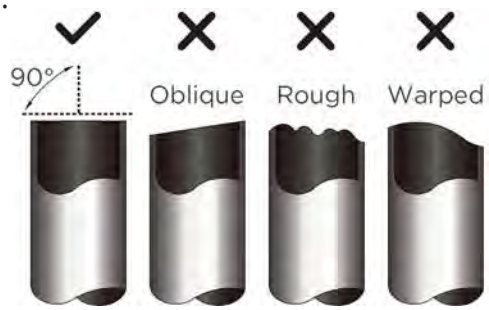
Name	Model	Pipe Specification		Remark
		Liquid Side	Gas Side	
Connecting Pipe Assembly	24K	Ø3/8in (Ø9.52mm)	Ø3/4in (Ø19mm)	**Pipes are not included in the accessories and need to be purchased separately.**
	30K	Ø3/8in (Ø9.52mm)	Ø3/4in (Ø19mm)	
	36K	Ø3/8in (Ø9.52mm)	Ø3/4in (Ø19mm)	
	48K	Ø3/8in (Ø9.52mm)	Ø3/4in (Ø19mm)	
	60K	Ø3/8in (Ø9.52mm)	Ø3/4in (Ø19mm)	

Air Handler Model	Air Handler Unit Connection (in.flare)		Adapter Required at Indoor Unit (in.flare to braze)
24K/30K/ 36K/48K/60K	Liquid	3/8	3/8flare-->3/8braze
	Gas	3/4	3/4flare-->3/4braze

Step 1: 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.

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

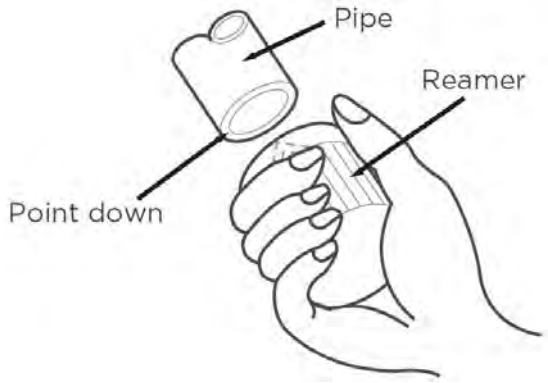


NOTE: Do not deform pipe while cutting. Be careful not to damage, kink, or deform the pipe while cutting. This will drastically reduce the heating performance.

Step 2: Remove Burrs

Burrs can affect the air-tight seal of the refrigerant piping connection. They must be completely removed.

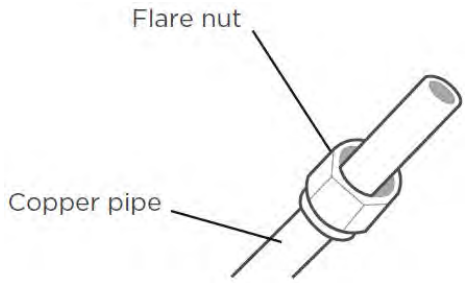
- Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
- Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.



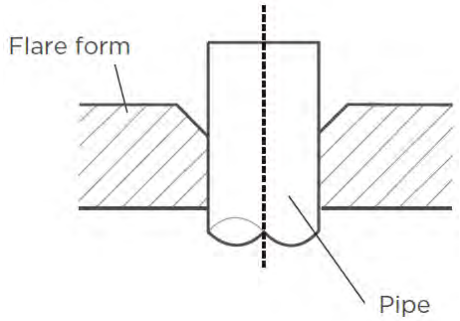
Step 3: Flare Pipe Ends

Proper flaring is essential to achieve an airtight seal.

- After removing burrs from cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
- Sheath the pipe with insulating material.
- Place flare nuts on both ends of the pipe. Make sure they are facing in the right direction, because you can't put them on or change their direction after flaring.
- Remove PVC tape from ends of pipe when ready to perform flaring work.



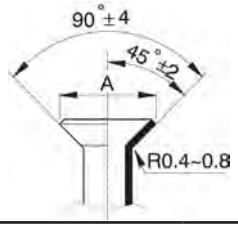
- Clamp flare form on the end of the pipe. The end of the pipe must extend beyond the flare form.



- Place flaring tool onto the form.
- Turn the handle of the flaring tool clockwise until the pipe is fully flared.

Piping Extension Beyond Flare Form

Pipe Gauge	Tightening Torque	Flare Dimension (A)	
		Min.	Max.
Ø3/8in (Ø9.52mm)	32-39 N.m (320-390kgf.cm)	0.52in (13.2mm)	0.53in (13.5mm)
Ø3/4in (Ø19mm)	67-101 N.m (670-1010kgf.cm)	0.91in (23.2mm)	0.93in (23.7mm)
Flare Shape			



- Remove the flaring tool and flare form, then inspect the end of the pipe for cracks and even flaring.

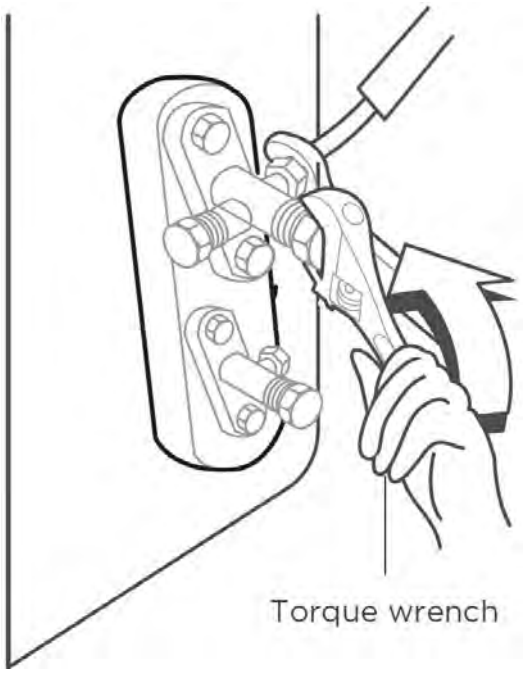
Step 4: Connect Pipes

Connect the copper pipes to the indoor unit first, then connect it to the outdoor unit. First connect the low-pressure pipe, then the high pressure pipe.

- When connecting the flare nuts, apply a thin coat of refrigeration oil to the flared ends of the pipes.
- Align the center of the two pipes that you will connect.
- Tighten the flare nut snugly by hand.
- Using a wrench, grip the nut on the unit tubing.
- While firmly gripping the nut, use a torque wrench to tighten the flare nut according to the torque valves in the table above.

NOTICE

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



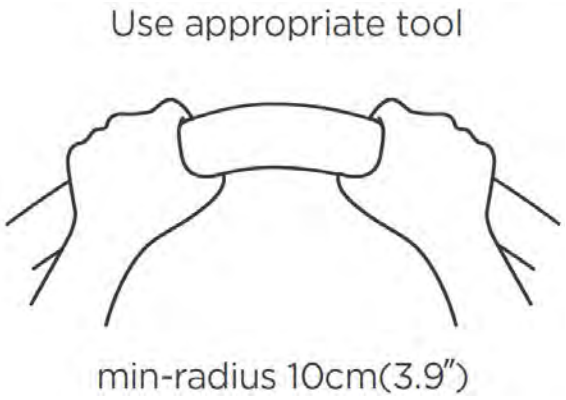
! CAUTION

Be sure 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.

NOTICE-MINIMUM BEND RADIUS

Carefully bend the tubing in the middle according to the diagram below. DO NOT bend the tubing more than 90° or more than 3 times.



- After connecting the copper pipes to the indoor unit, wrap the power cable, signal cable, and the piping together with binding tape.

NOTICE

DO NOT intertwine or cross the signal cable with any other wiring.

- Thread this pipeline through the wall and connect it to the outdoor unit.
- Insulate all the piping, including the valves of the outdoor unit.
- Open the stop valves of the outdoor unit to start the flow of the refrigerant between the indoor and outdoor unit.

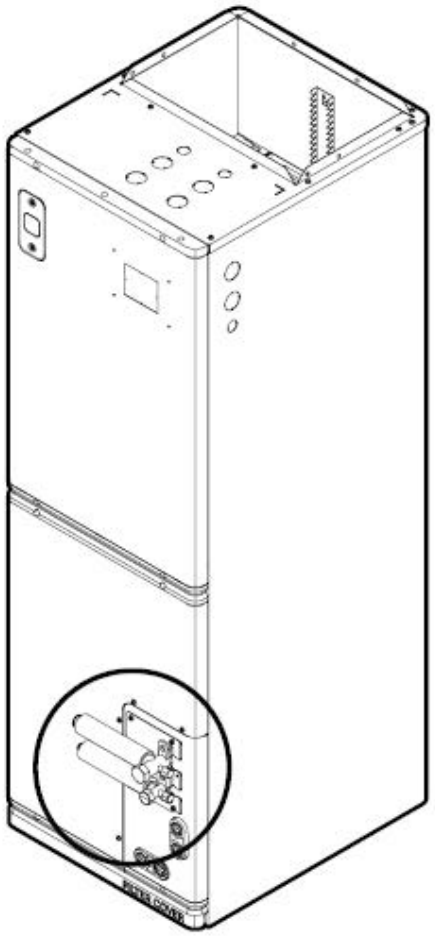
! CAUTION

Check to make sure there is no refrigerant leak after completing installation work. If there is a refrigerant leak, ventilate the area immediately and evacuate the system (refer to Air Evacuation section of this manual).

Maximum length and drop height

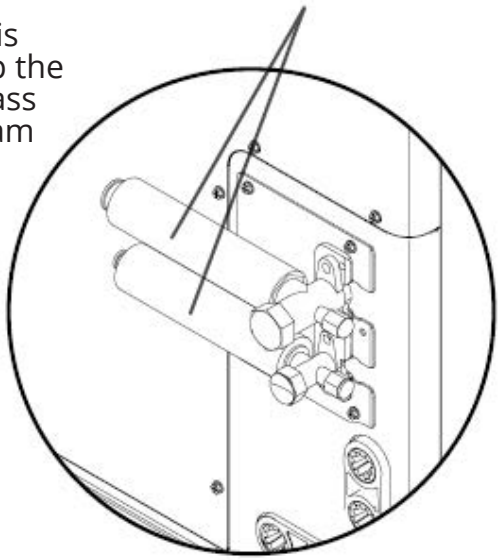
Model Capacity (BTU/H)	Maximum Length of Piping	Maximum Drop Height
24K/30K	164 ft (50 m)	82 ft (25 m)
36K/48K/60K	246 ft (75 m)	98.4 ft (30 m)

Correct Refrigerant Piping Installation Methods:



Insulation Sleeve

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



You need to wrap all the connected copper pipes, nuts, and other metal parts tightly into the insulation.

5.1 Units without Electrical Heat

Unit Size	Volts-Phase	Rated Current (A)	Minimum Circuit Amps	Branch Circuit	
				Minimum Wire Size AWG	Fuse/Circuit Breaker Amps
24K	115/208/230V-1	115V: 6.0A	115V: 8.0A	14#	115V: 15.0A
		208/230V: 4.0A	208/230V: 5.5A		208/230V: 15.0A
30K	115/208/230V-1	115V: 7.5A	115V: 10.0A	14#	115V: 15.0A
		208/230V: 4.5A	208/230V: 6.0A		208/230V: 15.0A
36K	115/208/230V-1	115V: 7.5A	115V: 10.0A	14#	115V: 15.0A
		208/230V: 4.5A	208/230V: 6.0A		208/230V: 15.0A
48K	115/208/230V-1	115V: 14.0A	115V: 17.5A	14#	115V: 20.0A
		208/230V: 8.5A	208/230V: 11.0A		208/230V: 15.0A
60K	115/208/230V-1	115V: 14.0A	115V: 17.5A	14#	115V: 20.0A
		208/230V: 8.5A	208/230V: 11.0A		208/230V: 15.0A

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).

NOTICE

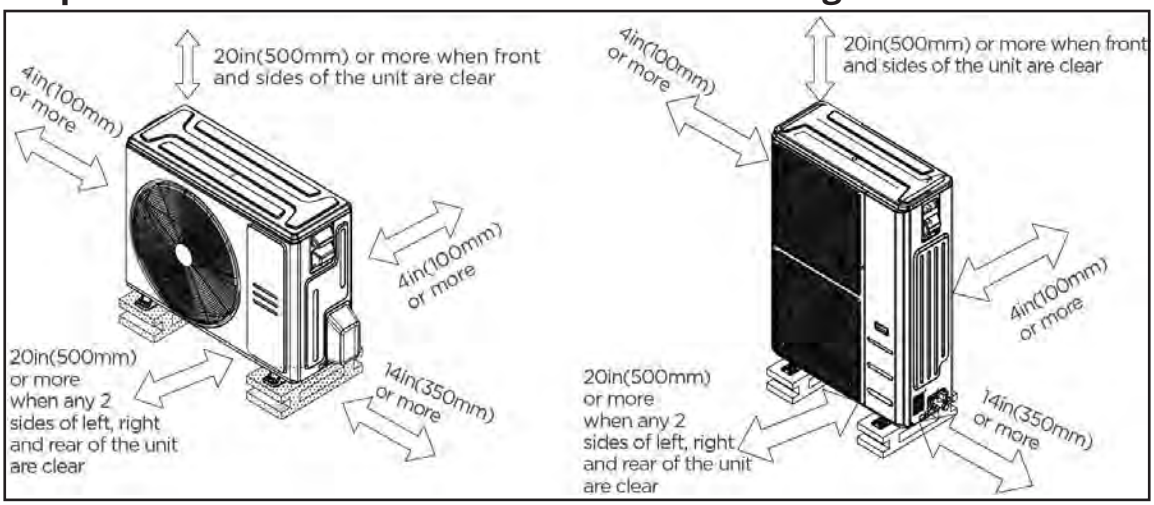
The specification may be different between different models. Refer to the indoor unit's nameplate. Choose the cable type according to the local electrical codes and regulations. Choose the correct cable size according to the Minimum Circuit Ampacity indicated on the nameplate of the unit.

6 OUTDOOR UNIT INSTALLATION

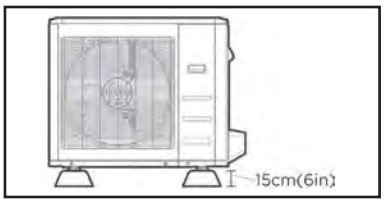
6.1 Location Selection

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

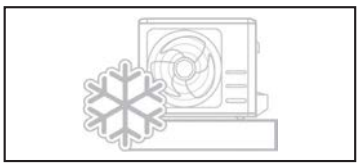
Proper Installation Locations Meet the Following Standards:



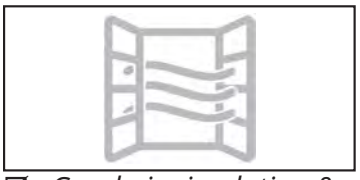
☑ *Meets all spatial requirements shown in Installation requirements above.*



☑ *The outdoor unit must be installed on risers of at least 6in.(15cm) in height (or per local code) above snowfall.*



☑ *Where snowfall is anticipated, take appropriate measures to prevent ice buildup & coil damage.*



☑ *Good air circulation & ventilation.*



☑ *Noise from the unit will not disturb other people.*

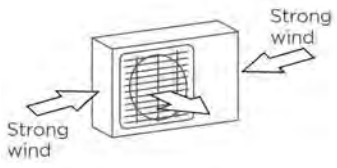


☑ *The location can support the unit & won't vibrate.*

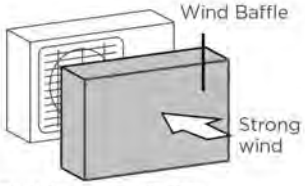
NOTE: Install the unit by following local codes and regulations, which may differ between different regions.

! CAUTION: SPECIAL CONSIDERATIONS FOR EXTREME WEATHER

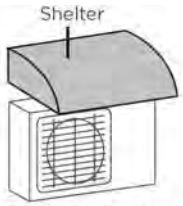
If the unit is exposed to heavy wind:
Install the unit so that the air outlet fan is at a 90° angle to the direction of the wind. If needed, build a barrier in front of the unit to protect it from extremely heavy winds.
If the unit is frequently exposed to heavy rain or snow:
Build a shelter above the unit to protect it from the rain or snow. Be careful not to obstruct air flow around the unit.
If the unit is frequently exposed to salty air (seaside):
Use outdoor unit that is specially designed to resist corrosion.



90° angle to the direction of the wind



Build a wind Baffle to protect the unit



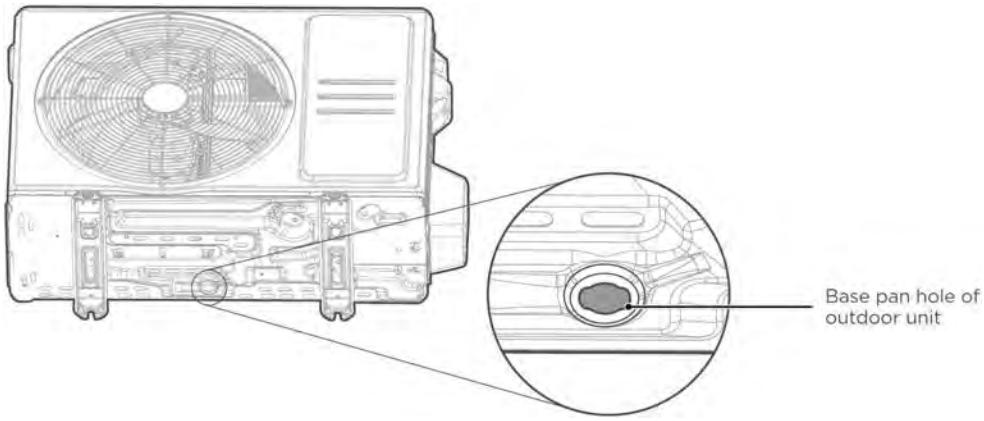
Build a shelter to protect the unit

DO NOT install the unit in the following locations:

- ⊘ *Near an obstacle that will block air inlets & outlets.*
- ⊘ *Near a public street, crowded areas, or where noise from the unit will disturb others.*
- ⊘ *In a location exposed to large amounts of dust.*
- ⊘ *Near animals or plants that will be harmed by hot air discharge.*
- ⊘ *Near any source of combustible gas.*

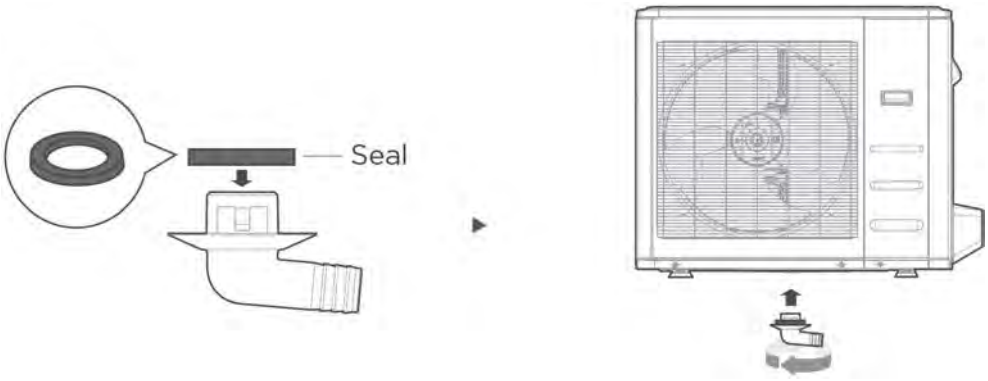
6.2 Drain Fitting

Step 1:
Find the base pan hole on the outdoor unit.



Step 2:

- Fit the rubber seal on the end of the drain fitting that will connect to the outdoor unit.
- Insert the drain fitting into the hole in the base pan of the unit. The drain fitting will click into place.
- Connect a drain hose extension (not included) to the drain fitting to redirect water from the unit during heating mode.

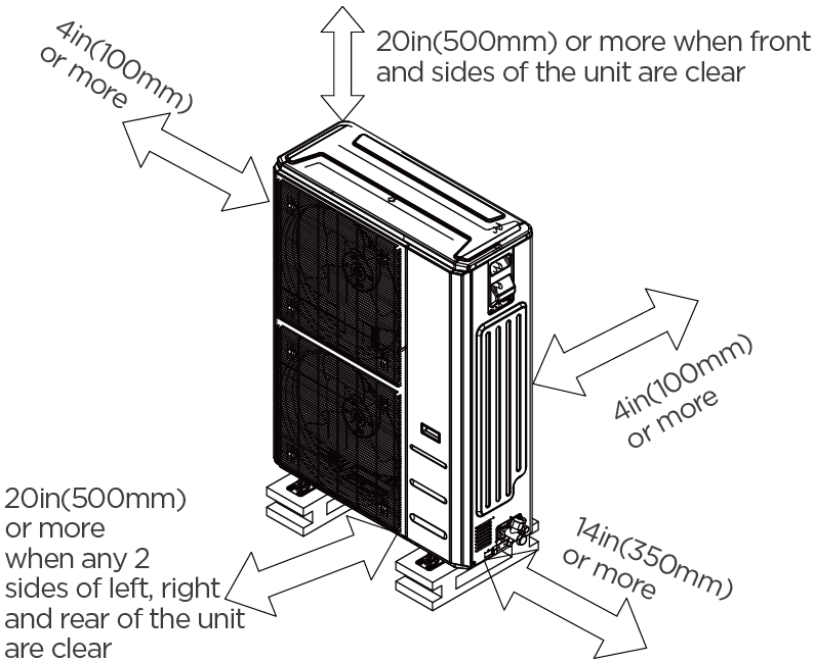


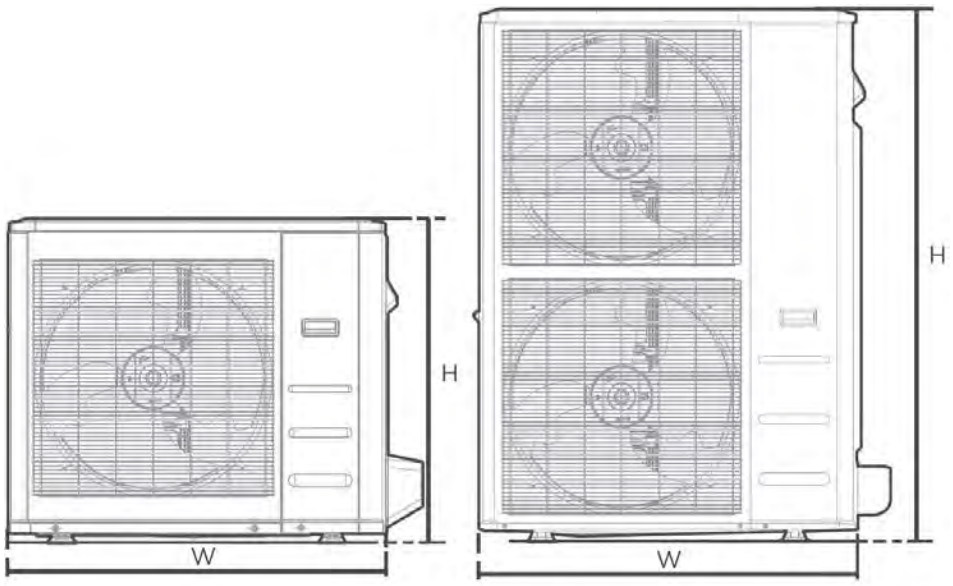
IN COLD CLIMATES

In cold climates, make sure that the drain hose is as vertical as possible to ensure swift water drainage. If water drains too slowly, it can freeze inside the hose and flood the unit.

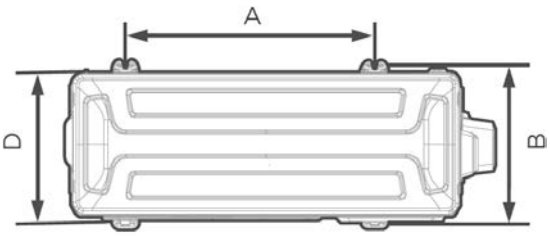
6.3 Anchor Outdoor Unit

The outdoor unit can be anchored to the ground or to a wall-mounted bracket with an M10 bolt. Prepare the installation base of the unit according to the dimensions below.



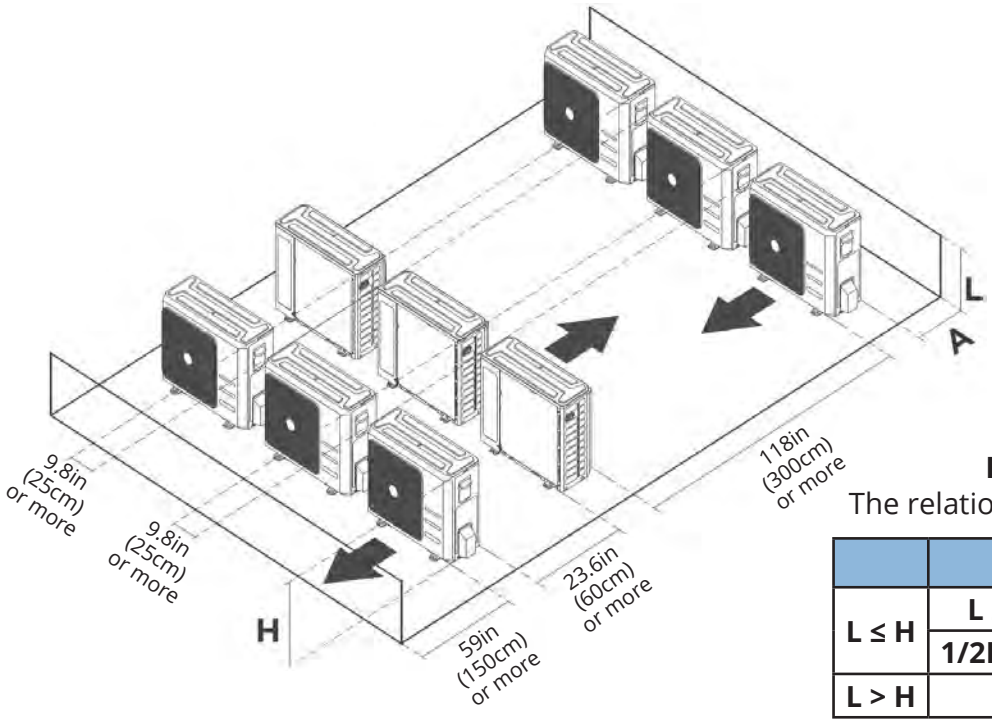


Front view



Top view

Model	Outdoor Unit Dimensions						Mounting Dimensions			
	W		H		D		A		B	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
24K	890	35	673	26-1/2	342	13-15/32	663	26-1/8	354	13-15/16
30/36K	946	37-1/4	810	31-29/32	410	16-5/32	673	26-1/2	403	15-7/8
48K/60K	980	38-19/32	975	38-3/8	415	16-11/32	616	24-1/4	397	15-5/8



Rows of Series Installation

The relations between H, A, and L are as follows:

	L	A
L ≤ H	L ≤ 1/2H	25cm / 9-13/16in or more
	1/2H < L ≤ H	30cm / 11-13/16in or more
L > H	Cannot be installed	

If installing the unit on the ground or concrete mounting platform, do the following:

- Mark the positions for four expansion bolts based on the dimensions chart.
- Pre-Drill holes for expansion bolts.
- Place a nut on the end of each expansion bolt.
- Hammer expansion bolts into the pre-drilled holes.
- Remove the nuts from expansion bolts, and place the outdoor unit on bolts.
- Put a washer on each expansion bolt, then replace the nuts.
- Using a wrench, tighten each nut until snug.

WARNING

WHEN DRILLING INTO CONCRETE, EYE PROTECTION IS RECOMMENDED AT ALL TIMES.

If installing the unit on a wall-mounted bracket, do the following:

- Mark the position of the bracket holes based on the dimensions chart.
- Pre-Drill holes for expansion bolts.
- Place a washer and nut on the end of each expansion bolt.
- Thread expansion bolts through the holes in the mounting brackets, put mounting brackets into position, and hammer the expansion bolts into the wall.
- Check that the mounting brackets are level.
- Carefully lift the unit and place its mounting feet on brackets.
- Bolt the unit firmly to the brackets.
- If allowed, install the unit with rubber isolator pads to reduce vibrations and noise.

CAUTION

Make sure the wall is made of solid brick, concrete, or of similarly strong material. The wall must be able to support at least four times the weight of the unit.

7 ELECTRICAL CONNECTIONS

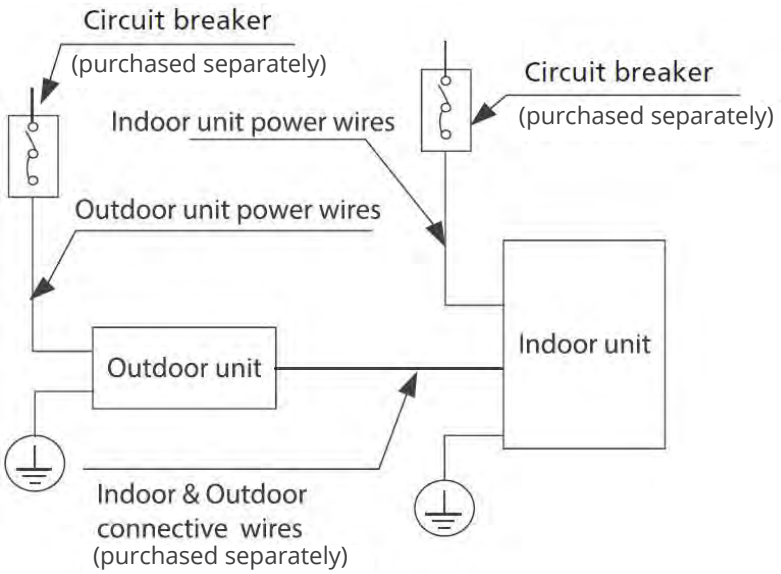
7.1 Wiring Precautions

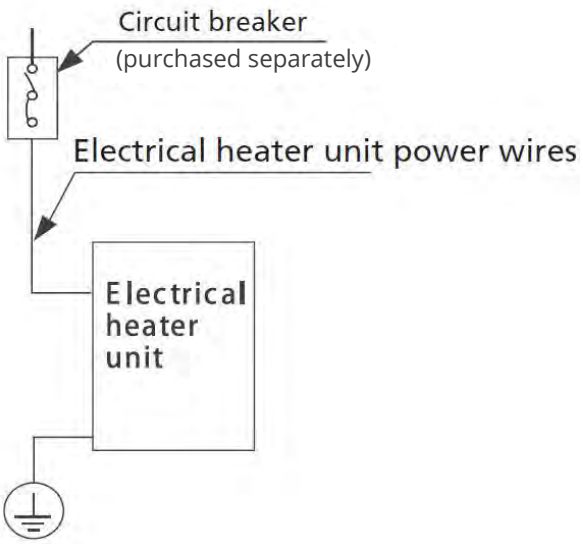
WIRING WARNINGS

Before performing any electrical work, read these warnings:

- **BEFORE PERFORMING ANY ELECTRICAL OR WIRING WORK, TURN OFF THE MAIN POWER TO THE SYSTEM.**
- All wiring must comply with local and national electrical codes, 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. Do not resume the install 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.
- If connecting power to fixed wiring, a switch or circuit breaker that disconnects all poles and has a contact separation of at least 1/8in (3mm) must be incorporated in 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 unit.
- 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 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.
- Ensure electrical wiring does not cross with signal wiring. This may cause distortion, interference, or possibly damage the circuit boards.
- No other equipment should be connected to the same power circuit.
- Connect the outdoor wires before connecting the indoor wires.

7.2 Wiring Overview





- The diagrams are for explanation purpose only. Your machine may be slightly different. The actual diagram shall prevail.
- Select a service disconnect as required by local, regional, and national codes.

7.3 Outdoor Unit Wiring

WARNING

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

Prepare the cable for connection

Step 1:

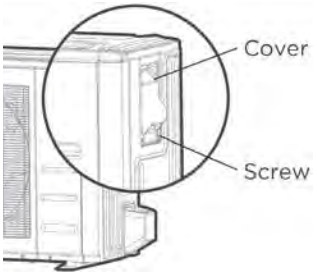
1. Choose the right cable size according to the local electrical codes and regulations, and the Minimum Circuit Ampacity indicated on the unit nameplate.
2. Using wire strippers, strip the jacket from both ends of the signal cable to reveal approximately 5.9in (15cm) of wire.
3. Strip the insulation from the ends.
4. Stranded wire requires u-lugs or ring terminals to be crimped onto the ends of the wire.

NOTICE

- 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.
- Choose the right cable size according to the Minimum Circuit Ampacity indicated on the nameplate of the unit.

Step 2:

Remove the electrical box cover of the outdoor unit. If there is no cover on the outdoor unit, take off the bolts from the maintenance board and remove the protection board.

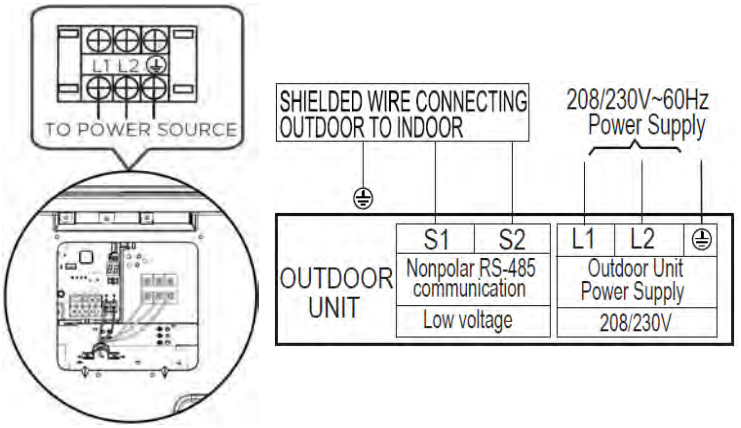


WARNING

- RISK OF ELECTRIC SHOCK CAN CAUSE INJURY OR DEATH. DISCONNECT ALL REMOTE ELECTRIC POWER SUPPLIES BEFORE SERVICING.
- ISOLATE THE POWER SUPPLY LEADS AND COMMUNICATION LEADS BY THE STRAIN RELIEF AND KEEP POWER SUPPLY LEADS AWAY FROM COMMUNICATION LEADS.

Step 3:

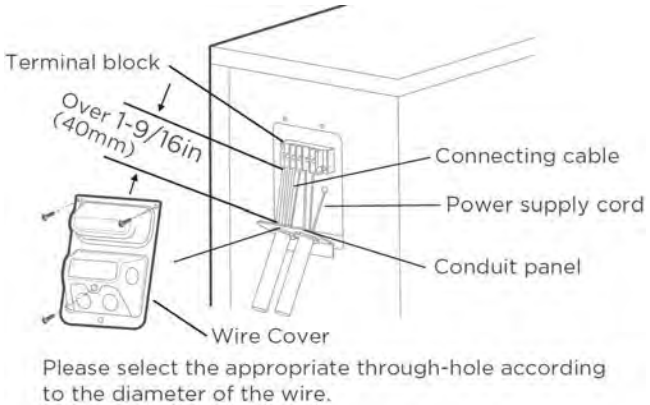
1. Match the wire colors/labels with the labels on the terminal block. Firmly screw the u-lug of each wire to its corresponding terminal.



2. Clamp down the cable with the cable clamp.
3. Insulate unused wires with electrical tape. Keep them away from any electrical or metal parts.
4. Reinstall the cover of the electric control box.

Step 4:

1. Remove the wire cover from the unit by loosening the 3 screws.
2. Remove caps on the conduit panel.
3. Mount the conduit tubes (not included) on the conduit panel.
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 local switches.
6. Be sure to size each wire allowing several inches longer than the required length for wiring.



7.4 Indoor Unit Wiring

WARNING

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

Step 1: Prepare the cable for connection.

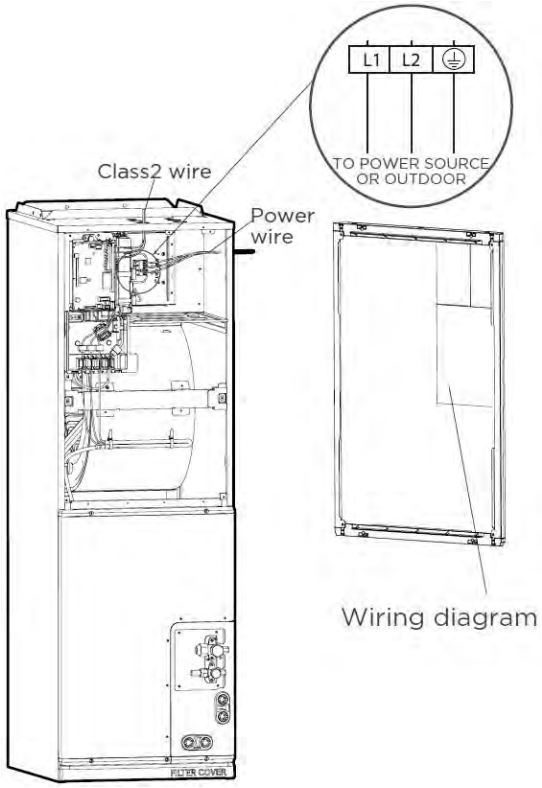
1. Using wire strippers, strip the rubber jacket from both ends of the signal cable to reveal about 5.9in (15cm) of the wire.
2. Strip the insulation from the ends of the wires.

Step 2: Open the front panel.

Using a screwdriver, remove the cover of the electric control box on your indoor unit.

Step 3: Connect the wires to the terminals.

1. Thread the power cable and the signal cable through the wire outlet.
2. 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 208V or 230V, connect L1 and L2. When using 115V, connect L1 and L2. (L2 is used as N.)



3. Clamp down the cable with the cable clamp. The cable must not be loose or pull on the u-lugs.
4. Reattach the electric box cover.

CAUTION

- While connecting the wires, 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.

7.5 Specific Wiring Methods

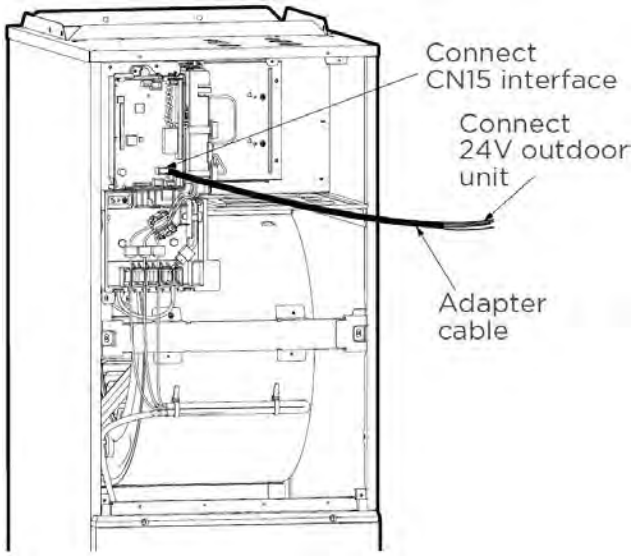
WARNING

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

When using a 24V thermostat, please refer to the non-communicating wiring diagrams that follow:

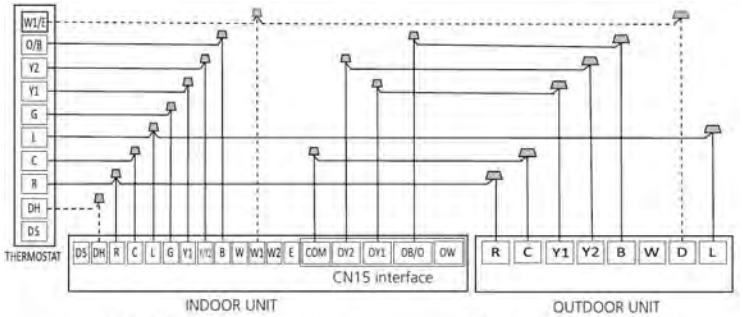
Connection Method C: The following wiring diagrams are suitable for the AHU and ODU with a 24V thermostat.

Non-Communication Scheme Wiring Reference:



Note: The adapter cable must be used when the full 24V communication scheme is applied. It will stop the operation of the outdoor unit if a refrigerant leak is detected.

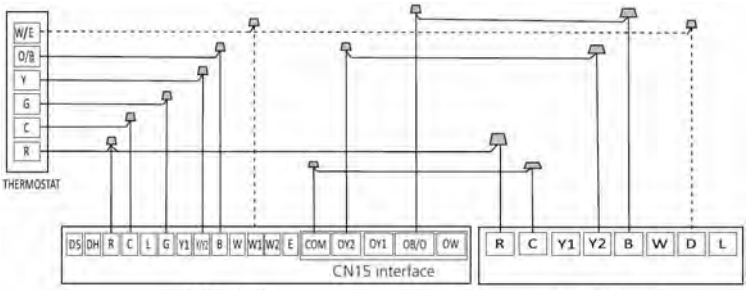
Wiring for 3H & 2C Thermostat:



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

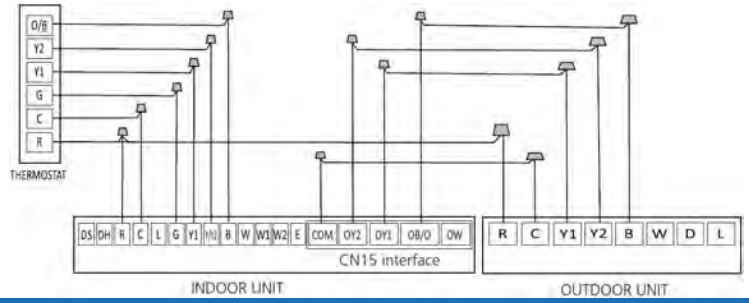
S4-4 Default on, W1 and W2 shorted for single stage Aux heat operation. Turn off to separate stages.

Wiring for 2H & 1C Thermostat:

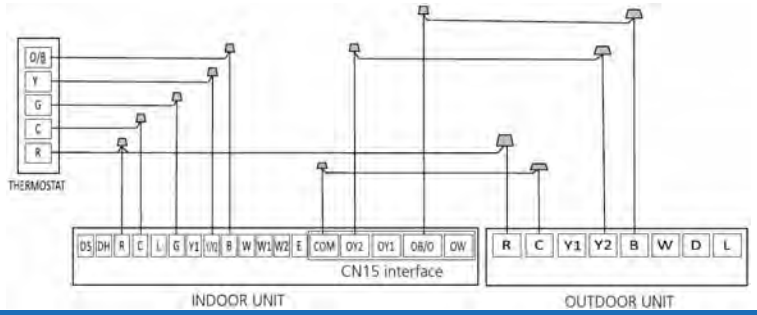


S4-4 Default on, W1 and W2 shorted for single stage Aux heat operation. Turn off to separate stages.

Wiring for 2H & 2C Thermostat:

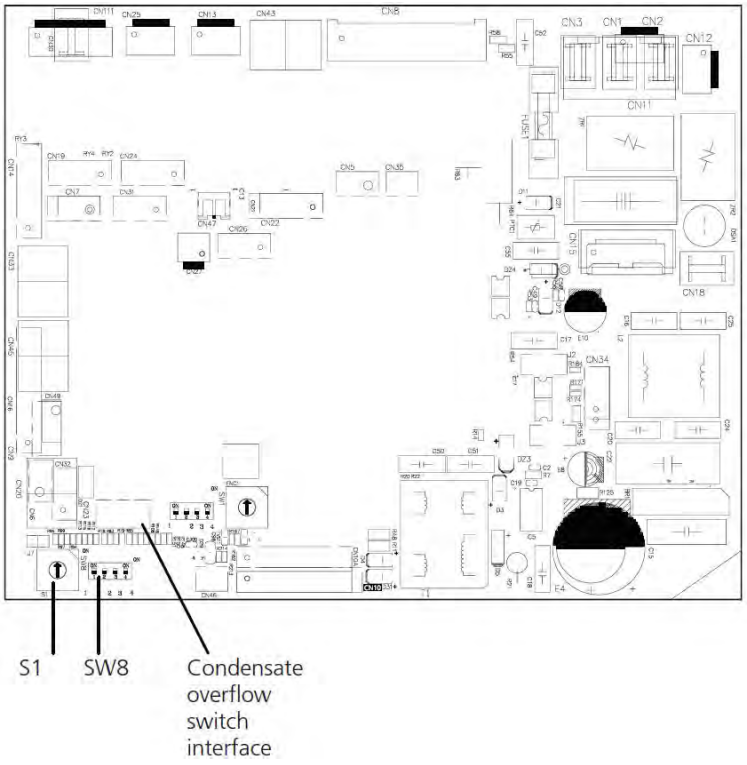


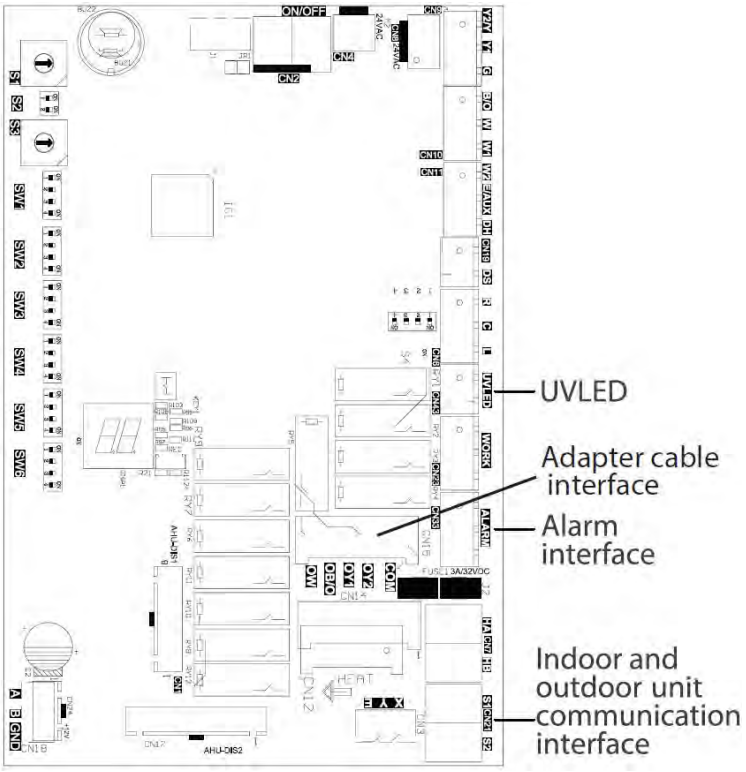
Wiring for 1H & 1C Thermostat:



7 ELECTRICAL CONNECTIONS

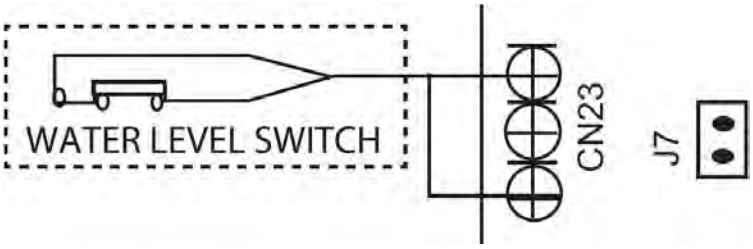
Optional Function Wiring:



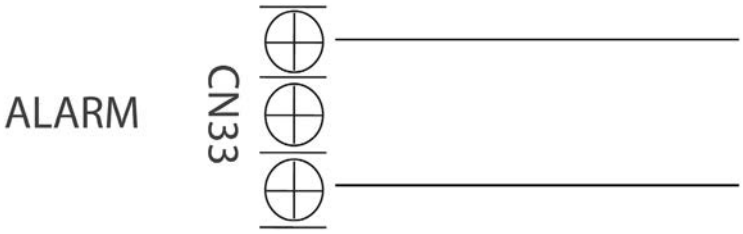


Condensate Overflow Switch:

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 connection signaling the unit to turn off the system.



Fault Warning:

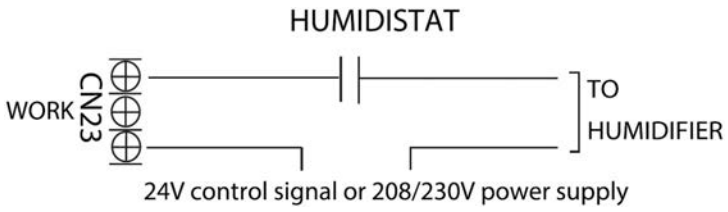


Alarm Output:

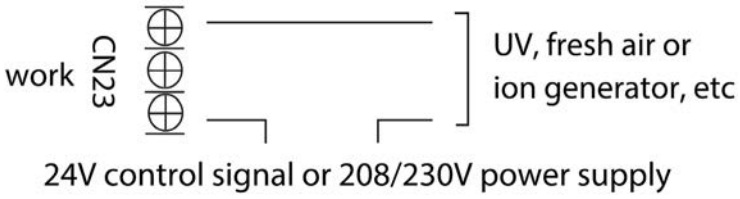
An alarm output (CN33) can be utilized if actions are required when a fault is present. This is a passive outlet port, so you will need to input a voltage signal. The relay is normally open for normal operation, and closed when a fault condition is active.

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 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 set point. If the thermostat or zone controller has an HUM interface, connect the humidifier directly to the HUM and C ports.



UV, Fresh Air, or Ion Generator Wiring:



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

Control Logic

Indoor Unit Connector

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

Outdoor Unit Connector

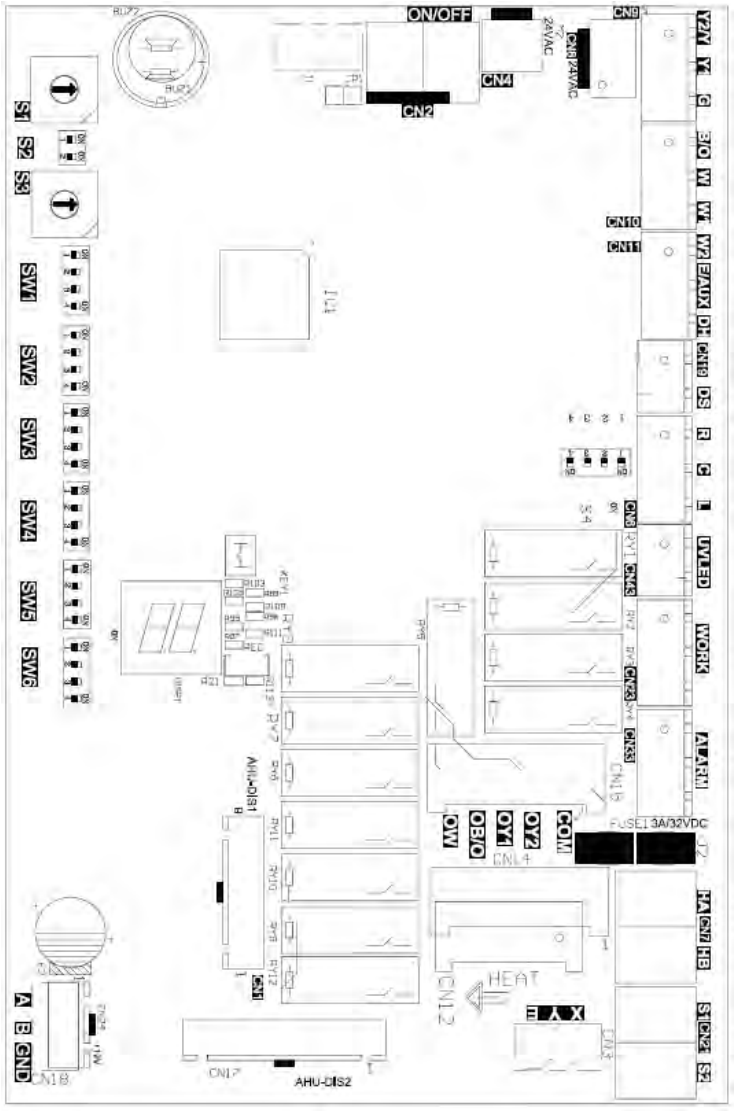
Connector	Purpose
R	24V Power Connection
C	Common
Y1	Low Demand Compressor
Y2	High Demand Compressor
B	Heating Reversing Valve
W	Heating Control
D	Defrost Control
L	System Fault Signal

LED Display

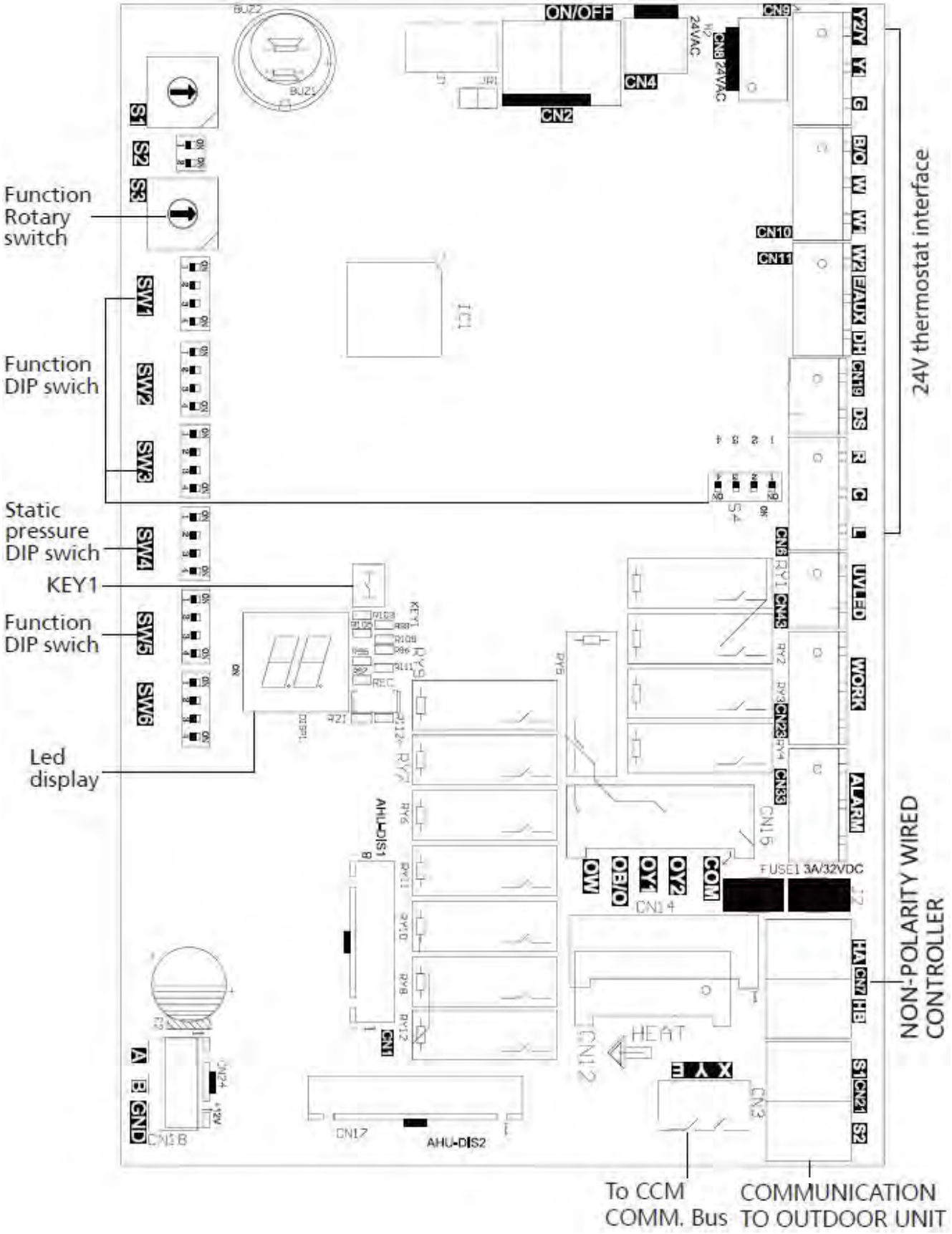
The control displays unit status as well as any active fault codes on the LED display. If the unit is functioning normally, the LED will display the current temperature set point. When a fault code is active, the display will quickly flash the active fault code. Refer to the fault code table located 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) for 5 seconds to enter forced defrost mode.

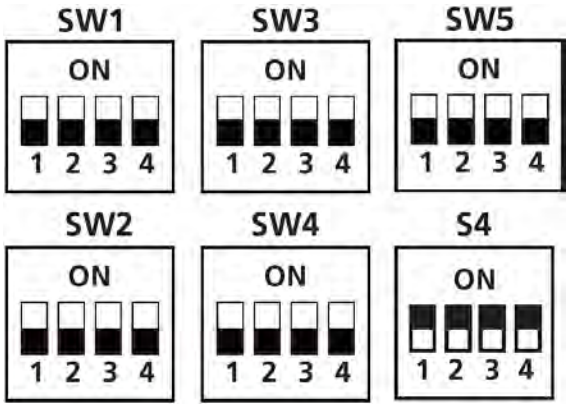


7.6 DIP Switch Definitions



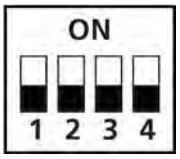
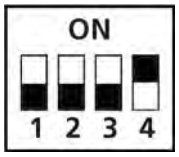
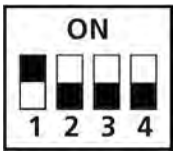
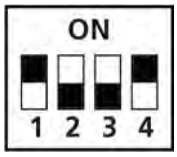
Function DIP Switch Settings:

The 24V thermostat modes must refer to the following settings:



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

Function Combination Table of SW1-1 and SW1-4:

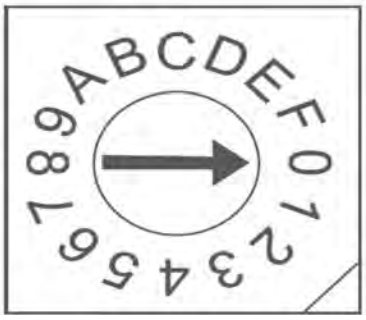
SW1	Control Type	IDU and ODU Connection	Note
	Wired Controller / 24V Thermostat	(S1+S2) / 24V Connection	Auto Discovery
	Wired Controller	S1+S2	Scenario 2
	24V Thermostat	S1+S2	Scenario 1
	24V Thermostat	24V Connection	Scenario 3

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 and W1
4	SW2-1	2	Temperature differential to activate first stage auxiliary heat (the GAP of T1 and Ts), Wire controller demand with heat pump+electric heat working together	2°F (1°C)	[Default] 4°F (2°C)	
5	SW2-2	2	Electric heat on delay	YES	[Default] NO	
6	SW2-3	2	Electric auxiliary heating delay to start time	30 minutes	[Default] 15 minutes	Based on SW2-2 is ON.
7	SW2-4	1	Compressor	The operation of the heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited. The system makes judgments according to the following rules: 1) The compressor cannot be operated hwen the outdoor temperature is lower than the S3 rotary switch. 2) The compressor can be operated when the outdoor temperature is ≥ S3 Rotary switch temperature +35.6°F (2°C).		SW2-4 and S3 need to be working together.
8	SW2-4	2	Compressor/Auxiliary heat outdoor ambient lockout	The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited. The system makes judgments according to the following rules: 1) The compressor can be operated when the outdoor temperature is ≥S3 Rotary switch temperature +35.6°F (2°C). 2) The compressor cannot be operated when the outdoor temperature is lower than the S3 rotary switch temperature.	[Default] Only one heat pump or auxiliary heat can be operated. The system makes judgment according to the following rules: 1) When the outdoor temperature is lower than the S3 Rotary switch temperature, the compressor is not allowed to operate, but auxiliary heat is allowed to operate. 2) When the outdoor temperature is ≥S3 Rotary switch temperature +35.6°F (2°C), the compressor can be operated but auxiliary heat cannot be operated.	
9	Rotary Switch S3	1,2	Set outdoor temperature limitation (for auxiliary heating or compressor)	Table A		

No.	Dial Code	Control Scenario	Function	ON	OFF	Note
10	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 to increase capacity and satisfy user set point.	30 minutes	[Default] 90 minutes	
11	SW3-2	1	Cooling and heating Y/Y2 temperature differential adjustment	Compressor slower speed	[Default] Faster compressor	Only affects compressor
12	SW3-3	1	Compressor running (demand working with heat pump+electric heat)	Compressor slower speed	[Default] Faster compressor	Only affects compressor and W2
13	SW3-3	2	Temperature differential to activate second stage auxiliary heating (the GAP of T1 and Ts). Wire controller demand with heat pump+electric heat working together	4°F (2°C)	[Default] 6°F (3°C)	
14	SW3-4	1, 3	Fan speed of cooling mode when 24V Thermostat is applied for	Turbo	High	
15	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; See table 11 for the corresponding CFM adjustment.		
16	SW4-4	2	Temperature differential to activate third stage auxiliary heating (the GAP of T1 and Ts) Wire controller demand with heat pump + electric heat working together	6°F (3°C)	[Default] 8° (4°C)	Only valid for product which has three stage auxiliary heating.
17	SW4-4	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	
18	S4-2	1,3	DH Function Selection	[Default] Dehumidification control not available	Dehumidification feature is enabled through thermostat	
19	SW5-3	1,2,3	L or Alarm relay selection	L output 24V or alarm relay close only when refrigerant sensor fault or R454B refrigerant leakage is detected	[Default] L output 24V or alarm relay closed when any fault is detected	
20	SW5-4	1,2,3	R output selection	R stop output 24V when refrigerant sensor fault or R454B refrigerant leakage is detected	[Default] R keep output 24V even when refrigerant sensor fault or R454B refrigerant leakage is detected	

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



Address DIP Switch:

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

Network address: The address silkscreen is NET address, which is composed of a 16-bit address rotary code S1 plus a two-digit DIP switch SW8 [Set during engineering installation, 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;

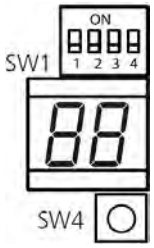
When SW8 is 10 (corresponding to the switch of the hardware connected to the 10K resistor), the network address value is S1 plus 16;

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

When SW8 is 01 (corresponding to the dial 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.

Outdoor Unit DIP Switch Setting:



Press the SW4 button for 10 seconds for force defrosting.

S3	S3 (°F)	S3 (°C)
0	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

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

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

No.	Dial Code	Features	ON	OFF
1	SW1-1	Function to be defined		
2	SW1-2	Communication dial code	24V communication only	24V communication/ 485 communication
3	SW1-3	Strong cold and strong heat function	The cooling/heating target pressure compensation value is valid	The cooling/heating target pressure compensation value is invalid
4	SW1-4	Enhanced defrosting function	Enhanced defrosting	Default setting (standard defrost algorithm)

Air Volume Table

Capacity	External Static Pressure Range	Fan Speed	Electric Auxiliary Heat Module	24V Thermostat		Wired Controller		Airflow Volume (CFM)
				DIP Switch	24V Terminal Engaged	DIP Switch	Mode	
24K (2 Ton)	0-1.0in. wc.	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
		Electric Auxiliary Module 0 [Default]	15kW	SW4-1 = OFF SW4-2 = OFF SW4-3 = OFF	W1, W2, AUX	SW4-1 = OFF SW4-2 = OFF SW4-3 = OFF	Heat + AUX, AUX	988
		Electric Auxiliary Module 1	15kW, 10kW	SW4-1 = OFF SW4-2 = OFF SW4-3 = ON	W1, W2, AUX	SW4-1 = OFF SW4-2 = OFF SW4-3 = ON	Heat + AUX, AUX	841
		Electric Auxiliary Module 2	10kW, 8kW	SW4-1 = OFF SW4-2 = ON SW4-3 = OFF	W1, W2, AUX	SW4-1 = OFF SW4-2 = ON SW4-3 = OFF	Heat + AUX, AUX	818
		Electric Auxiliary Module 3	5kW	SW4-1 = OFF SW4-2 = ON SW4-3 = ON	W1, W2, AUX	SW4-1 = OFF SW4-2 = ON SW4-3 = ON	Heat + AUX, AUX	788
30K (2.5 Ton)	0-1.0 in. wc.	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	712
		Heat Pump Turbo	-	-	-	-	Heat	988
		Heat Pump High	-	-	B+Y2/Y, W	-	Heat	894
		Heat Pump Medium	-	-	Y1	-	Heat	806
		Heat Pump Low	-	-	-	-	Heat	712
		Electric Auxiliary Heat Module 0	15kW	SW4-1 = OFF SW4-2 = OFF SW4-3 = OFF	W1, W2, AUX	SW4-1 = OFF SW4-2 = OFF SW4-3 = OFF	Heat + AUX, AUX	1088
		Electric Auxiliary Heat Module 1	15kW, 10kW	SW4-1 = OFF SW4-2 = OFF SW4-3 = ON	W1, W2, AUX	SW4-1 = OFF SW4-2 = OFF SW4-3 = ON	Heat + AUX, AUX	1029
		Electric Auxiliary Heat Module 2	10kW, 8kW	SW4-1 = OFF SW4-2 = ON SW4-3 = OFF	W1, W2, AUX	SW4-1 = OFF SW4-2 = ON SW4-3 = OFF	Heat + AUX, AUX	976
		Electric Auxiliary Heat Module 3	5kW	SW4-1 = OFF SW4-2 = ON SW4-3 = ON	W1. W2, AUX	SW4-1 = OFF SW4-2 = ON SW4-3 = ON	Heat + AUX, AUX	918

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

7 ELECTRICAL CONNECTIONS

Capacity	External Static Pressure Range	Fan Speed	Electric Auxiliary Heat Module	24V Thermostat		Wired Controller		Airflow Volume (CFM)
				DIP Switch	24V Terminal Engaged	DIP Switch	Mode	
36K (3 Ton)	0-1.0 in. wc.	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	1112
		Heat Pump High	-	-	B + Y2/Y, W	-	Heat	1059
		Heat Pump Medium	-	-	Y1	-	Heat	794
		Heat Pump Low	-	-	-	-	Heat	582
		Electric Auxiliary Module 0 [Default]	20kW	SW4-1 = OFF SW4-2 = OFF SW4-3 = OFF	W1, W2, AUX	SW4-1 = OFF SW4-2 = OFF SW4-3 = OFF	Heat + AUX, AUX	1306
		Electric Auxiliary Module 1	15kW	SW4-1 = OFF SW4-2 = OFF SW4-3 = ON	W1, W2, AUX	SW4-1 = OFF SW4-2 = OFF SW4-3 = ON	Heat + AUX, AUX	1241
		Electric Auxiliary Module 2	10kW, 8kW	SW4-1 = OFF SW4-2 = ON SW4-3 = OFF	W1, W2, AUX	SW4-1 = OFF SW4-2 = ON SW4-3 = OFF	Heat + AUX, AUX	1176
		Electric Auxiliary Module 3	5kW, 8kW	SW4-1 = OFF SW4-2 = ON SW4-3 = ON	W1, W2, AUX	SW4-1 = OFF SW4-2 = ON	Heat + AUX, AUX	1112
48K (4 Ton)	0-0.8 in.wc.	Cooling Turbo	-	SW3-4 = ON	Y2/Y	-	Cool	1600
		Cooling High	-	SW3-4 = OFF	Y2/Y	-	Cool	1441
		Cooling Medium	-	-	Y1	-	Cool	1265
		Cooling Low	-	-	-	-	Cool	1088
		Heat Pump Turbo	-	-	-	-	Heat	1471
		Heat Pump High	-	-	B+Y2/Y, W	-	Heat	1324
		Heat Pump Medium	-	-	Y1	-	Heat	1147
		Heat Pump Low	-	-	-	-	Heat	971
		Electric Auxiliary Heat Module 0	20kW	SW4-1 = OFF SW4-2 = OFF SW4-3 = OFF	W1, W2, AUX	SW4-1 = OFF SW4-2 = OFF SW4-3 = OFF	Heat + AUX, AUX	1741
		Electric Auxiliary Heat Module 1	15kW	SW4-1 = OFF SW4-2 = OFF SW4-3 = ON	W1, W2, AUX	SW4-1 = OFF SW4-2 = OFF SW4-3 = ON	Heat + AUX, AUX	1653
		Electric Auxiliary Heat Module 2	10kW, 8kW	SW4-1 = OFF SW4-2 = ON SW4-3 = OFF	W1, W2, AUX	SW4-1 = OFF SW4-2 = ON SW4-3 = OFF	Heat + AUX, AUX	1559
		Electric Auxiliary Heat Module 3	8kW	SW4-1 = OFF SW4-2 = ON SW4-3 = ON	W1, W2, AUX	SW4-1 = OFF SW4-2 = ON SW4-3 = ON	Heat + AUX, AUX	1471
60K (5 Ton)	0-0.8 in.wc.	Cooling Turbo	-	SW3-4 = ON	Y2/Y	-	Cool	1800
		Cooling High	-	SW3-4 = OFF	Y2/Y	-	Cool	1647
		Cooling Medium	-	-	Y1	-	Cool	1500
		Cooling Low	-	-	-	-	Cool	1234
		Heat Pump Turbo	-	-	-	-	Heat	1682
		Heat Pump High	-	-	B+Y2/Y, W	-	Heat	1582
		Heat Pump Medium	-	-	Y1	-	Heat	1359
		Heat Pump Low	-	-	-	-	Heat	1047
		Electric Auxiliary Heat Module 0	25kW	SW4-1 = OFF SW4-2 = OFF SW4-3 = OFF	W1, W2, AUX	SW4-1 = OFF SW4-2 = OFF SW4-3 = OFF	Heat + AUX, AUX	2171
		Electric Auxiliary Heat Module 1	15kW, 20kW	SW4-1 = OFF SW4-2 = OFF SW4-3 = ON	W1, W2, AUX	SW4-1 = OFF SW4-2 = OFF SW4-3 = OFF	Heat + AUX, AUX	2029
		Electric Auxiliary Heat Module 2	10kW, 15kW	SW4-1 = OFF SW4-2 = ON SW4-3 = OFF	W1, W2, AUX	SW4-1 = OFF SW4-2 = OFF SW4-3 = OFF	Heat + AUX, AUX	1894
		Electric Auxiliary Heat Module 3	10kW	SW4-1 = OFF SW4-2 = ON SW4-3 = ON	W1, W2, AUX	SW4-1 = OFF SW4-2 = OFF SW4-3 = OFF	Heat + AUX, AUX	1753

8.1 Preparation & Precautions

Air and foreign matter in the refrigerant circuit can cause abnormal rises in pressure, which can damage the unit, reduce its efficiency, and cause injury. Use a vacuum pump and manifold gauge to evacuate the refrigerant circuit, removing any non-condensible gas and moisture from the system. Evacuation should be performed upon initial installation and when unit is relocated.

NOTE: When opening valve stems, turn the hexagonal wrench until it hits against the stopper. Do not try to force the valve open further.

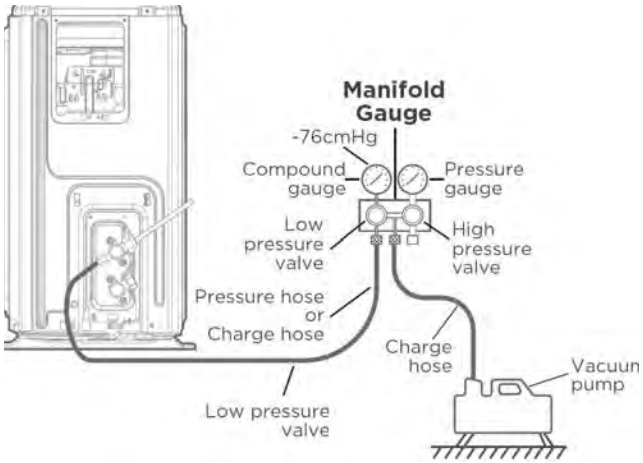
Before Performing Evacuation:

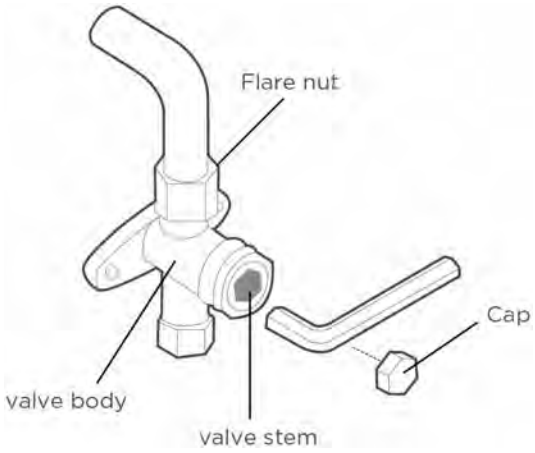
- ☑ Check to ensure the connective pipes between the indoor and outdoor units are connected properly.
- ☑ Check to make sure all wiring is connected properly.

8.2 Evacuation Instructions

1. Connect the charge hose of the manifold gauge to service port on the outdoor unit's low pressure valve.
2. Connect another charge hose from the manifold gauge to the vacuum pump.
3. Open the low pressure side of the manifold gauge. Keep the high pressure side closed.
4. Turn on the vacuum pump to evacuate the system.
5. Run the vacuum for at least 15 minutes, or until the compound meter reads -500 Microns (-10^5Pa).
6. Close the low pressure side of the manifold gauge, and turn off the vacuum pump.
7. Wait for 5 minutes, then check that there has been no change in system pressure.
8. If there is a change in system pressure, refer to the Gas Leak Check section for information on how to check for leaks. If there is no change in system pressure, unscrew the cap from the packed valve (high pressure valve).
9. Insert hexagonal wrench into the packed valve (high pressure valve) and open the valve by turning the wrench in a 1/4 counter clockwise turn. Listen for gas to exit the system, then close the valve after 5 seconds.
10. Watch the pressure gauge for one minute to make sure that there is no change in pressure. The pressure gauge should read slightly higher than atmospheric pressure.
11. Remove the charge hose from the service port.

Outdoor Unit





12. Open the stop valves of the outdoor unit to start the flow of the refrigerant between the indoor and outdoor unit. Using a hexagonal wrench, fully open both the high pressure and low pressure valves.
13. Tighten valve caps on all three valves (service port, high pressure, low pressure) by hand. You may tighten it further using a torque wrench if needed.

9 TEST RUN

CAUTION

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

9.1 Before 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. Refrigeration system does not leak.
e. Drainage system is unimpeded and draining to a safe location.
f. Insulation of piping and duct 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 system.

9.2 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 unit to COOL mode.
4. **For the Indoor Unit**

☑ Double check to see if the room temperature is being registered correctly.
☑ Ensure the manual buttons on the indoor unit work properly.
☑ Check to see that the drainage system is unimpeded and draining smoothly.
☑ Ensure there is no vibration or abnormal noise during operation.

5. **For the Outdoor Unit**

☑ Check for any leaks from the refrigeration system.
☑ Make sure there is no vibration or abnormal noise during operation.
☑ Ensure the wind, noise, and water generated by the unit do not disturb others or pose a safety hazard.

6. **Drainage Test**

☑ Ensure the drainpipe flows smoothly. New buildings should perform this test before finishing the ceiling.
☑ Turn on the main power switch and run the unit in COOL mode.
☑ 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.
☑ Make sure that there are no leaks in any of the piping.
☑ Stop the unit. Turn off the main power switch and reinstall the test cover.

10.1 Care & Maintenance

BEFORE CLEANING & MAINTENANCE

- Disconnect the power before cleaning or maintenance, except for cleaning the air filter.
- Contact an authorized service technician for repair or maintenance. Improper repair and maintenance may cause water leakage, electrical shock, or fire, and may void your warranty.
- Do not substitute a blown fuse with a higher or lower amperage rating fuse, as this may cause circuit damage or an electrical fire. The replacement fuse must be identical to the one removed.
- Make sure the drain hose is set up according to the instructions. Failure to do so could cause leakage and result in personal property damage, fire, and electric shock.
- Make sure that all wires are connected properly. Failure to connect wires according to instructions can result in electrical shock or fire.
- Only use a soft, dry cloth to wipe the unit clean. If needed, use a cloth soaked in warm water to wipe it clean.
- Do not use chemicals or chemically treated cloths to clean the unit.
- Do not use benzene, paint thinner, polishing powder, or other solvents to clean the unit. They can cause the plastic surface to crack or deform.
- To avoid panel deformation or discoloration, do not use water hotter than 104°F (40°C) to clean the front panel.
- Do not wash the unit under running water. Doing so creates an electrical hazard.
- Clean the unit using a damp, lint-free cloth and neutral detergent. Dry the unit with a dry, lint-free cloth.
- Do not use water to clean the inside of the indoor unit. This can destroy insulation and cause electrical shock.
- An authorized dealer or licensed service provider should perform maintenance and cleaning of the outdoor unit.
- Any unit repairs should be performed by an authorized dealer or a licensed service provider.

CHANGING THE FILTER

- Before changing the filter or cleaning, turn off the unit and disconnect its power supply.
- When removing the filter, do not touch the metal parts in the unit. The sharp metal edges can cut you.
- Do not expose the filter to direct sunlight when drying. This can shrink the filter.

Maintaining the Unit

Long Periods of Non-Use
If you plan not to use the unit for an extended period of time, do the following:

Clean all filters.

Turn on fan function until unit dries out completely.

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

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



Check for damaged wires.



Clean all filters.



Check for leaks.

Ensure nothing is blocking the air inlets & outlets.

10.2 Troubleshooting

! CAUTION

If any of the following conditions occur, turn off the unit immediately.

- You smell a burning odor.
- The unit emits loud or abnormal sounds.
- A power fuse blows or the circuit breaker frequently trips.
- Water or other objects fall into or out of the unit.

DO NOT ATTEMPT TO FIX THESE YOURSELF! CONTACT AN AUTHORIZED SERVICE PROVIDER IMMEDIATELY.

Common Issues

The following problems are not a malfunction, and in most situations will not require repairs.

Issue	Possible Causes
Unit does not turn on when pressing ON/OFF button.	The unit has a 3-minute protection feature that prevents the unit from overloading. The unit cannot be restarted within 3 minutes of being turned off.
	If the operation light and PRE-DEF indicators are lit up, the outdoor temperature is too cold and the unit's anti-cold wind is activated in order to defrost the unit.
The unit changes from COOL/ HEAT mode to FAN mode.	The unit may change its setting to prevent frost from forming on the unit. Once the temperature increases, the unit will start operating in the previously selected mode again.
	The set temperature has been reached, at which point the unit turns off the compressor. The unit will continue operating when the temperature fluctuates again.
The indoor unit emits white mist.	In humid regions, a large temperature difference between the room's air and the conditioned air can cause white mist.
Both the indoor and outdoor units emit white mist.	When the unit restarts in heat mode after defrosting, white mist may be emitted due to moisture generated from the defrosting process.
The indoor unit makes noises.	A squeaking sound is heard when the system is off or in cool mode. The noise is also heard when the drain pump (optional) is in operation.
	A squeaking sound may occur after running the unit in heat mode due to expansion and contraction of the unit's plastic parts.
Both the indoor unit and the outdoor unit make noises.	Low hissing sound during operation: this is normal and is caused by refrigerant gas flowing through both indoor and outdoor units.
	Low hissing sound when the system starts, has just stopped running, or is defrosting: this noise is normal and is caused by the refrigerant gas stopping or changing direction.
	Squeaking sound: normal expansion and contraction of plastic and metal parts caused by temperature changes during operation can cause squeaking noises.
The outdoor unit makes noises.	The unit will make different sounds based on its current operating mode.
Dust is emitted from either the indoor or outdoor unit.	The unit may accumulate dust during extended periods of non-use, which will be emitted when the unit is turned on. This can be mitigated by covering the unit during long periods of inactivity.
The unit emits a bad odor.	The unit may absorb odors from the environment (such as furniture, cooking, cigarettes, etc.) which will be emitted during operation.
	The unit's filters have become moldy and should be cleaned.
The fan of the outdoor unit does not operate.	During operation, the fan speed is controlled to optimize product operation.

Note: If a problem persists, contact a local dealer or MRCOOL® customer service. Provide them with a detailed description of the unit malfunction as well as your model number.

When trouble occurs, please check the following points before contacting a repair company.

Problem	Possible Causes	Solution
Poor Cooling Performance	**Temperature setting may be higher than ambient room temperature.**	Lower the temperature setting.
	The heat exchanger on the indoor or outdoor unit is dirty.	Clean the affected heat exchanger.
	The air filter is dirty.	Remove the filter and clean it according to instructions.
	The air inlet or outlet of either unit is blocked.	Turn the unit off, remove the obstruction and turn it back on.
	Doors and windows are open.	Make sure that all doors and windows are closed while operating the unit.
	Excessive heat is generated by sunlight.	Close windows and curtains during periods of high heat or bright sunshine.
	Too many sources of heat in the room (people, computers, electronics, etc.)	Reduce the amount of heat sources.
	Low refrigerant due to leak or long-term use.	Check for leaks, re-seal if necessary, and top off refrigerant.
The unit is not working	**Power failure**	Wait for the power to be restored.
	The power is turned off.	Turn on the power.
	The fuse is burned out.	Replace the fuse.
	The unit's 3-minute protection has been activated.	Wait three minutes after restarting the unit.
	Timer is activated	Turn timer off
The unit starts and stops frequently.	**There's too much or too little refrigerant in the system.**	Call a technician to check for leaks and recharge the system with refrigerant.
	Incompressible gas, air, or moisture, or foreign material has entered the system.	Call a technician to evacuate and recharge the system with refrigerant.
	System circuit is blocked.	Determine which circuit is blocked and replace the malfunctioning piece of equipment.
	The compressor is broken.	Call a technician to replace the compressor.
	The voltage is too high or too low.	Install a manostat to regulate the voltage.
Poor heating performance	**The outdoor temperature is extremely low**	Use auxiliary heating device
	Cold air is entering through doors and windows.	Make sure that all doors and windows are closed during use.
	Low refrigerant due to leak or long-term use.	Call a technician to check for leaks, re-seal if necessary, and top off refrigerant.

Note: If your problem persists after performing the checks and diagnostics above, turn off your unit immediately and contact a local dealer or MRCOOL® customer service.

10.3 24V Signal Chart

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	
Electric Auxiliary Heat Module 1	3	*	0	0	*	0	1	0	0	*	Turbo	08
Electric Auxiliary Heat Module 2		*	0	0	*	0	0	1	0	*	Turbo	
Electric Auxiliary Heat Module 1 & 2		*	0	0	*	0	1	1	0	*	Turbo	09
Heat Pump Stage 1 + Electric Auxiliary Heat Module 1	4	*	1	0	1	0	1	0	0	1	Turbo	10
Heat Pump Stage 1 + Electric Auxiliary Heat Module 2		*	1	0	1	0	0	1	0	1	Turbo	
Heat Pump Stage 2 + Electric Auxiliary Heat Module 1		*	*	1	1	0	1	0	0	1	Turbo	
Heat Pump Stage 2 + Electric Auxiliary Heat Module 1		*	*	*	*	1	1	0	0	1	Turbo	
Heat Pump Stage 2 + Electric Auxiliary Heat Module 2		*	*	1	1	0	0	1	0	1	Turbo	
Heat Pump Stage 2 + Electric Auxiliary Heat Module 2		*	*	*	*	1	0	1	0	1	Turbo	
Heat Pump Stage 1 + Electric Auxiliary Heat Module 1 & 2		*	1	0	1	0	1	1	0	1	Turbo	11
Heat Pump Stage 2 + Electric Auxiliary Heat Module 1 & 2		*	*	1	1	0	1	1	0	1	Turbo	
Heat Pump Stage 2 + Electric Auxiliary Heat Module 1 & 2		*	*	*	*	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 AUU will turn off if the 24V input cannot meet the table.

10.4 Error Display (Indoor Unit)

When the indoor unit encounters a recognized error, the operation lamp will flash in a corresponding series, the timer lamp may turn on or begin flashing, and an error code will be displayed. These error codes are described in the following table:

Display	Error Information	Solution
EC 07	ODU fan speed out of control	TS21
EC 0D	ODU malfunction	TS38
EC 51	ODU EEPROM parameter error	TS19
EC 52	ODU coil temp. sensor (T3) error	TS23
EC 53	ODU ambient temp. sensor (T4) error	TS23
EC 54	COMP. discharge temp. sensor (TP) error	TS23
EC 56	IDU coil outlet temp. sensor (T2B) error (Multi-Zone)	TS23
EC C1	Other IDU refrigerant sensor detects leakage (Multi-Zone)	TS35
EH 00	IDU EEPROM malfunction	TS19
EH 03	IDU fan speed out of control	TS21
EH 0A	IDU EEPROM parameter error	TS19
EH 0B	IDU main control board & display board communication error	TS39
EH 0E	Water-level alarm malfunction	TS25
EH 3A	External fan DC bus voltage is too low	TS35
EH 3B	External fan DC bus voltage is too high	TS35
EH 60	IDU room temp. sensor (T1) error	TS23
EH 61	IDU coil temp. sensor (T2) error	TS23
EH 62 / EH 66	Evaporator coil inlet temperature sensor T2B is in open circuit or short circuit	TS23
EH 65	Evaporator coil temperature sensor T2A is in open circuit or short circuit	TS23
EH BA	Communication malfunction between indoor unit and external fan module	TS35
EH C1	Refrigerant sensor detects leakage	TS37
EH C2	Refrigerant sensor is out of range and leakage is detected	TS37
EH C3	Refrigerant sensor is out of range	TS36
EL 01	IDU & ODU communication error	TS20
EL 0C	System lacks refrigerant	TS23
EL 16	Communication malfunction between adapter board and outdoor main board	TS40
FH CC	Refrigerant sensor error	TS36
FL 09	Mismatch between the new and old platforms	TS40
pC 00	ODU IPM module protection	TS26
PC 01	ODU voltage protection	TS27
PC 02	Compressor top (or IPM) temp. protection	TS32
PC 03	Pressure protection (low or high pressure)	TS29
PC 04	Inverter compressor drive error	TS28
PC 0l	Low ambient temperature protection	TS33
----	IDUs mode conflict (Multi-Zone)	--

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

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

LED Flash Frequency:



10.5 Error Display (Wired Controller)

Display	Error Information	Solution
EH B3	Communication malfunction between wire and master control	TS34

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

10.6 Error Display (Outdoor Unit)

Display	Error Information	Solution
DF	Defrosting	Normal display, not error code
FC	Forced cooling	
EC 07	ODU fan speed out of control	TS12
EC 51	ODU EEPROM parameter error	TS10
EC 52	ODU coil temperature sensor (T3) error	TS14
EC 53	ODU ambient temperature sensor (T4) error	TS14
EC 54	Compressor discharge temperature sensor (T4) error	TS14
EC 55	ODU IPM module temperature sensor malfunction	TS33
EC 57	Refrigerant pipe temperature sensor error	TS14
EC SC	Pressure sensor failure	TS35
EL 01	IDU & ODU communication error	TS11
EL 16	Communication malfunction between adapter board and ODU main board	TS36
PC 00	IPM Module Protection	TS17
PC 02	Compressor top (or IPM) temperature protection / Refrigerant sensor error	TS25
PC 06	Discharge temperature protection of compressor	TS23
PC 08	Outdoor overcurrent protection	TS15
PC 0A	High temperature protection of condenser	TS24
PC 0F	PFC Module Protection	TS22
PC 10	ODU low AC voltage protection	TS19
PC 11	ODU main control board DC bus high voltage protection	TS19
PC 12	ODU main control board DC bus low voltage protection / 341 MCE error	TS19
PC 30	System high pressure protection	TS27
PC 31	System low pressure protection	TS29
PC 31	System low pressure protection	TS29
PC 40	Communication error between ODU main chip and compressor driven chip	TS21
PC 31	System low pressure protection	TS29
PC 40	Communication error between ODU main chip and compressor driven chip	TS21
PC 41	Compressor current sampling failure	TS32
PC 42	Compressor start failure of outdoor unit	TS15
PC 43	ODU compressor lack phase protection	TS31
PC 44	ODU zero speed protection	TS15
PC 45	ODU IR chip drive failure	TS32
PC 46	Compressor speed out of control	TS15
PC 49	Compressor overcurrent failure	TS15
LC 06	High temperature protection of Inverter Module (IPM)	TS26
PH 90	High temperature protection of evaporator	TS34
PH 91	Low temperature protection of evaporator	TS35

10.7 Quick Maintenance by Error Code

If you do not have the time to test which specific parts are faulty, you can change the required parts according to the error code. You can find the parts to replace by error code in the following table.

Part Requiring Replacement	Error Code										
	EH 00/EH 0A	EL 01	EH 03	EH 60	EH 61	EH 62/EH66	EH 65	EL OC	EH C1/CH C2	EH oE	EH OB
Indoor PCB	√	√	√	√	√	√	√	√	X	√	√
Outdoor PCB	X	√	X	X	X	X	X	X	X	X	X
Indoor Fan Motor	X	X	√	X	X	X	X	X	X	X	X
T1 Sensor	X	X	X	√	X	X	X	X	X	X	X
T2 Sensor	X	X	X	X	√	X	X	√	X	√	X
T2B Sensor	X	X	X	X	X	√	X	X	X	X	X
T2A Sensor	X	X	X	X	X	X	√	X	X	X	X
Magnet Ring	X	√	X	X	X	X	X	X	X	X	X
Compressor	X	X	X	X	X	X	X	X	X	X	X
Additional Refrigerant	X	X	X	X	X	X	X	√	√	√	X
Water-Level Switch	X	X	X	X	X	X	X	X	X	√	X
Water Pump	X	X	X	X	X	X	X	X	X	√	X
Display Board	X	X	X	X	X	X	X	X	X	X	√

Part Requiring Replacement	Error Code											
	EC 54	EC 51	EC 52	EC 53	EC 56	EC 07	PC 00	PC 01	PC 02	PC 04	PC 03	FH cc/EH C3
Indoor PCB	X	X	X	X	X	X	X	X	X	X	X	√
Outdoor PCB	√	√	√	√	√	√	√	√	√	√	√	X
Outdoor Fan Motor	X	X	X	X	X	√	√	X	√	√	X	X
T3 Sensor	X	X	√	X	X	X	X	X	X	X	X	X
T4 Sensor	X	X	X	√	X	X	X	X	X	X	X	X
TP Sensor	√	X	X	X	X	X	X	X	X	X	X	X
T2B Sensor	X	X	X	X	√	X	X	X	X	X	X	X
Refrigerant Sensor	X	X	X	X	X	X	X	X	X	X	X	√
Reactor Sensor	X	X	X	X	X	X	X	√	X	X	X	X
Compressor	X	X	X	X	X	X	√	X	X	√	X	X
IPM Module Board	X	X	X	X	X	X	√	√	√	√	X	X
Pressure Protector	X	X	X	X	X	X	X	X	X	X	√	X
Additional Refrigerant	X	X	X	X	X	X	X	X	X	X	√	X

Part Requiring Replacement	Error Code							
	EL 01	EC 51	EC 52	EC 53	EC 54	EC 55	EC SC	EC 57
Indoor PCB	√	X	X	X	X	X	X	X
Outdoor PCB	√	√	√	√	√	√	√	√
ODU Coil Temp. Sensor	X	X	√	X	X	X	X	X
ODU Ambient Temp. Sensor	X	X	X	√	X	X	X	X
COMP. Discharge Temp. Sensor	X	X	X	X	√	X	X	X
IPM Module Temperature Sensor	X	X	X	X	X	√	X	X
Pressure Sensor	X	X	X	X	X	X	√	X
Refrigerant Pipe Temperature Sensor	X	X	X	X	X	X	X	√
Condenser Temperature Sensor	X	X	X	X	X	X	X	X
Reactor	√	X	X	X	X	X	X	X
IPM Module Board	√	X	X	X	X	X	X	X

Part Requiring Replacement	Error Code								
	EC 07	PC 00	PC 10 / PC 11 / PC 12	PC 02	PC 08 / PC 42 / PC 44 / PC 46 / PC 49	PC 0f	PC 41	PH 90	PH 91
Outdoor PCB	√	√	√	√	√	√	√	X	X
Outdoor Fan Motor	√	√	X	X	X	X	X	X	X
Reactor or Inductance	X	√	√	X	√	√	X	X	X
Compressor	X	√	X	X	X	X	X	X	X
IPM Module Board	X	√	√	X	√	X	X	X	X
Bridge Rectifier	X	√	√	X	√	X	X	X	X
Evaporator Coil Temperature Sensor	X	X	X	X	X	X	X	√	√
PFC Module	X	X	X	X	X	√	X	X	X
Additional Refrigerant	X	X	X	X	X	X	X	X	X
Overload Protector	X	X	X	√	X	X	X	X	X
ODU Ambient Temperature Sensor	X	X	X	X	X	X	X	X	X
Refrigerant Pipe Temperature Sensor	X	X	X	X	X	X	X	X	X
Indoor Fan	X	X	X	X	X	X	X	√	X
Indoor PCB	X	X	X	X	X	X	X	√	√

Part Requiring Replacement	Error Code							
	PC 40	PC 43	PC 45	PC 06	PC oA	PC 30	PC 31	EL 16
Outdoor PCB	√	√	X	√	√	√	√	√
Outdoor Fan Motor	X	X	X	X	√	√	√	X
ODU Coil Temp. Sensor	X	X	X	X	√	X	X	X
Comp. Discharge Temp. Sensor	X	X	X	√	X	X	X	X
Compressor	X	√	X	X	X	X	X	X
IPM Module Board	X	X	√	X	X	X	X	X
Additional Refrigerant	X	X	X	√	√	X	√	X
Electric Control Box	√	X	X	X	X	X	X	X
High Pressure Switch	X	X	X	X	X	√	X	X
Low Pressure Switch	X	X	X	X	X	X	√	X
Adapter Board	X	X	X	X	X	X	X	√

10.8 Outdoor Unit Point Check Function

- A check switch is included on the adapter board.
- Push SW4 to check the unit's status while running. The digital display shows the following codes each time SW4 is pushed.

Number of Presses	Display	Remark
0	Normal Display	Displays running frequency, running state, or malfunction code Defrosting mode: "dF" or alternative displays between running frequency and "dF" (each appears for 0.5s) Forced cooling mode: the LED displays "FC" or alternative displays between running frequency and "FC" (each appears for 0.5s)
1	Indoor unit capacity demand code	Actual data *HP*10 If capacity demand code is higher than 99, the decimal point of the high digit tube will be lighted. (For example, the digital display tube shows "5.0". 5.0 multiplied by 10 becomes 50, then added to 100 to become 150. The actual capacity demand = 150/10=15. If the digital display tube shows "60", the actual capacity demand = 60/10=6.0.) GA algorithm models display "--"
2	The frequency after the capacity requirement adapter	If the value is higher than 99, the decimal point of the high digit tube will be lighted.

Number of Presses	Display	Remark
3	Room Temperature (T1)	If the temperature is lower than 0°C (32°F), the digital display tube will show "0". If the temperature is higher than 70°C (158°F), the digital display tube will show "70".
4	Indoor Unit Evaporator Temperature (T2)	If the temperature is lower an -9°C (15.8°F), the digital display tube will show "-9". If the temperature is higher than 70°C (158°F), the digital display tube will show "70". If the outdoor unit is not connected, the digital display tube will show "--".
5	Condenser pipe temperature (T3)	
6	Outdoor ambient temperature (T4)	
7	Compressor discharge temperature (TP)	The display value is between 0~199°C (32°F~390.2°F). If the temperature is lower than 0°C (32°F), the digital display tube will show "0". If the temperature is higher than 99°C (210.2°F), the decimal point of the high digit tube will be lighted. (For example, the digital display tube shows "0.5", so 0.5 multiplied by 10 becomes 5, then added to 100 to become 105°C (221°F).)
8	AD value of current	The display value is a hex number. For example, the digital display tube shows "Cd", so $C*16^1+d*16^0=12*16+13=205$ means AD value is 205.
9	AD value of voltage	
10	Indoor unit Running Mode Code	Standby: 0, Cooling: 1, Heating: 2, Fan Only: 3, Drying: 4, Forced Cooling: 6, Defrost: 7, ECO: 9, Forced Defrosting: A, Self-Clean: B
11	Outdoor Unit Running Mode Code	
12	EXV Open Angle	Actual Data / 4 If the value is higher than 99, the decimal point of the high digit tube will be lighted. For example, the digital display tube shows "2.0". 2.0 multiplied by 10 becomes 20, then added to 100 to become 120. This means the EXV open angle is 120x4=480p.
13	Frequency Limit Symbol AD value of current AD value of voltage Indoor unit Running Mode Code Outdoor Unit Running Mode Code	Bit 7: Frequenc limit caused by IGBT radiator Bit 6: Reserved Bit 5: Reserved Bit 4: Frequency limit caused by low temperature of T2. (LH00) Bit 3: Frequency limit caused by T3. (LC01) Bit 2: Frequency limit caused by TP. (LC02) Bit 1: Frequency limit caused by current (LC03) Bit 0: Frequency limit caused by voltage (LC05)
14	Outdoor unit fan speed	If it is higher than 99, the decimal point of the high digit tube will be lighted. (For example, the digital display tube shows 2.0, so 2.0 multiplied by 10 becomes 20, then added to 100 to become 120. This value is multiplied by 8, so the current fan speed: 120*8=960.
15	The average value of the temperature values detected by the high and low pressure sensors in the last 10 seconds of the compressor frequency calculation period	The displayed value is the actual value plus 60. (When the displayed value is 10, the actual value is -50.) When the displayed value is high than 99, the decimal point of the high digit tube will be lighted. (For example, if it displays 2.0, 2.0 multiplied by 10 becomes 20, then added to 100 to become 120, so the actual value is 60.) When there is no pressure sensor, it is displayed as --
16	The temperature value detected by the high and low presure sensor	
17	AD value detected by the high and low pressure sensor	The display value is a hex number. For example, the digital display tube shows "Cd". $C*16^1+d*16^0=12*16+13=205$ means AD value is 205. When there is no pressure sensor, it is displayed as --
18	The currently running communication protocol version	00-99

MRCOOL®

COMFORT MADE SIMPLE

MRCOOL® UNIVERSAL® Series

The design and specifications of this product and/or manual are subject to change without prior notice.
Consult with the sales agency or manufacturer for details.