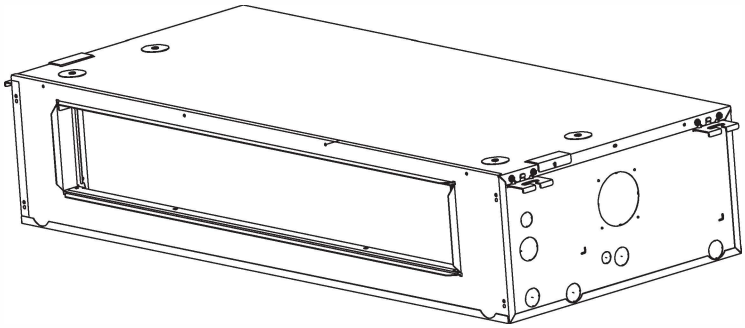
ComfortStar®

AIR-HANDLER CEILING MOUNT AHU

Installation Manual

Safety precautions & Installation

CPK3 SERIES



IMPORTANT NOTE:

Read this manual and SAFETY MANUAL(if any) carefully before installing or operating your appliance. Make sure to save this manual for future reference.

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Read this manual

Inside you'll find many helpful hints on how to use and maintain your air conditioner properly. Just a little preventive care on your part can save you a great deal of time and money over the life of your air conditioner. These instructions may not cover every possible condition of use, so common sense and attention to safety is required when installing, operating and maintaining this product.

SAFETY PRECAUTIONS

It is really important you read Safety Precautions Before Operation and Installation Incorrect installation due to ignoring instructions can cause serious damage or injury. The seriousness of potential damage or injuries is classified as either a WARNING or CAUTION.

The following safety guidelines are intended to prevent unforeseen risks or damage from unsafe or incorrect operation of the appliance. Please check the packaging and appliance on arrival to make sure everything is intact to ensure safe operation. If you find any damage, please contact the retailer or dealer. Please note modifications or alterations to the appliance are not allowed for your safety. Unintended use may cause hazards and loss of warranty claims.

Explanation of Symbols

WARNING

This symbol indicates the possibility of personal injury or loss of life.

CAUTION

This symbol indicates the possibility of property damage or serious consequences.

Read these operating instructions carefully and attentively before using/commissioning the unit and keep them in the immediate vicinity of the installation site or unit for later use!

⚠ WARNING

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

⚠ ELECTRICAL WARNINGS

- Only use the specified wire. If the wire is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- The product must be properly grounded at the time of installation, or electrical shock may occur.
- Installation Manual. Connect cables tightly, and clamp them securely to prevent external forces from damaging the terminal. Improper electrical connections can overheat and cause fire, and may also cause shock. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
- All wiring must be properly arranged to ensure that the control board cover can close properly. If the control board cover is not closed properly, it can lead to corrosion and cause the connection points on the terminal to heat up, catch fire, or cause electrical shock.
- Disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
  Do not share the electrical outlet with other appliances. Improper or insufficient power supply can cause fire or electric shock.
- If connecting power to fixed wiring, an all-pole disconnection device must be incorporated in the fixed wiring in accordance with the wiring rules.
- If the SUPPLY CORD damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

⚠ WARNINGS FOR PRODUCT INSTALLATION

- Turn off the air conditioner and disconnect the power before performing any installation or repairing. Failure to do so can cause electric shock.
- Installation must be performed by an authorized dealer or specialist. Defective installation can cause water leakage, electrical shock, or fire.
- Installation must be performed according to the installation instructions. Improper installation can cause water leakage, electrical shock, or fire.
- Check the electric wire, water and gas pipeline layout inside the wall, floor and ceiling before installation. Do not implement drilling unless confirm safety with the user, especially for the hidden power wire. An electro probe can be used to test whether a wire is passing by at the drilling location, to prevent physical injury or death caused by insulation broken cords.
- Excessive Weight Hazard - Use two or more people when moving and installing the unit. Failure to do so can result in back or other type of injury.

- Check the power supply before installation. Ensure that the power supply must be reliably grounded following local, state and National Electrical Codes. If not, for example, if the ground wire is detected charged, installation is prohibited before it is rectified. Otherwise, there is a risk of fire and electric shock, causing physical injury or death.
- Contact an authorized service provider for repair or maintenance of this unit. This appliance shall be installed in accordance with national wiring regulations.
- Only use the included accessories, parts, and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, fire, and can cause the unit to fail.
- Install the unit in a firm location that can support the unit's weight. If the chosen location cannot support the unit's weight, or the installation is not done properly, the unit may fall and cause serious injury and damage.
- The first 36 inches of supply air plenum and ductwork must be constructed of sheet metal as required by NFPA 90B. The supply air plenum or duct must have a solid sheet metal bottom directly under the unit with no openings, registers or flexible air ducts located in it. If flexible supply air ducts are used, they may be located only in the vertical walls of rectangular plenum, a minimum of 6 inches from the solid bottom. Metal plenum of duct may be connected to the combustible floor base, if not, it must be connected to the unit supply duct exposed to the supply air opening from the downflow unit. Exposing combustible (non-metal) material to the supply opening of a downflow unit can cause a fire resulting in property damage, personal injury or death.

  Exception warning to downflow:

  Installations on concrete floor slab with supply air plenum and ductwork completely encased must be not less than 2 inches of concrete (See NFPA 90A). When using the unit with electrical heater, the switch is used only for electrical heater on the front of panel.
- Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.
- Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.
- For units that have an auxiliary electric heater, do not install the unit within 1 meter (3 feet) of any combustible materials.
- **Do not** install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause fire.
- **Do not** turn on the power until all work has been completed.
- When moving or relocating the air conditioner, consult experienced service technicians for disconnection and reinstallation of the unit.
- How to install the appliance to its support, please read the information for details in "indoor unit installation" and "outdoor unit installation" sections .

TAKE NOTE OF FUSE SPECIFICATIONS

The air conditioner's circuit board (PCB) is designed with a fuse to provide overcurrent protection. The specifications of the fuse are printed on the circuit board, for example: T3.15AL/250VAC, T5AL/250VAC, T3.15A/250VAC, T5A/250VAC, T20A/250VAC, T30A/250VAC, etc.
NOTE: Only the blast-proof ceramic fuse can be used.

⚠ WARNINGS FOR CLEANING AND MAINTENANCE

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

⚠ WARNING FOR USING FLAMMABLE REFRIGERANT

1. Installation (Space)
   - That the installation of pipe-work shall be kept to a minimum.
   - That pipe-work shall be protected from physical damage.
   - Where refrigerant pipes shall be compliance with national gas regulations.
   - That mechanical connections shall be accessible for maintenance purposes.
   - In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.
   - When disposing of the product is used, be based on national regulations, properly processed.
2. Servicing
   - Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry recognized assessment specification.
3. 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.
4. Do not use any means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
5. The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
6. Be more careful that foreign matter (oil, water, etc.) does not enter the piping. Also, when storing the piping, securely seal the opening by pinching, taping, etc.
7. Do not pierce or burn.
8. Be aware that refrigerants may not contain an odour.
9. All working procedure that affects safety means shall only be carried by competent persons.
10. Appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specific for operation.
11. The appliance shall be stored so as to prevent mechanical damage from occurring.
12. Joints shall be tested with detection equipment with a capability of 5 g/year of refrigerant or better, with the equipment in standstill and under operation or under a pressure of at least these standstill or operation conditions after installation. Detachable joints shall NOT be used in the indoor side of the unit (brazed, welded joint could be used).

NOTE ABOUT FUSE SPECIFICATIONS

- The air conditioner's circuit board (PCB) may be designed with a fuse to provide overcurrent protection. This fuse must be replaced with identical component.
- The specifications of the fuse, if equipped, are printed on the circuit board, examples of such are T5A/250VAC and T10A/250VAC.

NOTE ABOUT REFRIGERANT

- Installation, service, maintenance and repair of this unit must be performed by a certified technician.
- Product uninstallation and recycling must be performed by a certified technician.
- When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.

The allowed static pressure range of the air conditioner on site is 0-0.80 in-H2O (0-200 Pa).
The data below represents the static pressures at full required air flow used for AHRI testing.

MODEL	18-24K	30-36K
PRESSURE	0.30in-H2O (75Pa)	0.30in-H2O (75Pa)

STATIC PRESSURE	⩽200Pa/0.8in-H2O	＞200Pa/0.8in-H2O
THE STATIC PRESSURE ALLOWED BY THE PRODUCT	OK	NG

NOTE

The maximum functional total external static pressure cannot exceed 0.80 in. W.C. or 200 Pa. The airflow reduces significantly beyond 0.80 in.W.C. or 200Pa. System design should allow for the increased resistance of filters as they become dirty.

Room size restriction

The appliances are connected via an air duct system to one or more rooms, the bottom of the air outlet of the air duct in the room should be at a height ⩾7.3ft/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.

NOTE

The nouns in this section are explained as follows :
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 (M_{max}) 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 6.0ft/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 area of the adjacent rooms, on the same floor, connected by 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 according to Sec.2.
- 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 shall 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 shall be applied.

• The area of any openings above 300mm from the floor shall not be considered in determining compliance with Anvmin.

• At least 50% of the required opening area Anvmin shall be below 200mm from the floor.

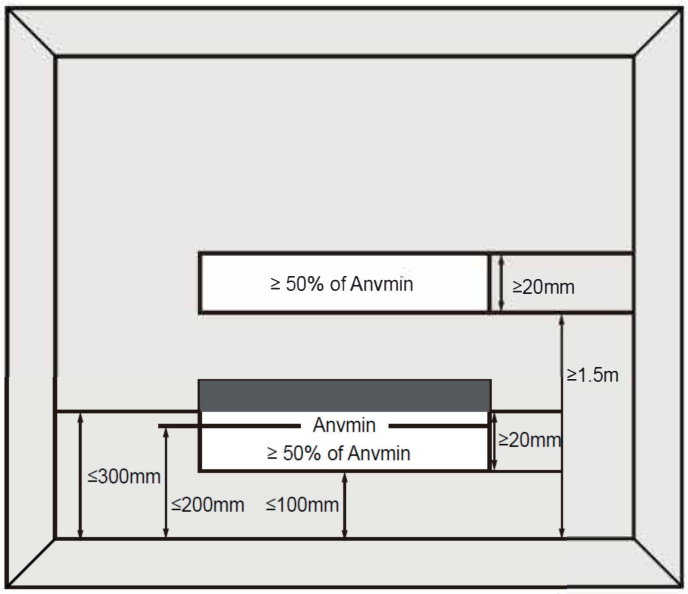
• The bottom of the lowest openings shall not be higher than the point of release when the unit is installed and not more than 100mm from the floor.

• Openings are permanent openings which cannot be closed.

– For openings extending to the floor the height shall not be less than 20mm above the surface of the floor covering

• A second higher opening shall be provided. The total size of the second opening shall not be less than 50% of minimum opening area for Anvmin and shall be at least 1.5 m 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) shall have a total area of not less than TAmin.

• The room area in which the unit is installed shall be not less than 20 %TAmin.

For R454B refrigerant charge amount and minimum room area:

The machine you purchased may be one of the types in the table below. The indoor and outdoor units are designed to be used together. Please check the machine you purchased. The minimum room area of operating or storage should be as specified in the following table:

Regular Heat Series

Model	Indoor unit	Outdoor unit
18K(208/230V)	CPK3-18-SG3	CPR3-18CD(O)
24K(208/230V)	CPK3-24-SG3	CPR3-24CD(O)
30K(208/230V)	CPK3-30-SG3	CPR3-30CD(O)
36K(208/230V)	CPK3-36-SG3	CPR3-36CD(O)

Hyper Heat Series

Model	Indoor unit	Outdoor unit
18K(208/230V)	CPK3-18-SG3	CPH3-18CD(O)
24K(208/230V)	CPK3-24-SG3	CPH3-24CD(O)
30K(208/230V)	CPK3-30-SG3	CPH3-30CD(O)
36K(208/230V)	CPK3-36-SG3	CPH3-36CD(O)

M_c or M_{REL} [oz/kg]	**TA_{min} [ft²/m²]**	**M_c or M_{REL} [oz/kg]**	**TA_{min} [ft²/m²]**	**M_c or M_{REL} [oz/kg]**	**TA_{min} [ft²/m²]**	**M_c or M_{REL} [oz/kg]**	**TA_{min} [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	152/14.13	239.9/6.8	225/20.88	317.5/9.0	298/27.64
91.7/2.6	86/7.99	169.3/4.8	159/14.74	246.9/7.0	231/21.5	324.5/9.2	304/28.26
98.8/2.8	93/8.6	176.4/5	165/15.36	254/7.2	238/22.11	331.6/9.4	311/28.87
105.8/3	99/9.21	183.4/5.2	172/15.97	261/7.4	245/22.73	338.6/9.6	317/29.48
112.9/3.2	106/9.83	190.5/5.4	179/16.58	268.1/7.6	251/23.34	345.7/9.8	324/30.10
119.9/3.4	112/10.44	197.5/5.6	185/17.2	275.1/7.8	258/23.96	352.7/10.0	331/30.71
127/3.6	119/11.06	204.6/5.8	192/17.81	282.2/8.0	264/24.57		

Area formula	**TA_{min}** is the required minimum room area in ft^2/m^2 **M_c** is the actual refrigerant charge in the system in oz/kg **M_{REL}** is the refrigerant releasable charge in oz/kg **h_{inst}** is the height of the bottom of the appliance relative to the floor of the room after installation. **WARNING:** The minimum room area or minimum room area of conditioned space is based on releasable charge and total system refrigerant charge.

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

Model	18K	24K	30K	36K
Nominal air volume	400CFM (680m³/h)	400CFM (680m³/h)	453CFM (770m³/h)	529CFM (900m³/h)

1. **Installation** (where refrigerant pipes are allowed)
   - Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry recognised assessment specification.
   - Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
   - That the installation of pipe-work shall be kept to a minimum.
   - That pipe-work shall be protected from physical damage.
   - Where refrigerant pipes shall be compliance with national gas regulations.
   - That mechanical connections shall be accessible for maintenance purposes.
   - Be more careful that foreign matter (oil, water, etc.) does not enter the piping. Also, when storing the piping, securely seal the opening by pinching, taping, etc.
   - All working procedure that affects safety means shall only be carried by competent persons.
   - Appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specific for operation.
   - Joints shall be tested with detection equipment with a capability of 5 g/year of refrigerant or better, with the equipment in standstill and under operation or under a pressure of at least these standstill or operation conditions after installation. Detachable joints shall NOT be used in the indoor side of the unit (brazed, welded joint could be used).
   - In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.
   - LEAK DETECTION SYSTEM installed. Unit must be powered except for service. For the unit with refrigerant sensor, when the refrigerant sensor detects refrigerant leakage, the indoor unit will display an error code and emit a buzzing sound, the compressor of outdoor unit will immediately stop, and the indoor fan will start running. The service life of the refrigerant sensor is 15 years. When the refrigerant sensor malfunctions, the indoor unit will display the error code “FHCC”. The refrigerant sensor cannot be repaired and can only be replaced by the manufacturer. It shall only be replaced with the sensor specified by the manufacturer.

2. **When a FLAMMABLE REFRIGERANT is used,** the requirements for installation space of appliance and/or ventilation requirements are determined according to
   - the mass charge amount (M) used in the appliance,
   - the installation location,
   - the type of ventilation of the location or of the appliance.
   - piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.
   - that protection devices, piping, and fittings shall be protected as far as possible against adverse environmental effects, for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris;
   - that piping in refrigeration systems shall be so designed and installed to minimize the likelihood of hydraulic shock damaging the system;
   - that steel pipes and components shall be protected against corrosion with a rustproof coating before applying any insulation;
   - that precautions shall be taken to avoid excessive vibration or pulsation;
   - the minimum floor area of the room shall be mentioned in the form of a table or a single figure without reference to a formula;
   - after completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements:

a. The minimum test pressure for the low side of the system shall be the low side design pressure and the minimum test pressure for the high side of the system shall be the high side design pressure, unless the high side of the system cannot be isolated from the low side of the system in which case the entire system shall be pressure tested to the low side design pressure.
b. The test pressure after removal of pressure source shall be maintained for at least 1 h with no decrease of pressure indicated by the test gauge, with test gauge resolution not exceeding 5% of the test pressure.
c. During the evacuation test, after achieving a vacuum level specified in the manual or less, the refrigeration system shall be isolated from the vacuum pump and the pressure shall not rise above 1500 microns within 10 min. The vacuum pressure level shall be specified in the manual, and shall be the lessor of 500 microns or the value required for compliance with national and local codes and standards, which may vary between residential, commercial and industrial buildings.

- field-made refrigerant joints indoors shall be tightness tested according to the following requirements: The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0.25 times the maximum allowable pressure. No leak shall be detected.

3. Qualification of workers

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

Examples for such working procedures are:

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

4. Checks to the area

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

5. Work procedure

Works shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.

6. General work area

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

7. Checking for presence of refrigerant

The area shall 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.

8. Presence of fire extinguisher

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

9. No ignition sources
No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of 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 shall be displayed.

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

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

- the actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed;
- the ventilation machinery and outlets are operating adequately and are not obstructed;
- if an indirect refrigerating circuit is being used, the secondary circuits shall be checked for the presence of refrigerant;
- marking to the equipment continues to be visible and legible, marking and signs that are illegible shall 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.

12. Checks to electrical devices
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, and adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.
Initial safety checks shall include:
that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
that there no live electrical components and wiring are exposed while charging, recovering or purging the system;
that there is continuity of earth bonding;
Sealed electrical components shall be replaced if it's damage;
Intrinsically safe components must be replaced if it's damage.

13. Wiring
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.

14. Detection of flammable refrigerants

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

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

NOTE Examples of leak detection fluids are

- bubble method.

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

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall 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.

15. Removal and evacuation

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

The following procedure shall be adhered to:

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

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

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

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

16. Charging procedures

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

Works shall be undertaken with appropriate tools only (In case of uncertainty, please consult the manufacturer of the tools for use with flammable refrigerants)
Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
Cylinders shall be kept upright.
Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
Label the system when charging is complete(if not already).
Extreme care shall be taken not to overfill the refrigeration system.
Prior to recharging the system, it shall be pressure tested with oxygen free nitrogen (OFN). The system shall 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.

17. Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall 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 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 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 the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

18. Labeling

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

19. Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled 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 shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.
The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units 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 shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

20. Unventilated areas

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

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

a. General
The following information is provided for units that employ FLAMMABLE REFRIGERANTS.

b. Transport of equipment containing flammable refrigerants
Attention is drawn to the fact that additional transportation regulations may exist with respect to equipment containing flammable gas. The maximum number of pieces of equipment or the configuration of the equipment permitted to be transported together will be determined by the applicable transport regulations.

c. Marking of equipment using signs
Signs for similar appliances used in a work area are generally addressed by local regulations and give the minimum requirements for the provision of safety and/or health signs for a work location.
All required signs are to be maintained and employers should ensure that employees receive suitable and sufficient instruction and training on the meaning of appropriate safety signs and the actions that need to be taken in connection with these signs.
The effectiveness of signs should not be diminished by too many signs being placed together.
Any pictograms used should be as simple as possible and contain only essential details.

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

e. Storage of equipment/appliances
The storage of the appliance should be in accordance with the applicable regulations or instructions, whichever is more stringent.

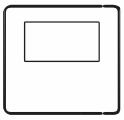
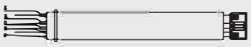
f. Storage of packed (unsold) equipment
Storage package protection should be constructed in such a way that mechanical damage to the equipment inside the package will not cause a leak of the REFRIGERANT CHARGE.
The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.

Explanation of symbols displayed on the indoor unit or outdoor unit

	**WARNING**	This symbol shows that this appliance used a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	**CAUTION**	This symbol shows that the operation manual should be read carefully.
	**CAUTION**	This symbol shows that 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.

1 PRODUCTION INSTALLATION

Accessories (Packed with the indoor unit)

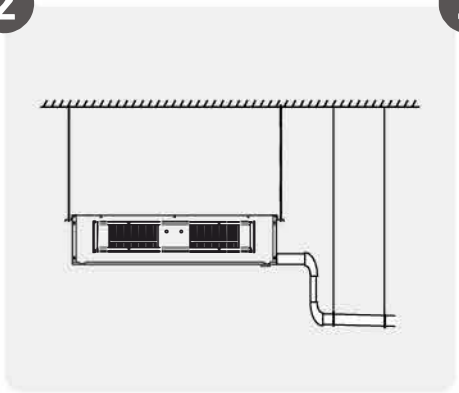
Name	Picture	Quantity
Manual		2
Foam		1
Flare nut		2
Braze to flare adapter		2
Wired remote controller (optional)		1
Remote controller (optional)		1
Battery (optional)		2
Adapter cable (For full 24V communication)		1

INSTALLATION SUMMARY

1

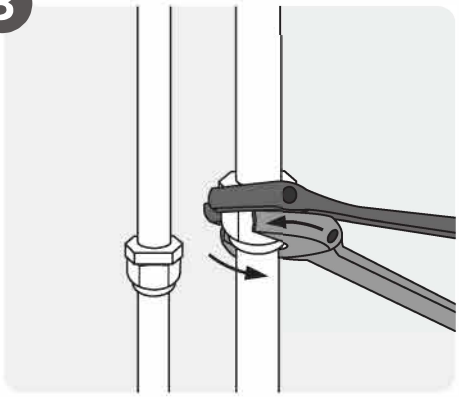
Install the indoor unit

2



Install the drainpipe

3

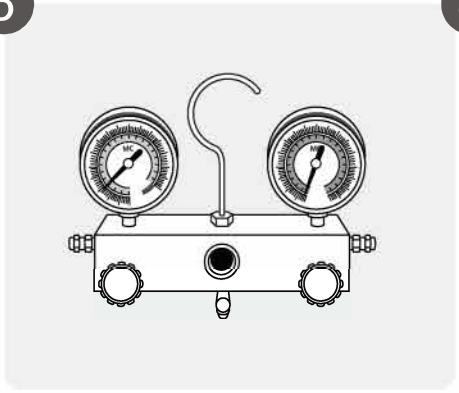


Connect the refrigerant pipes

6

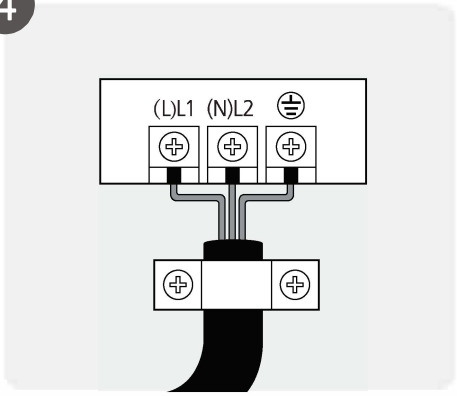
Perform a test run

5



Evacuate the refrigeration system

4

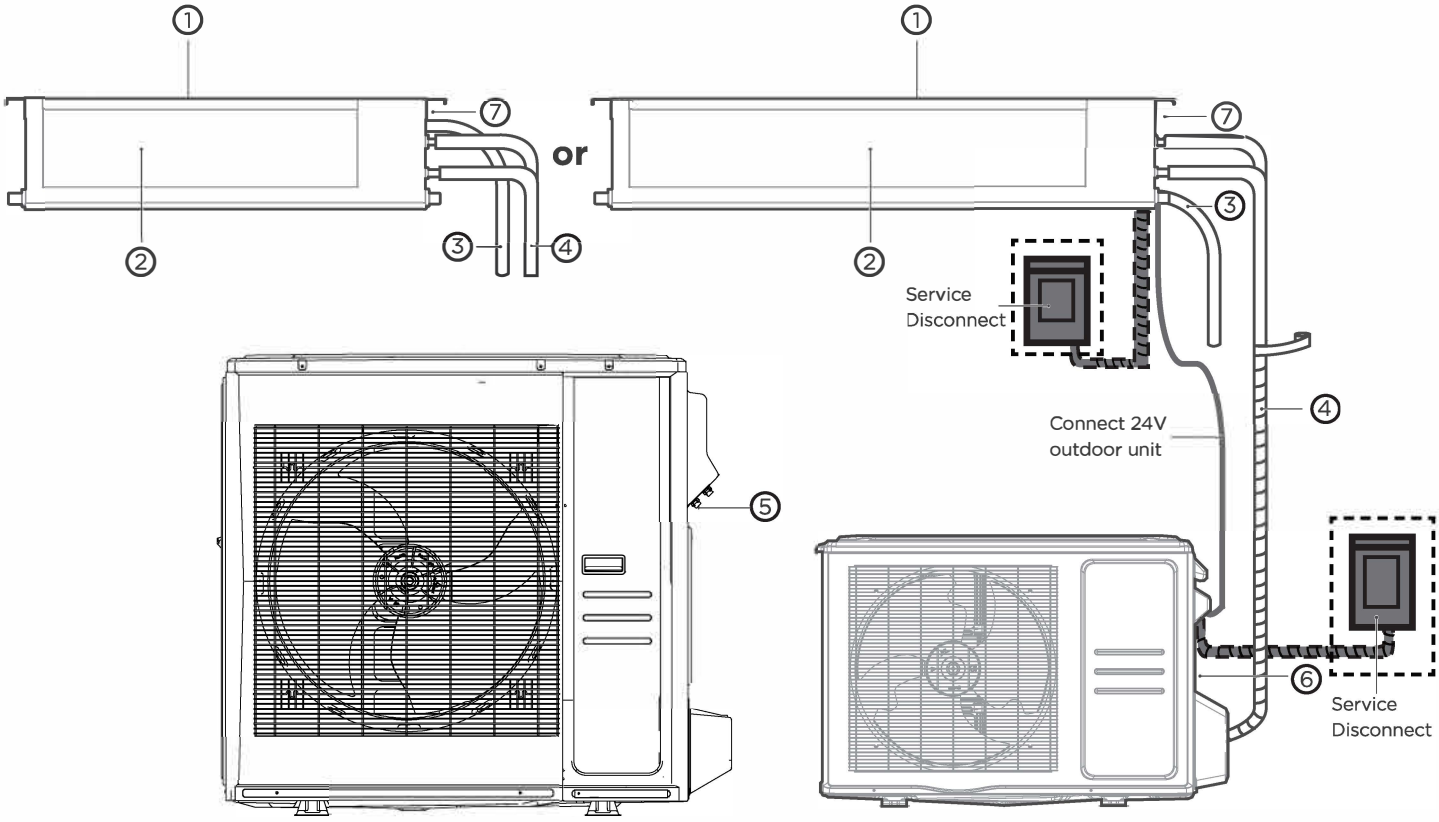


Connect the wires

2 PRODUCT OVERVIEW

NOTE ON ILLUSTRATIONS:

Illustrations in this manual are for explanatory purposes. The actual shape of your indoor unit may be slightly different. The actual shape shall prevail.
The installation must be performed in accordance with the requirement of local and national standards. The installation may be slightly different in different areas.



Note: Service Disconnect shall select as required by Local, regional, and national codes.

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

Install the Indoor Unit

1 Select installation location

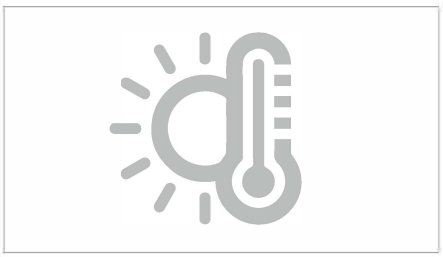
NOTE

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

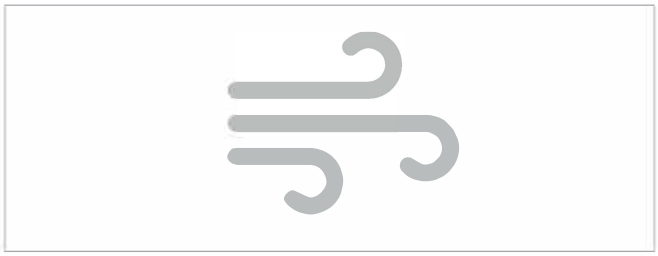
Proper installation locations meet the following standards:

☑ Enough room exists for installation and maintenance.

☑ Enough room exists for the connecting the pipe and drainpipe.

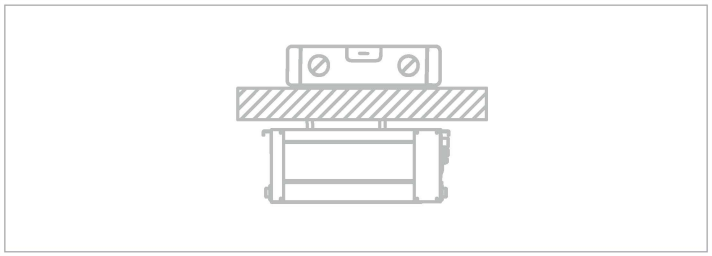


☑ There is no direct radiation from heaters.



☑ The air inlet and outlet are not blocked.

☑ The airflow can fill the entire room.



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

Models with a cooling capacity of 9000Btu to 18000Btu only apply to one room.

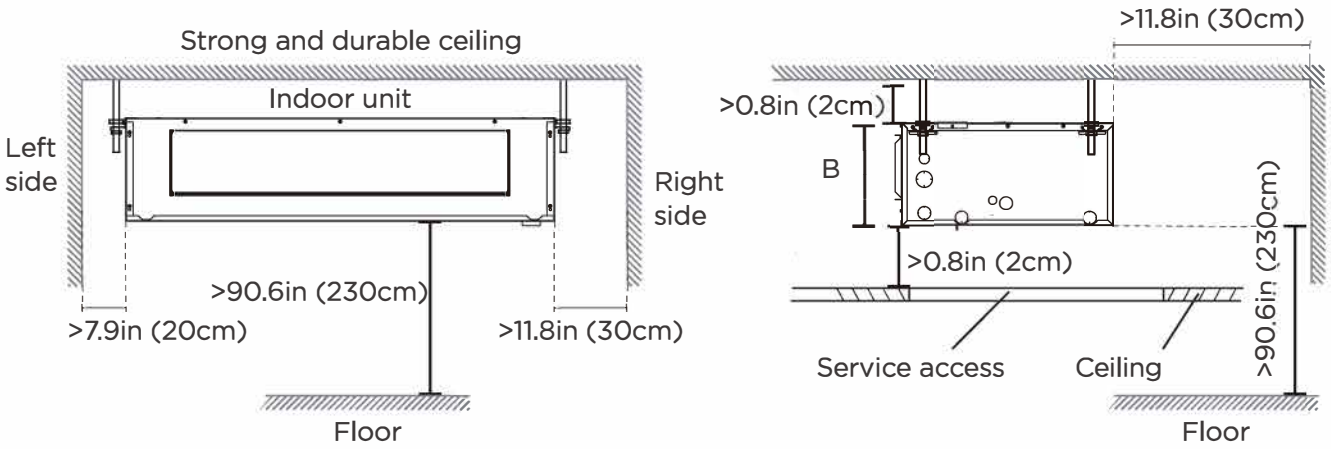
DO NOT install unit in the following locations:

- ⊘ Areas with oil drilling or fracking
- ⊘ Coastal areas with high salt content in the air
- ⊘ Areas with caustic gases in the air, such as hot springs
- ⊘ Areas that experience power fluctuations, such as factories
- ⊘ Enclosed spaces, such as cabinets
- ⊘ Kitchens that use natural gas
- ⊘ Areas with strong electromagnetic waves
- ⊘ Areas that store flammable materials or gas
- ⊘ Rooms with high humidity, such as bathrooms or laundry rooms

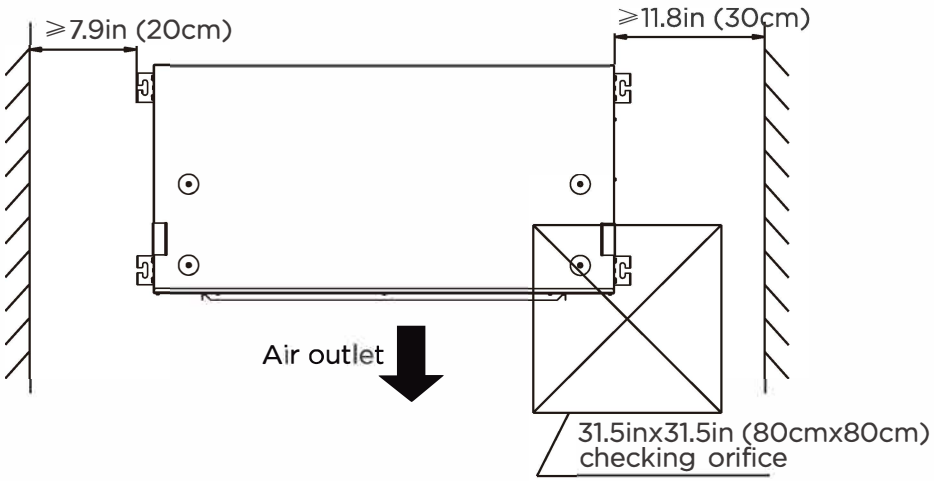
2 Confirm installation sizes

Installation place

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



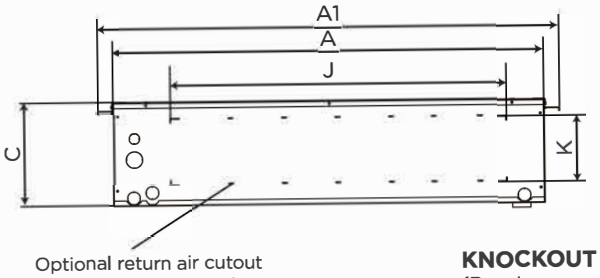
Maintenance space

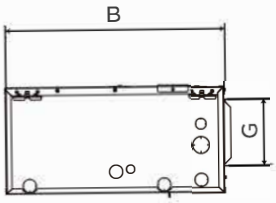


3 Hang indoor unit

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

Air outlet dimensions

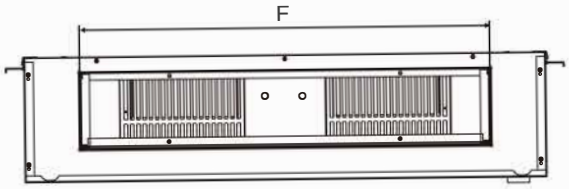


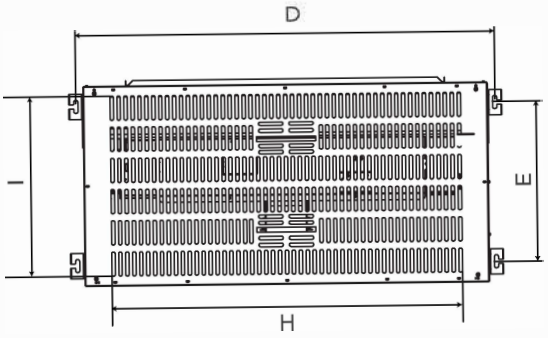


Optional return air cutout
(Not applicable to supplementary heating function models)

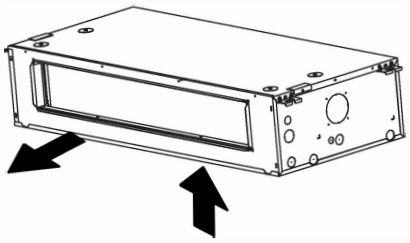
KNOCKOUT FOR DUCTED RETURN
(Requires remote filter grille - field supplied)
(Ducted return requires non-louvered panel)

Air inlet dimensions

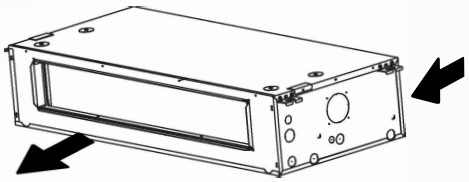




Airflow



Option A



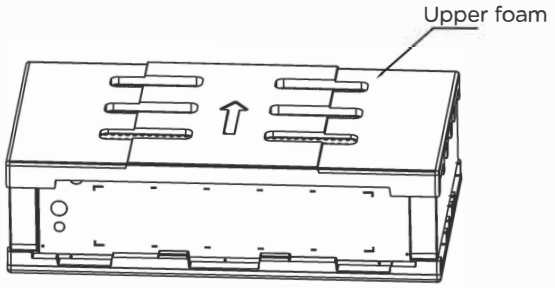
Option B
(Not applicable to supplementary heating function models)

(unit: inch/mm)

MODEL	OUTLINE DEMENSION						SIZE OF MOUNTED LUG		AIR OUTLET OPENING SIZE		AIR RETURN OPENING SIZE	
	A	A1	B	C	J	K	D	E	F	G	H	I
18K(53)	39-15/16 (1015)	43-7/32 (1098)	23-5/16 (593)	10-15/16 (278)	30 (761)	7 (178)	41-5/8 (1057)	18-1/8 (460)	30-5/16 (769)	6-7/8 (174)	38-3/8 (975)	21-1/8 (536)
24K(70)	45-7/8 (1165)	46-15/32 (1180)	23-5/16 (593)	10-15/16 (278)	35-7/8 (911)	7 (178)	47-1/2 (1207)	18-1/8 (460)	36-3/16 (919)	6-7/8 (174)	44-5/16 (1125)	21-1/8 (536)
30K(88)	51-15/16 (1320)	55-8/32 (1403)	23-5/16 (593)	10-15/16 (278)	41-31/32 (1066)	7 (178)	53-5/8 (1362)	18-1/8 (460)	42-5/16 (1074)	6-7/8 (174)	50-3/8 (1280)	21-1/8 (536)
36K(105)	58-7/8 (1495)	62-4/32 (1578)	23-5/16 (593)	10-15/16 (278)	48-7/8 (1241)	7 (178)	60-1/2 (1537)	18-1/8 (460)	49-3/16 (1249)	6-7/8 (174)	57-1/4 (1455)	21-1/8 (536)

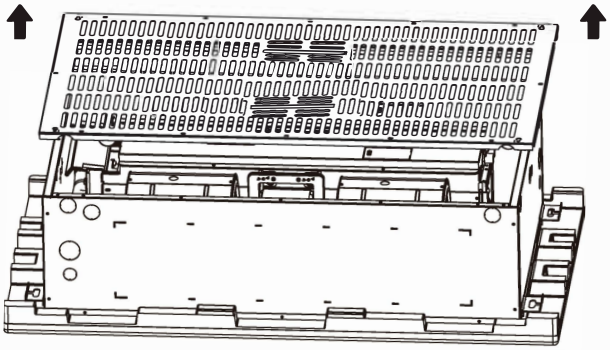
Step 1: Unpacking

Carefully unpack the unit and inspect the contents for damage. If any damage is found at the time of delivery, proper notification and claims should be made with the carrier. Check the rating plate to assure model number and voltage, plus any kits match with what you ordered. The manufacturer should be notified within 5 days of any discrepancy or parts shortage.

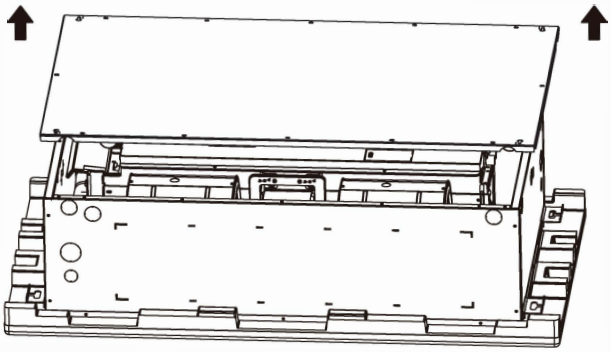


Step 2: Open air inlet channel panel.

Unscrew the 12 screws of the air inlet channel panel.



Option 1

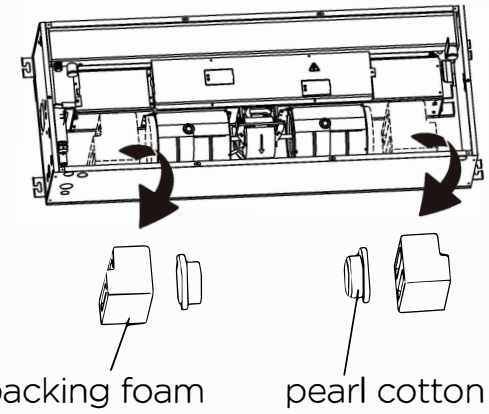


Option 2

(Not applicable to supplementary heating function models)

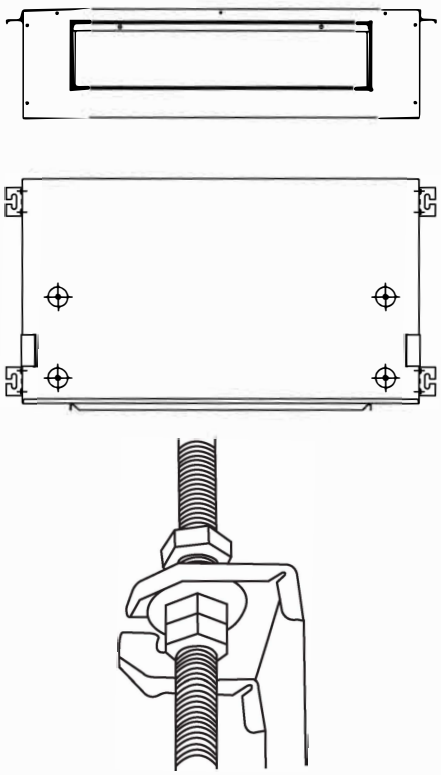
Step 3: Take out two packing foams and two pearl cottons.

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

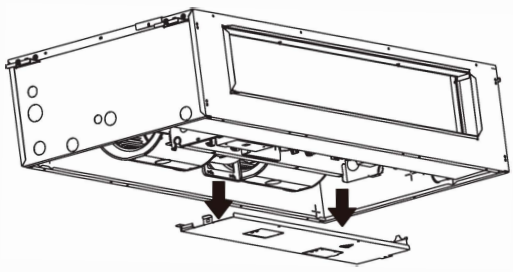


Step 4: Hang indoor unit

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

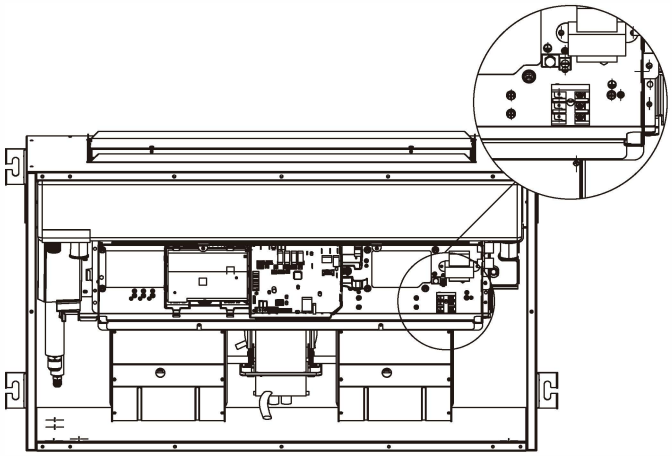


Step 5: Open the control box cover

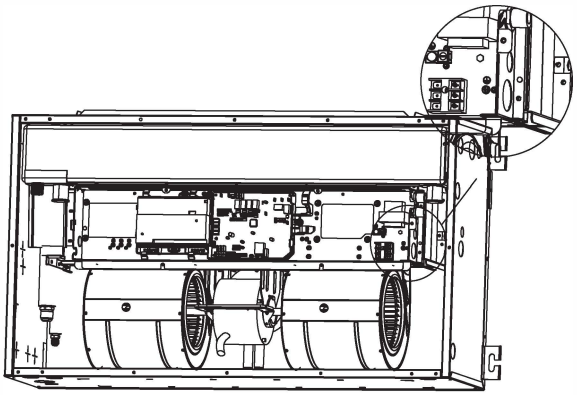


Step 6: Connecting the power cable

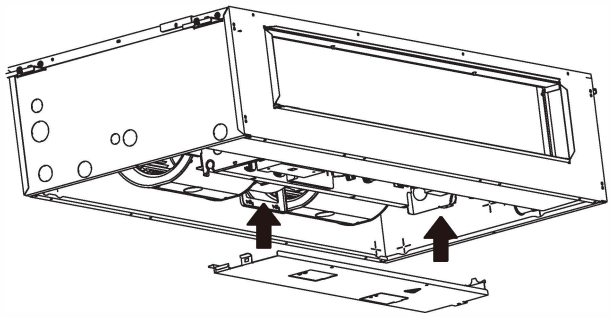
Connecting the power cable and the communication line.



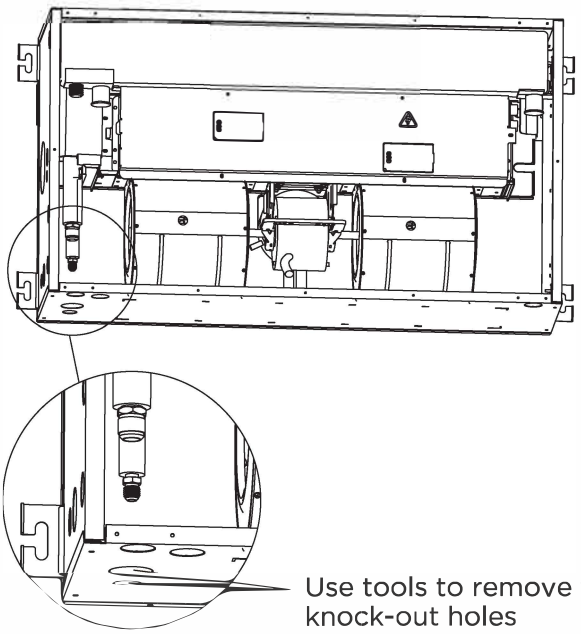
NOTE: The fixing port for the armored wire needs to be fitted to the knock-out hole on the electrical control box for protection of the leads from scratching.



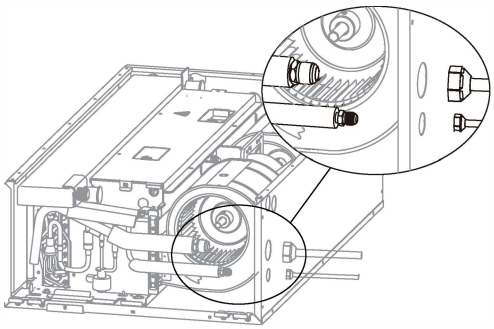
Step 7: Install the control box cover



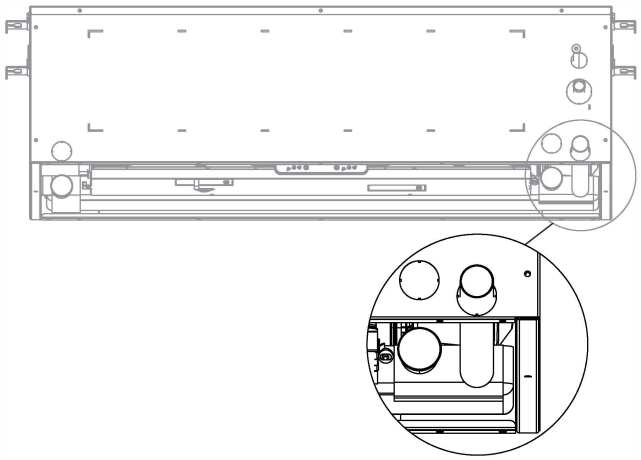
Step 8: Connect the refrigerant pipe



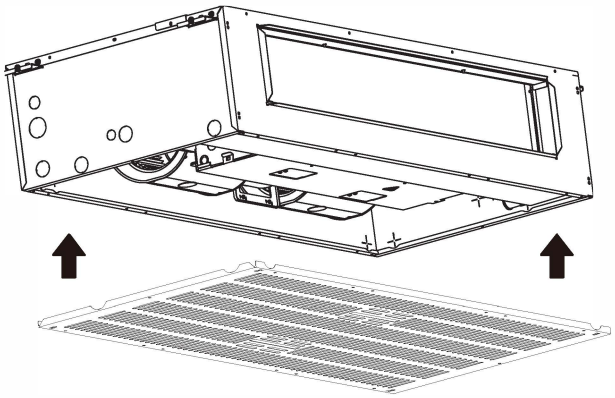
Use tools to remove the knock-out holes



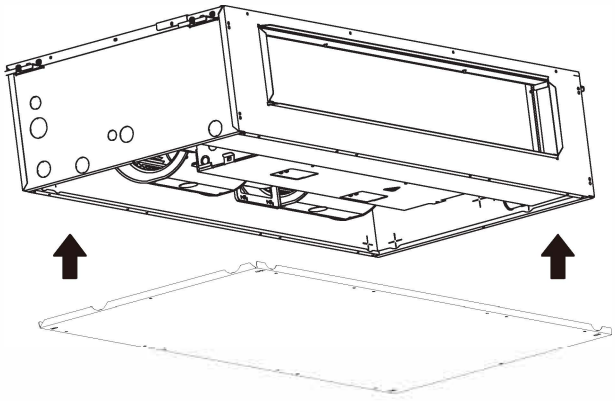
Step 9: Connect the drainpipe



Step 10: Install air inlet channel panel

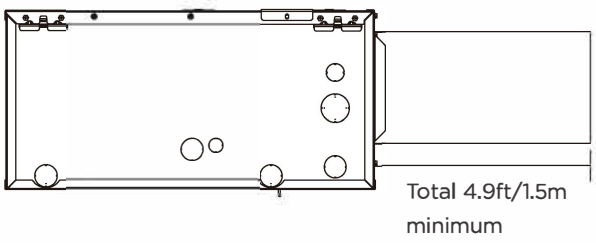


Option 1

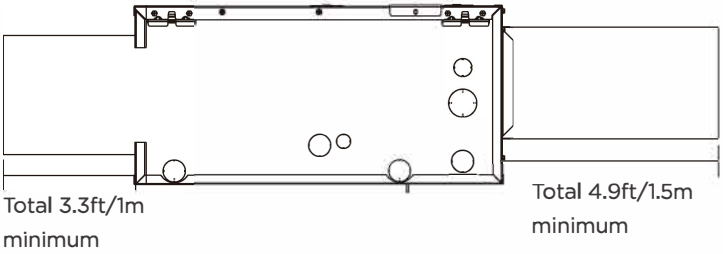


Option 2
(Not applicable to supplementary heating function models)

Step 11: Connect the duct



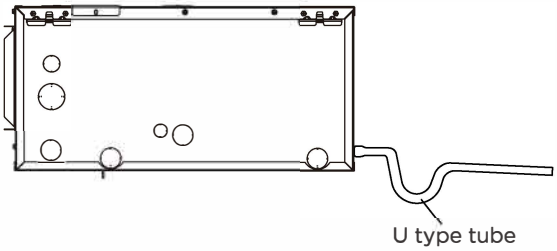
Option 1

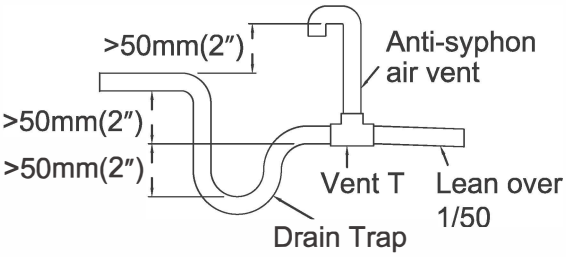


Option 2
(Not applicable to supplementary heating function models)

4 Connect drain hose

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





⚠ CAUTION

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

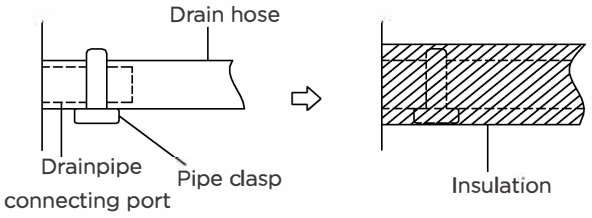
NOTE ON PURCHASING PIPES

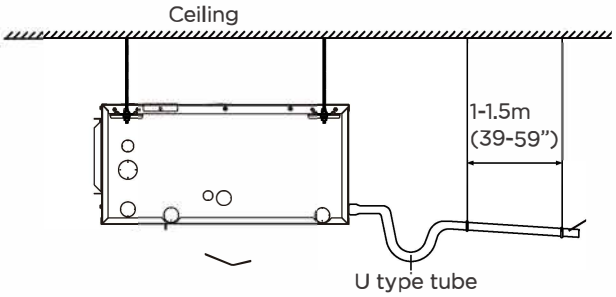
Installation requires a polyethylene tube (exterior diameter = 3.7-3.9cm, interior diameter = 3.2cm), which can be obtained at your local hardware store or dealer.

Indoor Drainpipe Installation

Install the drainpipe as illustrated in the following Figure.

1. Cover the drainpipe with heat insulation to prevent condensation and leakage.
2. Attach the mouth of the drain hose to the unit's outlet pipe. Sheath the mouth of the hose and clip it firmly with a pipe clasp.
3. These units operate with a negative pressure at the drain connections and a drain trap is required. The trap needs to be installed as close to the unit as possible. Make sure the top of the trap is below the connection to the drain pan to allow complete drainage of the pan.





NOTE ON DRAINPIPE INSTALLATION

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

When electrical wiring is finished already

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

5 Airflow performance

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

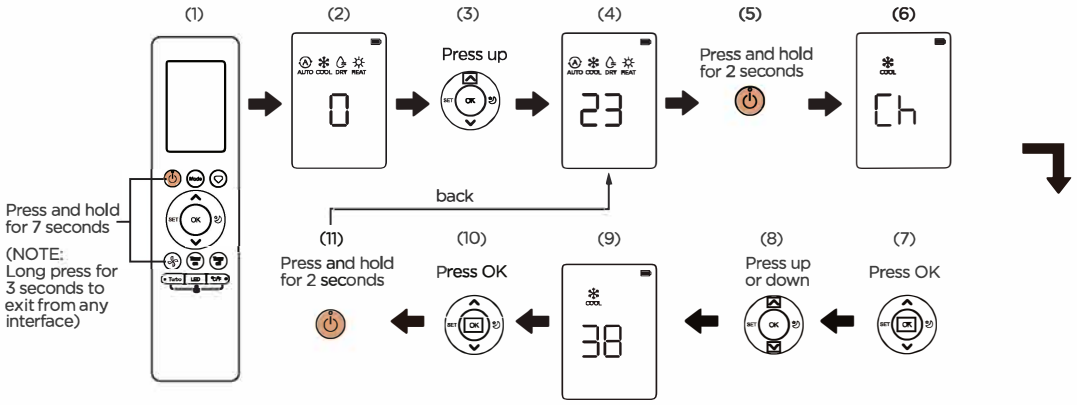
Airflow performance (Standard CFM)

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

Engineering Mode Access Conditions

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

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



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

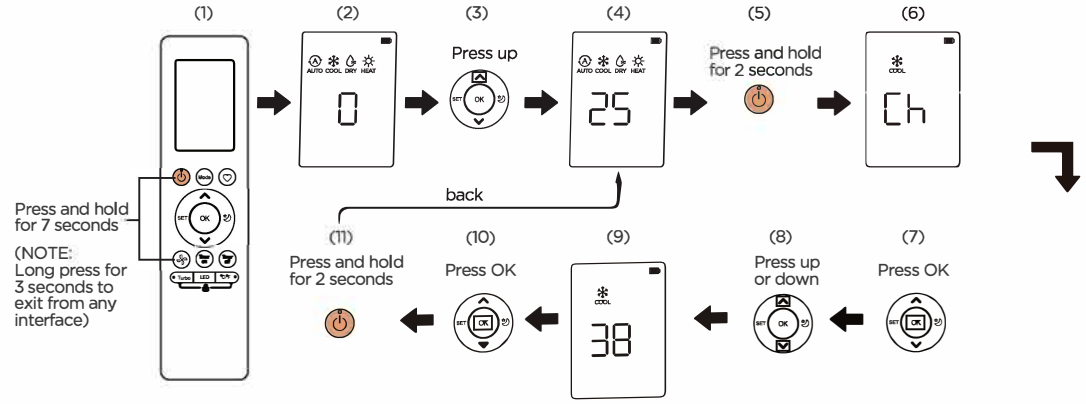


Table. Dialling code

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

6 Leak Dissipation System

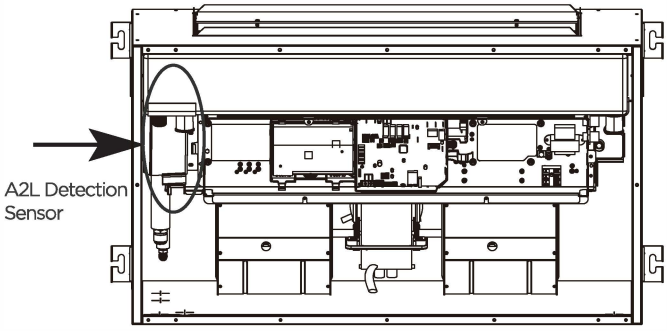
⚠ WARNING

PERSONAL INJURY OR PROPERTY DAMAGE HAZARD

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

The units come equipped with a factory wired R-454B leak detection and dissipation system to ensure safe operation during a leak. The system consists of a bracket, a PCB, a A2L Detection Sensor, and a drain pan clip. Failure to install this system will result in potentially hazardous conditions and improper equipment operation, and void all system warranties and liabilities.

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



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

⚠ CAUTION

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

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

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

The location of leakage sensors shall be chosen in relation to the different installation scenarios. Please refer to the indoor unit installation manual for specific requirements.

The installation of the refrigerant leakage sensor shall allow access for checking, repair or replacement by an authorized person.

The refrigerant leakage sensor shall be installed so its function can be verified easily.

The refrigerant leakage sensor shall be protected to prevent tampering or unauthorized resetting of the pre-set value.

To be effective, the refrigerant leakage sensor must be electrically powered at all times after installation, other than when servicing.

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

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

⚠ WARNING

LEAK DETECTION SYSTEM installed on indoor unit. Unit must be powered except for service. Continuous air circulation required for proper functioning. Unit must be powered except for service. This unit is equipped with electrically powered safety measures. To be effective. the unit must be electrically powered at all times after installation, other than when servicing.

7 Installation of supplementary heater kit module (Only for HEAT function models)

NOTICE

Installation must be performed by a licensed contractor. Please make necessary precaution when performing the installation operation.

Accessories

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

Model size selection

For installations requiring supplemental heating, the optional supplementary heater kit module is available in sizes from 3kW to 10kW to accommodate appropriate sizing given the specific heat load and electrical requirements of each installation. Please refer to the table below for selection of available sizes of each model, being sure to avoid improper matching.

MODEL (Btu/h)	3kW	5kW	8kW	10kW
18K	Y	Y	Y	Y
24K	Y	Y	Y	Y
30K	Y	Y	Y	Y
36K	Y	Y	Y	Y

NOTICE

Only use matched modules certified for use with model. Please refer to the Electric Auxiliary Heat Model specification for additional details to ensure proper selection and installation.

Preparations for Installation

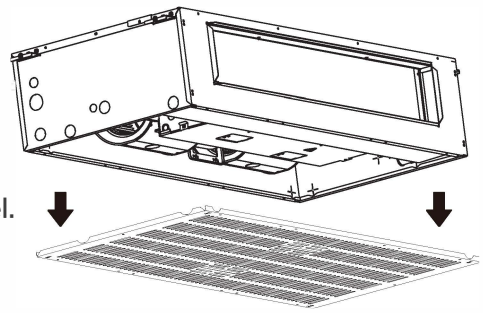
Before installation, please confirm the electric auxiliary heat module and supplied accessories are complete and free of any damage. Do not attempt to install if damage is present.

Specification of connecting wires between protectors and fuses: 12AWG.

Supplementary heater kit Module installation and Wiring Operation

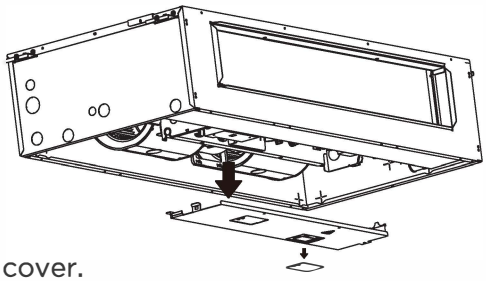
Step 1

Open the air inlet channel panel.



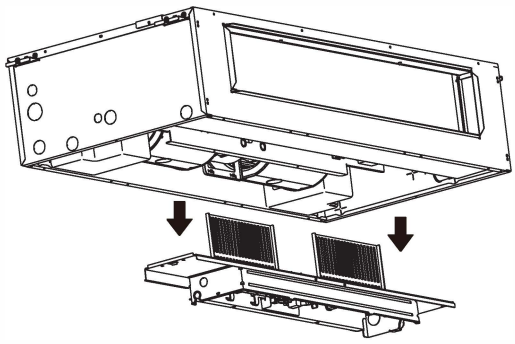
Step 2

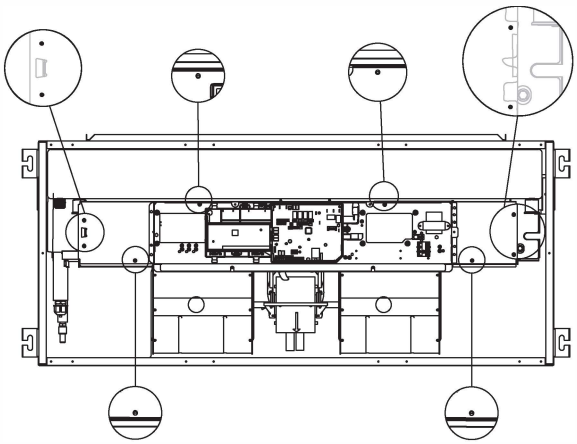
Open the control box cover.
(Unplug the wires from the control box so that you can remove the control box cover.)



Step 3

Remove the electronic controller assembly.



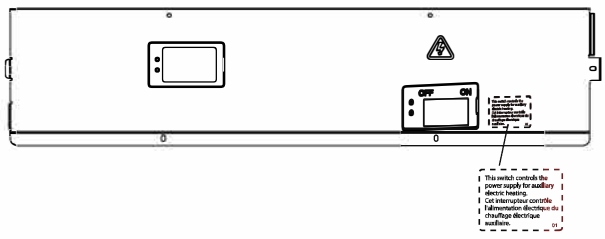


NOTE:
18K/24K/30K: 6 mounting screws need to be unscrewed.
36K: 8 mounting screws need to be unscrewed.

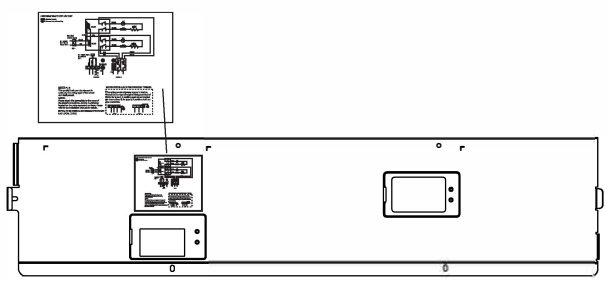
Step 4

Paste label.

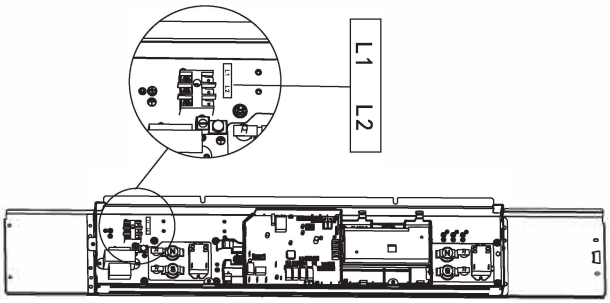
Paste the air circuit breaker label on the control box cover outside.



Paste the supplementary heater kit wiring diagram on the control box cover inside .

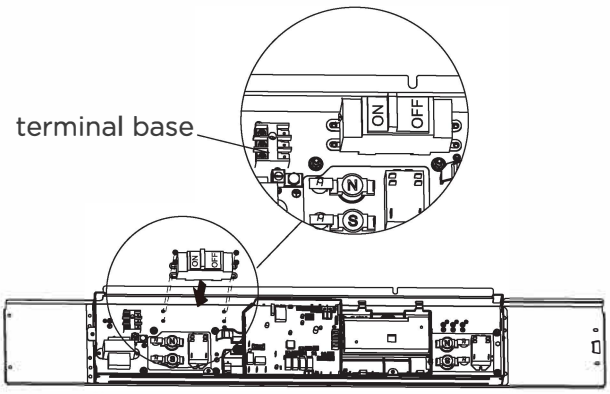


Paste the wire terminal label on the control box.



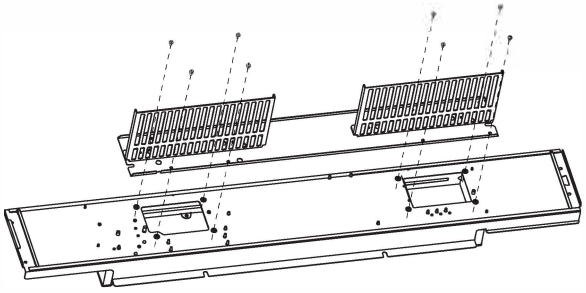
Step 5

Installation of air circuit breaker ('ON' towards the terminal base).



Step 6

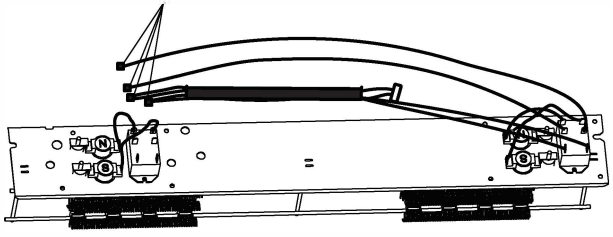
Dismantle the guide plate.

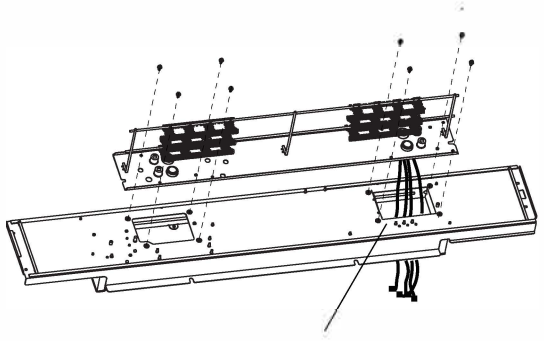


Step 7

Installation of supplementary heater kit.

Remove these four wiring terminals



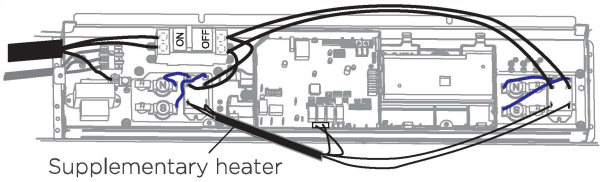


Thread wires through this hole, then install the electric heating assembly to the electric control box.

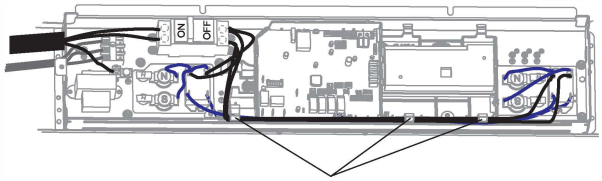
Step 8

Connect supplementary heater kit wires to the terminals respectively

Screw each wire into position refer to the supplementary heater kit wiring diagram.



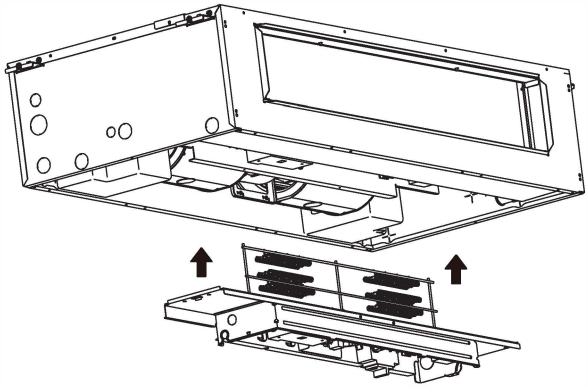
Supplementary heater kit wires



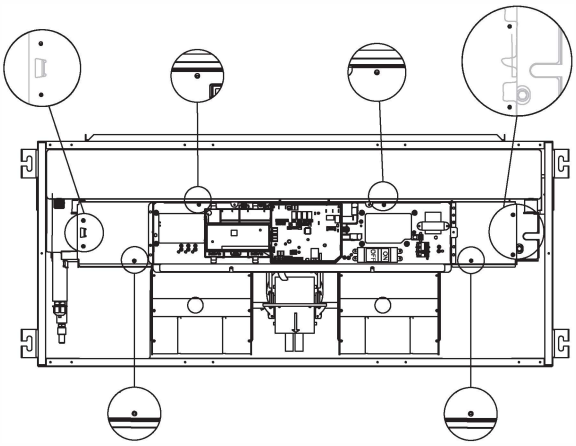
Install wires into the clasps

Step 9

Install the electronic controller assembly.

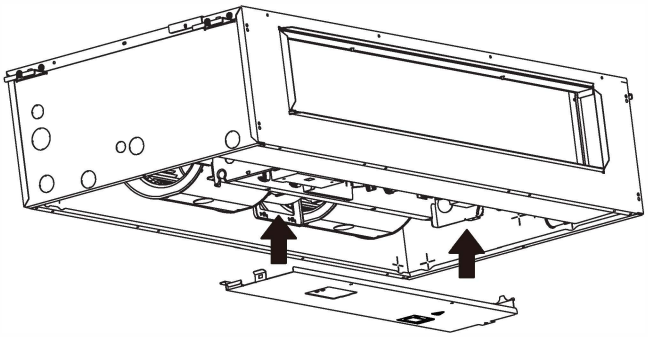


NOTE:
18K/24K/30K: 6 mounting screws need to be secured.
36K: 8 mounting screws need to be secured.



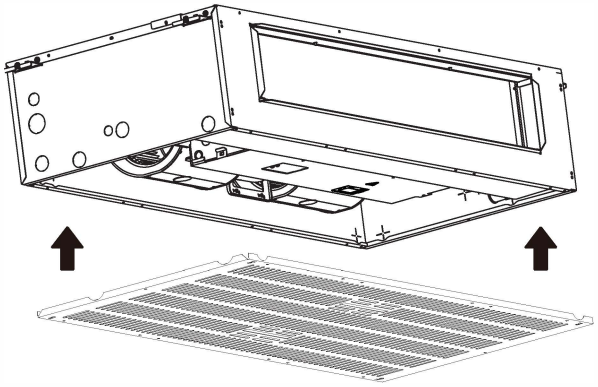
Step 10

Install the control box cover.



Step 11

Install the air inlet channel panel.



confirmation of indoor unit

NOTICE

Supplementary heater kit wiring diagram packed with the accessories.
If branch circuit wire length exceeds 100 ft, consult NEC 210-19a to determine maximum wire length.
Use 2% voltage drop.

After the supplementary heater kit wiring is connected, please confirm before power on:

- Check all wiring and ensure secure connection of all wiring.
- Ensure that wire size is properly selected per NEC or local codes.

Specifications	Number of circuit breakers	Number of relays	Number of power cord groups	Number of power cord grounding screws
3kW	1	2	1	1
5kW	1	2	1	1
8kW	1	2	1	1
10kW	1	2	1	1

Units without supplementary heater kit

UNIT SIZE	VOITS-PHASE	Rated current	MCA (Minimum Circuit Ampacity)	BRANCH CIRCUIT	
				MIN WIRE SIZE AWG*	FUSE/CKT BKR AMPS
18K	115/208/230V-1	115V: 4.0A 208/230V: 3.5A	115V: 6.0A 208/230V: 5.0A	16#	15.0
24K	115/208/230V-1	115V: 5.5A 208/230V: 3.5A	115V: 7.0A 208/230V: 5.0A	16#	15.0
30K	115/208/230V-1	115V: 6.4A 208/230V: 4.5A	115V: 8.0A 208/230V: 6.0A	16#	15.0
36K	115/208/230V-1	115V: 6.4A 208/230V: 4.5A	115V: 8.0A 208/230V: 6.0A	16#	15.0

Use copper wire only to connect 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, please refer to indoor unit's nameplate. Choose the cable type according to the local electrical codes and regulations. Please choose the right cable size according to the Minimum Circuit Ampacity indicated on the nameplate of the unit.

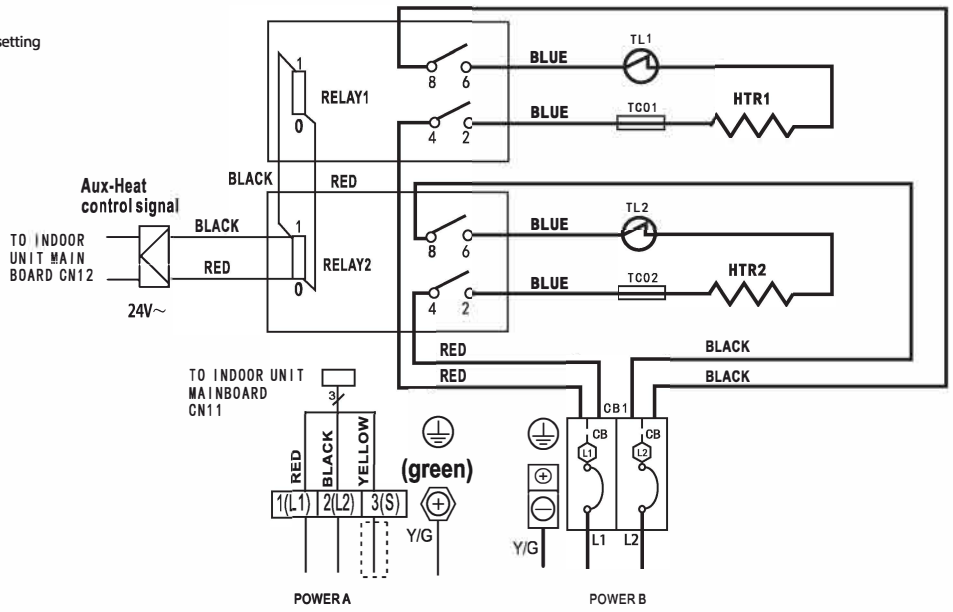
Supplementary Heater Kit Data (Optional)

Heater Part No.	Heater KW	Internal Circuit Protection	CIRCUIT 1 208/230V		
			Heater Amps	MCA (1)	MOP (1)
EAH-03D (UL)	2.26/2.75	Ckt Bkr	11.0/12.5	14.0/16.0	15.0/20.0
EAH-05D (UL)	3.76/4.54	Ckt Bkr	18.5/20.0	23.5/25.0	25.0/30.0
EAH-08D (UL)	5.90/7.10	Ckt Bkr	29.0/31.5	36.5/40.0	40.0/45.0
EAH-10D (UL)	7.40/9.00	Ckt Bkr	36.5/40.0	46.0/50.0	50.0/50.0

Supplementary heater kit wiring diagram

3KW/5KW/8KW/10KW HEAT KIT

:thermal cut-out
:thermal link, self-resetting



NOTE1:
This symbol indicates the element is optional, The wiring type of the actual unit shall prevail.

NOTE2:
Please attach the nameplate to the cover of the electric control box.
Please refer to the Installation Manual for details.

NOTE3: TO BE WIRED IN ACCORDANCE WITH NEC AND LOCAL CODES.

NOTE4: POWER A,B,C,D ARE DIFFERENT POWERS.

The wiring mode of power supply A shall be based on the type of original wiring terminal of AHU; for type A, S position must be connected to the ourdoor S; for type B, S position shall not be connected.

Connection Instructions—Refrigerant Piping

⚠ CAUTION

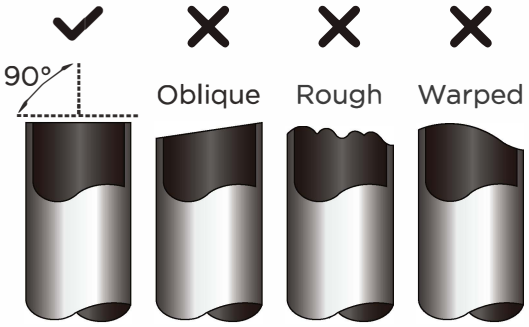
- Insulate both the gas and liquid piping to prevent condensation.

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



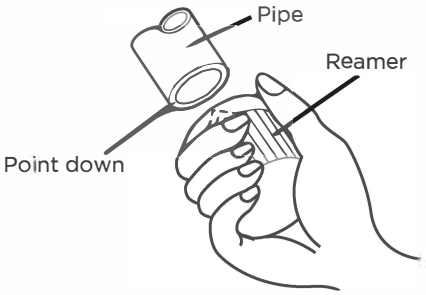
DO NOT DEFORM PIPE WHILE CUTTING

Be extra 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 refrigerant piping connection. They must be completely removed.

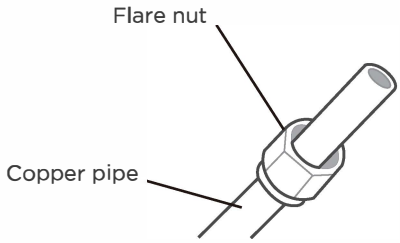
- Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
- Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.



Step 3: Flare pipe ends

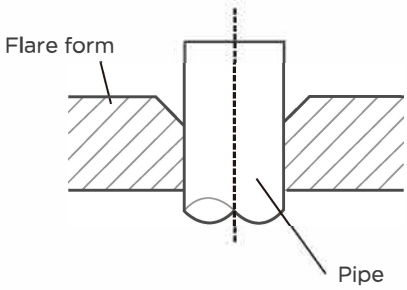
Proper flaring is essential to achieve an airtight seal.

- 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 pipe. Make sure they are facing in the right direction, because you can't put them on or change their direction after flaring.



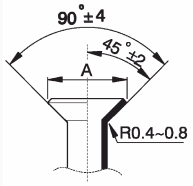
- Remove PVC tape from ends of pipe when ready to perform flaring work.

- Clamp flare from 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) (Unit: mm/Inch)		Flare shape
		Min.	Max.	
Ø 6.35 (Ø 1/4")	18-20 N·m (180-200kgf.cm)	8.4/0.33	8.7/0.34	
Ø 9.52 (Ø3/8")	32-39 N·m (320-390kgf.cm)	13.2/0.52	13.5/0.53	
Ø 12.7 (Ø 1/2")	49-59 N·m (490-590kgf.cm)	16.2/0.64	16.5/0.65	
Ø 16 (Ø 5/8")	57-71 N·m (570-710kgf.cm)	19.2/0.76	19.7/0.78	
Ø 19 (Ø 3/4")	67-101 N·m (670-1010kgf.cm)	23.2/0.91	23.7/0.93	
Ø 22 (Ø 7/8")	85-110 N·m (850-1100kgf.cm)	26.4/1.04	26.9/1.06	

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

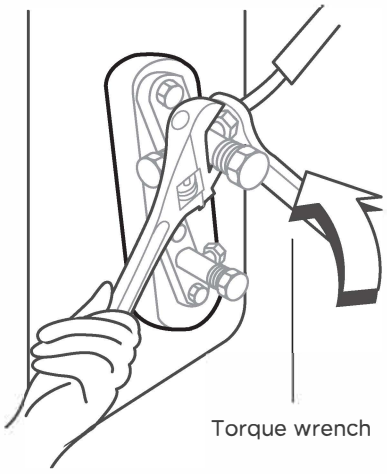
Step 4: Connect pipes

Connect the copper pipes to the indoor unit first, then connect it to the outdoor unit. You should 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 values in above table.

NOTICE

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



⚠ CAUTION

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

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

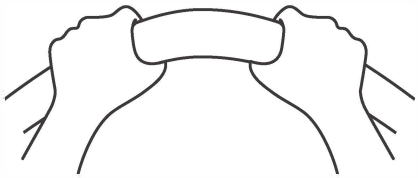
NOTICE

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.

Use appropriate tool



min-radius 10cm (3.9″)

- 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 the installation work. If there is a refrigerant leak, ventilate the area immediately and evacuate the system (refer to the Air Evacuation section of this manual).

3. WIRING PRECAUTIONS

⚠ WARNING

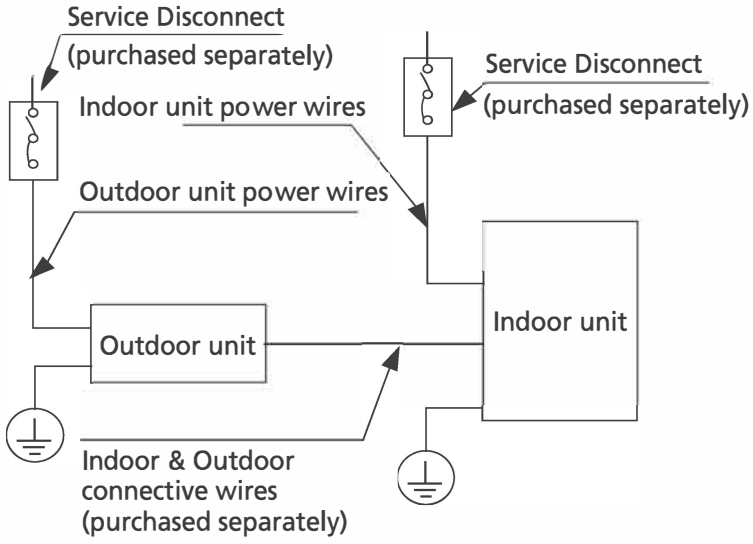
BEFORE PERFORMING ANY ELECTRICAL WORK, READ THESE WARNINGS.

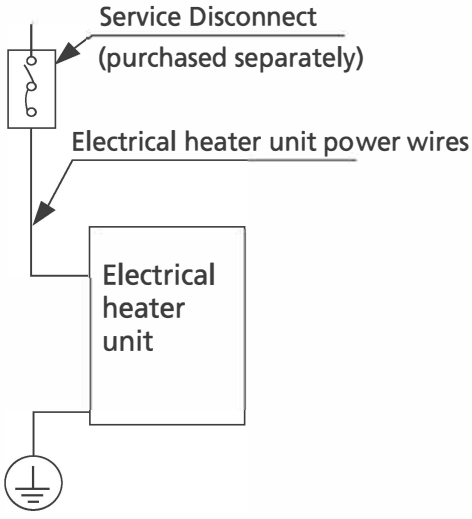
- All wiring must comply with local and national electrical codes, regulations and must be installed by a licensed electrician.
- All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
- If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.
- Power voltage should be within 90-110% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.
- Installation of an external surge suppressor at the outdoor disconnect is recommended.
- 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 air conditioner.
- Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
- Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.
- To avoid getting an electric shock, never touch the electrical components soon after the power supply has been turned off. After turning off the power, always wait 10 minutes or more before you touch the electrical components.
- Make sure that you do not cross your electrical wiring with your signal wiring. This may cause distortion, interference or
- possibly damage to circuit boards.
- No other equipment should be connected to the same power circuit.
- Connect the outdoor wires before connecting the indoor wires.

⚠ WARNING

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

Wiring overview





NOTICE

- The diagrams are for explanation purpose only. Your machine may be slightly different. The actual diagram shall prevail.
- Note: Service Disconnect shall select as required by Local, regional, and national codes.

INDOOR UNIT WIRING

⚠ CAUTION

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

Step 1: Prepare the cable for connection.

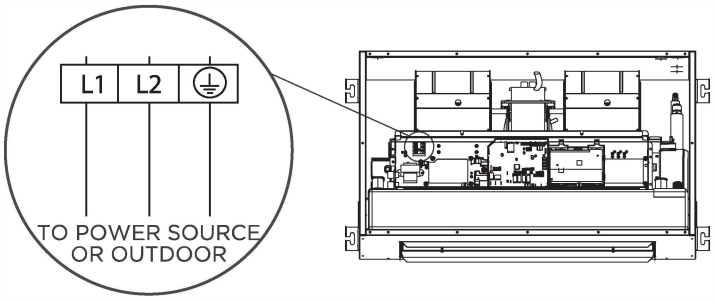
1. Using wire strippers, strip the insulating jacket from both ends of the signal cable to reveal about 15cm (5.9") of the wire.
2. Strip the insulation from the ends of the wires.

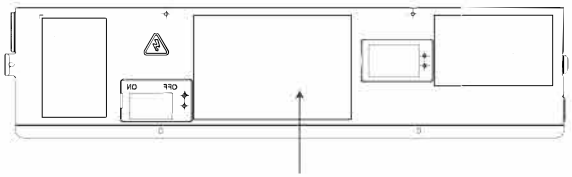
Step 2: Open the front panel of the indoor unit.

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

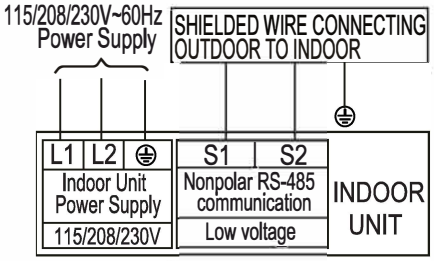
Step 3: Connect the wires to the terminals.

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).





Wiring diagram
(Labeling position is subject to the actual product)



⚠ WARNING

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

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

⚠ CAUTION

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

⚠ WARNING

The motor has two pairs of plugs. The red color indicates that the motor is connected to the plug when powered by 115V, and the white color indicates that the motor is connected to the plug when powered by 230V (default is connected to the white pair of plugs). When using a 208-230V power supply, this part remains unchanged; When using a 115V power supply, the motor wiring requires the use of a 115V motor pair plug. At this time, the white motor pair plug needs to be removed and the red motor pair plug needs to be connected. When the motor is plugged in red, the internal power supply must be 115V. If it is powered by a 208-230V power supply, the motor will be damaged.

OUTDOOR UNIT WIRING

⚠ WARNING

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

Step 1: Prepare the cable for connection.

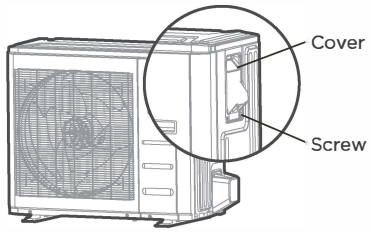
1. You must first choose the right cable size.
2. Using wire strippers, strip the rubber jacket from both ends of the signal cable to reveal approximately 5.9in (150mm) of wire.
3. Strip the insulation from the ends.
4. Stranded wire requires u-lugs or ring terminals to be crimped onto the ends of the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

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

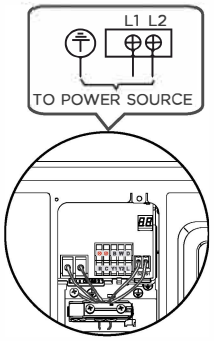
Step 2: Remove the electric cover.

Remove the electric 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.

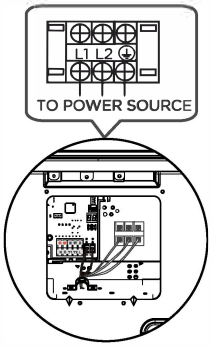


Step 3: Connect the u-lugs to the terminals

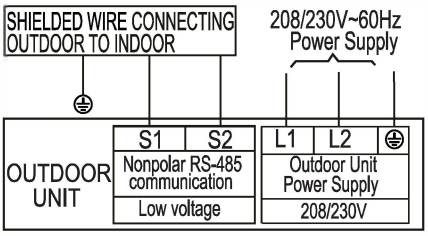
Match the wire colors/labels with the labels on the terminal block. Firmly screw the u-lug of each wire to its corresponding terminal.



Outdoor Unit A



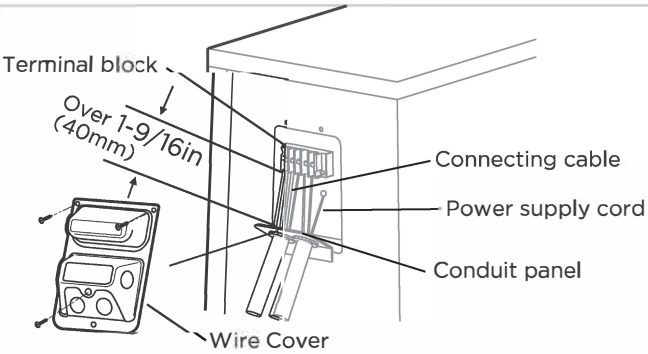
Outdoor Unit B



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

In North America

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 switchs.
6. Be sure to size each wire allowing several inches longer than the required length for wiring.



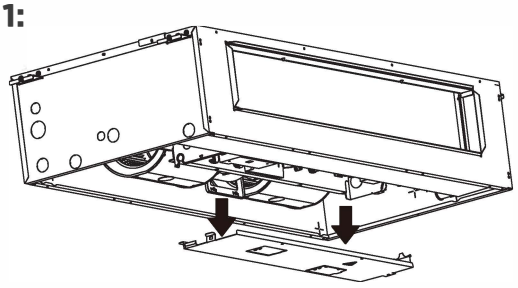
Please select the appropriate through-hole according to the diameter of the wire.

⚠ WARNING

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

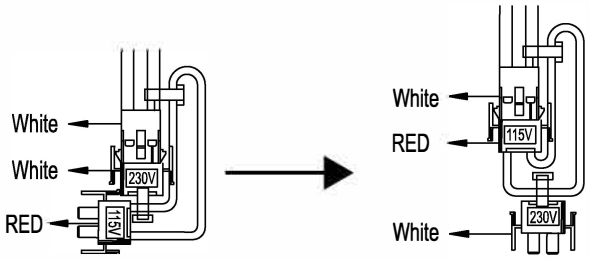
INSTALLATION GUIDE FOR AHU USING 115V POWER SUPPLY

Step 1:



Open the cover

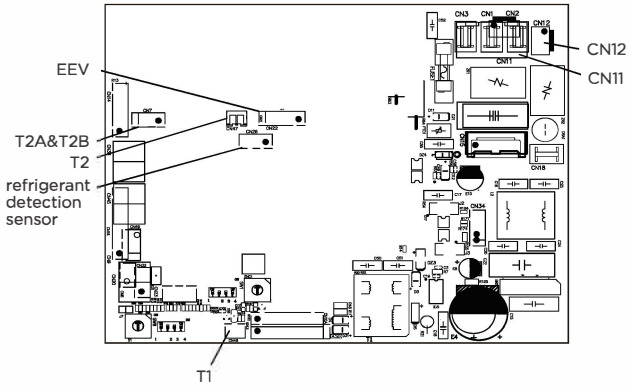
Step 2: When using 115V power supply, the fan motor wiring requires the use of 115V fan motor pair plug. At this time, the white fan motor pair plug needs to be removed and the red fan motor pair plug needs to be connected.



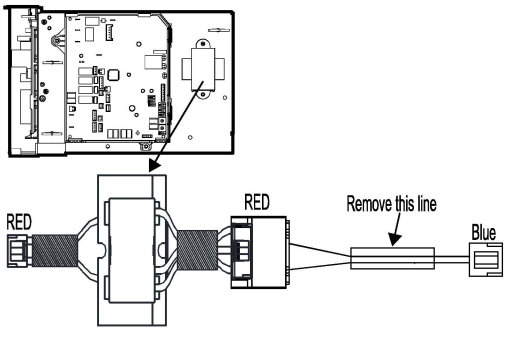
Default

When using a 115V power supply, the motor is plugged in red.

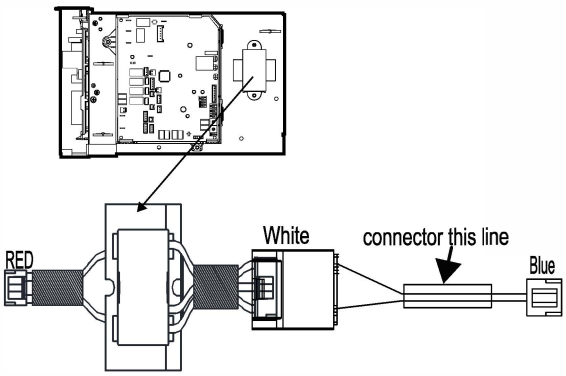
Step 3: Remove the blue connector from the control board CN12.



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



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



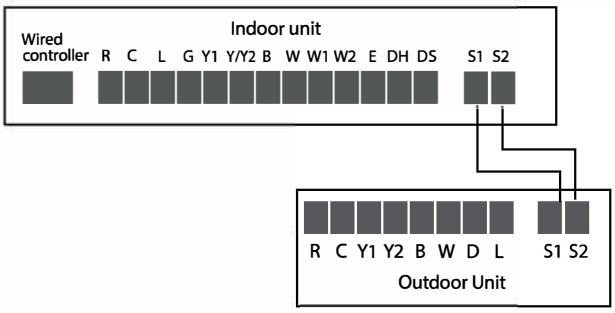
SPECIFIC WIRING METHODS

⚠ 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.

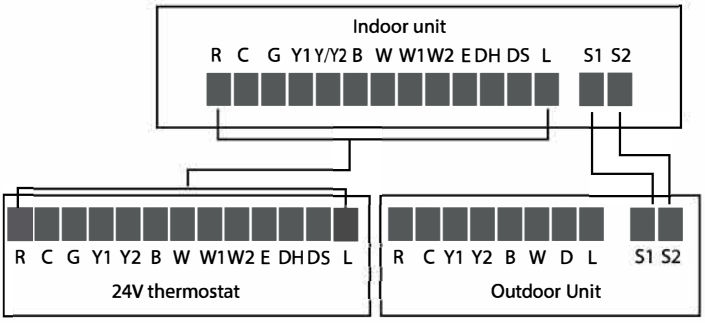
Connection method A:

Refer to the wiring method of internal and external machine communication:



Connection method B:

To use a 24V thermostat, you need to refer to the following wiring:

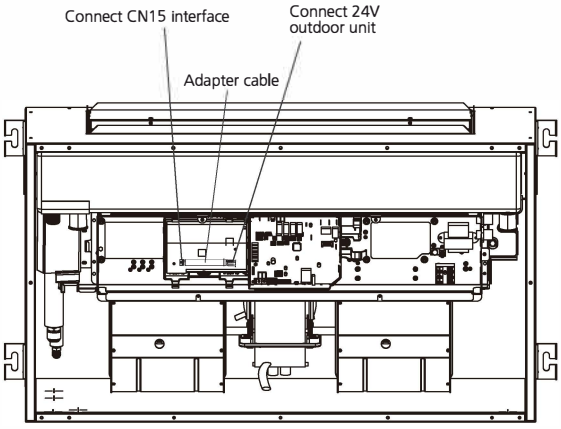


When using a 24V thermostat, please refer to the non-communicating wiring diagrams that follow:

Connection method C:

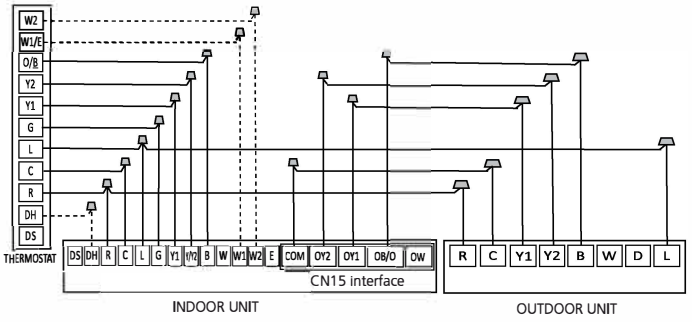
The following wiring diagram are suitable for the AHU and ODU with 24V thermostat.

Non-communication scheme wiring reference



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

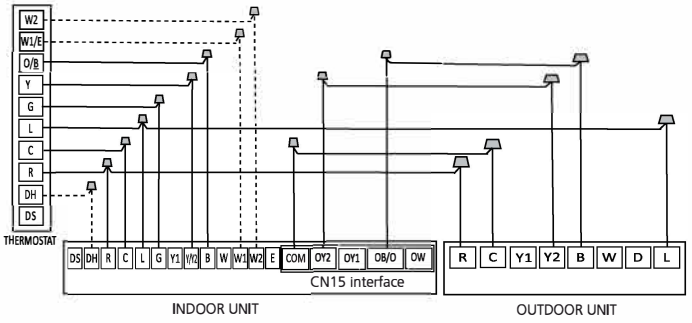
• Wiring for 4H and 2C thermostat



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

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

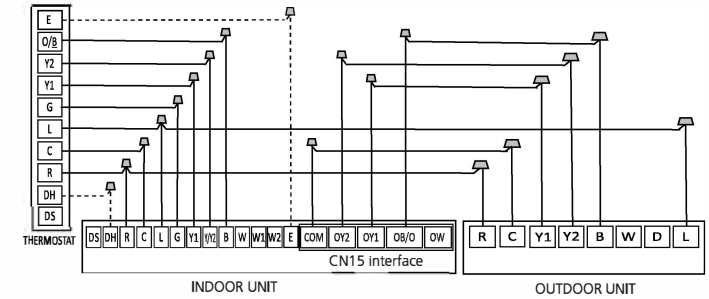
• Wiring for 3H and 1C thermostat



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

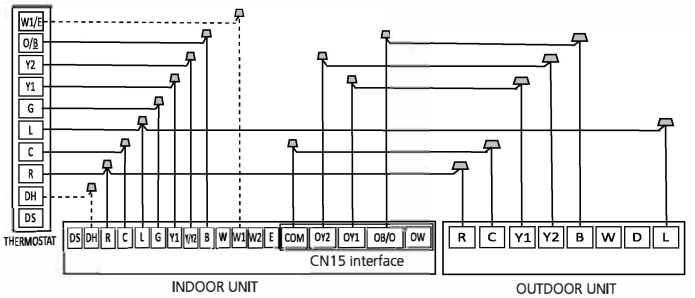
S4-4 Default on, W1 and W2 shorted for single stage Aux heat operation. Turn off to separate stages.

• Wiring for 3H and 2C thermostat



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

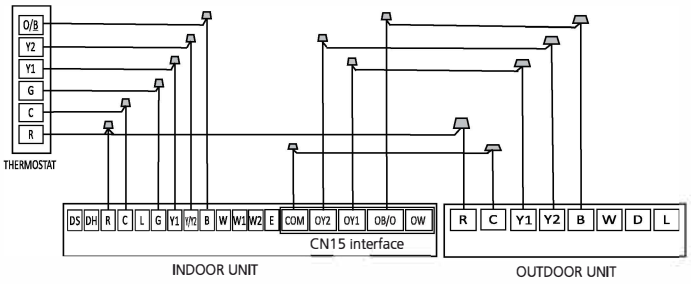
• Wiring for 3H and 2C thermostat



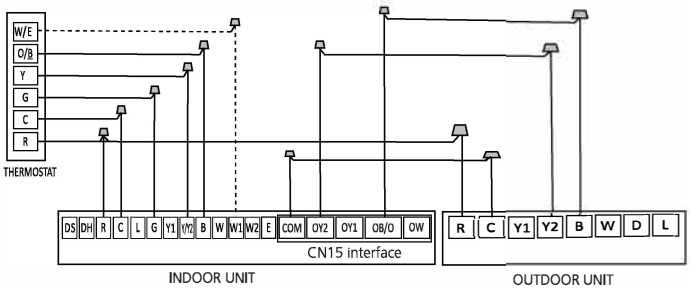
S4-2 Default on, DH function off. Turn switch off to activate DH function.

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

• Wiring for 2H and 2C thermostat

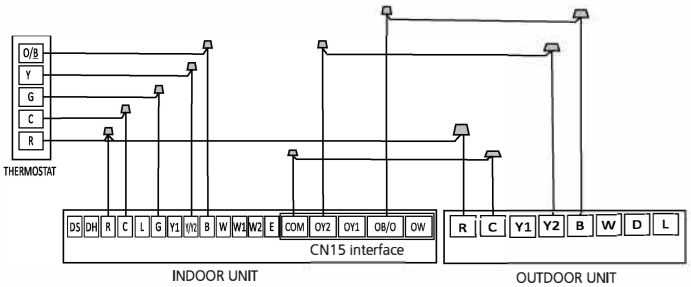


• Wiring for 2H and 1C thermostat

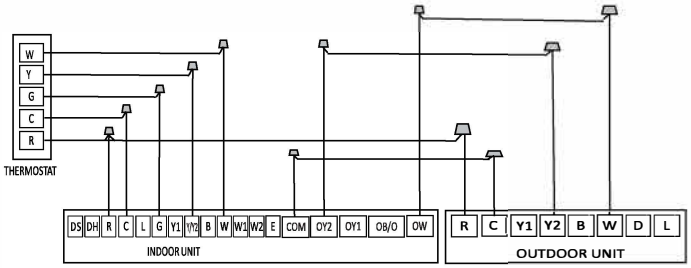


S4-4 Default on, W1 and W2 shorted for single stage Aux heat operation. Turn off to separate stages.

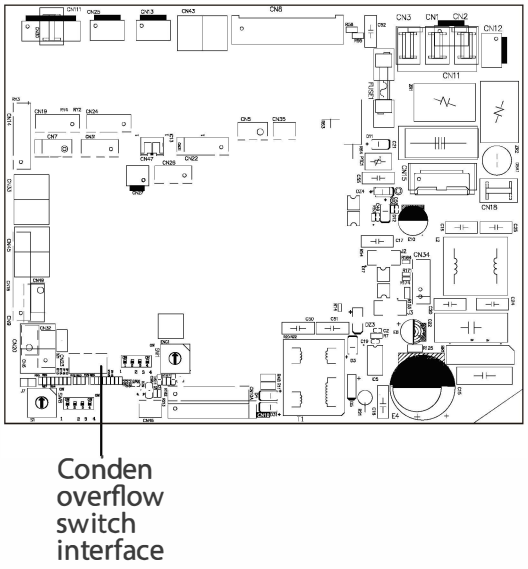
• Wiring for 1H and 1C thermostat

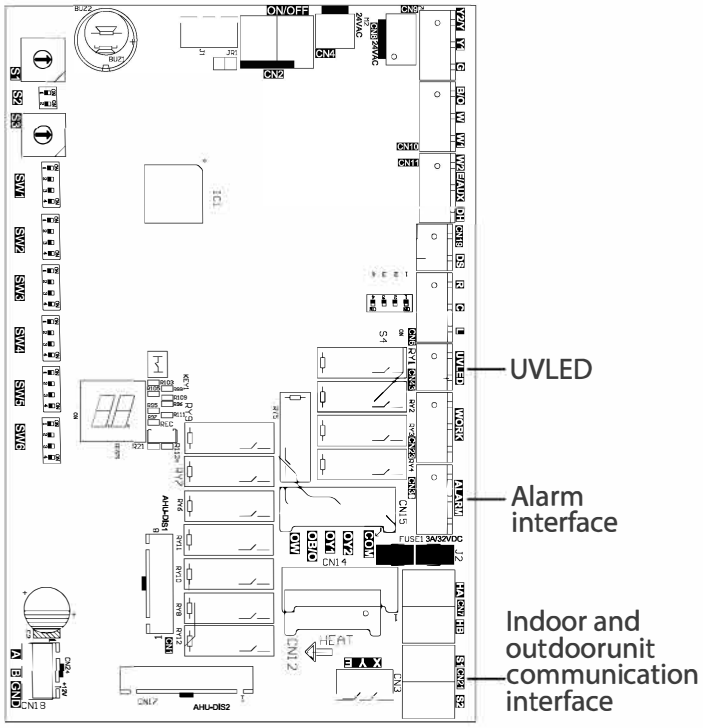


• Wiring for 1H and 1C thermostat



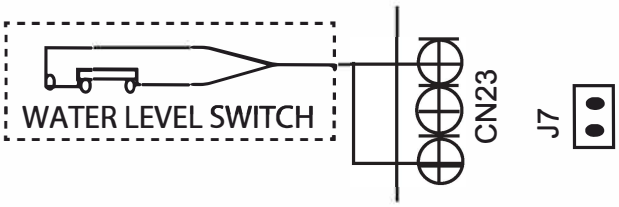
Optional function wiring:



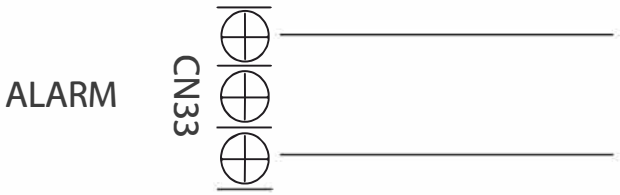


Condensate overflow switch:

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.



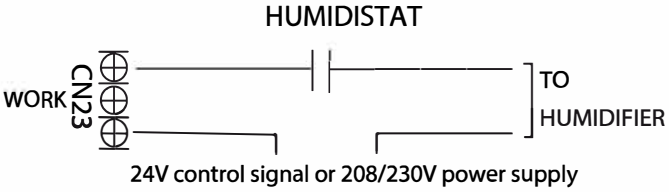
The fault warning:



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 humidity setpoint. 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
Y/Y2	High Demand
B	Heating Reversing Valve
W	Heating control
W1	Stage 1 Electric Heating
W2	Stage 2 Electric Heating
E/AUX	Emergency Heating
DH/BK	Dehumidification/Zoning control
DS	Reserved Signal
L	System Fault Signal

Outdoor unit connector

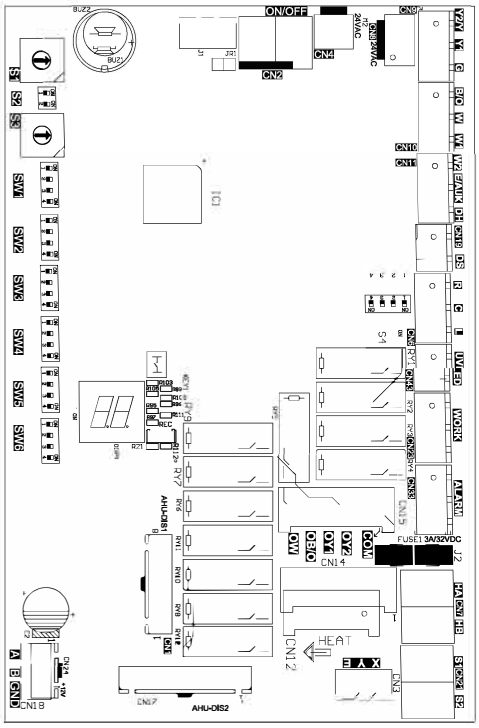
Connector	Purpose
R	24V Power Connection
C	Common
Y1	Low Demand
Y2	High Demand
B	Heating Reversing Valve
W	Heating control
D	**Defrost control**
L	System Fault Signal

LED display

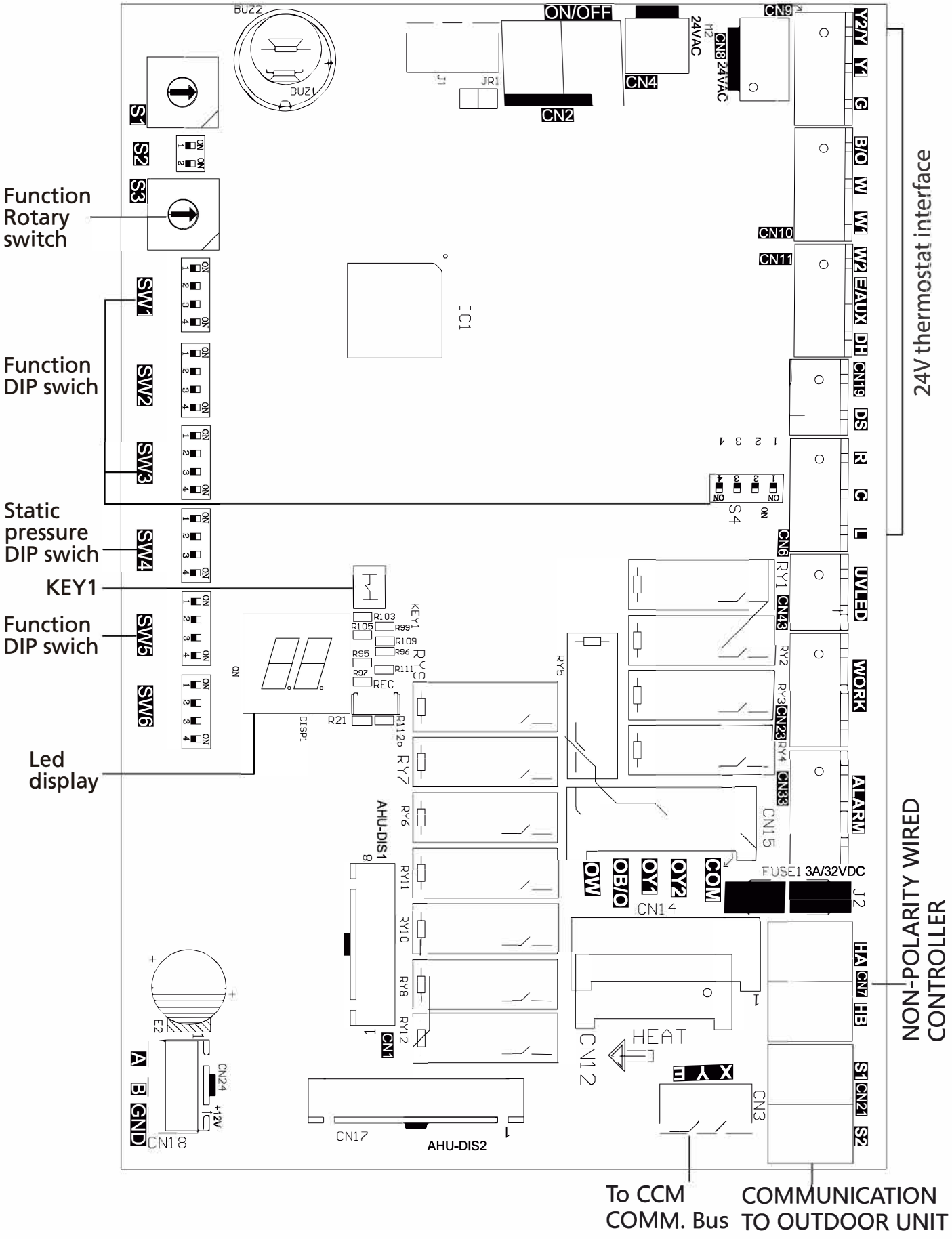
The control displays unit status as well as any active fault codes on the LED display. If the unit is functioning normally, the LED will display current temperature setpoint. When a fault code is active, the display will flash quickly the active fault code. Please refer to the fault code table located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

KEY1 Instructions (For Wired Controller only)

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

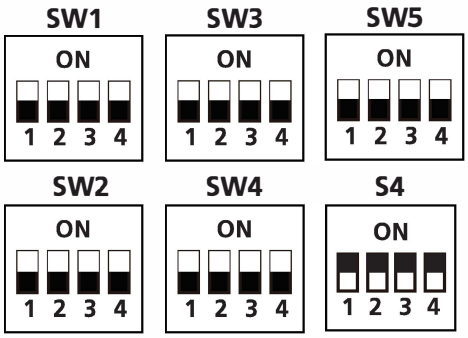


DIP switch definitions



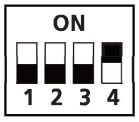
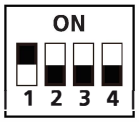
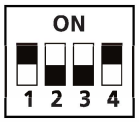
Function DIP switch settings:

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



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

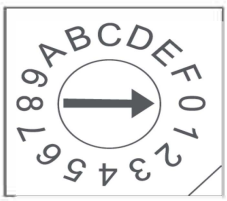
Function combination table of SW1-1 and SW1-4:

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, only valid for heating zone control with W1
4	Rotary Switch S3	1,2	Set outdoor temperature Limitation (for auxiliary heating or compressor)	Table A		
5	SW3-1	1	Maximum continuous runtime allowed before system automatically stages up capacity to satisfy set point. This adds 1 to 5°F to the user set point in the calculated control point to increase capacity and satisfy user set point	30 minutes	[Default] 90 minutes	
6	SW3-2	1	Cooling and heating Y/Y2 temperature differential adjustment.	Compressor slower speed	[Default] Faster Compressor	Only affects compressor
7	SW3-3	1	Compressor Running (demand working with heat pump+ Electric heat)	Compressor slower speed	[Default] Faster Compressor	Only affects compressor, only valid for heating zone control with W2
8	SW3-4	1,3	Fan speed of cooling mode when 24V Thermostat is applied for.	Turbo	High	
9	SW4-1 SW4-2 SW4-3	1,2,3	Electric heat nominal CFM adjustment	Available settings are 000/001/010/011. Each digit corresponds an individual switch position. For example [SW4-1 OFF, SW4-2 ON, SW4 -3 OFF] = 010		
10	S4-4	1,3	Default ON	[Default] For single stage supplemental heat,W1 and W2 are connected	For dual stage supplemental heat, W1 and W2 are controlled independently.	
11	S4-2	1,3	DH function selection	[Default] Dehumidification control not available	Dehumidification feature is enabled through thermostat	
12	SW5-3	1,2,3	L or Alarm relay selection	L output 24V or alarm relay close only when refrigerant sensor fault or R454B refrigerant leakage be detected	[default] L output 24V or alarm relay close when any fault be detected	
13	SW5-4	1,2,3	R output selection	R stop output 24V when refrigerant sensor fault or R454B refrigerant leakage be detected	[default] R keep output 24V even when refrigerant sensor fault or R454B refrigerant leakage be 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, no network function does not need to be set]
When SW8 is 00 (the dialing code is not connected), the network address value is the value of S1;
When SW8 is 10 (corresponding to the switch of the hardware connected to the 10K resistor), the network address value is S1 plus 16;
Determined by dial code SW8 1-10K 2-5.1K
When SW8 is 01 (corresponding to the 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.

Table A

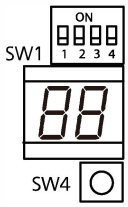
S3	S3 (°F)	S3 (°C)
0	OFF	OFF
1	-22	-30
2	-18	-28
3	-15	-26
4	-11	-24
5	-8	-22
6	-4	-20
7	3	-16
8	10	-12
9	18	-8
A	25	-4
B	32	0
C	36	2
D	39	4
E	43	6
F	46	8

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

Dial code selection	Website address
	S1 + 48
	S1 + 32
	S1 + 16
	S1

Outdoor unit DIP Switch setting

Press the SW4 button 10S for force defrosting



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 heater kit	24V thermostat		Wired controller		Airflow volume (CFM)
				DIP Switch	24V terminal engaged	DIP Switch	Mode	
18K（1.5 Ton）	0 - 0.80 in. w.g.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	618
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	576
		Cooling Medium	—	—	Y1	—	Cool	529
		Cooling Low	—	—	—	—	Cool	488
		Heat Pump Turbo	—	—	—	—	Heat	565
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	541
		Heat Pump Medium	—	—	Y1	—	Heat	435
		Heat Pump Low	—	—	—	—	Heat	400
		Emergency heat	10KW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	AUX	653
		Emergency heat	8KW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	AUX	624
		Emergency heat	5KW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	AUX	594
		Emergency heat	3KW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	AUX	565
24K（2 Ton）	0 - 0.80 in. w.g.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	824
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	759
		Cooling Medium	—	—	Y1	—	Cool	694
		Cooling Low	—	—	—	—	Cool	629
		Heat Pump Turbo	—	—	—	—	Heat	788
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	753
		Heat Pump Medium	—	—	Y1	—	Heat	641
		Heat Pump Low	—	—	—	—	Heat	524
		Emergency heat	10KW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	AUX	871
		Emergency heat	8KW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	AUX	841
		Emergency heat	5KW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	AUX	818
		Emergency heat	3KW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	AUX	788
30K（2.5 Ton）	0 - 0.80 in. w.g.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	988
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	894
		Cooling Medium	—	—	Y1	—	Cool	806
		Cooling Low	—	—	—	—	Cool	541
		Heat Pump Turbo	—	—	—	—	Heat	971
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	912
		Heat Pump Medium	—	—	Y1	—	Heat	706
		Heat Pump Low	—	—	—	—	Heat	471
		Emergency heat	10KW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	AUX	1088
		Emergency heat	8KW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	AUX	1029
		Emergency heat	5KW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	AUX	976
		Emergency heat	3KW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	AUX	918

Air volume table

Capacity	External Static Pressure Range	Fan Speed	Electric heater kit	24V thermostat		Wired controller		Airflow volume (CFM)
				DIP Switch	24V terminal engaged	DIP Switch	Mode	
36K (3 Ton)	0 - 0.80 in. w.g.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	1188
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	1082
		Cooling Medium	—	—	Y1	—	Cool	971
		Cooling Low	—	—	—	—	Cool	865
		Heat Pump Turbo	—	—	—	—	Heat	1147
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	1059
		Heat Pump Medium	—	—	Y1	—	Heat	794
		Heat Pump Low	—	—	—	—	Heat	582
		Emergency heat	10KW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	AUX	1306
		Emergency heat	8KW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	AUX	1241
		Emergency heat	5KW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	AUX	1176
		Emergency heat	3KW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	AUX	1112

NOTICE

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

SPECIFICATIONS

Cooling and Heating power specifications (Regular Heat Series)

MODEL (Btu/h)			18K	24K	30K
POWER (outdoor)		PHASE	1 Phase		
		FREQUENCY AND VOLT	208/230V,60Hz		
OUTDOOR UNIT		MCA	16A	19A	23A
		MOP	20A	20A	25A
LINES GAUGE	OUTDOOR UNIT POWER LINE	LINE QUANTITY	2+Ground		
		LINE DIAMETER (AWG)	14	12	12
	OUTDOOR-INDOOR SIGNAL LINE	LINE QUANTITY	2		
		LINE DIAMETER (AWG)	20		
	THERMOSTAT SIGNAL LINE	LINE QUANTITY	——		
		LINE DIAMETER (AWG)	18		

MODEL (Btu/h)			36K
POWER (outdoor)		PHASE	1 Phase
		FREQUENCY AND VOLT	208/230V,60Hz
OUTDOOR UNIT		MCA	27A
		MOP	30A
LINES GAUGE	OUTDOOR UNIT POWER LINE	LINE QUANTITY	2+Ground
		LINE DIAMETER (AWG)	10
	OUTDOOR-INDOOR SIGNAL LINE	LINE QUANTITY	2
		LINE DIAMETER (AWG)	20
	THERMOSTAT SIGNAL LINE	LINE QUANTITY	——
		LINE DIAMETER (AWG)	18

NOTICE

Line Diameter Sizing per NFPA 70 (2020), Table 310.15 (B) (16) Based on type NM-B Romex wire. Other sizing options are possible. Consult NFPA 70 or Licensed Electrician for alternate sizing.

Cooling and Heating power specifications (Hyper Heat Series)

MODEL (Btu/h)			18K	24K	30K
POWER (outdoor)		PHASE	1 Phase		
		FREQUENCY AND VOLT	208/230V,60Hz		
OUTDOOR UNIT		MCA	17A	19A	29.5A
		MOP	20A	20A	30A
LINES GAUGE	OUTDOOR UNIT POWER LINE	LINE QUANTITY	2+Ground		
		LINE DIAMETER (AWG)	12	12	10
	OUTDOOR-INDOOR SIGNAL LINE	LINE QUANTITY	2		
		LINE DIAMETER (AWG)	20		
	THERMOSTAT SIGNAL LINE	LINE QUANTITY	——		
		LINE DIAMETER (AWG)	18		

MODEL (Btu/h)			36K
POWER (outdoor)		PHASE	1 Phase
		FREQUENCY AND VOLT	208/230V,60Hz
OUTDOOR UNIT		MCA	32A
		MOP	35A
LINES GAUGE	OUTDOOR UNIT POWER LINE	LINE QUANTITY	2+Ground
		LINE DIAMETER (AWG)	10
	OUTDOOR-INDOOR SIGNAL LINE	LINE QUANTITY	2
		LINE DIAMETER (AWG)	20
	THERMOSTAT SIGNAL LINE	LINE QUANTITY	——
		LINE DIAMETER (AWG)	18

NOTICE

Line Diameter Sizing per NFPA 70 (2020), Table 310.15 (B) (16) Based on type NM-B Romex wire. Other sizing options are possible. Consult NFPA 70 or Licensed Electrician for alternate sizing.

4. AIR EVACUATION

NOTICE

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

Preparations and precautions

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

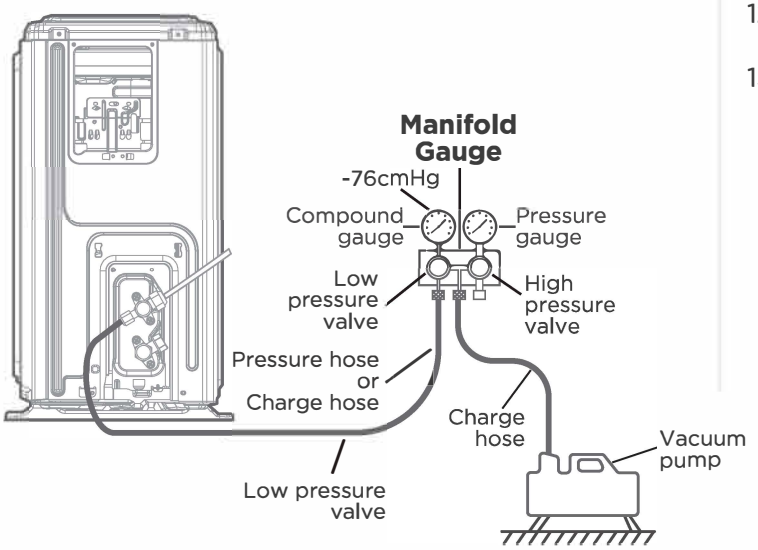
BEFORE PERFORMING EVACUATION

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

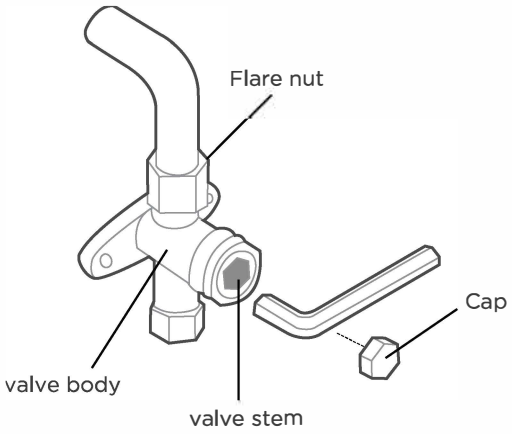
Evacuation Instructions

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 -750 Microns (-10^5Pa).

Outdoor unit



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 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 counterclockwise 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.



12. Using 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.

NOTE ON ADDING REFRIGERANT

⚠ CAUTION

DO NOT mix refrigerant types.

Some systems require additional charging depending on pipe lengths. In North America, the standard pipe length is 25ft (7.5m). The refrigerant should be charged from the service port on the outdoor unit's low-pressure valve. The additional refrigerant to be charged can be calculated using the following formula:

	Liquid Side Diameter	
Refrigerant	Ø1/4in (Ø6.35mm)	Ø3/8in (Ø9.52mm)
R454B: **(Orifice tube in the indoor unit):**	(Total pipe length - standard pipe length) ×30g (0.32oz)/m (ft)	(Total pipe length - standard pipe length) ×65g (0.7oz)/m (ft)

5. TEST RUN

⚠ CAUTION

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

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 air conditioner

Test run instructions

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

NOTICE

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

24V SIGNAL CHART

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

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

The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details. Any updates to the manual will be uploaded to the service website, please check for the latest version.

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