45MUHA
Crossover Air Handler
Sizes 18K - 60K

Installation Instructions

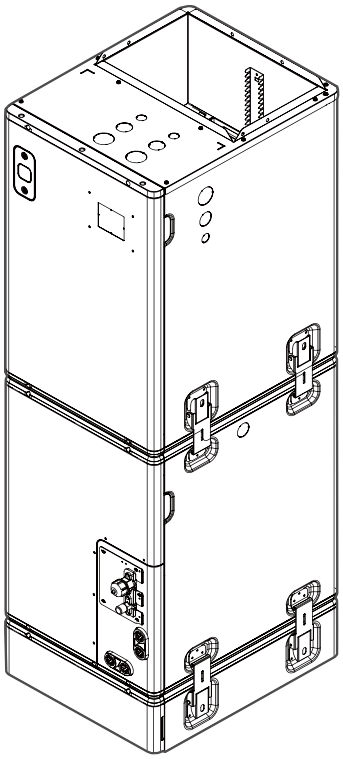


Fig. 1 — Sizes 18K - 60K

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

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SAFETY CONSIDERATIONS

Installing, starting up, and servicing air- conditioning equipment can be hazardous due to system pressures, electrical components, and equipment location (roofs, elevated structures, etc.).
Only trained, qualified installers and service mechanics should install, start- up, and service this equipment.

Untrained personnel can perform basic maintenance functions such as coil cleaning. All other operations should be performed by trained service personnel only.

When working on the equipment, observe the precautions in the literature and on tags, stickers, and labels attached to the equipment.

Follow all safety codes.Wear safety glasses and work gloves. Keep a quenching cloth and a fire extinguisher nearby when brazing. Use care in handling, rigging, and setting bulky equipment.
Read these instructions thoroughly and follow all warnings or cautions included in the literature and attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements.
Recognize safety information.

This is the safety - alert symbol ⚠.

When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand these signal words: **DANGER**, **WARNING**, and **CAUTION**. These words are used with the safety- alert symbol.

DANGER identifies the most serious hazards which will result in severe personal injury or death.

WARNING signifies hazards which could result in personal injury or death.

CAUTION is used to identify unsafe practices which may result in minor personal injury or product and property damage.

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

⚠ WARNING

ELECTRICAL SHOCK HAZARD
Failure to follow this warning could result in personal injury or death.

Before installing, modifying, or servicing system, the main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.

⚠ WARNING



EXPLOSION HAZARD
Failure to follow this warning could result in death, serious personal injury, and/or property damage.

Never use air or gases containing oxygen for leak testing or operating refrigerant compressors. Pressurized mixtures of air or gases containing oxygen can lead to an explosion.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Do not bury more than 36 in. (914 mm) of refrigerant pipe in the ground. If any section of pipe is buried, there must be a 6 in. (152 mm) vertical rise to the valve connections on the outdoor units. If more than the recommended length is buried, refrigerant may migrate to the cooler buried section during extended periods of system shutdown. This causes refrigerant slugging and could possibly damage the compressor at start-up.

⚠ 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.

⚠ WARNING

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 electric shock may occur.

For all electrical work, follow all local and national wiring standards, regulations, and the Installation Manual. Connect the 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 NEC, CSA and Local Codes. **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 which has at least 3mm clearances in all poles, and have a leakage current that may exceed 10mA, the residual current device (RCD) having a rated residual operating current not exceeding 30mA, and disconnection must be incorporated in the fixed wiring in accordance with NEC, CSA and Local Codes.

⚠ WARNING

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. Contact an authorized service technician 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 drop and cause serious injury and damage. Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property. For units that have an auxiliary electric heater, do not install the unit within 3 feet (1 meter) of any combustible materials.

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 re-installation of the unit.

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

NOTE: 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 a blast-proof ceramic fuse can be used.

⚠ WARNING

FOR FLAMMABLE REFRIGERANTS

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

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).

Do not pierce or burn. Be aware that refrigerants may not contain an odor.

⚠ WARNING

PERSONAL INJURY AND PROPERTY DAMAGE HAZARD

For continued performance, reliability, and safety, the only approved accessories and replacement parts are those specified by the equipment manufacturer. The use of non-manufacturer approved parts and accessories could invalidate the equipment limited warranty and result in a fire risk, equipment malfunction, and failure.

Review the manufacturer's instructions and replacement parts catalogs available from your equipment supplier.

WARNING - RISK OF FIRE DUE TO FLAMMABLE REFRIGERANT USED. FOLLOW HANDLING INSTRUCTIONS CAREFULLY IN COMPLIANCE WITH NATIONAL REGULATIONS.



Table 1 — 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.

FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For Class B Digital Device

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try t o correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the distance between the equipment and the receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for assistance.

MODIFICATION: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate this device.

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.

Table 2 — A (min)

		HO, RELEASE HEIGHT FT (M)					
MC or Mrel Refrigerant Charge Amount pounds (kilograms)	Mc or Mrel (lbs (kg)	≤ 7.2 (2.2)	7.5 (2.3)	7.9 (2.4)	8.5 (2.6)	9.2 (2.8)	9.8 (3.0)
	≤ 3.91 (1.776)	12 (1.10)					
	4.0 (1.8)	60 (5.53)	57 (5.29)	55 (5.07)	50 (4.68)	47 (4.34)	44 (4.05)
	4.4 (2.0)	66 (6.14)	63 (5.88)	61 (5.63)	56 (5.2)	52 (4.83)	48 (4.5)
	4.9 (2.2)	73 (6.76)	70 (6.46)	67 (6.19)	62 (5.72)	57 (5.31)	53 (4.95)
	5.3 (2.4)	79 (7.37)	76 (7.05)	73 (6.76)	67 (6.24)	62 (5.79)	58 (5.41)
	5.7 (2.6)	86 (7.99)	82 (7.64)	79 (7.32)	73 (6.76)	68 (6.27)	63 (5.86)
	6.2 (2.8)	93 (8.6)	89 (8.23)	85 (7.88)	78 (7.28)	73 (6.76)	68 (6.31)
	6.6 (3.0)	99 (9.21)	95 (8.81)	91 (8.45)	84 (7.8)	78 (7.24)	73 (6.76)
	7.1 (3.2)	106 (9.83)	101 (9.4)	97 (9.01)	90 (8.32)	83 (7.72)	78 (7.21)
	7.5 (3.4)	112 (10.44)	108 (9.99)	103 (9.57)	95 (8.84)	88 (8.2)	82 (7.66)
	7.9 (3.6)	119 (11.06)	114 (10.58)	109 (10.14)	101 (9.36)	94 (8.69)	87 (8.11)
	8.4 (3.8)	126 (11.67)	120 (11.16)	115 (10.7)	106 (9.88)	99 (9.17)	92 (8.56)
	8.8 (4.0)	132 (12.29)	126 (11.75)	121 (11.26)	112 (10.4)	104 (9.65)	97 (9.01)
	9.3 (4.2)	139 (12.9)	133 (12.34)	127 (11.82)	117 (10.91)	109 (10.14)	102 (9.46)
	9.7 (4.4)	145 (13.51)	139 (12.93)	133 (12.39)	123 (11.43)	114 (10.62)	107 (9.91)
	10.1 (4.6)	152 (14.13)	145 (13.51)	139 (12.95)	129 (11.95)	119 (11.1)	112 (10.36)
	10.6 (4.8)	159 (14.74)	152 (14.1)	145 (13.51)	134 (12.47)	125 (11.58)	116 (10.81)
	11 (5.0)	165 (15.36)	158 (14.69)	152 (14.08)	140 (12.99)	130 (12.07)	121 (11.26)
	11.5 (5.2)	172 (15.97)	164 (15.28)	158 (14.64)	145 (13.51)	135 (12.55)	126 (11.71)
	11.9 (5.4)	179 (16.58)	171 (15.86)	164 (15.2)	151 (14.03)	140 (13.03)	131 (12.16)
	12.3 (5.6)	185 (17.2)	177 (16.45)	170 (15.77)	157 (14.55)	145 (13.51)	136 (12.61)
	12.8 (5.8)	192 (17.81)	183 (17.04)	176 (16.33)	162 (15.07)	151 (14)	141 (13.06)
	13.2 (6.0)	198 (18.43)	190 (17.63)	182 (16.89)	168 (15.59)	156 (14.48)	145 (13.51)
	13.7 (6.2)	205 (19.04)	196 (18.21)	188 (17.45)	173 (16.11)	161 (14.96)	150 (13.96)
	14.1 (6.4)	212 (19.66)	202 (18.8)	194 (18.02)	179 (16.63)	166 (15.44)	155 (14.41)
	14.6 (6.6)	218 (20.27)	209 (19.39)	200 (18.58)	185 (17.15)	171 (15.93)	160 (14.86)
	15 (6.8)	225 (20.88)	215 (19.98)	206 (19.14)	190 (17.67)	177 (16.41)	165 (15.32)
	15.4 (7.0)	231 (21.5)	221 (20.56)	212 (19.71)	196 (18.19)	182 (16.89)	170 (15.77)
	15.9 (7.2)	238 (22.11)	228 (21.15)	218 (20.27)	201 (18.71)	187 (17.37)	175 (16.22)

Amin (ft2 (m2))
Mc: Actual refrigerant charge in the system lbs (Kg)
Mrel: Refrigerant releasable charge lbs (Kg)
Ho: Release height, measured from duct opening, in ft (m)
Hinst: Height of install, from the bottom of the indoor appliance, measured in ft (m)
Ho ≈ Hinst
Warning: Minimum room area of conditioned space is based on releasable charge or total system refrigerant charge.

When the unit detects a refrigerant leak, the indoor unit's minimum airflow appears (see Table 3).

Table 3 — Minimum Airflow

MODEL	18K	24K	30K	36K	48K	60K
NOMINAL AIRFLOW	400CFM	400CFM	447CFM	541CFM	706CFM	824CFM

For R454B refrigerant charge amount and minimum room area:

1. **Installation** (where refrigerant pipes are allowed)
   Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry recognized assessment specification.
   Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
   That the installation of pipe-work shall be kept to a minimum.
   That pipe-work shall be protected from physical damage.
   Where refrigerant pipes shall 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 specified for operation.
   Joints shall be tested with detection equipment with a capability of 5 g/year of refrigerant or better, with the equipment in 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 a 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 can not 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 affects, 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 minimized. 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 minimize the risk of a flammable gas or vapor being present while the work is being performed.

6. General work area
   All maintenance staff and others working in the local area 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 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:

    a. the actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed;
    b. the ventilation machinery and outlets are operating adequately and are not obstructed;
    c. 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;
    d. 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.

13. Wiring

    Check that wiring will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental affects. The check shall also take into account the affects 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 labeled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing FLAMMABLE REFRIGERANTS, ensure that there are labels on the equipment stating the equipment contains FLAMMABLE REFRIGERANT.

19. Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labeled for that refrigerant (i. e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-o 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

For appliances containing more than for any refrigerating circuit, the manual shall include a statement advising that 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. This shall include:
- a warning that if appliances with A2L REFRIGERANTS connected via an air duct system to one or more rooms are installed in a room with an area less than >Amin as determined in Clause GG.2, that room shall be without continuously operating open flames (for example an operating gas appliance) or other POTENTIAL IGNITION SOURCES (for example 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;
- for appliances using A2L REFRIGERANTS connected via an air duct system to one or more rooms, a warning with the substance of the following: “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 X °C and electric switching devices”. NOTE X is the maximum allowable surface temperature as defined in 22.117.
The manufacturer should specify other potential continuously operating sources known to cause ignition of the refrigerant used. The appliance shall be stored so as to prevent mechanical damage from occurring.
- for appliances using A2L refrigerants connected via an air duct system to one or more rooms, a warning that only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork. The manufacturer shall list in the instructions all approved auxiliary devices by manufacturer and model number for use with the specific appliance, if those devices have a potential to become an ignition source.
- a warning that 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 4min as determined in Clause GG.2. or installed in a room with an EFFECTIVE DISPERSAL VOLUME VED less than the minimum as determined by Clause 101.DVN.8, 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.

- for REFRIGERANT DETECTION SYSTEMS, the function and operation and required servicing measures;
- for LIMITED LIFE REFRIGERANT SENSORS Used in REFRIGERANT DETECTION SYSTEMS, the specified end-of-life and replacement instructions;
- REFRIGERANT SENSORS for REFRIGERANT DETECTION SYSTEMS Shall Only be replaced with sensors specified by the appliance manufacture; and instructions to verify actuation of mitigation actions per Annex GG or Annex 101.DVN as applicable.

For appliances using FLAMMABLE REFRIGERANTS with safety features that depend upon the proper function of a leak detection system used for leak mitigation, the instructions and unit markings shall contain the substance of the following: "LEAK DETECTION SYSTEM installed. Unit must be powered except for service." If any remote located REFRIGERANT SENSOR is employed to detect leaked refrigerant, such a remote located REFRIGERANT SENSOR shall also apply to this marking or be accompanied by such instructions.

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.

Table 4 — 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.

PRODUCT INSTALLATION WARNINGS

- 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. Contact an authorized service technician 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 drop and cause serious injury and damage.
- Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.
- For units that have an auxiliary electric heater, do not install the unit within 1 meter (3 feet) of any combustible materials.
- For the units that have a wireless network function, the USB device access, replacement, maintenance operations must be carried out by professional staff.
- Do not install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause fire.
- Do not turn on the power until all work has been completed.

- When moving or relocating the air conditioner, consult experienced service technicians for disconnection and re-installation 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.

CLEANING AND MAINTENANCE WARNINGS

- 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.

FLAMMABLE REFRIGERANT USE WARNINGS

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 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 odor.
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: FUSE SPCIFICATIONS

The air conditioner’s circuit board (PCB) may be designed with a fuse to provide overcurrent protection. This fuse must be replaces 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: FLUORINATED GASES (NOT APPLICABLE TO THE UNIT USING R290 REFRIGERANT)

This air-conditioning unit contains fluorinated greenhouse gases. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself or the “Owner's Manual - Product Fiche” in the packaging of the outdoor unit.

Installation, service, maintenance and repair of this unit must be performed by a certified technician. Product un-installation 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.wc.(0-200 Pa). The data below represents the static pressures at full required air flow used for AHRI testing.

Table 5 — Static Pressure Range

MODEL	18K-24K	30K-36K	48K-60K
PRESSURE (After January 1, 2023)	0.5 in.wc.(125Pa)		

NOTE: The maximum functional total external static pressure can not exceed 0.80 in.wc. or 200 Pa. The airflow reduces significantly beyond 0.80 in.wc. or 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 limits 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 (mmax) in an unventilated space, the following shall apply.

The room area (A) shall be defined as the room area enclosed by the projection to the floor of the walls, partitions and doors of the space in which the appliance is installed.

Spaces connected by only drop ceilings, ductwork, or similar connections shall not be considered a single space.

For units mounted higher than 6.0ft/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 listed in Table 6.

Table 6 — Opening Area

HEIGHT OF OUTLET, FT (M)	A, FT^2 (M^2)	MC, LB (KG)	MAX, LB (KG)	ANVMIN, FT^2 (M^2)
7.2 (2.2)	53.8 (5)	11.0 (5.0)	5.9 (2.7)	0.48 (0.045)
	64.5 (6)		6.4 (2.9)	0.45 (0.042)
	75.3 (7)		7.0 (3.2)	0.41 (0.038)
	86.1 (8)		7.5 (3.4)	0.38 (0.035)
	96.9 (9)		7.9 (3.6)	0.33 (0.031)
	107.6 (10)		8.4 (3.8)	0.30 (0.028)
	118.4 (11)		8.6 (3.9)	0.26 (0.024)
	129.2 (12)		9.3 (4.2)	0.21 (0.020)
	139.9 (13)		9.5 (4.3)	0.17 (0.016)
	150.7 (14)		9.9 (4.5)	0.14 (0.013)
	161.5 (15)		10.1 (4.6)	0.10 (0.009)
	172.2 (16)		10.6 (4.8)	0.05 (0.005)
	183 (17)		10.8 (4.9)	0.01 (0.001)

NOTE: Take the Mc = 11 lb (5 kg) 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.

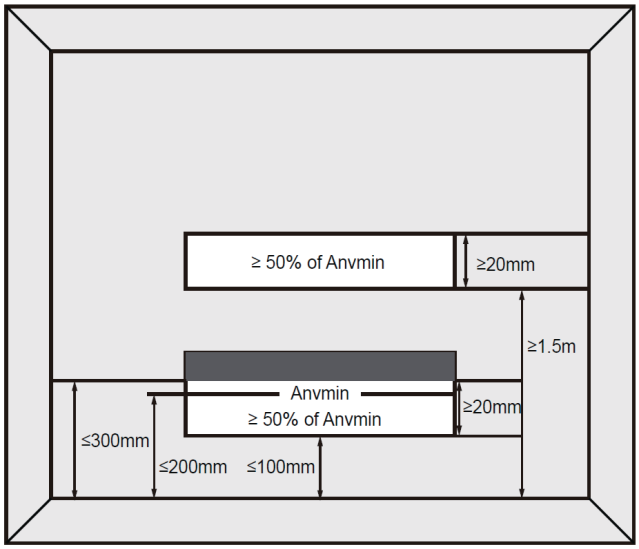


Fig. 2 — AnvMin

- 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.

R454B Refrigerant Charge Amount and Minimum Room Area:

The machine you purchased may be one of the 3 sizes in Table 7. The indoor and outdoor units are designed to be used together. Check the unit you purchased. The minimum room area of operating or storage should be as specified in Table 2 on page 5.

Table 7 — Compatible Indoor / Outdoor Units

SIZE	INDOOR UNIT	OUTDOOR UNIT
18K	45MUHAQ24XX3	37MUHAQ18AA3
24K		37MUHAQ24AA3
30K	45MUHAQ36XX3	37MUHAQ30AA3
36K		37MUHAQ36AA3
48K	45MUHAQ60XX3	37MUHAQ48AA3
60K		37MUHAQ60AA3

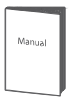
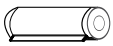
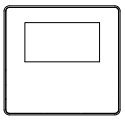
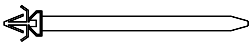
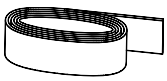
NOTE: Additional refrigerant for the indoor unit might be required based on the outdoor unit, please refer to the Outdoor Manual.

NOTE: Wiring Digram, Capacity Setting has more instructions regarding dual capacity settings of each Air Handler.

ACCESSORIES

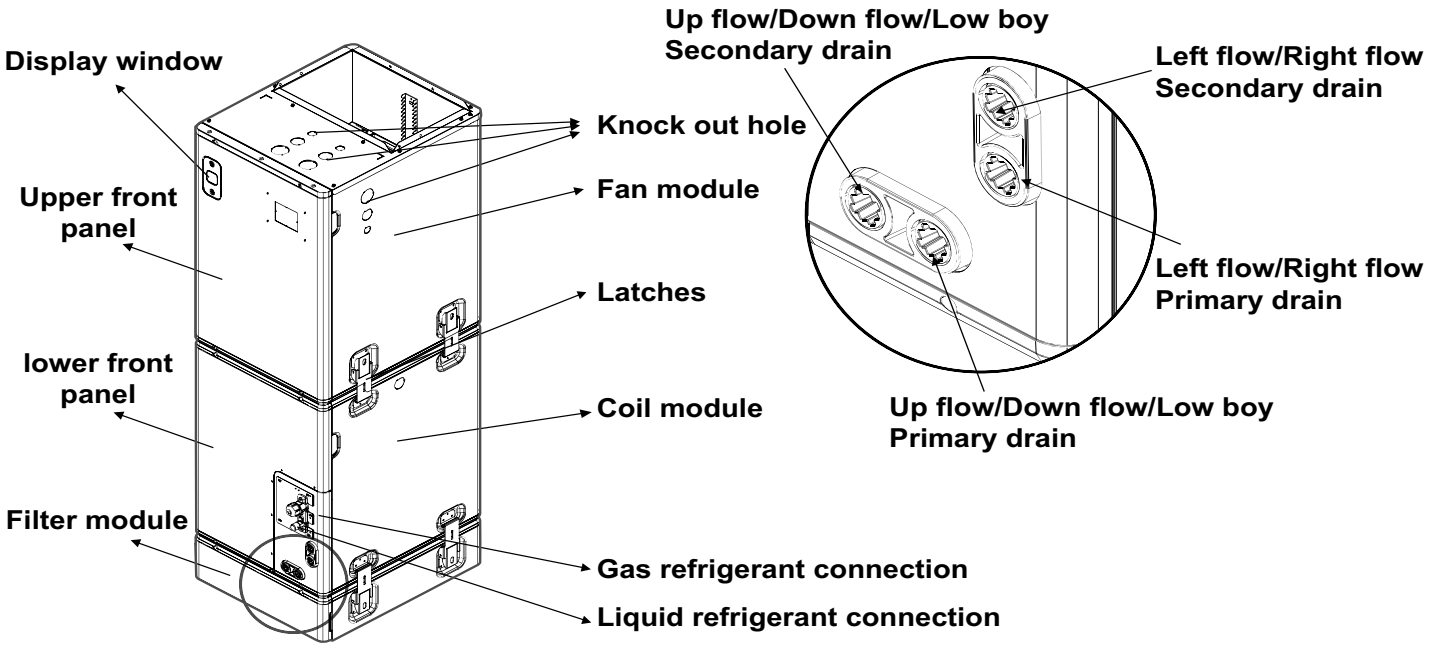
The system is shipped with the following accessories. Use all of the installation parts and accessories to install the system. Improper installation may result in water leakage, electrical shock and fire, or cause the equipment to fail. Keep the installation manual in a safe place and do not discard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

Table 8 — Accessories

NAME	SHAPE	QUANTITY
Manual		2
Cable ties		4
Insulation Sleeve		2
Flare Nut		2
Braze to flare adapter		2
Remote Controller		1
Remote Controller Holder		1
Batteries		2
Wired Remote Controller (purchase separately)		1
Zip ties (type B)		2
Insulator tape		1
24V Connection Cable to 3rd Party Condenser		1

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

PRODUCT OVERVIEW



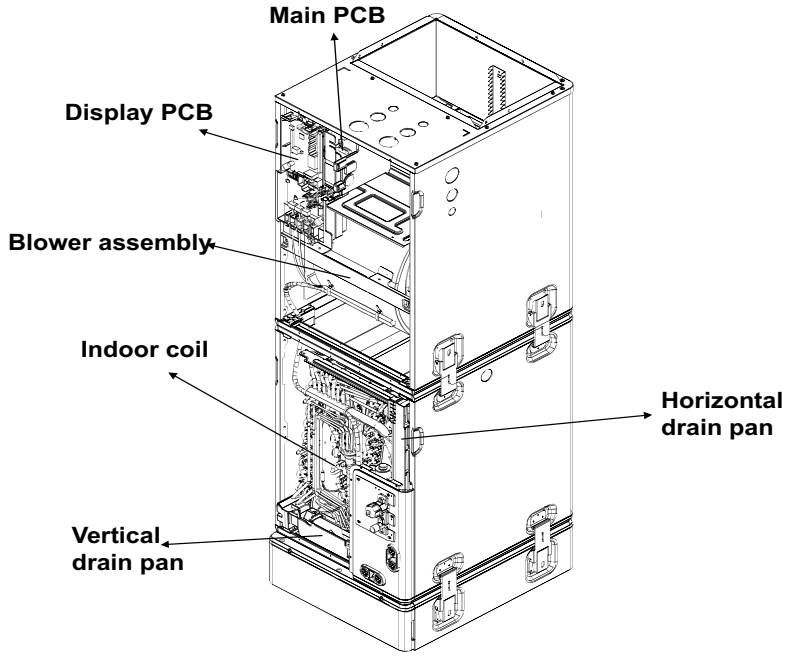


Fig. 3 — Product Overview

Step 1 - Indoor Unit Installation

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

Select the installation location for the indoor units

WARNING
DO NOT LOCATIONS:



DO NOT install the indoor unit in a moist environment. Excessive moisture can corrode the equipment, electrical components, and cause electrical shorts.



Areas with strong electromagnetic waves.



Coastal areas with high salt content in the air.



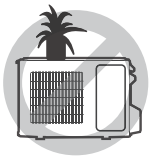
Areas with oil drilling or fracking.



Areas that store flammable materials or gas.



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



Areas where the air inlet and outlet may be obstructed.

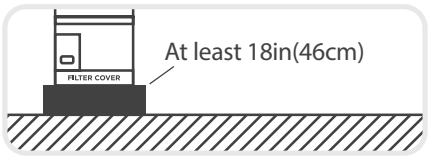


Danger of explosion. Keep flammable materials and vapors, such as gasoline, away from air handler.

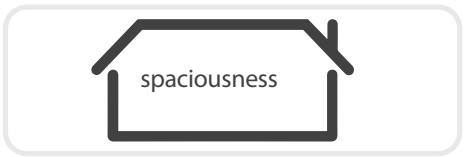
WARNING
MUST BE INSTALLED IN A LOCATION THAT MEETS THE FOLLOWING REQUIREMENTS:



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

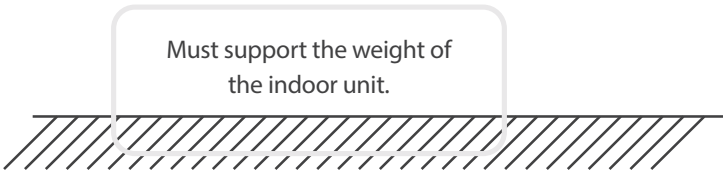


☑ Place air handler so that heating elements are at least 18 inches (46 cm) above the floor for a garage installation. Failure to follow these instructions can result in death, explosion, or fire.



☑ Enough room for installation and maintenance.

☑ Enough room for the connecting pipe and drainpipe.



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

PREPARATION AND PRECAUTIONS FOR THE INDOOR UNIT INSTALLATION

⚠ WARNING

Prior to Installation

Before installing the indoor unit, ensure the compatibility with the outdoor unit using the product data as a reference. It is also necessary to confirm the proper application of the equipment and to perform a heat load calculation for proper sizing.

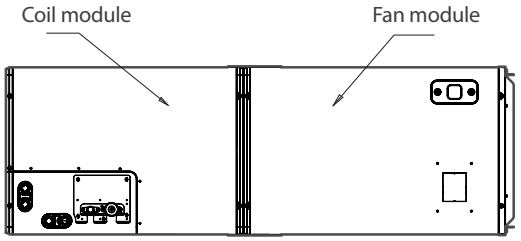


Fig. 4 — Coil Module and Fan Module

⚠ WARNING

Apply sealant around the places where the wires, refrigerant pipes and condensate pipes enter the cabinet.

Use duct tape or flexible sealant to seal closed any space around the holes where the drain lines exit the cabinet. Warm air must not be allowed to enter through any gaps or holes in the cabinet.

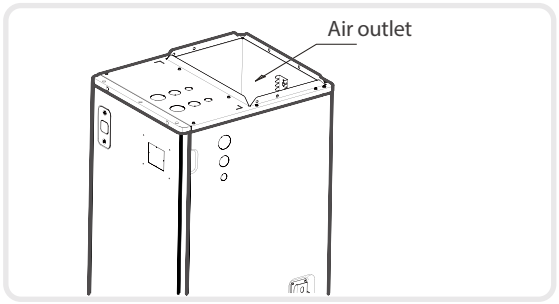


Fig. 5 — Air Outlet

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

Ductwork Acoustical Treatment

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

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

Recommended Distances Between the Indoor Unit

The distance between the mounted indoor unit should meet the specifications illustrated in Figure 6.

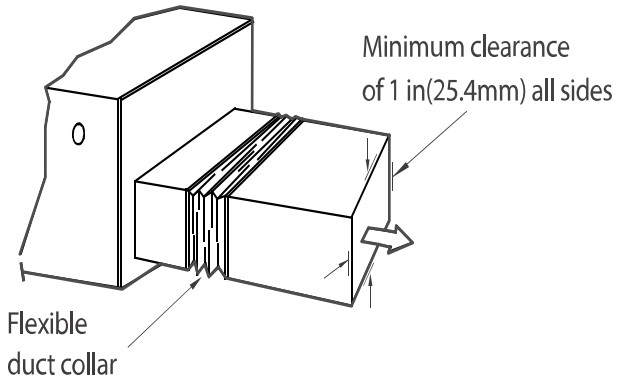


Fig. 6 — Specifications

Vertical Installations

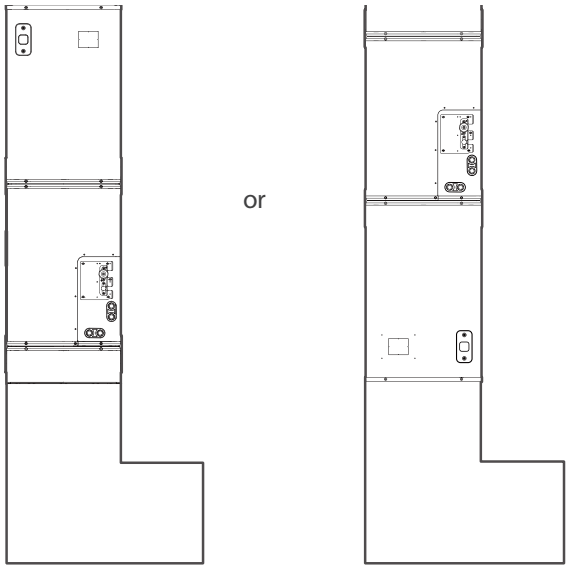


Fig. 7 — Vertical Installations

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

Indoor Unit Parts Installation Size

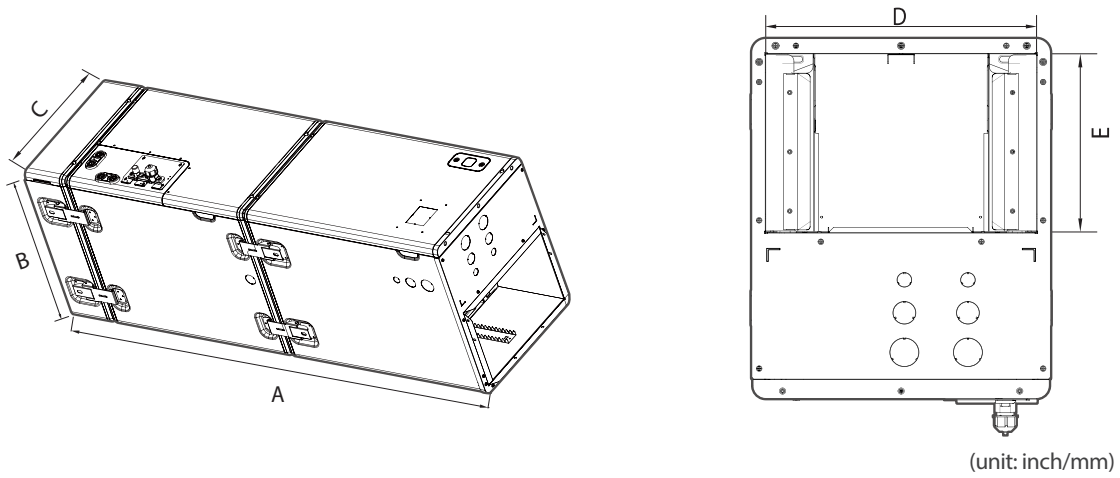


Fig. 8 — Indoor Unit Dimensions

Table 9 — Indoor Unit Dimensions

MODEL (BTU/H) DIMENSIONS		18K-24K	30K-36K	48K-60K
A	inch	53-7/8	58-1/8	60-1/8
	mm	1368	1476	1526
B	inch	21-1/2	21-1/2	21-1/2
	mm	546	546	546
C	inch	14-1/2	17-1/2	21-1/2
	mm	368	445	546
D	inch	13	13	20
	mm	330	407	508
E	inch	10-1/4	10-1/4	10-1/4
	mm	273	273	273

Actual dimensions of applied filters can't exceed the size in Table 10.

Table 10 — Applied Filter Dimensions

	WIDTH (IN)	DEPTH (IN)	THICKNESS (IN)
18K-24K	12	20	1 or 2 or 4
30K-36K	16	20	
48K-60K	20	20	

Lowboy Duct Size (Applied for Lowboy Application)

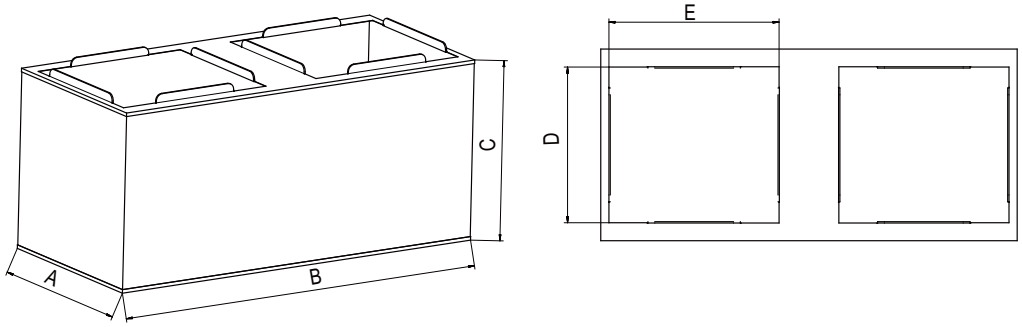


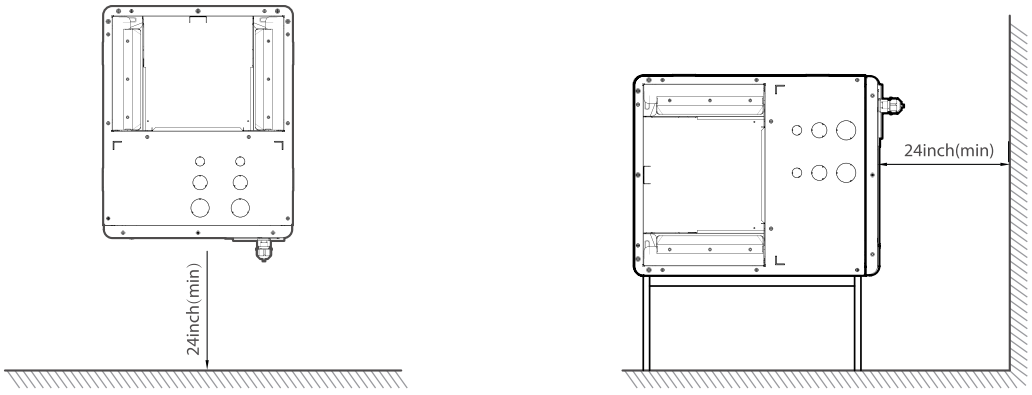
Fig. 9 — Lowboy Duct Application

Table 11 — Lowboy Duct Dimensions

		A	B (REFERENCE)	C	D	E
18K,24K	inch	≥22	≥ 38-1/2	≥14-1/2	18	12-3/4
	mm	≥560	≥ 980	≥368	455	324
30K,36K	inch	≥22	≥ 40	≥17-1/2	18	15-3/4
	mm	≥560	≥ 1018	≥445	455	398
48K,60K	inch	≥22	≥ 48	≥21-1/2	18	19-1/2
	mm	≥560	≥ 1218	≥546	455	495

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

Installation Position Requirements



Vertical installations

Horizontal installations

Fig. 10 — Installation Position Requirements

NOTICE FOR DUCT CONNECTIONS :



It should be assembled accordance to the instructions.



It should be insulated and use a Vapor Barrier.



It should be Flexible suspension mounted and not fastened



It should be fabricated and installed in accordance with local and/or national codes.

More Requirements

- Air supply and return may be handled in one of several ways best suited to the installation (See table for dimensions for duct inlet and outlet connections). The vast majority of problems encountered with combination cooling systems can be linked to improperly designed or installed duct systems. It is therefore highly important to the success of an installation that the duct system be properly designed and installed. Use flexible duct collars to minimize the transmission of vibration/noise into the conditioned space. Where return air duct is short, or where sound could potentially to be a problem, sound absorbing liner should be used inside the duct.
- Duct must be insulated where it runs through an unconditioned space during the cooling season. The use of a vapor barrier is recommended to prevent absorption of moisture from the surrounding air into the insulation.
- The supply air duct connection should be properly sized by use of a transition to match unit opening.
- All ducts should be suspended using flexible hangers and never fastened directly to the structure. This unit is not designed for nonducted (freeblow) applications.
- Duct work should be fabricated and installed in accordance with local and/or national codes.

⚠ CAUTION

A field-fabricated secondary drain pan, with a drain pipe to the outside of the building, is required in all installations over a finished living space or in any area that may be damaged by overflow from the main drain pan. In some localities, local codes may require a secondary drain pan for any horizontal installation.

Step 2 - Select Installation Direction

Different Installation Directions

The units can be installed in a vertical (down and up) and horizontal (right and left) configuration.

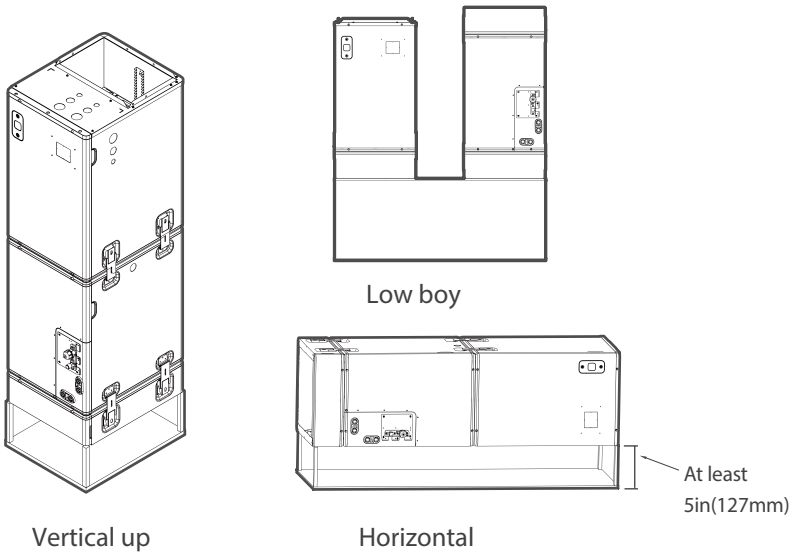


Fig. 11 — Different Installation Directions

NOTE: For horizontal installation, a secondary drain pan (not supplied) must be installed.

Airflow Direction For Different Installation Directions

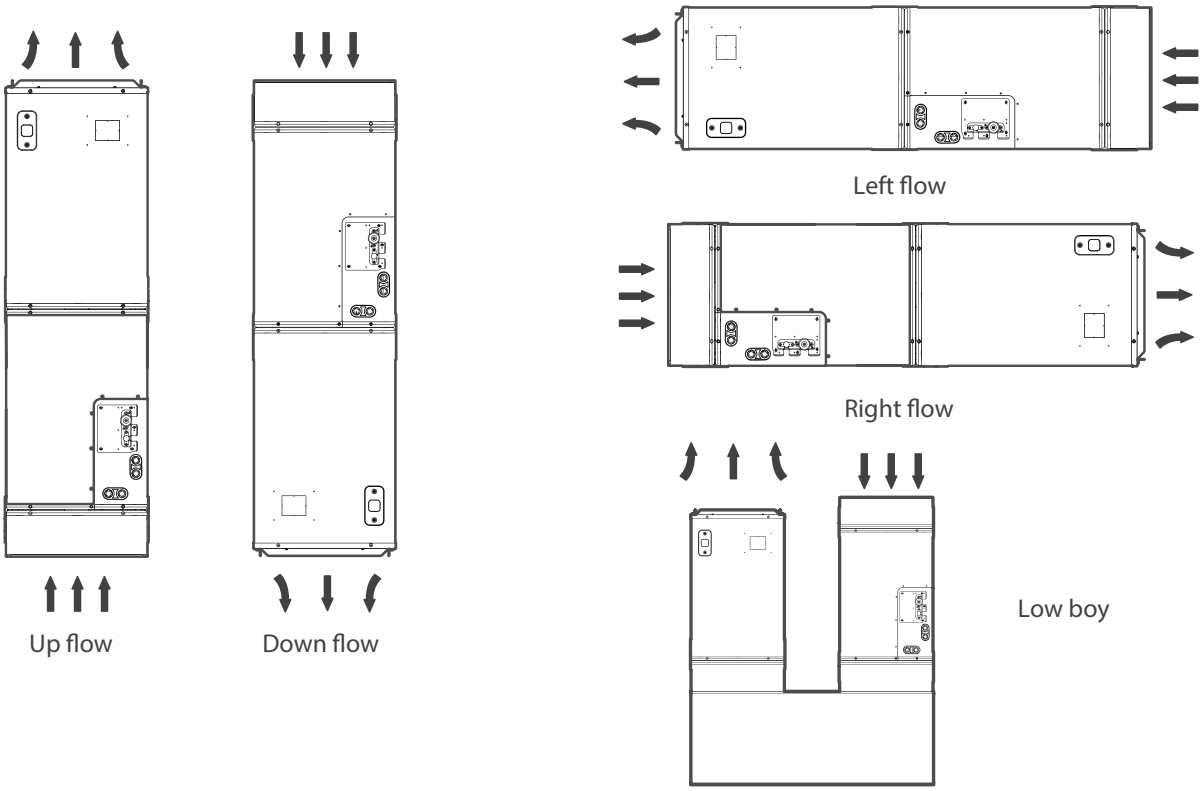
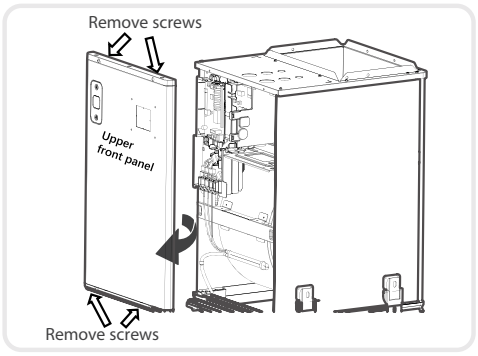


Fig. 12 — Airflow Direction For Different Installation Directions

NOTE: Vertical up and horizontal left installation does not need to change the direction of evaporator.

Step 3 - Connecting the Wire and Pipes (Pipes and Drainage Pipes)

Follow these steps to perform Vertical down installation and Horizontal right installation:



Step 1

Remove the four screws and open the upper front panel.

Step 2

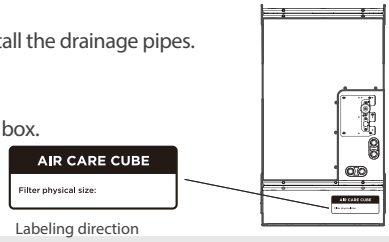
Connect the wire according to the wiring diagram.

Step 3

Connect the pipes and install the drainage pipes.

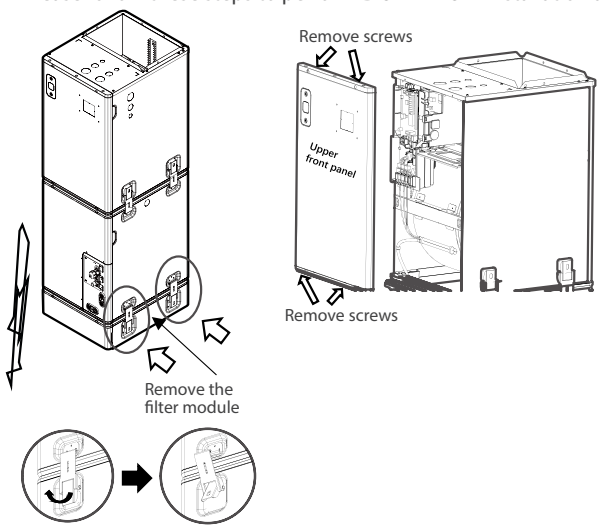
Step 4

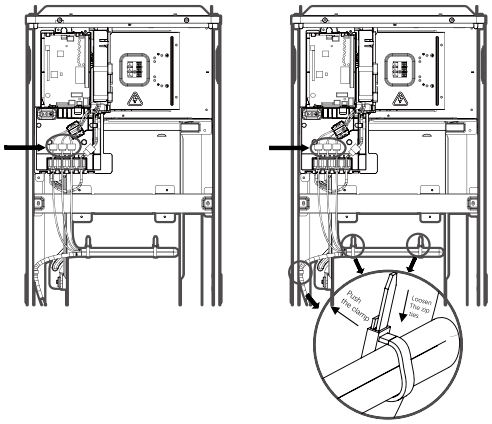
Tape the label on the filter box.



Down flow and horizontal left instructions

Please follow these steps to perform Down flow installation and Left flow installation:





Step 1

Unlook the 4 latches and remove the filter module.

Step 2

Remove the four screws and open the upper front panel.

Step 3

Disconnect the connectors.

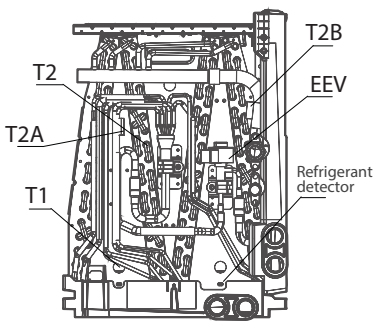
Step 4

Loosen three zip ties (reusable zip ties).

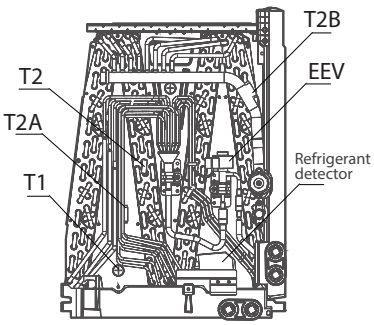
Step 5

Indication of the position of each temperature sensor of the evaporator:

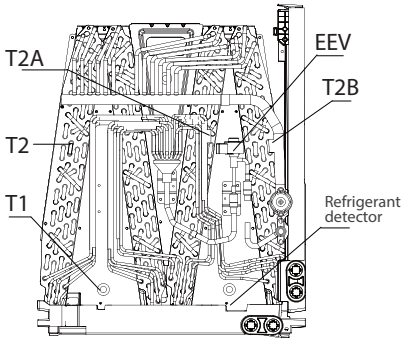
18-24K model



36K model

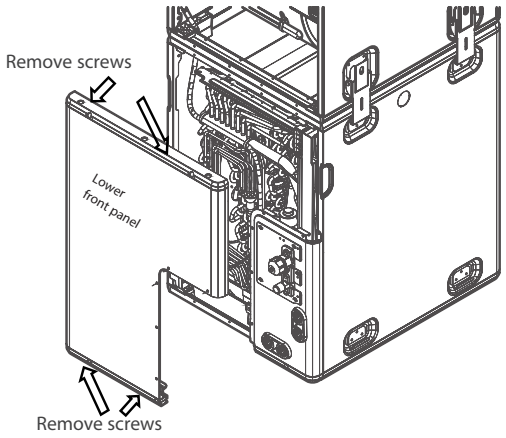


48-60K model



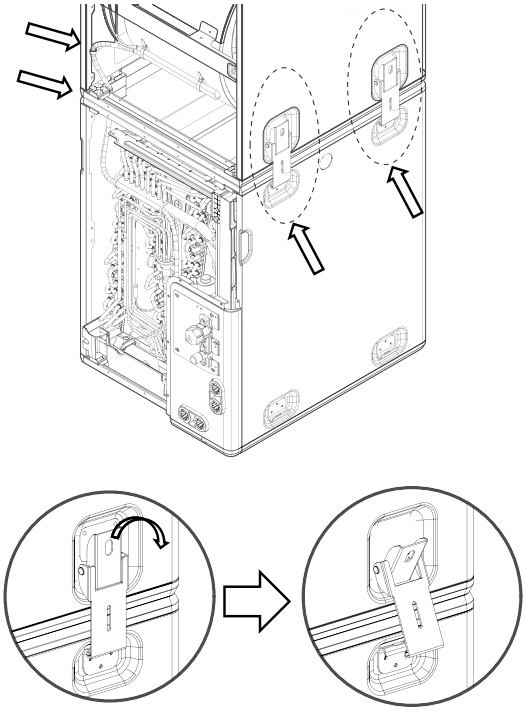
Step 6

Remove the four screws and open the lower front panel.



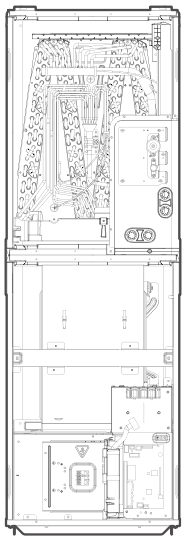
Step 7

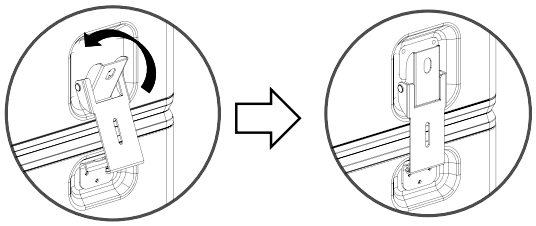
Unlock the 4 latches.



Step 8

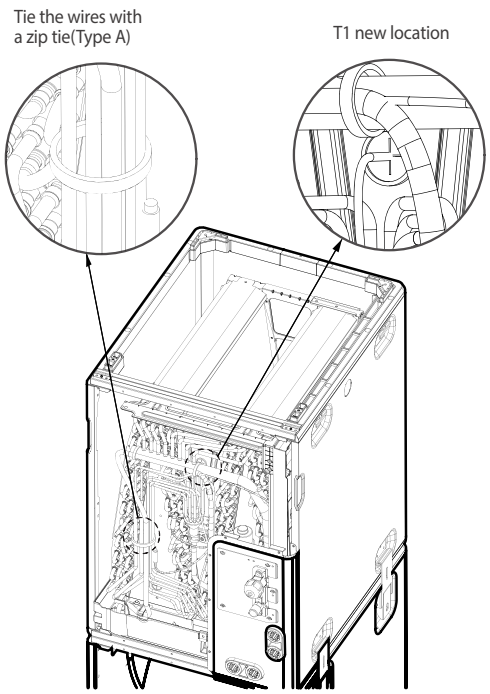
Turn the fan module 180 degree and put it under the coil module. Re-lock the 4 latches.

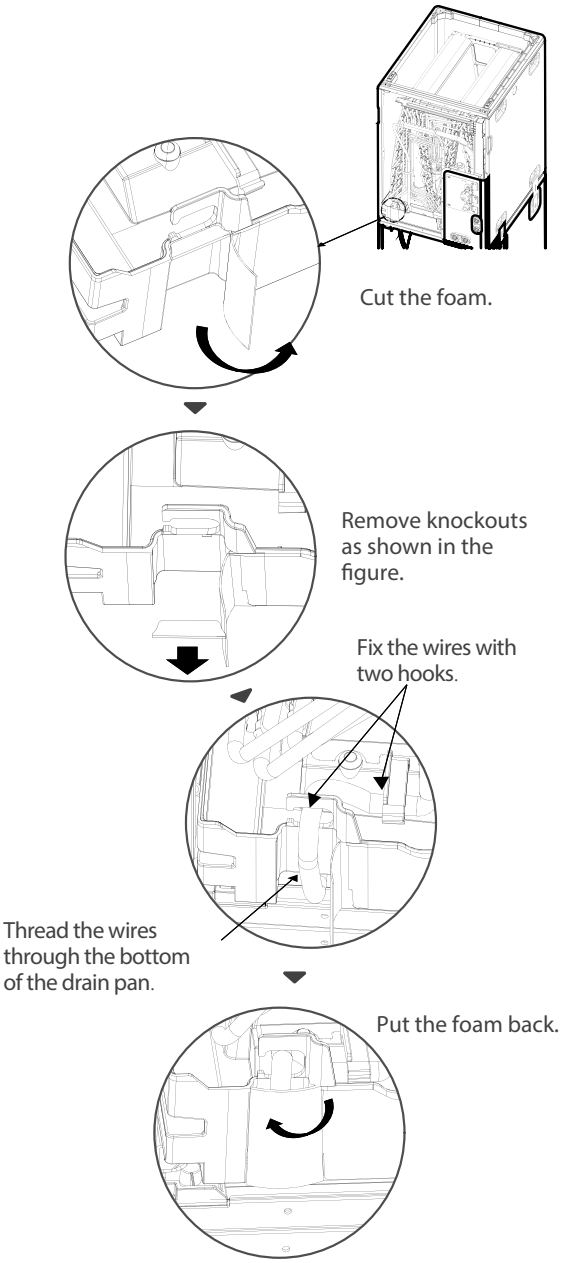




Step 9

Relocate the wires in the coil module.



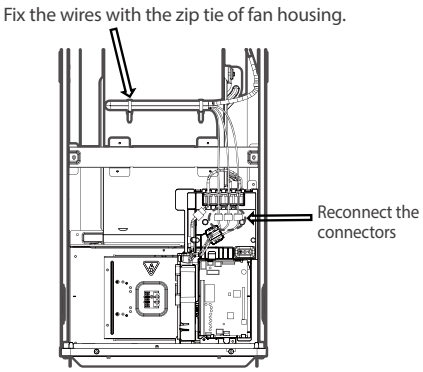


NOTICE

The wire body needs to pass through the wire groove from the drain pan and be stuck on the hook of the drain pan.

Step 10

Relocate the wires in the fan module.

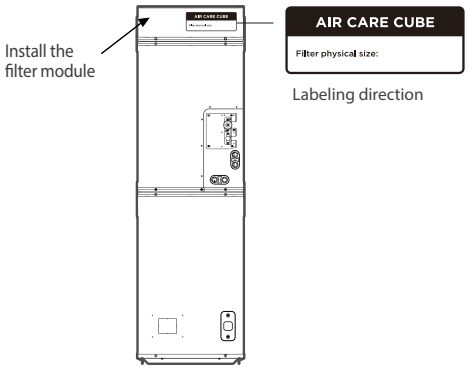


Step 11

Connect the wire according to the wiring diagram.

Step 12

Reassemble the upper and lower front panel, Install the the filter module. Tape the label on the filter box.



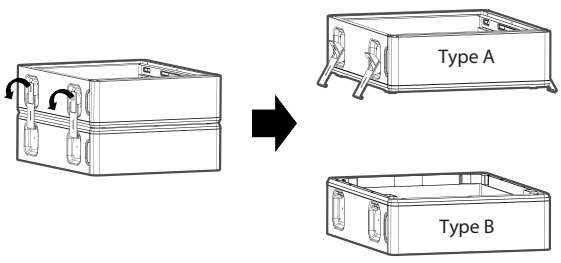
Low boy installations

Step 1~7

Refer to down flow and horizontal left instructions.

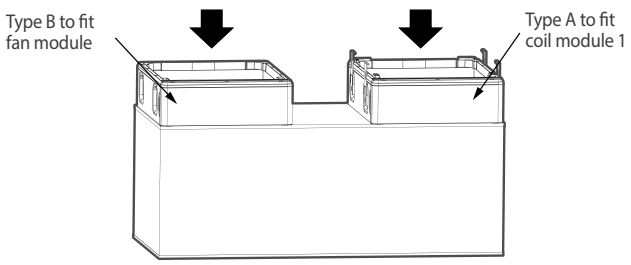
Step 8

Unlock the latches and separate the lowboy kit (the lowboy kit is from another single package).

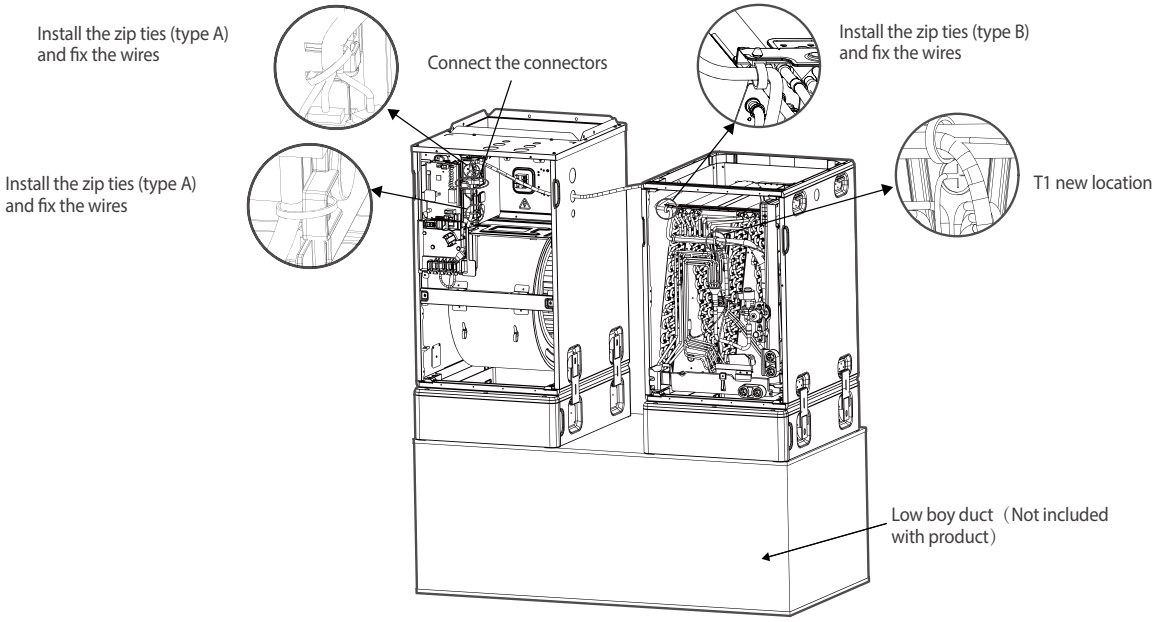


Step 9.1

Fix the lowboy kit on the lowboy duct (If fan module is put on the left).

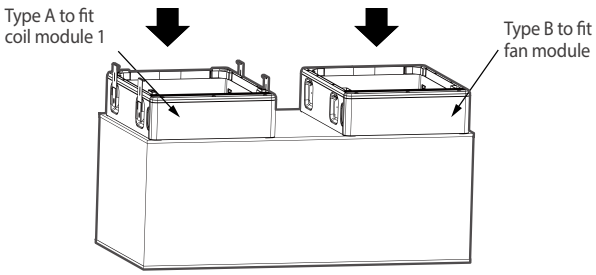


Install the fan module and coil module.

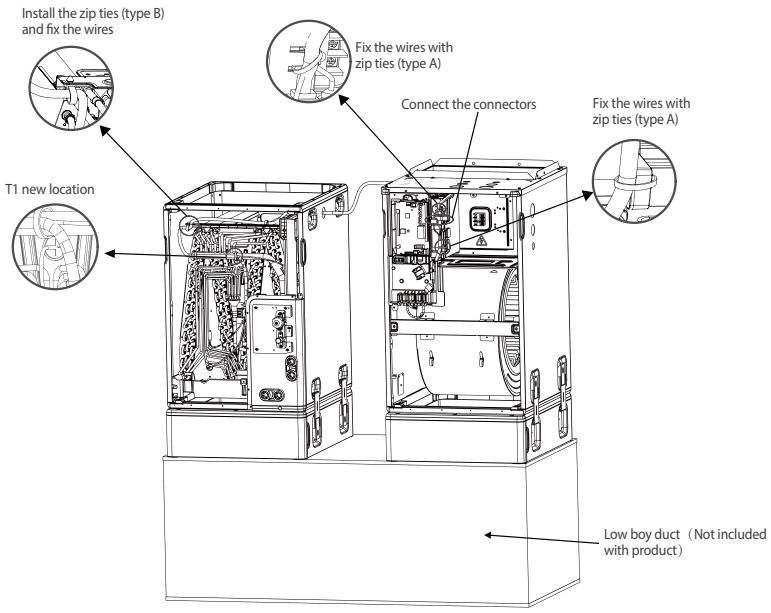


Step 9.2

Fix the lowboy kit on the lowboy duct (If fan module is put on the right).



Install the fan module and coil module.

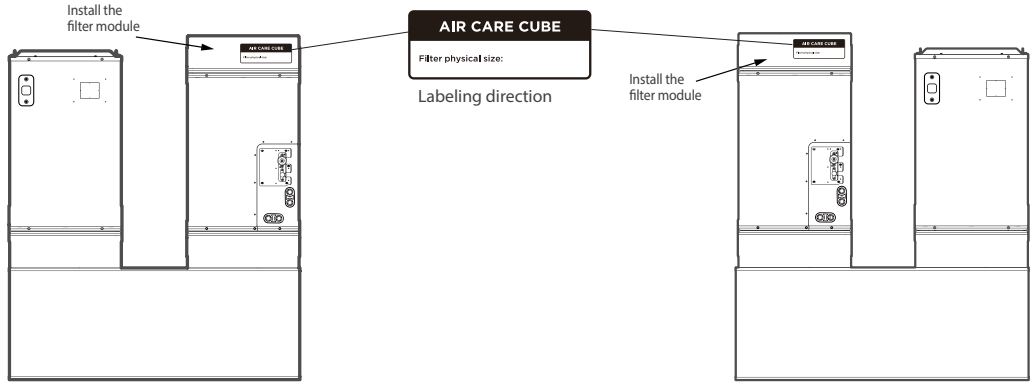


Step 10

Connect the wire according to the wiring diagram.

Step 11

Reassemble the upper, lower front panel and filter module.



⚠ CAUTION FOR ALL PIPES INSTALLATION

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

NOTICE

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

⚠ CAUTION

FOR ALL PIPES INSTALLATION

Insulate all piping to prevent condensation, which could lead to water damage. The drainpipe is used to drain water away from the unit. If the drainpipe is bent or installed incorrectly, water may leak and cause a water-level switch malfunction. In **HEAT** mode, the outdoor unit discharges water. Ensure the drain hose is placed in an appropriate area to avoid water damage and icy conditions on walkways.

DO NOT pull the drainpipe forcefully; doing so could disconnect it.

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

NOTE ON PURCHASING PIPES: Installation requires PVC pipe or other suitable material per local and national codes, which can be obtained at your local hardware store or dealer.

⚠ 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.

⚠ WARNING

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

Vertical Installations

These units operate with a negative pressure at the drain connections and a drain trap is **required**. Install the trap as close as possible to the unit. Ensure the top of the trap is below the connection to the drain pan to allow complete drainage of the pan.

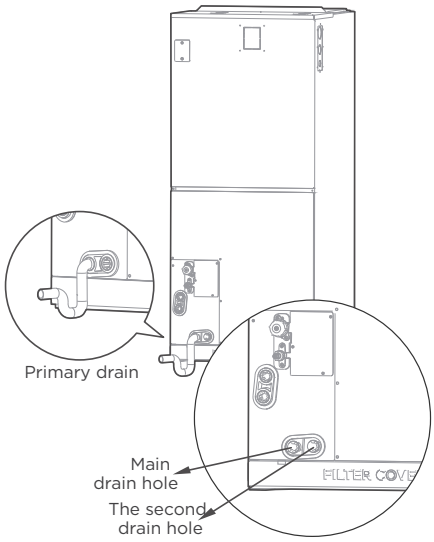


Fig. 13 — Vertical Discharge

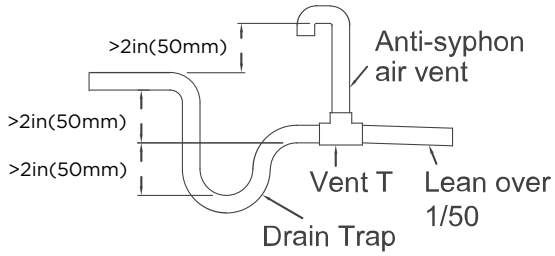


Fig. 14 — Drain Trap

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

NOTE ON DRAINPIPE INSTALLATION

- **Figure 13 shows how to trap or plug all drains during vertical discharge.**
- **Figure 14 shows how to trap or plug all drains during right-hand discharge.**
- **The seal plug are supplied as accessories and should be screwed tightly only by hand.**
- **Incorrect installation could cause water to flow back into the unit and flood.**

⚠ CAUTION

The drainpipe outlet should be at least 1.9in(5cm) above the ground. If the outlet touches the ground, the unit may become blocked and malfunction.

REFRIGERANT PIPING CONNECTION

⚠ WARNING

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

Pipe Length and Elevation

Table 12 — Maximum Length and Drop Height Based on Models (Unit: ft./m)

CAPACITY (BTU/H)	MAXIMUM PIPING LENGTH		MAXIMUM DROP HEIGHT	
	ft.	m	ft.	m
18K/24K/30K	164	50	82	25
36K	213.2	65	98.4	30
48K/60K	246	75	98.4	30

Ensure that the length of the refrigerant pipe, the number of bends, and the drop height between the indoor and outdoor units meets the requirements (see Table 13).

Table 13 — Pipe Specifications

NAME	MODEL	PIPE SPECIFICATION		REMARK
		LIQUID SIDE	GAS SIDE	
Connecting pipe assembly	18K	Ø3/8in(Ø9.52mm)	Ø3/4in(Ø19mm)	Pipes are not included in the accessories and you need to purchase it separately from the local dealer.
	24K	Ø3/8in(Ø9.52mm)	Ø3/4in(Ø19mm)	
	30K	Ø3/8in(Ø9.52mm)	Ø3/4in(Ø19mm)	
	36K	Ø3/8in(Ø9.52mm)	Ø3/4in(Ø19mm)	
	48K	Ø3/8in(Ø9.52mm)	Ø3/4in(Ø19mm)	
	60K	Ø3/8in(Ø9.52mm)	Ø3/4in(Ø19mm)	

Step 4 - Refrigerant Piping

Table 14 — Refrigerant Piping

AIR HANDLER UNIT MODEL	AIR HANDLER UNIT CONNECTION (IN.FLARE)		ADAPTER REQUIRED AT AIR HANDLER UNIT (IN. FLARE TO BRAZE)
18K to 60K	Liquid	3/8	3/8 flare → 3/8 braze
	Gas	3/4	3/4 flare → 3/4 braze

Use the following steps to connect the refrigerant piping:

1. Run the interconnecting piping from the outdoor unit to the indoor unit.
2. Connect the refrigerant piping and drain line outside the indoor unit. Complete the pipe insulation at the flare connection then fasten the piping and wiring to the wall as required. Completely seal the hole in the wall.
3. Cut tubing to correct length.

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

   a. Measure the distance between the indoor and outdoor units.
   b. Using a pipe cutter, cut the pipe a little longer than the measured distance.
   c. Ensure the pipe is cut at a perfect 90° angle.

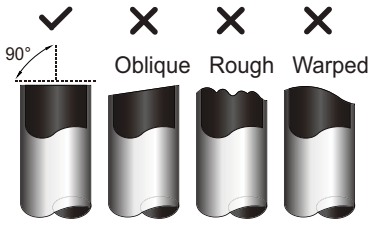


Fig. 15 — Pipe Cutting

4. Remove Burrs

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

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

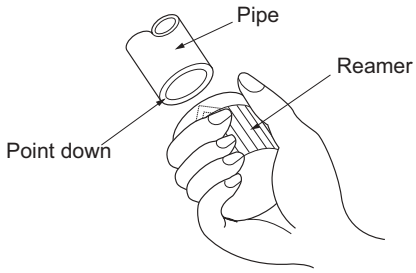


Fig. 16 — Deburring tool

5. Flare Pipe Ends
   Proper flaring is essential to achieving an airtight seal.
   a. After removing the burrs from the cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
   b. Sheath the pipe with insulating material.
   c. Place flare nuts on both ends of the pipe. Ensure they are facing the right direction. Once the ends are flared, it is impossible to put them on or change their direction.

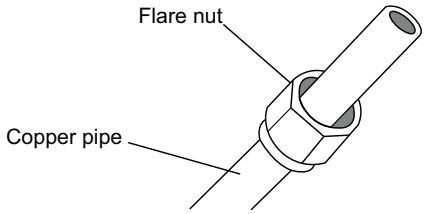


Fig. 17 — Copper pipe and flare nut

   d. Remove the PVC tape from ends of pipe when ready to perform the flaring work.
   e. Clamp the flare block on the end of the pipe. The end of the pipe must extend beyond the flare form.
   f. Place the flaring tool onto the form.
   g. Turn the handle of the flaring tool clockwise until the pipe is fully flared. Flare the pipe in accordance with the dimensions in Table 15.
   h. Remove the flaring tool and flare block, then inspect the end of the pipe for cracks and even flaring.

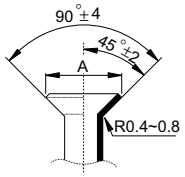


Fig. 18 — Flare shape

Table 15 — Flare Nut Spacing

Pipe Gauge	Tightening Torque	Flare Dimension (A) (Unit: MM/Inch)	
		Min	Max
3/8 in (Ø9.52)	25-25 N.m (18-19 ft-lb)	13.2 / 0.52	13.5 / 0.53
3/4 in (Ø19)	65-67 N.m (48-49 ft-lb)	23.2 / 0.91	23.7 / 0.93
7/8 in (Ø22)	75-85 N.m (55-63 ft-lb)	26.4 / 1.04	26.9 / 1.06

6. Connect the copper pipes to the outdoor unit first, then connect the pipes to the indoor unit. Connect the low-pressure pipe first, then connect the high pressure pipe.
7. When connecting the flare nuts, apply a thin coat of refrigeration oil to the flared ends of the pipes.
8. Align the center of the two pipes that you will connect.

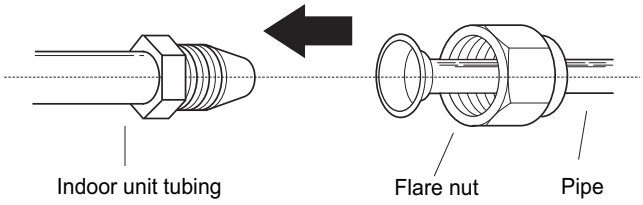


Fig. 19 — Align the center of the two pipes

9. Tighten the flare nut as much as possible by hand.
10. Using a wrench, grip the nut on the unit tubing.
11. While firmly gripping the nut, use a torque wrench to tighten the flare nut. See Table 15.

NOTE: Use both a backup wrench and a torque wrench when connecting or disconnecting pipes to or from the unit.

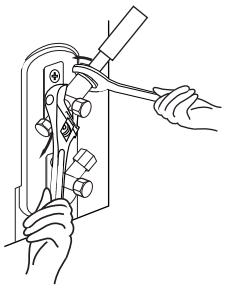


Fig. 20 — Torque wrench with backup wrench

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

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

NOTE: While bundling these items together, DO NOT intertwine or cross the signal cable with any other wiring.

13. Thread this lineset through the wall to connect to the indoor unit.

14. Refer to the liquid line and gas line connection O.D. sizes in Table 14 based on the model being installed. Cut and deburr the tubing (review "Remove Burrs" on page 27) to prepare it for brazing. Setup the nitrogen apparatus and connect to the outside unit to flow nitrogen while brazing. Braze the tubing and any fittings to obtain a proper seal.

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

16. Insulate suction line completely, including the outdoor unit valves.

⚠ CAUTION

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

17. Brazing Adapter (Optional)

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

a. Refer to the liquid line and gas line connection O.D. sizes in Table 14 based on the model being installed. Cut and deburr the tubing (review "Remove Burrs on page 27.) to prepare it for brazing. Setup the nitrogen apparatus and connect to the outside unit to flow nitrogen while brazing. Braze the tubing and any fittings to obtain a proper seal.

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

c. Insulate suction line completely, including the outdoor unit valves.

NOTE: MINIMUM BEND RADIUS: Carefully bend the tubing in the middle according to Figure 21. DO NOT bend the tubing more than 90° or more than 3 times.

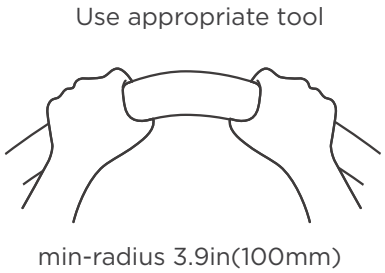


Fig. 21 — Minimum Bend Radius

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

Table 16 — Units Without Electrical Heat

Unit Size	Volts	Rated Current	MCA Minimum Circuit Amps	Branch Circuit	
				Min Wire Size AWG	Fuse/CKT BKR Amps
18K	115/208/230-1	115V: 4.4A (208/230V: 2.5A)	115V: 5.5A (208/230V: 3.5A)	14#	15.0
24K		115V: 4.4A (208/230V: 2.5A)	115V: 5.5A(208/230V: 3.5A)	14#	15.0
30K		115V: 6.4A (208/230V: 4.5A)	115V: 8.0A(208/230V: 6.0A)	14#	15.0
36K		115V: 6.4A (208/230V: 4.5A)	115V: 8.0A (208/230V: 6.0A)	14#	15.0
48K		115V: 11.5A (208/230V: 8.0A)	115V: 14.5A (208/230V: 10.0A)	14#	15.0
60K		115V: 11.5A (208/230V: 8.0A)	115V: 14.5A (208/230V: 10.0A)	14#	15.0

NOTES: The specification may be different between different models, refer to indoor unit's nameplate. Choose the cable type according to the local electrical codes and regulations. Select the right cable size according to the Minimum Circuit Ampacity indicated on the nameplate of the unit. 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). 115V applications cannot use electric heat. Single Point Power is not allowed between the indoor and electrical heater.

Table 17 — Selection of Available Sizes

		Heater Unit Models					
Outdoor Unit Model	Indoor Unit Models	EHKMD05KN	EHKMD08KN	10kWEHKMD10KN	EHKMD15KN	EHKMD20KN	EHKMD25KN
37MUHAQ18AA3	45MUHAQ24XX3	Y	Y	Y	-	-	-
37MUHAQ24AA3		Y	Y	Y	Y	-	-
37MUHAQ30AA3	45MUHAQ36XX3	Y	Y	Y	Y	-	-
37MUHAQ36AA3		Y	Y	Y	Y	Y	-
37MUHAQ48AA3	45MUHAQ60XX3	-	Y	Y	Y	Y	-
37MUHAQ60AA3		-	-	Y	Y	Y	Y

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

NOTE: This heater cannot be powered from a 115 volt circuit. Separate 208/230 volt power must be supplied to the electric heaters for 115 volt applications.

NOTE: If the unit needs to be equipped with the electric auxiliary heat module, check the electric auxiliary heat module specification that is compatible with the unit to avoid unnecessary consequences caused by improper matching and refer to the Product Data manual.

WIRELESS REMOTE CONTROLLER INSTALLATION

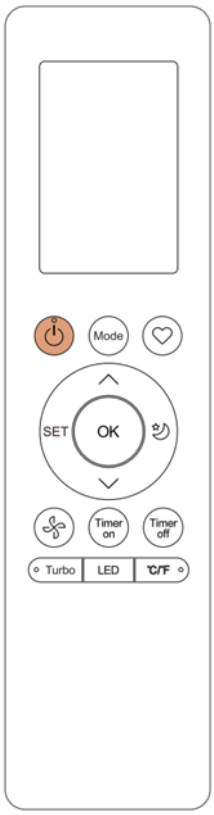


Fig. 22 — Wireless Remote Controller (RG10F8(2)/ BGEFU1)

To attach the mounting bracket:

1. Use the two screws supplied with the wireless remote control to attach the mounting bracket to the wall in a location selected by the customer and within operating range.
2. Install the batteries in the remote control.
3. Place the remote control into the remote control mounting bracket.

NOTE: For remote control operation, refer to the remote control's owners manual.

OPTIONAL WIRED WALL-MOUNTED REMOTE CONTROL INSTALLATION

The wired remote controller comes with the following items:

- A set of installation instructions and owner's manuals
- 3 M4X20 Screws to mount on the wall
- 4 wall plugs to mount on the wall
- 2 M4X25 to mount on switch box
- 2 plastic screw bars to fix on switch box
- 1 set of batteries

1 set of connecting wires to connect to indoor unit's main board



Fig. 23 — Wired Controller

For wired controller set up and installation instructions, consult the wired controller installation manual.

WIRING DIAGRAM

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

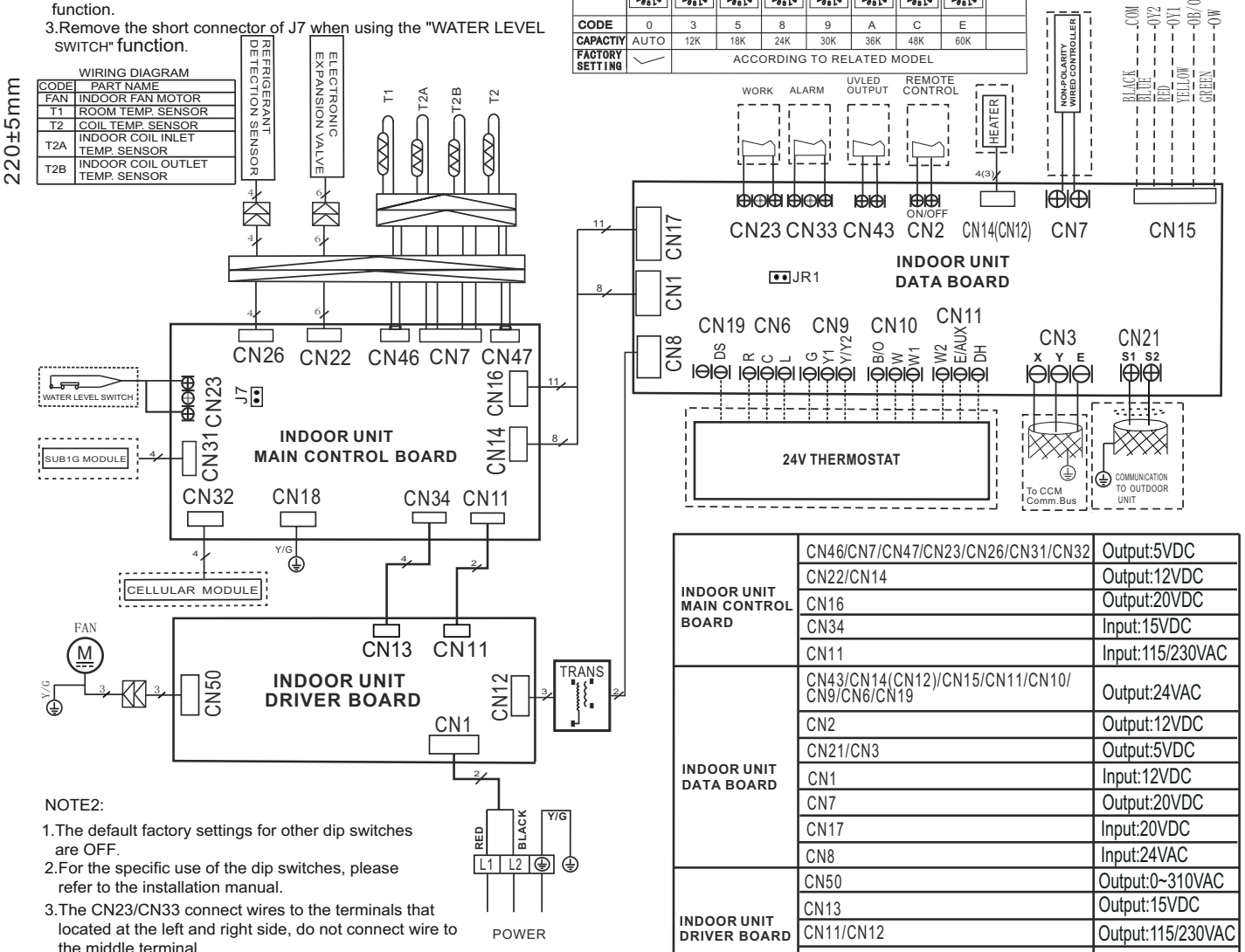
24V THERMOSTATS SETTING								
	S3	SW1	SW2	SW3	SW4	S4	SW5	
CODE	0~F	ON~OFF	ON~OFF	ON~OFF	ON~OFF	ON~OFF	ON~OFF	
FACTORY SETTING	✓	✓	✓	✓	✓	✓	✓	

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

NOTE1:
1.This symbol indicates the element is optional, the actual shape shall prevail.
2.Remove the short connector of JR1 when using the "ON-OFF" function.
3.Remove the short connector of J7 when using the "WATER LEVEL SWITCH" function.

220±5mm

WIRING DIAGRAM	
CODE	PART NAME
FAN	INDOOR FAN MOTOR
T1	ROOM TEMP. SENSOR
T2	COIL TEMP. SENSOR
T2A	INDOOR COIL INLET TEMP. SENSOR
T2B	INDOOR COIL OUTLET TEMP. SENSOR



INDOOR UNIT MAIN CONTROL BOARD	CN46/CN7/CN47/CN23/CN26/CN31/CN32	Output:5VDC
	CN22/CN14	Output:12VDC
	CN16	Output:20VDC
	CN34	Input:15VDC
	CN11	Input:115/230VAC
INDOOR UNIT DATA BOARD	CN43/CN14(CN12)/CN15/CN11/CN10/ CN9/CN6/CN19	Output:24VAC
	CN2	Output:12VDC
	CN21/CN3	Output:5VDC
	CN1	Input:12VDC
	CN7	Output:20VDC
	CN17	Input:20VDC
	CN8	Input:24VAC
INDOOR UNIT DRIVER BOARD	CN50	Output:0~310VAC
	CN13	Output:15VDC
	CN11/CN12	Output:115/230VAC
	CN1	Input:115/230VAC

NOTE2:
1.The default factory settings for other dip switches are OFF.
2.For the specific use of the dip switches, please refer to the installation manual.
3.The CN23/CN33 connect wires to the terminals that located at the left and right side, do not connect wire to the middle terminal.
4.Terminal block wiring. When using 208V or 230V, connect L1 and L2. When using 115V, connect L1 and L2 (L2 is used as N).

Fig. 23 — Wiring Diagram (For All Sizes)

Capacity Settings

24K(18K) AHU3

ENC1 Dip Switch Instruction for Capacity Change
ENC1 dip switch is used for capacity change.

When matching with 37MUHA single zone condensers S1 S2 communication, the indoor unit will automatically adjust to 18,000 BTU/H or 24,000 BTU/ according to condensers capacity.

When matching with 37MUHA single zone condensers 24V communication, it needs to set the ENC1.
Change the capacity of indoor unit to 18,000 BTU/H by adjusting the dip switch ENC1 from “0” to “5”. Change the capacity of indoor unit to 24,000 BTU/H by adjusting the dip switch ENC1 from “0” to “8”.

Power needs to be OFF BEFORE DIP SWITCH adjustment.


(Default setting “0”)


(Dip switch change to be “5” for 18,000BTU/H)


(Default setting “0”)


(Dip switch change to be “8” for 24,000BTU/H)

36K(30K) AHU3

ENC1 Dip Switch Instruction for Capacity Change
ENC1 dip switch is used for capacity change.

When matching with 37MUHA single zone condensers S1 S2 communication, the indoor unit will automatically adjust to 30,000 BTU/H or 36,000 BTU/ according to condensers capacity.

When matching with 37MUHA single zone condensers 24V communication it needs to set the ENC1. Change
the capacity of indoor unit to 30,000 BTU/H by adjusting the dip switch ENC1 from “0” to “9”. Change the capacity of indoor unit to 36,000 BTU/H by adjusting the dip switch ENC1 from “0” to “A”.

Power needs to be OFF BEFORE DIP SWITCH adjustment.


(Default setting “0”)


(Dip switch change to be “9” for 30,000BTU/H)


(Default setting “0”)


(Dip switch change to be “A” for 36,000BTU/H)

60K(48K) AHU3

ENC1 Dip Switch Instruction for Capacity Change
ENC1 dip switch is used for capacity change.

When matching with 37MUHA single zone condensers S1 S2 communication, the indoor unit will automatically adjust to 48,000 BTU/H or 60,000 BTU/ according to condensers capacity.

When matching with 37MUHA single zone condensers 24V communication, it needs to set the ENC1.
Change the capacity of indoor unit to 48,000 BTU/H by adjusting the dip switch ENC1 from “0” to “C”. Change the capacity of indoor unit to 60,000 BTU/H by adjusting the dip switch ENC1 from “0” to “E”.

Power needs to be OFF BEFORE DIP SWITCH adjustment.


(Default setting “0”)


(Dip switch change to be “C” for 48,000BTU/H)


(Default setting “0”)


(Dip switch change to be “E” for 60,000BTU/H)

Fig. 24 —Capacity Settings

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 on. After turning o 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

Failure to follow this warning could result in product damage, personal injury, or death.

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

Wiring Overview

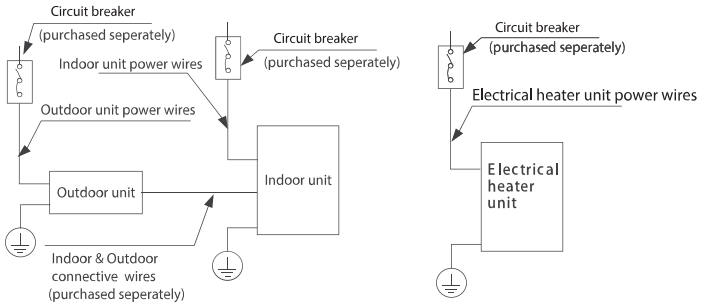


Fig. 25 — Wiring Overview

NOTE: Wiring overview is for general explanation only. Your unit may be slightly different. The actual diagram should prevail.

OUTDOOR UNIT WIRING

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 stranded wire requires u-lugs or ring terminals to be crimped onto the ends of the wire.
- 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 electrical 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.

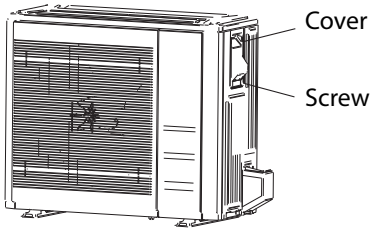


Fig. 26 — Remove Electrical Cover

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.

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

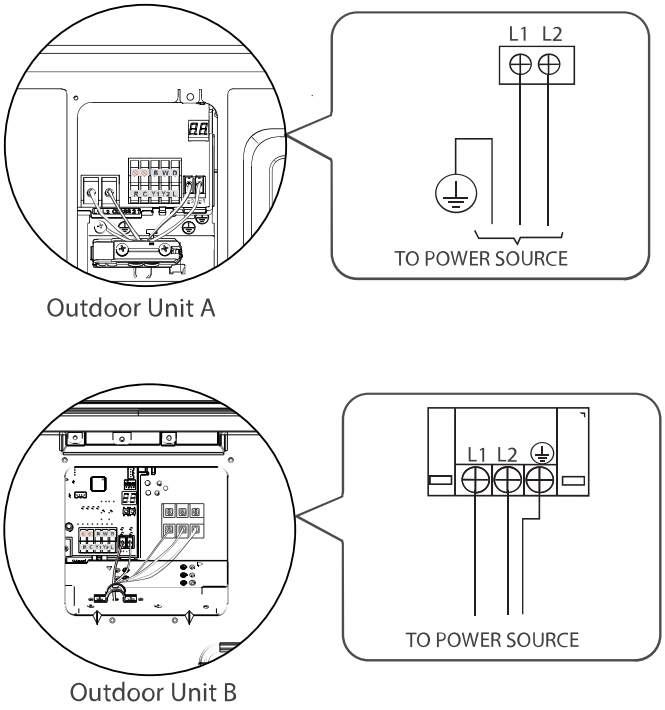


Fig. 27 — Connect U-Lugs to Terminals

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

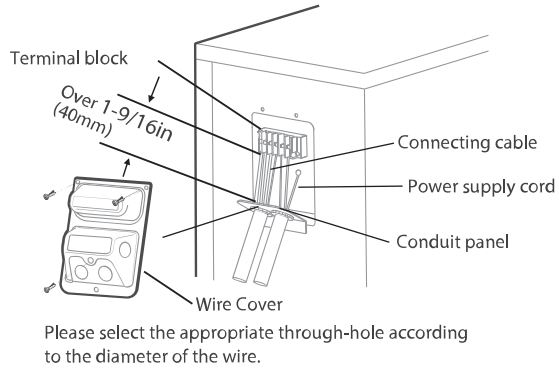


Fig. 28 — Typical Wiring

IMPORTANT: Isolate the power supply leads and communication leads by the strain relief and keep power supply leads away from communication leads.

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 5.9in(150mm) of the wire.
2. Strip the insulation from the ends of the wires.

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

Use a screwdriver, remove the cover of the electric control box on the 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).

NOTE: The board will automatically detect input voltage.

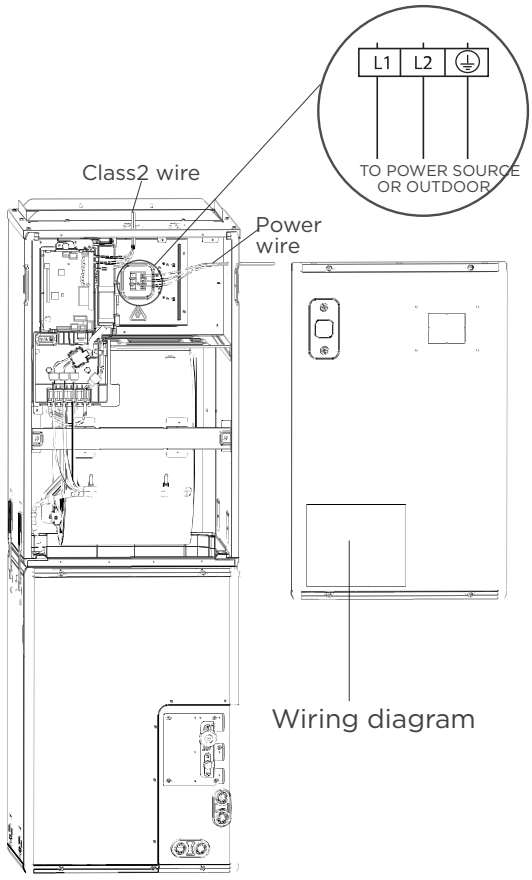


Fig. 29 — Connect the wires to the terminals

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

⚠ CAUTION

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

SPECIFY WIRING METHODS

⚠ WARNING

Please refer to the wiring nameplate for the wiring method. Do not connect 24VAC to S1 - S2, as this will damage the system.

Scenario 1:

This is the preferred method of control. This allows a 24V thermostat to be used with the RS485 communication between the indoor and outdoor units.

- None of the 24V outdoor terminals can be used for this scenario.
- The B terminal and W terminal should not be used together at the indoor unit.
- W should only be used with a conventional thermostat for the heat demand at the indoor unit.
- DS is a reserve Terminal.

To use a 24V thermostat, Refer to Figure 30.

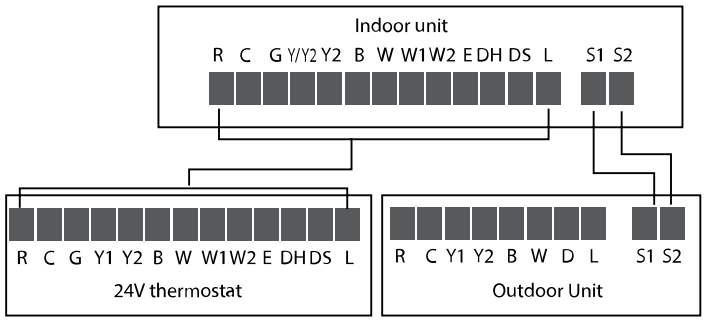


Fig. 30 — Scenario 1

Scenario 2 (Default)

This allows the 1401 wired controller to be used with RS485 communication between indoor and outdoor units.

- None of the 24 volt terminals at the air handler or outdoor unit can be used for this scenario
- Using the 1401 wired controller allows for the system to be fully communicating.
- Refer to the 1401 wired controller Owner's Manual for wired controller operating information.

Refer to the wiring method of indoor and outdoor unit communication and wired controller as follows:

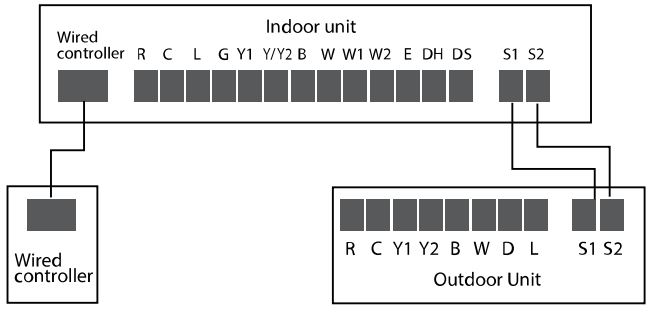


Fig. 31 — Scenario 2 (Default)

Scenario 3

This allows a 24 volt thermostat to be used with 24 volt communication between the indoor and outdoor units. Some communication features will not be available with this method.

NOTE: This equipment energizes the reversing valve in heat. Ensure that the B terminal is configured at the thermostat for heat.

NOTE: This method can be used for a 37MUHA outdoor unit and a third party indoor unit or cased coil and gas furnace.

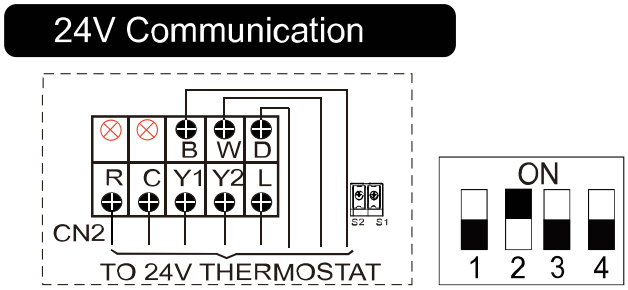


Fig. 32 — Scenario 3 – Wiring to the Outdoor Unit

NOTE: DIP switch 2 in the outdoor unit must be turned on for Scenario 3 only. Leave off for the other 2 scenarios.

NOTE: The 24 volt wire terminals in the outdoor unit should only be used for Scenario 3. S1 and S2 should only be used for Scenarios 1 and 2.

24V must never be connected to S1 – S2. All wiring must be in compliance with the above scenarios. Incorrect wiring can damage the outdoor and indoor control boards.

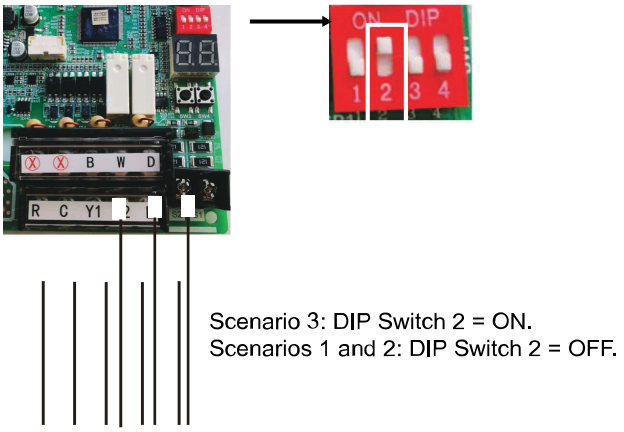


Fig. 33 — 24V Connection (Scenario 1) Dip Switch Settings

The SW3 button is not active.

SW4 button should be used for point check inquiry and forced defrost.

NOTE: The use of shielded communication or thermostat wire is not required, but is recommended where separation from high voltage conductors can not be maintained, or in areas with high electrical noise. The shield must be grounded at the outdoor unit and stripped back and taped at the indoor unit. Grounding at both ends results in an increase of noise transmitted onto the signal wires.

Outdoor Unit Dip Switch Setting

Press the SW4 button 10S for force defrosting (the SW3 button is not active).

NOTE: Forced defrost should only be used to test defrost. All defrost termination conditions affect the length of time forced defrost is active.

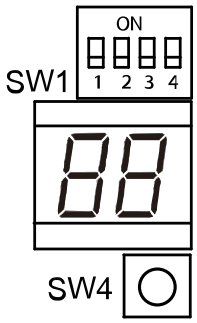


Fig. 34 — Outdoor Unit Dip Switch

Table 18 — Outdoor Unit Dip Switch

NO	DIAL CODE	FEATURES	ON	OFF
1	SW-1	Function to be defined	N/A	N/A
2	SW-2	Communication method code	24V communication (scenario 3 only)	RS 485 communication (scenarios 1 and 2 only)
3	SW-3	Recovery time enhancement (scenario 3 only)	Increases compressor frequency for quicker recovery to set point	Default settings for scenarios 1 and 2
4	SW-4	Enhanced defrosting function (all 3 scenarios)	Enhanced defrosting	Default setting (standard defrost algorithm)

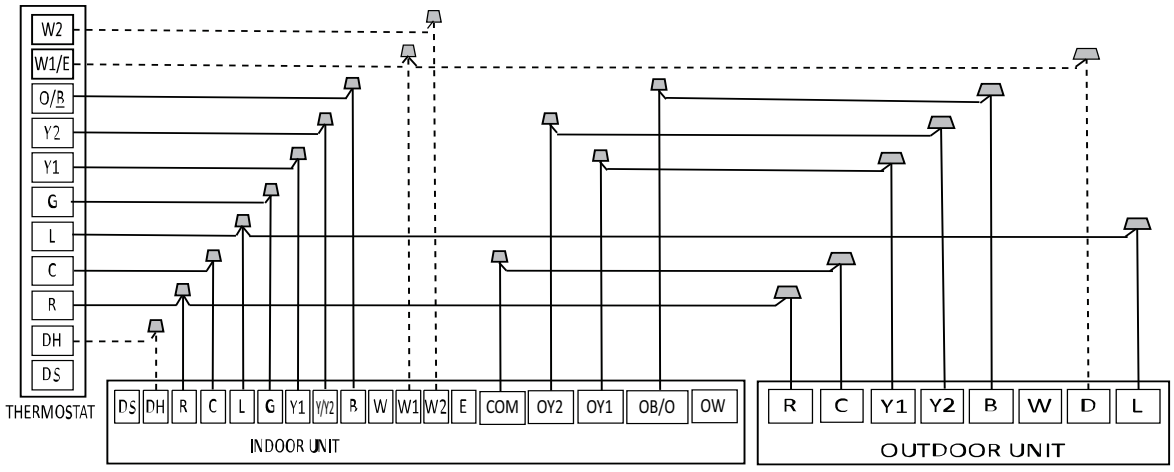
NOTE: SW4 is the button for forced defrosting, and it is active for all three scenarios.

NOTE: When the SW1-4 is ON, the outdoor unit will have enhanced defrosting function.

If the enhanced defrosting is activated, defrost will be active after 40 minutes of compressor cumulative run time in heat mode.

If standard defrosting is activated, defrost will be active after 90 minutes of compressor cumulative run time in heat mode.

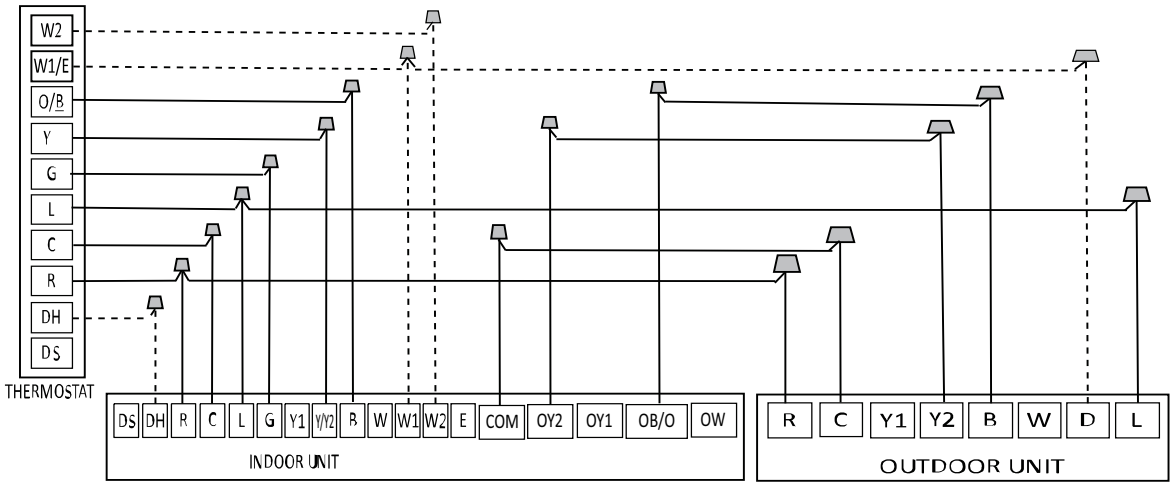
Thermostat Wiring



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.

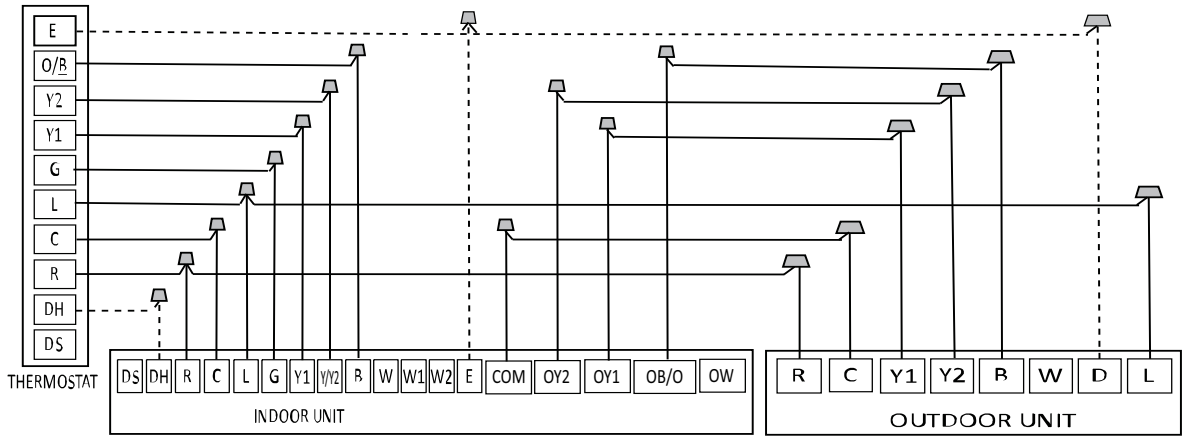
Fig. 35 — Wiring for 4H and 2C Thermostat



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.

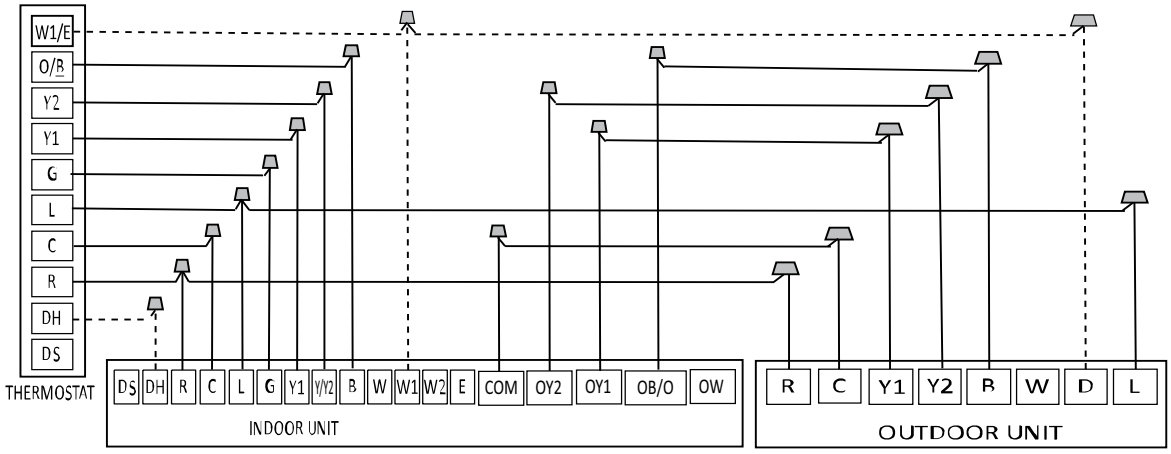
Fig. 36 — Wiring for 3H and 1C Thermostat



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

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

Fig. 37 — 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.

Fig. 38 — Wiring for 3H and 2C Thermostat

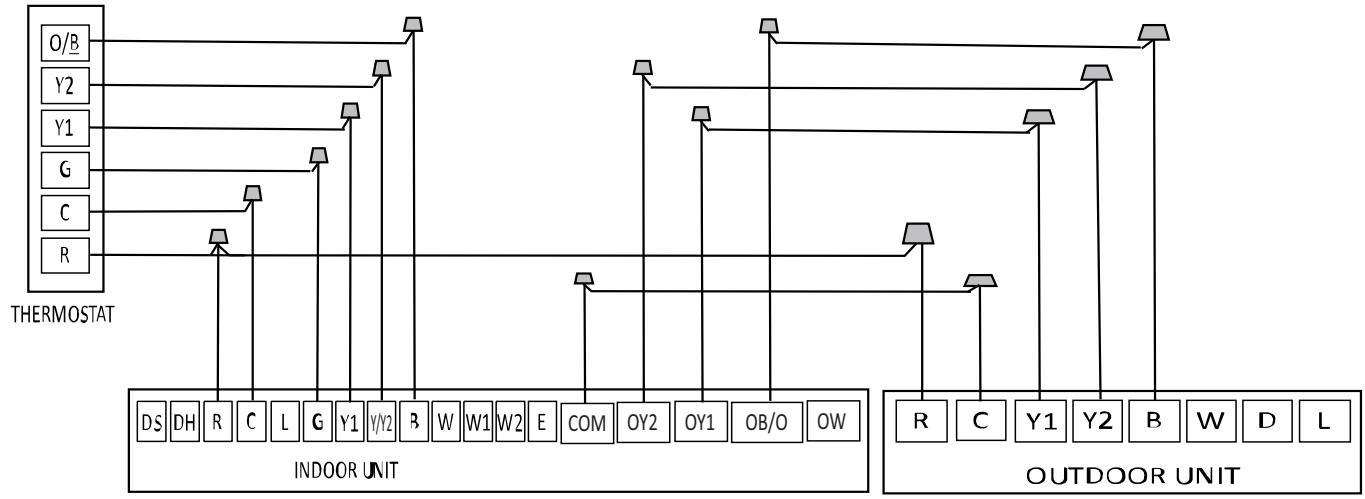
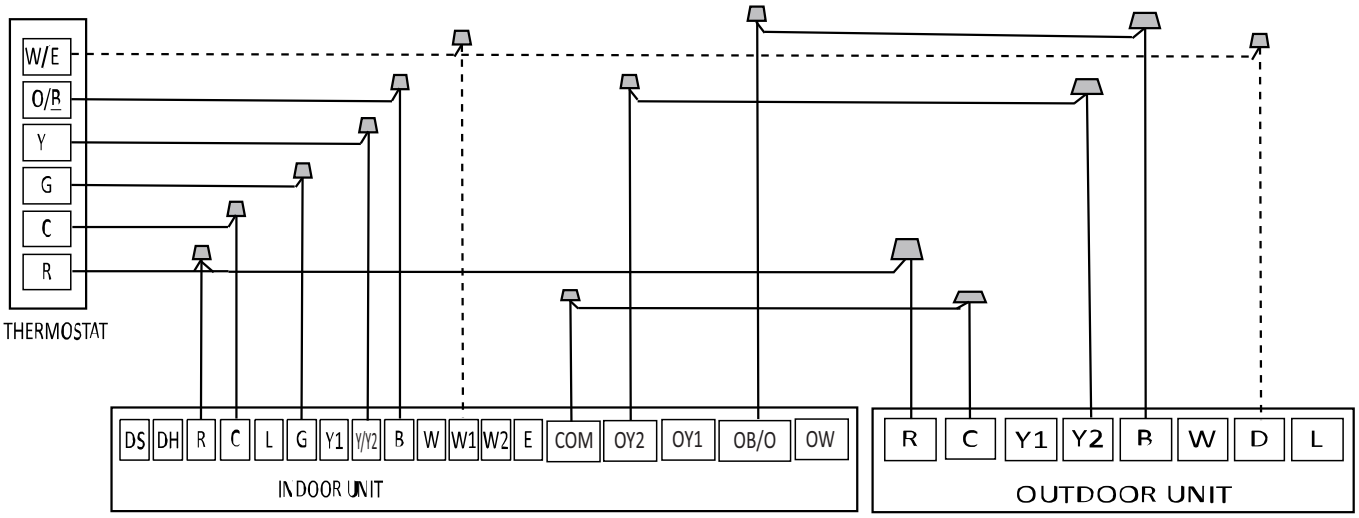


Fig. 39 — Wiring for 2H and 2C Thermostat



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

Fig. 40 — Wiring for 2H and 1C Thermostat

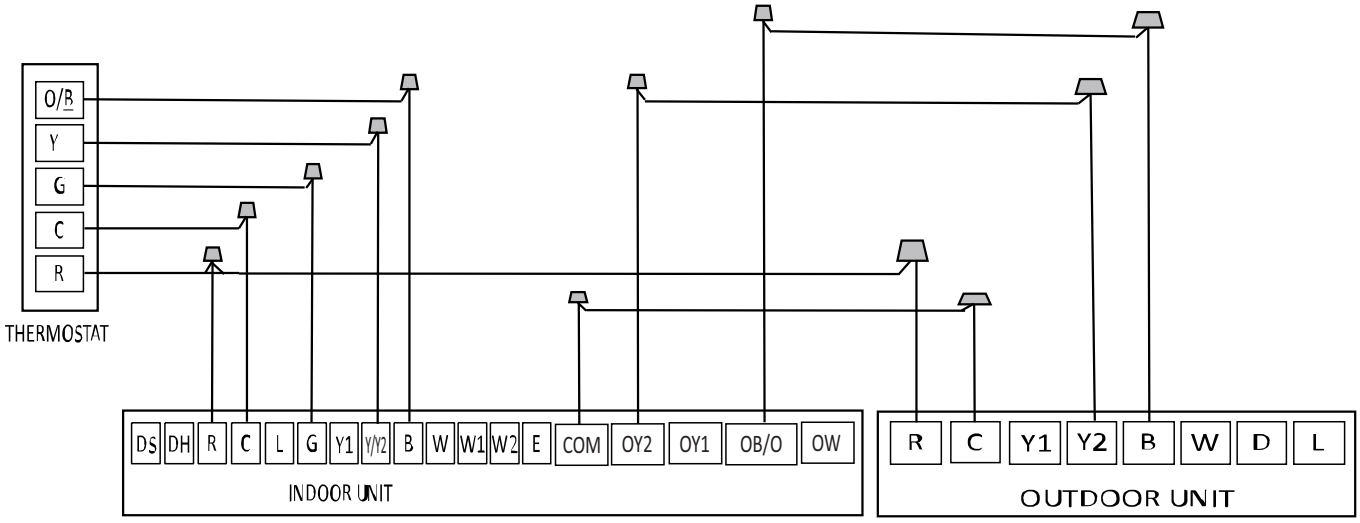


Fig. 41 — Wiring for 1H and 1C Thermostat

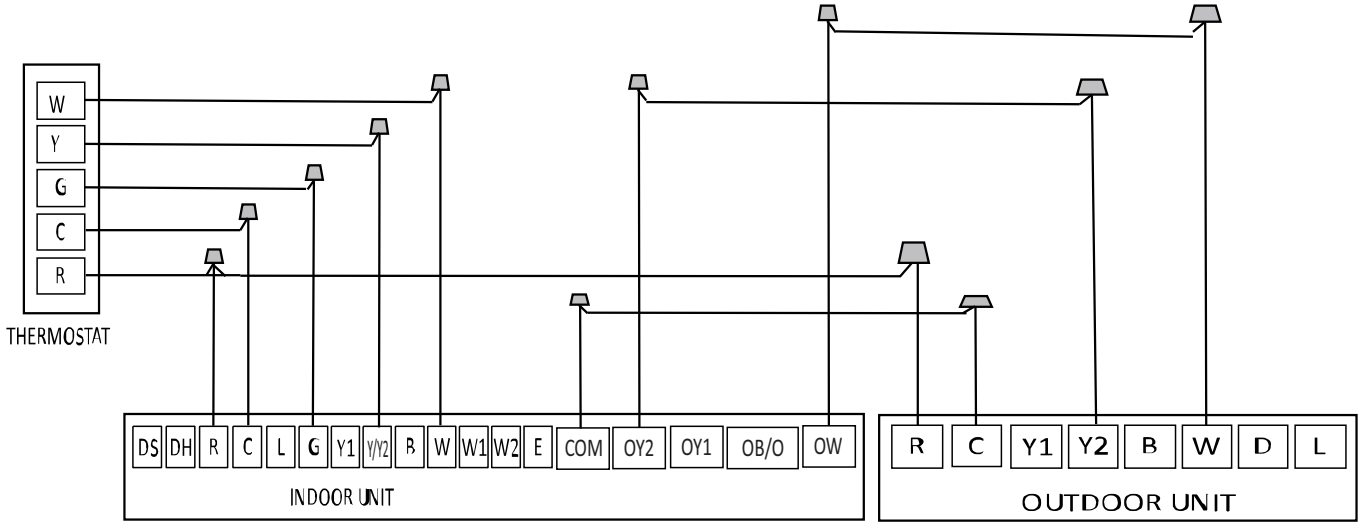
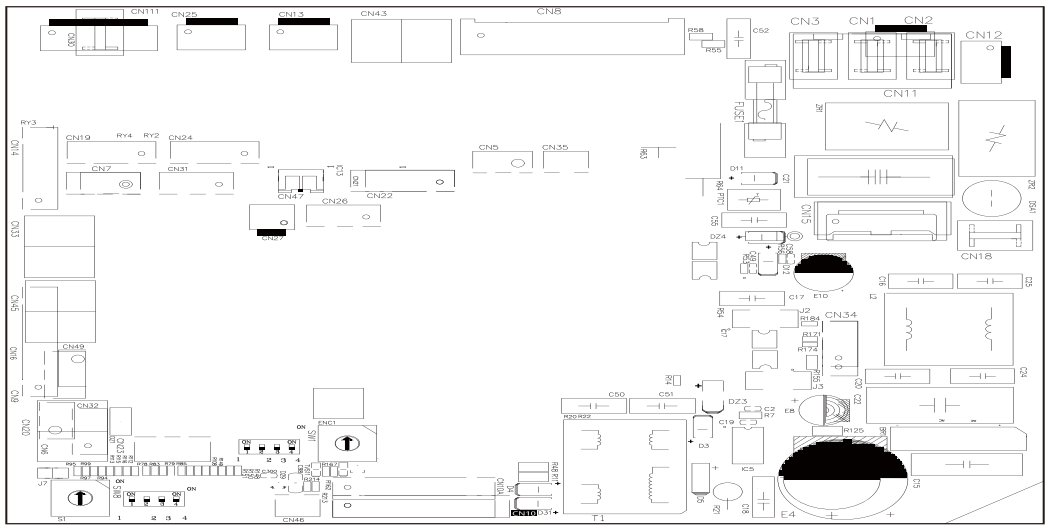


Fig. 42 — Wiring for 1H and 1C Thermostat

Optional function wiring



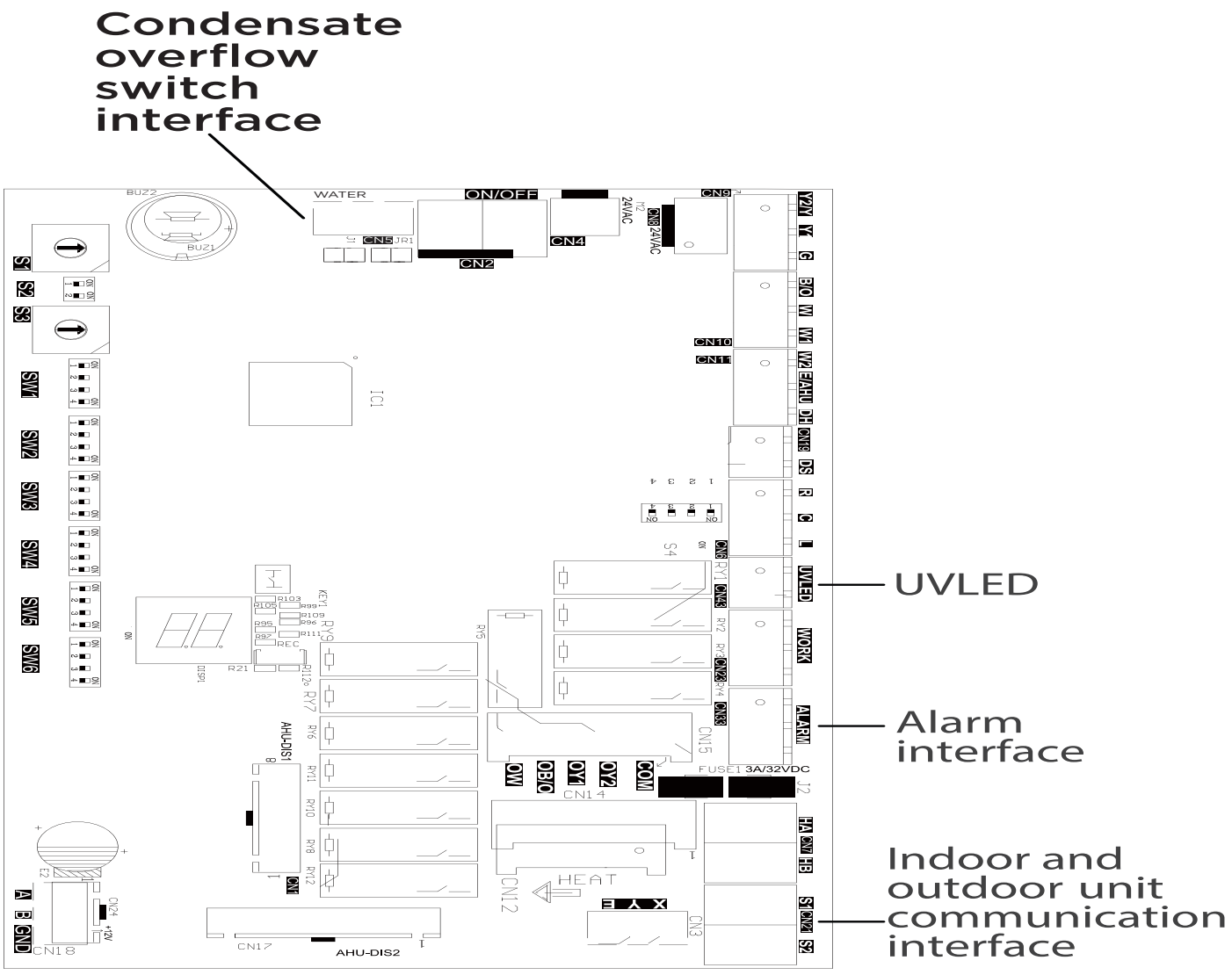
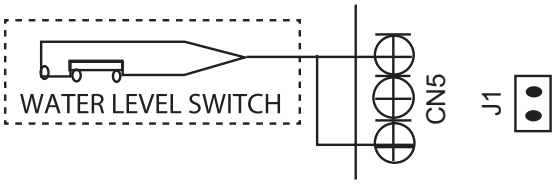


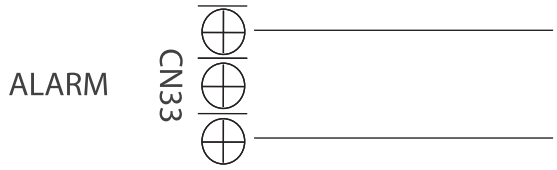
Fig. 43 —Optional Function Wiring

Condensate Overflow Switch

The unit will accommodate a remote condensate overflow switch. To enable, remove jumper J1, and connect the installer provided condensate overflow device to CN5 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 allows power to the humidifier when the humidistat is below humidity setpoint. If the thermostat has an HUM interface, connect the humidifier directly to the HUM and C ports.

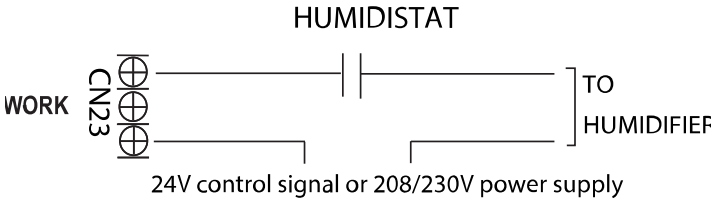


Fig. 44 — Humidistat

UV, Fresh Air or ION Generator Wiring

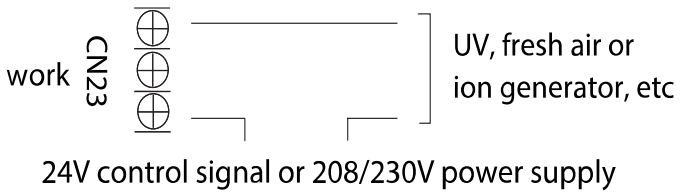


Fig. 45 — UV, Fresh Air, or Ion Generator Wiring

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

Control Logic

Table 19 — 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	State 2 Electric Heating
E/AUX	Emergency Heating
DH/BK	Dehumidification / Zoning Control
DS	Reserved Signal
L	System Fault Signal

Table 20 — 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 displays the current temperature setpoint. When a fault code is active, the display flashes quickly the active fault code. Refer to the fault code table located in the troubleshooting section of the manual for detailed fault code information.

Instructions (for Wired Controller only)

- Press 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 under forced cooling mode (LED display FC) 5s to enter forced defrost mode

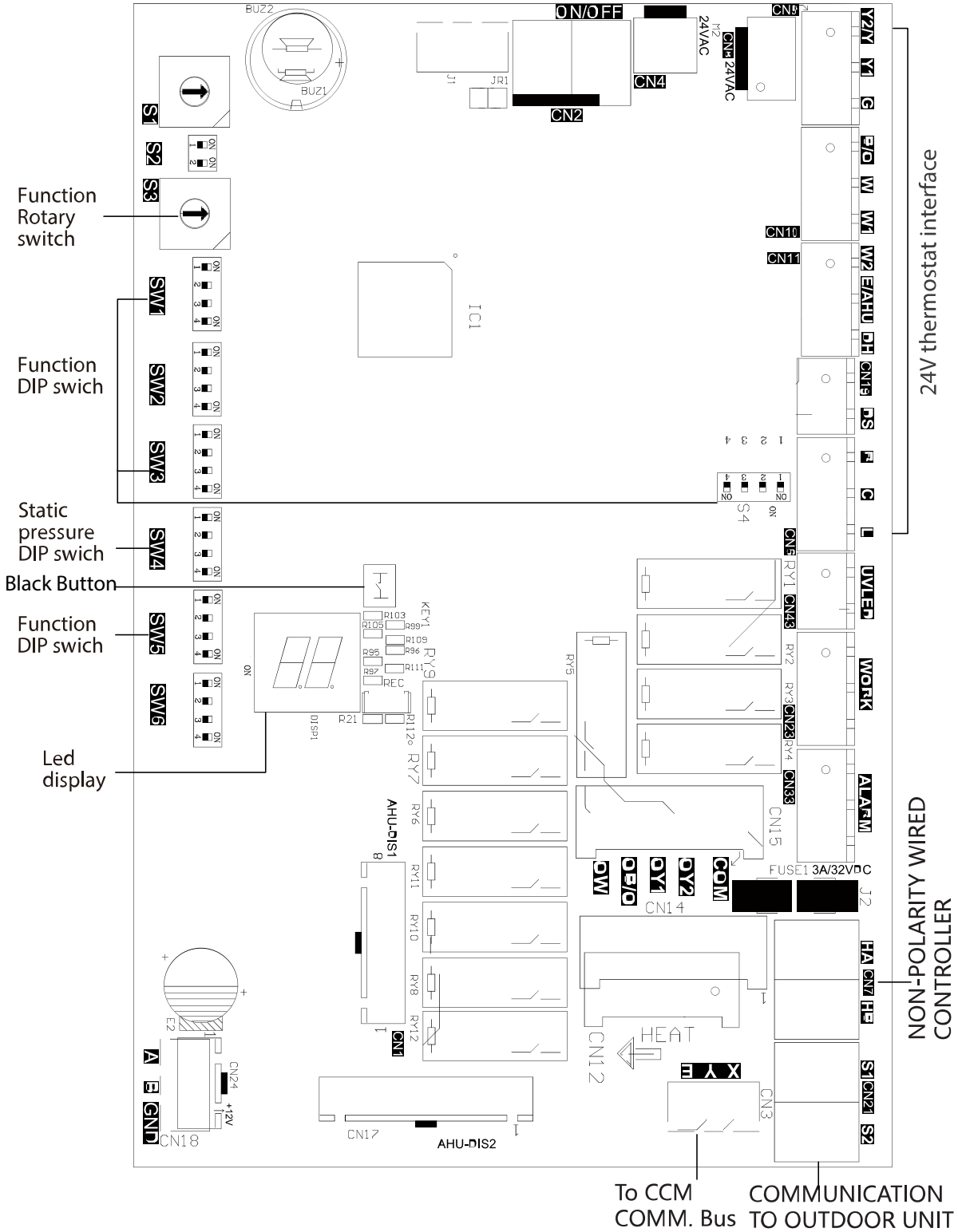
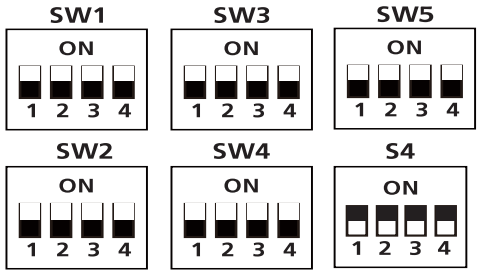


Fig. 46 — DIP Switch Definitions

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

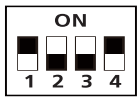
Function DIP switch settings:

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



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

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

SW1	Control type	IDU and ODU Connection	Note
	Wired controller / 24V thermostat	(S1+S2) / 24V connection	Auto Discovery
	Wired controller	S1+S2	Scenario 2
	24V Thermostat	S1+S2	Scenario 1 (no outdoor unit clean function[*])
	24V Thermostat	24V connection	Scenario 3

[*]: Outdoor unit clean function means reversing outdoor fan to blow away dust and other attachments on the fins

Fig. 47 — Function DIP Switch Settings

NOTE: Refer to Table 27 on page 47 for setting airflow for each heater.

Table 21 — Functions of SW1-1 and SW1-4

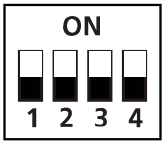
SW1	CONTROLLER TYPE	IDU AND ODU CONNECTION	NOTE
	Wired controller / 24V thermostat	(S1 + S2) / 24V connection	Auto Discovery
	Wired controller	S1 + S2	Scenario 2
	24V thermostat	S1 + S2	Scenario 1
	24V thermostat	24V connection	Scenario 3

Table 22 — Indoor Unit Dial Codes

NO	DIAL CODE	CONTROL SCENARIO	FUNCTION	ON	OFF	NOTE
1	SW1-2	1, 2, 3	Anti-cold blow protection option	NO	[Default] YES	
2	SW1-3	1, 2, 3	Single cooling / heating and cooling options	Cooling	[Default] Cooling & Heating	
3	SW2-1	1	Compressor Running (demand working with heat pump+ Electric heat)	Compressor slower speed	[Default] Faster Compressor	Only affects compressor and W1
4	SW2-1	2	Temperature differential to activate first stage auxiliary heat (the GAP of T1 and Ts), Wire controller demand with heat pump + electric heat working together	2°F (1°C)	[Default] 4°F (2°C)	
5	SW2-2	2	Electric heat on delay	YES	[Default] NO	
6	SW2-3	2	Electric auxiliary heating delay to start time	30 minutes	[Default] 15 minutes	Based on SW2-2 is ON
7	SW2-4	1	Compressor	The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited.The system makes judgments according to the following rules: 1) The compressor can be operated when the outdoor temperature is ≥S3 DIP switch temperature +2 °C. 2) The compressor cannot be operated when the outdoor temperature is lower than the S3 DIP switch temperature.	[Default] The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited. The system makes judgments based on the following rules: 1) The compressor cannot be operated when the outdoor temperature is lower than the S3 DIP switch. 2) The compressor can be operated when the outdoor temperature is ≥S3 DIP switch temperature +2 °C.	SW2-4 and S3 need to working together
8	SW2-4	2	Compressor/Auxiliary heat outdoor ambient lockout	The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited.The system makes judgments according to the following rules: 1) The compressor can be operated when the outdoor temperature is ≥S3 DIP switch temperature +2 °C. 2) The compressor cannot be operated when the outdoor temperature is lower than the S3 DIP switch temperature.	[Default] Only one heat pump or auxiliary heat can be operated.The system makes judgments according to the following rules: 1) When the outdoor temperature is lower than the S3 DIP switch temperature, the compressor is not allowed to operated, but auxiliary heat is allowed to operated; 2) When the outdoor temperature is ≥S3 DIP switch temperature +2(°C), the compressor can be operated, but auxiliary heat cannot be operated.	
9	Rotary Switch S3	1, 2	Set outdoor temperature Limitation (for auxiliary heating or compressor)	Table A		
10	SW3-1	1	Maximum continuous runtime allowed before system automatically stages up capacity to satisfy set point. This adds 1 to 5°F to the user set point in the calculated control point to increase capacity and satisfy user setpoint.	30 minutes	[Default] 90 minutes	
11	SW3-2	1	Cooling and heating Y/Y2 temperature differential adjustment.	Compressor slower speed	[Default] Faster Compressor	Only affects compressor
12	SW3-3	1	Compressor Running (demand working with heat pump+ Electric heat)	Compressor slower speed	[Default] Faster Compressor	Only affects compressor and W2
13	SW3-3	2	Temperature differential to activate second stage auxiliary heating (the GAP of T1 and Ts) Wire controller demand with heat pump + Electric heat working together	4°F (2°C)	[Default] 6°F (3°C)	
14	SW3-4	1, 3	Fan speed of cooling mode when 24V Thermostat is applied for.	Turbo	High	
15	SW4-1,2,3	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		
16	SW4-4	2	Temperature differential to activate third stage auxiliary heating (the GAP of T1 and Ts) Wire controller demand with heat pump + electric heat working together	6°F (3°C)	[Default] 8°F (4°C)	Only valid for product which has three stage auxiliary heating.
17	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.	
18	S4-2	1, 3	DH function selection	[Default] Dehumidification control not available	Dehumidification feature is enabled through thermostat	
19	SW5-3	1, 2, 3	L or Alarm relay selection	L output 24V or alarm relay close only when refrigerant sensor fault or R454B refrigerant leak detected	[default] L output 24V or alarm relay close when any fault detected	
20	SW5-4	1, 3	R output selection	R stops output 24V when R454B refrigerant leak detected	[default] R keeps output 24V even when R454B refrigerant leak detected	

Table 23 — Control Scenario

CONTROL SCENARIO	24V Tstat, S1 + S2	1
	Wired Controller S1 + S2	2
	Full 24V	3

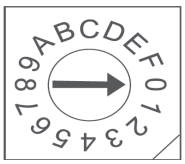


Fig. 48 — Address DIP Switch

Note: For Scenario 1 & Scenario 2, when the IDU paired with a single split outdoor unit, after power-on or recovery from IDU and ODU communication failure, the compressor in heating mode delays starting for 3 minutes.

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 24 — 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

Table 25 — Determined by Dial Code SW8 1-10K 2-5.1K

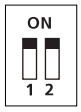
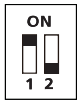
DIAL CODE SELECTION	WEBSITE ADDRESS
	S1 + 48
	S1 + 32
	S1 + 16
	S1

Table 26 — Outdoor Unit DIP Switch Settings

NO.	DIAL CODE	FEATURES	ON	OFF
1	SW1-1	Function to be defined		
2	SW1-2	Communication Dial Code	485 Communication Scheme	24V Communication Scheme
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)

Table 27 — Air Volume Table

Capacity	External Static Pressure Range	Fan speed	Electric auxiliary heat module	24V thermostat		Wired controller		Airflow volume (CFM)
				DIP Switch	24V terminal engaged	DIP Switch	Mode	
18K(1.5 Ton)	0 - 1.0 in.wc.	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	—	—	**B+Y1**	—	Heat	435
		Heat Pump Low	—	—	—	—	Heat	400
		Electric auxiliary heat module 0(Default)	10kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	882
		Electric auxiliary heat module 1	10kW, 8kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	624
		Electric auxiliary heat module 2	8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	594
		Electric auxiliary heat module 3	5kW, 3kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	565
24K(2 Ton)	0 - 1.0 in.wc.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	824
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	759
		Cooling Medium	—	—	Y1	—	Cool	694
		Cooling Low	—	—	—	—	Cool	629
		Heat Pump Turbo	—	—	—	—	Heat	788
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	753
		Heat Pump Medium	—	—	**B+Y1**	—	Heat	641
		Heat Pump Low	—	—	—	—	Heat	524
		Electric auxiliary heat module 0(Default)	15kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	988
		Electric auxiliary heat module 1	15kW, 10kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	841
		Electric auxiliary heat module 2	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	818
		Electric auxiliary heat module 3	5kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	788
30K(2.5 Ton)	0 - 1.0 in.wc.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	988
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	894
		Cooling Medium	—	—	Y1	—	Cool	806
		Cooling Low	—	—	—	—	Cool	712
		Heat Pump Turbo	—	—	—	—	Heat	988
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	894
		Heat Pump Medium	—	—	**B+Y1**	—	Heat	806
		Heat Pump Low	—	—	—	—	Heat	712
		Electric auxiliary heat module 0(Default)	15kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	1088
		Electric auxiliary heat module 1	15kW, 10kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	1029
		Electric auxiliary heat module 2	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	976
		Electric auxiliary heat module 3	5kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	918

Table 27 — Air Volume Table (continued)

Capacity	External Static Pressure Range	Fan Speed	Electric auxiliary heat module	24V thermostat		Wired controller		Airflow volume (CFM)
				DIP Switch	24V terminal engaged	DIP Switch	Mode	
36K (3 Ton)	0 - 1.0 in.wc.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	1235
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	1147
		Cooling Medium	—	—	Y1	—	Cool	1059
		Cooling Low	—	—	—	—	Cool	971
		Heat Pump Turbo	—	—	—	—	Heat	1235
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	1147
		Heat Pump Medium	—	—	Y1	—	Heat	1059
		Heat Pump Low	—	—	—	—	Heat	971
		Electric auxiliary heat module 0(Default)	20kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	1306
		Electric auxiliary heat module 1	15kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	1241
		Electric auxiliary heat module 2	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	1176
		Electric auxiliary heat module 3	5kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	1112
48K (4 Ton)	0 - 0.8 in.wc.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	1600
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	1441
		Cooling Medium	—	—	Y1	—	Cool	1265
		Cooling Low	—	—	—	—	Cool	1088
		Heat Pump Turbo	—	—	—	—	Heat	1471
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	1324
		Heat Pump Medium	—	—	Y1	—	Heat	1147
		Heat Pump Low	—	—	—	—	Heat	971
		Electric auxiliary heat module 0(Default)	20kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	1741
		Electric auxiliary heat module 1	15kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	1653
		Electric auxiliary heat module 2	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	1559
		Electric auxiliary heat module 3	8kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	1471
60K (5 Ton)	0 - 0.8 in.wc.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	1800
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	1647
		Cooling Medium	—	—	Y1	—	Cool	1500
		Cooling Low	—	—	—	—	Cool	1235
		Heat Pump Turbo	—	—	—	—	Heat	1682
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	1582
		Heat Pump Medium	—	—	B+Y1	—	Heat	1359
		Heat Pump Low	—	—	—	—	Heat	1047
		Electric auxiliary heat module 0(Default)	25kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	2171
		Electric auxiliary heat module 1	15kW, 20kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	2029
		Electric auxiliary heat module 2	10kW, 15kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	1894
		Electric auxiliary heat module 3	10kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	1753

NOTE: The constant airflow volume motor speed is applied, so the airflow volume is constant at all ESP within the stated range.

SETTING UP AIRFLOW AND STATIC PRESSURE

Accessing the INQUIRY Mode

CAUTION

Read and understand the function changes you wish to make in advance. Changes can only be made in the **SERVICE** mode, but to access **SERVICE** mode, the remote must be in the **INQUIRY** mode first. Refer to the Remote Controller Service Mode Set Up instructions to enable the **SERVICE** mode. Neither the indoor unit nor the remote control displays the new level of any of the changes made while in the **INQUIRY** mode. Be sure to document the changes you have made to the system's programming using the **INQUIRY** mode. Once you complete the changes and exit the **INQUIRY** mode, if additional changes are made to the programming, the system will not show the new previously set level(s).

For example, when you first access **CODE 22**, **Heating Temperature Compensation**, the remote control display defaults to **0**. If you change it to **-2,** then save and exit out of the **INQUIRY** mode, the next time someone goes back in and accesses **CODE 22**, the remote's display will not display **-2**. Instead the display will show **0** because that's the default. If you are unsure of the previous changes, due to a lack of documentation, you could press the **DOWN** symbol to the maximum change range of **-6**, then press the **UP** symbol until you are back to **0**, and make the new adjustments accordingly. Be sure to document the changes when you are done.

Simultaneously press **ON/OFF** and **FAN SPEED** for 8 seconds:

a. The remote is now in the **INQUIRY** mode.
b. The remote control remains in the **INQUIRY** mode for 1 minute if no other button is pressed.
c. While in the **INQUIRY** Mode, the remote display cancels all icons except **AUTO**, **COOL**, **DRY**, **HEAT** and **Battery Strength**.
d. The remote control digital display defaults to **0** upon entering the **INQUIRY** mode.
e. In the **INQUIRY** mode, each digital code (from 0 to 30) is accessed by pressing the **UP** or **DOWN** arrows.
f. The **INQUIRY** information appears on the high wall indoor unit display in approximately 1 second after accessing the digital code. Press **OK** to send as well.
g. In the **INQUIRY** mode, all other buttons and operations are invalid except for **UP**, **DOWN** and **OK** or the operation to exit the **INQUIRY** mode.

Remote Controller Service Mode Set Up

NOTE: While in the INQUIRY mode, refer to the following instructions to enter SERVICE mode for the applicable codes.

Below is a list of **INQUIRY** modes and serviceable functions.

a. Before using the remote's service functions, turn **OFF** the indoor unit with the remote.
b. Turn **OFF** the power to the outdoor unit for 2 minutes. Turn the power back **ON**.
c. Remove the batteries from the remote and wait for the remote screen to clear. Within 30 seconds of replacing the batteries, use **UP** or **DOWN** to scroll through the **INQUIRY** modes.
d. To enter the **SERVICE** mode for an applicable **INQUIRY** mode, press **ON/OFF** for 2 seconds.
e. After **SERVICE** adjustments have been made, press **ON/OFF** for 2 seconds to exit the **SERVICE** mode and return to the **INQUIRY** mode.
f. Once operations in the **INQUIRY** mode are complete, press **ON/OFF** and **FAN SPEED** for 2 seconds to exit. All buttons on the remote controller are disabled for 60 seconds.

NOTE: To ensure changes are locked, power down the outdoor unit for three (3) minutes after all the service mode changes are made.

AIR EVACUATION

NOTE: When opening the valve stems, turn the hexagonal wrench until it hits 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 micron gauge reads 500 Microns (67 Pa)

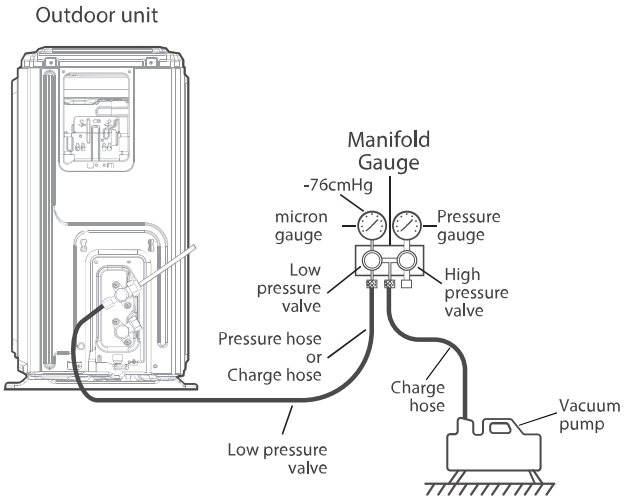


Fig. 49 — Evacuation Setup

6. Close the Low Pressure side of the manifold gauge, and turn o 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.

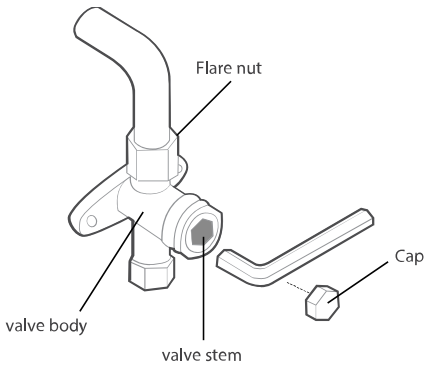


Fig. 50 — Stop Valve

12. Open the stop valves of the outdoor unit to start the flow of the refrigerant between the indoor and outdoor unit. 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.

Adding Refrigerant

IMPORTANT: Do not mix refrigerant types. Equipment damage will occur.

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:

Table 28 — Additional Refrigerant

	LIQUID SIDE DIAMETER
	3/8 in. (9.52 mm)
R-454B: (tube in indoor unit)	(total pipe length - std pipe length) x 65 g/m (0.7oz/ft)

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 after the unit begins to drain depending on the drainpipe.
   d. Make sure that there are no leaks in any of the piping.
   e. Stop the air conditioner. Turn off the main power switch and reinstall the test cover.

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

Table 29 — 24V Signal Chart (Heating and Cooling)

		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	
Electric auxiliary heat module 1	3	*	0	0	*	0	1	0	0	*	Turbo	08
Electric auxiliary heat module 2		*	0	0	*	0	0	1	0	*	Turbo	
Electric auxiliary heat module 1 and 2		*	0	0	*	0	1	1	0	*	Turbo	09
Heat pump stage 1 + Electric auxiliary heat module 1	4	*	1	0	1	0	1	0	0	1	Turbo	10
Heat pump stage 1 + Electric auxiliary heat module 2		*	1	0	1	0	0	1	0	1	Turbo	
Heat pump stage 2 + Electric auxiliary heat module 1		*	*	1	1	0	1	0	0	1	Turbo	
Heat pump stage 2 + Electric auxiliary heat module 1		*	*	*	*	1	1	0	0	1	Turbo	
Heat pump stage 2 + Electric auxiliary heat module 2		*	*	1	1	0	0	1	0	1	Turbo	
Heat pump stage 2 + Electric auxiliary heat module 2		*	*	*	*	1	0	1	0	1	Turbo	
Heat pump stage 1 + Electric auxiliary heat module 1 and 2		*	1	0	1	0	1	1	0	1	Turbo	11
Heat pump stage 2 + Electric auxiliary heat module 1 and 2		*	*	1	1	0	1	1	0	1	Turbo	
Heat pump stage 2 + Electric auxiliary heat module 1 and 2		*	*	*	*	1	1	1	0	1	Turbo	
Emergency heat	1	*	*	*	*	*	*	*	1	*	Turbo	12

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

Table 1 —24V Signal Chart (Cooling Only)

		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
OFF	5	*	1	0	1	0	0	0	0	*	OFF	00
OFF		*	*	1	1	0	0	0	0	*	OFF	
OFF		*	*	*	*	1	0	0	0	*	OFF	
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	
EMERGENCY HEAT	4	*	1	0	1	0	1	0	0	*	Turbo	
EMERGENCY HEAT		*	1	0	1	0	0	1	0	*	Turbo	
EMERGENCY HEAT		*	*	1	1	0	1	0	0	*	Turbo	
EMERGENCY HEAT		*	*	*	*	1	1	0	0	*	Turbo	
EMERGENCY HEAT		*	*	1	1	0	0	1	0	*	Turbo	
EMERGENCY HEAT		*	*	*	*	1	0	1	0	*	Turbo	
EMERGENCY HEAT		*	1	0	1	0	1	1	0	*	Turbo	
EMERGENCY HEAT		*	*	1	1	0	1	1	0	*	Turbo	
EMERGENCY HEAT		*	*	*	*	1	1	1	0	*	Turbo	
EMERGENCY HEAT	1	*	*	*	*	*	*	*	1	*	Turbo	

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

TROUBLESHOOTING

Table 2 — Error Codes

DISPLAY	MALFUNCTION AND PROTECTION INDICATION
EC07	ODU fan speed out of control
EC0d	ODU malfunction
EC51	ODU EEPROM parameter error
EC52	ODU coil temp sensor error
EC53	ODU ambient temp sensor error
EC54	COMP. discharge temp sensor error
EC5b	IDU coil outlet temp sensor error
ECC1	Other IDU refrigerant sensor detects leakage (multi-zone)
EH00	IDU EEPROM malfunction
EH03	IDU fan speed out of control
EH0A	IDU EEPROM parameter error
EH0b	IDU main control and display boards communication error
EH0E	Water-level alarm malfunction
EH3A	External fan DC bus voltage is too low protection
EH3b	External fan DC bus voltage is too high fault
EH60	IDU room temp. sensor (T1) error
EH61	IDU coil temp. sensor (T2) error
EH62/ EH66	Evaporator coil inlet temp. sensor (T2B) is in open circuit or short circuit
EH65	Evaporator coil inlet temp. sensor (T2A) is in open circuit or short circuit
EHbA	Communication error between indoor unit and external fan module
EHb3	Communication malfunction between wire and master control
EHC1	Refrigerant sensor detects leakage
EHC2	Refrigerant sensor is out of range and leakage is detected
EHC3	Refrigerant sensor is out of range
EL01	IDU & ODU communication error
ELOC	System lacks refrigerant
EL16	Communication malfunction between adapter board and outdoor main board
FHCC	Refrigerant sensor error
FL09	Mismatch between the new and old platforms
PC00	ODU IPM module protection
PC01	ODU voltage protection
PC02	Compressor top (or IPM) temp. protection
PC03	Pressure protection (low or high pressure)
PC04	Inverter compressor drive error
PCOL	Low ambient temp. protection
----	IDUs mode conflict
NOTE: The digital tube will show DF in defrost mode and FC in forced cooling mode. DF and FC are not error codes.	

Table 3 — Refrigerant Leak Detection Error Codes

EHC1	Refrigerant Sensor detects a leak
EHC2	Working condition of the refrigerant sensor is out of range and a leak is detected

If **you receive one of the codes in Table 3, call a technician as soon as possible. No need to panic, the unit goes into TURBO mode until the error code clears. There is a "beeping" noise coming from the indoor unit, which is normal in this case.**

For additional diagnostic information, refer to the Service Manual.

COMMON ISSUES

Table 4 — Common Issues

ISSUE	POSSIBLE CAUSE
Unit does not turn on when pressing **ON/OFF**.	The Unit has a 3-minute protection feature that prevents the unit from overloading. The unit cannot be restarted within three minutes of being turned off.
The unit changes from **COOL/HEAT** mode to **FAN** mode	The unit may change its setting to prevent frost from forming on the unit. Once the temperature increases, the unit starts operating in the previously selected mode again. The set temperature has been reached, at which point the unit turns o the compressor. The unit continues operating when the temperature fluctuates again.
The indoor unit emits white mist	In humid regions, a large temperature difference between the room's air and the conditioned air can cause white mist.
Both the indoor and outdoor units emit white mist	When the unit restarts in **HEAT** mode after defrosting, white mist may be emitted due to moisture generated from the defrosting process.
The indoor unit makes noises	A rushing air sound may occur when the louver resets its position. A squeaking sound may occur after running the unit in **HEAT** mode due to expansion and contraction of the unit's plastic parts.
Both the indoor unit and outdoor unit make noises	Low hissing sound during operation: This is normal and is caused by refrigerant gas flowing through both indoor and outdoor units.
	Low hissing sound when the system starts, has just stopped running, or is defrosting: This noise is normal and is caused by the refrigerant gas stopping or changing direction.
	Squeaking sound: Normal expansion and contraction of plastic and metal parts caused by temperature changes during operation can cause squeaking noises.
The outdoor unit makes noises	The unit makes different sounds based on its current operating mode.
Dust is emitted from either the indoor or outdoor unit	The unit may accumulate dust during extended periods of non-use, which emits when the unit is turned on. This can be mitigated by covering the unit during long periods of inactivity.
The unit emits a bad odor	The unit may absorb odors from the environment (such as furniture, cooking, cigarettes, etc.) which emit during operations.
	The unit's filters have become moldy and should be cleaned.
The fan of the outdoor unit does not operate	During operation, the fan speed is controlled to optimize product operation.
Operation is erratic, unpredictable, or unit is unresponsive	Interference from cell phone towers and remote boosters may cause the unit to malfunction. In this case, try the following: • Disconnect the power, then reconnect. • Press **ON/OFF** on the remote control to restart operation.

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

⚠ CAUTION

When troubles occur, check the following points before contacting a repair company.

Table 5 — Common Issues

PROBLEM	POSSIBLE CAUSES	SOLUTION
Poor Cooling Performance	Temperature setting may be higher than ambient room temperature	Lower the temperature setting
	The heat exchanger on the indoor or outdoor unit is dirty	Use Clean function by remote control to clean the affected heat exchanger
	The air filter is dirty	Remove the filter and clean it according to instructions
	The air inlet or outlet of either unit is blocked	Turn the unit off, remove the obstruction and turn it back on
	Doors and windows are open	Make sure that all doors and windows are closed while operating the unit
	Excessive heat is generated by sunlight	Close windows and curtains during periods of high heat or bright sunshine
	Too many sources of heat in the room (people, computers, electronics, etc.)	Reduce amount of heat sources
	Low refrigerant due to leak or long-term use	Check for leaks, re-seal if necessary and top off refrigerant
	SILENCE function is activated (optional function)	**SILENCE** function can lower product performance by reducing operating frequency. Turn off **SILENCE** function.
The unit is not working	Power failure	Wait for the power to be restored
	The power is turned off	Turn on the power
	The fuse is burned out	Call service center to replace the fuse
	Remote control batteries are dead	Replace batteries
	The Unit's 3-minute protection has been activated	Wait three minutes after restarting the unit
	Timer Function is activated	Turn off Timer Function
The unit starts and stops frequently	There's too much or too little refrigerant in the system	Call a service center to check for leaks and recharge the system with refrigerant.
	Incompressible gas or moisture has entered the system.	Call a service center to evacuate and recharge the system with refrigerant
	The compressor is broken	Call a service center to replace the compressor
	The voltage is too high or too low	Install a manostat to regulate the voltage
Poor heating performance	The outdoor temperature is extremely low	Use auxiliary heating device
	Cold air is entering through doors and windows	Ensure all doors and windows are closed during use
	Low refrigerant due to leak or long-term use	Call service center to check for leaks, re-seal if necessary and top off refrigerant
Indicator lamps continue flashing	The unit may stop operation or continue to run safely. If the indicator lamps continue to flash or error codes appear, wait for about 10 minutes. The problem may resolve itself. If not, disconnect the power, then connect it again. Turn the unit on. If the problem persists, disconnect the power and contact your nearest customer service center.	
Error code appears and begins with the letters as the following in the window display of the indoor unit: E(x), P(x), F(x) EH(xx), EL(xx), EC(xx) PH(xx), PL(xx), PC(xx)		

NOTE: If your problem persists after performing the checks and diagnostics above, turn off your unit immediately and contact an authorized service center.

DUCTLESS START-UP CHECKLIST - Single Zone

Installation Data

Site Address:_____

City:_____ **State:**_____ **Zip Code:**_____

Installing Contractor:_____ **Contractor Contact #:** ( ) _____-_____

Job Name:_____ **Start-up Date:**_____

Distributor:_____

System Details

UNITS	MODEL NO.	SERIAL NO.	CONTROLLER
OUTDOOR UNIT			
INDOOR UNIT A			

Are the outdoor unit and indoor unit compatible? YES:_____ NO:_____

Wiring Electrical

Wire Size and Type Used? AWG:_____ TYPE:_____

Are there any breaks, splices, wire nuts or butt connectors between the outdoor unit and the indoor unit? YES:_____ NO:_____

Was the wiring from the outdoor unit port to the correct indoor unit verified? YES:_____ NO:_____

REMARKS:_____

_____

Voltage Check

Wiring: Single Zone

Outdoor Unit Disconnect	1(L1):GND		Outdoor Unit Terminal Block	1(L1):GND		**NOTES:**_____
	2(L2):GND			2(L2):GND		
	1(L1):L2(2)			1(L1):2(L2)		
Indoor Unit Voltage Check @ Outdoor Unit	1(L1):GND		Indoor Unit Voltage Check @ Indoor Unit	1(L1):GND		**NOTES:**_____
	2(L2):GND			2(L2):GND		
	1(L1):2(L2)			1(L1):2(L2)		
	2(L2):3(S)			2(L2):3(S)		

Outdoor Unit Disconnect	1(L1):GND		Outdoor Unit Terminal Block	1(L1):GND		**NOTES:**_____
	2(L2):GND			2(L2):GND		
	1(L1):L2(2)			1(L1):2(L2)		
Indoor Unit Voltage Check @ Outdoor Unit	1(L1):GND		Indoor Unit Voltage Check @ Indoor Unit	1(L1):GND		**NOTES:**_____
	2(L2):GND			2(L2):GND		
	1(L1):2(L2)			1(L1):2(L2)		
	2(L2):3(S)			2(L2):3(S)		

Ductless Start-Up Checklist (CONT)

Piping

Leak Check:
System held 500 psig (max. 550psi) for a minimum of 30 minutes using dry nitrogen. YES:_____ NO:_____

Evacuation Method:

- Was the Triple Evacuation Method used as outlined in the installation manual? YES:_____ NO:_____
- Was the Deep Vacuum Method used as outlined in the installation manual? YES:_____ NO:_____
- Did the System Hold 500 microns for 1 hour? YES:_____ NO:_____
- Does the line set match the diameter of the evaporator connections? YES:_____ NO:_____
- For Conventional Fan Coils, does the line set match the outdoor unit size? YES:_____ NO:_____

Single Zone Piping:
Has the liquid pipe length been measured and the additional charge calculated? Size:_____ Length:_____ Charge:_____

NOTES:

NOTE: Final Charge Amount must be recorded!

PORT	LIQUID SIZE		SUCTION SIZE		LENGTH	CHARGE	NOTES:_____
A							

Performance Check

For 1:1 Single Zone Systems: Adjust the set-point to create an operational call for the desired testing operation. Allow the system to run for a minimum of 10 min. and record the following details:

(Operational data recorded on applicable heads with the wireless remote controller's Point Check function)

UNIT	SET-POINT	MODE	T1	T2	T3	T4	Tb	Tp	Th	LA/Lr
A										

NOTE:

- T1 - Ambient Space Temperature Sensor
- T2 - IDU Coil Temperature Sensor
- T3 - Outdoor Coil Temperature Sensor
- T4 - Outdoor Ambient Temperature
- Tb - Suction Line Temperature @PMV
- Tp - Discharge Temperature Sensor
- Th - IPM Board Temperature
- LA/Lr - PMV Temperature

Error Codes

Were there any error codes present at start-up? YES:_____ NO:_____

		Notes:
Indoor Unit Error Code:		
Outdoor Unit Error Code:		
Wall Controller:		
24V Interface:		

Comments:

_____

_____

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