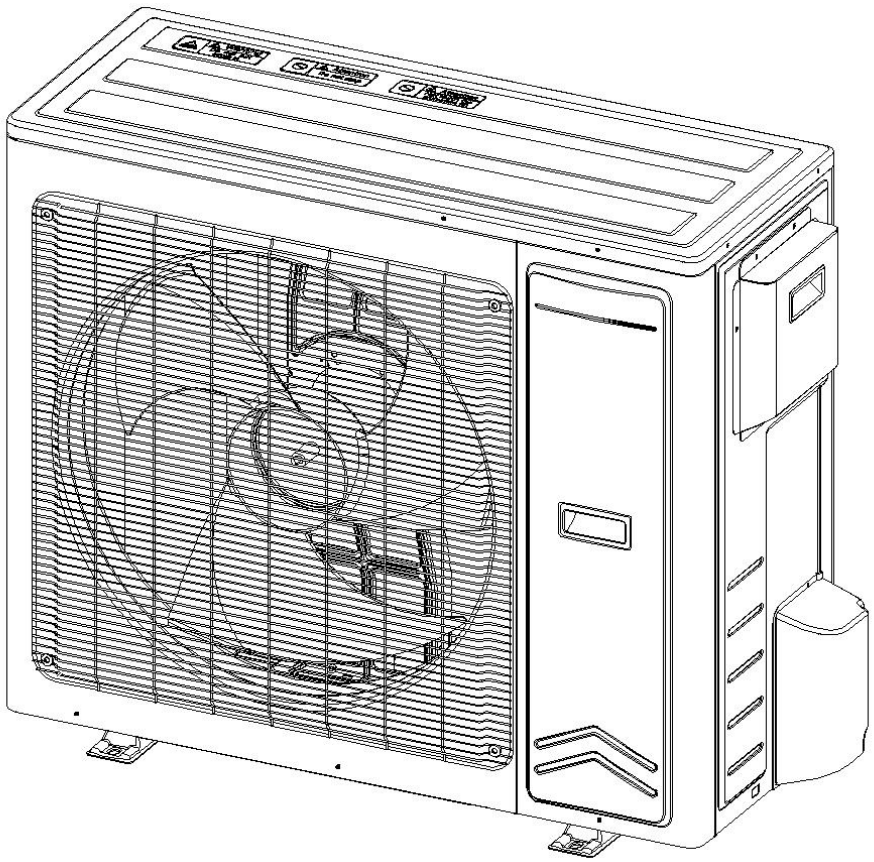
INSTALLATION MANUAL

Heat Pump Air Conditioner Outdoor Unit

UNIT MODEL

VUH24-VA6BA(O) **VUH36-VA6BA(O)**

VUH48-VA6BA(O) **VUH60-VA6BA(O)**



CANADIAN TECHNICAL EDITION · 5 NOVEMBER 2026

Zhuhai SAMYOU Environmental Technology Co., Ltd.

CONTENT

I Foreword 1
II Safety Precautions 3
1. Unit Introduction 13
1.1. Unit Pictures 13
1.1.1. Indoor unit 13
1.1.2. Outdoor unit 14
1.2. Unit Technical Data 15
1.2.1. Performance of Cooling 15
1.2.2. Performance of Heating 15
1.2.3. Energy Efficiency 16
1.2.4. Indoor Unit (Air Handler) Specification 16
1.2.5. Outdoor Unit Specification 16
1.2.6. Electrical Data 17
2. Installation Prepare 18
2.1. Main Parts and Refrigerant System Diagram 18
2.2. Installation Tools 18
2.3. Connecting Wires 18
2.4. Connection Pipes for Indoor and Outdoor Units 18
2.5. Other Installation Materials 19
2.6. Unit Installation Requirements 19
2.6.1. Unit Installation Space Requirements 19
2.6.2. Unit Installation Location Selection 20
2.7. Installation Precautions 20
3. Installation 21
3.1. Outdoor Unit Pipe Connections 21
3.2. Wring Connections 26
3.2.1. Make prime power cable connection 26
3.2.2. Make signal wires connection from Air handler to thermostat 27
3.2.3. Grounding 30
4. Commissioning 31
4.1. System Refrigerant Charge Adjustment 31
4.2. System Operating 33
4.3. Unit Settings 34
5. Maintenance and Service 35
5.1. Fault Codes 35
5.2. Fault Analysis and Troubleshooting 37
6. After-sales and Service 39
6.1. After-sales Service 39
6.2. Maintenance (Preventive and Corrective) 39
6.3. Inquiry 39
6.4. Warranty 39

Foreword

I Foreword

Thank you for choosing Our equipment.

⚠ **NOTICE：**

This manual includes necessary information for correct installation, debugging, startup, and maintenance. Please keep this manual safe and carefully read it before installation and operating.

The installation, startup, and maintenance of the equipment may pose risks. Operators need to have professional knowledge and pass training before operating the equipment. If they do not have sufficient understanding of the working principle of the equipment, or do not have sufficient safety knowledge and have not taken relevant safety protection measures, please do not operate the machine in any way to avoid personal injury and equipment failure, which may lead to death or serious personal injury. When operating the equipment, attention should be paid to all the precautions in this manual and the warning and caution labels on the equipment.

The unit strictly follows the design standards during production, ensuring that the unit provides high-quality operating conditions, high reliability, and excellent adaptability.

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.

Failure to strictly follow the precautions may cause serious accidents such as personal injury or death.

If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

Before cleaning the Air Handler, stop it from running and turn it off.

Do not operate the Air Handler, or plug in or unplug the power cord with wet hands to prevent electric shocks.

The warranty coverage must meet the following conditions:
• The installation work must be carried out by trained professionals. • The opening of the machine must be carried out by professional maintenance personnel from the Provider Maintenance Service Center or designated contracted company personnel. Only the various spare parts provided by Provider can be used. • All machine operation and maintenance matters specified in this manual must be strictly carried out according to the specified time and frequency. Violation of any of the above conditions will automatically void the warranty.

The personnel responsible for installing the machine should ensure the safety of the installation process and be responsible for the installation of all refrigerant pipelines, waterways, electrical installation work,

and other necessary ancillary equipment.

Provider shall not be liable for any personal injury or machine damage caused by improper installation, debugging, unnecessary maintenance, failure to follow the provisions and guidance in this manual.

If you have any questions during the installation process, please contact your provider and local provider offices.

Other precautions:

Inspection

When receiving the unit, it is necessary to immediately inspect for any possible damage that may occur during transportation. If there is obvious damage, it should be written on the carrier's transport documents and then claimed according to the instructions on the notice. If there is damage to any part other than the surface, please immediately notify the local repair personnel at Provider.

Storage

- If the unit is ready to be stored for a period of time before installation, some protective measures should be taken to prevent damage, rust, or wear.
- Ensure that all interfaces, such as pipes interfaces, are properly sealed;
- Storage environment temperature range -40℃~55℃, relative humidity less than 90%, avoid direct sunlight;
- The air-cooled coil heat exchanger on the unit should be covered to prevent fins from getting dirty and clogged, especially in construction areas where outdoor storage is not allowed;
- To reduce the possibility of accidental damage (such as being smashed, collided, etc.), the unit should be stored as much as possible in a place with the least occurrence of various activities;
- Regularly inspect during storage.

II Safety Precautions

The Refrigerant

- To realize the function of the air conditioner unit, a special refrigerant circulates in the system. The used refrigerant is the fluoride R32, which is specially cleaned. The refrigerant is flammable and inodorous. Furthermore, it can lead to explosion under certain conditions. But the flammability of the refrigerant is very low. It can be ignited only by fire.
- Compared to common refrigerants, R32 is a nonpolluting refrigerant with no harm to the ozonosphere. The influence upon the greenhouse effect is also lower. R32 has got very good thermodynamic features which lead to a really high energy efficiency. The units therefore need a less filling.

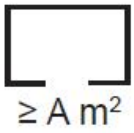


The appliance is filled with flammable gas R32.

WARNING

- 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 odour.

The refrigerant charge of the unit should refer to the nameplate. The minimum operating and storage area for the unit should refer to the table below.



1) Amin is the required minimum room area in square meters (m²) and square feet (ft²), refer to the sticker near nameplate.
2) Mrel is the refrigerant releasable charge in kilograms (kg) and pounds (lb).

Unit Size	Mc (kg/lb)	Amin (m²/ft²)
24K	2.6 / 5.7	7.8 / 83.3
36K	2.6 / 5.7	7.8 / 83.3
48K	3.5 / 7.7	10.4 / 112
60K	3.5 / 7.7	10.4 / 112

Safety Precautions

DANGER

- Before touching electrical parts, turn off all applicable power to the unit.
- When service panels are removed, live parts can be easily touched by accident.
- Never leave the unit unattended during installation or servicing when the service panel is removed.
- Do not touch pipes during and immediately after operation as the pipes may be hot and could burn your hands. To avoid injury, give the piping time to return to normal temperature or be sure to wear protective gloves.
- Do not touch any switch with wet fingers. Touching a switch with wet fingers can cause electrical shock.

WARNING

- 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, ASHRAE 15.2, 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.
- for appliances containing FLAMMABLE REFRIGERANTS, the minimum floor area of the room shall be mentioned in the form of a table refer to PAGE 3 table.
- When installing or relocating the unit, be sure to keep the refrigerant circuit free from air or substances other than the specified refrigerant.

  Any presence of air or other foreign substance in the refrigerant circuit will cause system pressure rise or compressor rupture, resulting in injury.
- When installing or moving this unit, do not charge the refrigerant which is not comply with that on the nameplate or unqualified refrigerant.

  Otherwise, it may cause abnormal operation, wrong action, mechanical malfunction or even series safety accident.
- When refrigerant needs to be recovered during relocating or repairing the unit, be sure that the unit is running in cooling mode. Then, fully close the valve at high pressure side (liquid valve). About 30-40 seconds later, fully close the valve at low pressure side (gas valve), immediately stop the unit and disconnect power. Please note that the time for refrigerant recovery should not exceed 1 minute.

  If refrigerant recovery takes too much time, air may be sucked in and cause pressure rise or compressor rupture, resulting in injury.
- During refrigerant recovery, make sure that liquid valve and gas valve are fully closed and power is disconnected before detaching the connection pipe.

  If compressor starts running when stop valve is open and connection pipe is not yet connected, air will be sucked in and cause pressure rise or compressor rupture, resulting in injury.
- When installing the unit, make sure that connection pipe is securely connected before the compressor starts running.

If compressor starts running when stop valve is open and connection pipe is not yet connected, air will be sucked in and cause pressure rise or compressor rupture, resulting in injury.

- Prohibit installing the unit at the place where there may be leaked corrosive gas or flammable gas.

  If there leaked gas around the unit, it may cause explosion and other accidents.

- Do not use extension cords for electrical connections. If the electric wire is not long enough, please contact a local service center authorized and ask for a proper electric wire.

  Poor connections may lead to electric shock or fire.

- Use the specified types of wires for electrical connections between the indoor and outdoor units. Firmly clamp the wires so that their terminals receive no external stresses.

  Electric wires with insufficient capacity, wrong wire connections and insecure wire terminals may cause electric shock or fire.

⚠ CAUTION

- Ground the unit.
- Grounding resistance should be according to local laws and regulations.
- Do not connect the ground wire to gas or liquid pipes, lightning conductors or telephone ground wires.
- Incomplete grounding may cause electric shocks.
  - ⊕ Gas pipes: Fire or an explosion might occur if the gas leaks.
  - ⊕ Lightning conductors or telephone ground wires: Electrical threshold may rise abnormally if struck by a lightning bolt.
- Install the power wire at least 3 feet (1 meter) away from televisions or radios to prevent interference or noise. (Depending on the radio waves, a distance of 3 feet (1 meter) may not be sufficient to eliminate the noise.)
- Do not wash the live parts of the unit. This may cause electric shocks or fire. The appliance must be installed in accordance with national wiring regulations. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- Do not install the unit in the following places:
  - ⊕ Where there is mist of mineral oil, oil spray or vapors. Plastic parts may deteriorate, and cause them to come loose to leak.
  - ⊕ Where corrosive gases (such as sulphureous acid gas) are produced. Where corrosion of copper pipes or soldered parts may cause refrigerant to leak.
  - ⊕ Where there is machinery which emits electromagnetic waves. Electromagnetic waves can disturb the control system and cause equipment malfunction.
  - ⊕ Where flammable gases may leak, where carbon fiber or ignitable dust is suspended in the

air or where volatile flammable such as paint thinner or gasoline are handled. These types of gases might cause a fire.

⊕ Where the air contains high levels of salt such as near the ocean.

⊕ Where voltage fluctuates a lot, such as in factories.

⊕ In vehicles or vessels.

⊕ Where acidic or alkaline vapors are present.

- If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person.
- DISPOSAL: Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary. Do not dispose of electrical appliances as municipal waste, use separate collection facilities. Contact your local government for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substance can leak into the ground water and get into the food chain, damaging your health and well-being.
- The wiring must be performed by professional technicians in accordance with national wiring regulation and this circuit diagram. An all-pole disconnection device which has at least 3mm separation distance in all pole and a residual current device (RCD) with the rating not exceeding 30mA shall be incorporated in the fixed wiring according to the national rule.
- Before wiring/pipes, confirm the safety of the installation area (walls, floors, etc.) without hidden dangers such as water, electricity, and gas.
- Before installation, check whether the user's power supply meets the electrical installation requirements of unit (including reliable grounding, leakage, and wire diameter electrical load, etc.). If the electrical installation requirements of the product are not met, the installation of the product is prohibited until the product is rectified.
- When installing multiple units in a centralized manner, please confirm the load balance of the three-phase power supply, and multiple units are prevented from being assembled into the same phase of the three-phase power supply.
- Product installation should be fixed firmly. Take reinforcement measures, when necessary.

WARNING

To repair or dispose of the equipment, contact the after-sales service team.

The equipment use refrigerant R32, and it must be repaired by professionals.

1) Transport of equipment containing flammable refrigerants

See transport regulations.

2) Marking of equipment using signs

See local regulations.

3) Disposal of equipment using flammable refrigerants

See national regulations.

4) Storage of equipment/appliances

The storage of equipment should be in accordance with the manufacturer's instructions.

5) Storage of packed (unsold) equipment

Storage package protection should be constructed such 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.
- To realize the function of the product, a special refrigerant circulates in the system. The used refrigerant is R32, which is highly flammable.
- The refrigerant is flammable and inodorous. Furthermore, it can lead to explosion under certain conditions. But the flammability of the refrigerant is very low. It can be ignited only by fire.
- Compared to common refrigerants, R32 is a nonpolluting refrigerant with no harm to the ozonosphere. The influence upon the Green house effect is also lower. R32 has got very good thermodynamic features which lead to a really high energy efficiency. The units therefore need less filling.

6) Qualification of Service Personnel

Any person who is involved with working on or repairing refrigerating circuits should possess a valid certificate issued by industry recognized assessment organizations certifying that they have the necessary qualifications required for handling refrigerants safely.

Only maintain and repair the product following the methods recommended by the manufacturer. If other technicians are required for assistance, the maintenance or repair should be supervised by persons qualified for handling R32 refrigerants.

7) Checks to the Area

Prior to beginning work on the product that uses refrigerant R32, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the following precautions shall be complied with before conducting work on the system.

8) Work procedure

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

9) 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.

10) Check for the 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. non-sparking, adequately sealed, or intrinsically safe.

11) Presence of fire extinguisher

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.

12) No ignition sources:

Safety Precautions

No person carrying out work in relation to a refrigerating system that involves exposing any pipe work that contains or has previously contained flammable refrigerants shall use any sources of ignition in such a manner that it can 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, repair, removal, and disposal, during which refrigerant can be released into 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.

13) Ventilated Area

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

14) Checks to the Refrigerating 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 of products using R32 refrigerants:

- The refrigerant charge is in accordance with the room size within which the refrigerant-containing parts are installed.
- The ventilation machinery and outlets are operating adequately and are not obstructed.
- If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.
- Marking to the product continues to be visible and legible. Markings and signs that are illegible shall be corrected.
- Refrigerating pipe or electrical components are installed in a position where they are unlikely to be exposed to any substance that can corrode refrigerant-containing components, unless the electrical components are constructed of materials that are inherently resistant to being corroded or are suitably protected against being so corroded.

15) Checks to Electrical Devices

Repair and maintenance of electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected completely in the end, but it is necessary to continue operation, an 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 the possibility of sparking.
- That no live electrical components and accessories are exposed while charging, recovering, or purging the system.
- That there is continuity of earth bonding.

16) Repairs to Sealed Components

Sealed electrical components shall be replaced.

17) Repairs to Intrinsically Safe Components

Intrinsically safe components must be replaced.

18) Cabling

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

19) Detection of Refrigerant R32

After entering the cooling or heating command for the air conditioner, if the air blown out by the unit is neither cold nor hot, please first open the windows for ventilation or turn on the exhaust fan. Then check whether the machine has any alarms. If there is a refrigerant leakage alarm or a refrigerant shortage alarm, please contact service personnel for on-site repair. Before the repair is completed, please keep the area ventilated.

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

20) Leak Detection Methods

LEAK DETECTION SYSTEM installed. Unit must be powered except for service.

The following leak detection methods are deemed acceptable for systems containing refrigerant R32:

- Electronic leak detectors may be used to detect refrigerant R32, but the sensitivity may be inadequate 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 lower flammability limit (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 shall be suitable for use with most refrigerants but the use of solvents containing chlorine shall be avoided as the chlorine can react with the refrigerant and corrode the copper pipe-work.
- If a leak is suspected, all naked flames shall be removed or 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. Before and during brazing, purge the entire system with oxygen-free nitrogen (OFN).

21) 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.

22) Refrigerant Charging Procedures

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

- 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 refrigerating system is earthed before charging the system with refrigerant.
- Label the system after or before the completion of charging.
- Extreme care shall be taken not to overfill the refrigerating system.
- Prior to recharging the system, it shall be pressure-tested with oxygen-free nitrogen. 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.

23) Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details. 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.

- Become familiar with the equipment and its operation.
- Isolate system electrically.
- 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.

- Pump down the refrigerant system, if possible.
- If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- Make sure that the cylinder has sufficient capacity before recovery takes place.
- Start the recovery machine and operate in accordance with instructions.
- Do not overfill cylinders (no more than 80% volume liquid charge).

- Do not exceed the maximum working pressure of the cylinder, even temporarily.
- When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from the site promptly and all isolation valves on the equipment are closed off.
- Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.

24) Labeling

Equipment shall be labeled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating the equipment contains refrigerant R32.

25) Recovery

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

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

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

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. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release.

Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier 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 evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Safety Precautions

Description of Pictograms

Throughout this manual and on the work site you will encounter various pictograms depicting hazards or other noteworthy items. Please consult the table below for their meanings:

Pictogram	Meaning
	Dangerous high voltage is present. Do not access a compartment with this symbol unless power is turned off
	A pressurized liquid or gas is present. Do not puncture or heat up with a flame.
	A flammable chemical or gas is present. Do not use open flames to cut or solder unless the gas has been evacuated.
	Indicates the User Manual should be read before performing an operation
	Indicates the Install & Service Manual should be read before performing an operation
	A grounding point, either between earth and the ODU or between the IDU and the ODU.

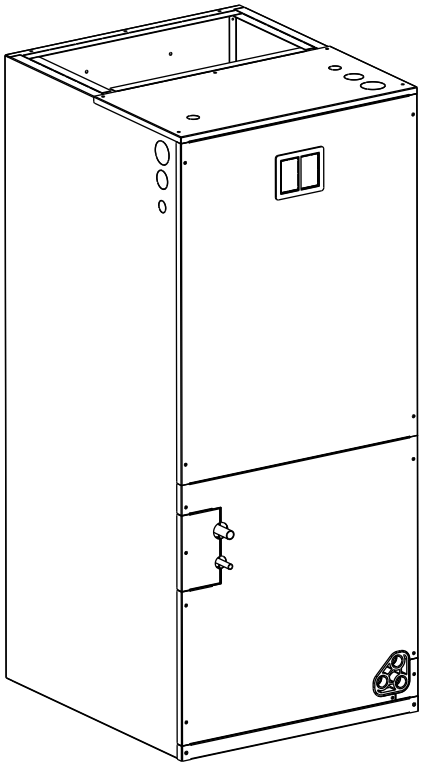
1. Unit Introduction

The DC inverter central heat pump can meet the needs of hotels, hospitals, sports venues, restaurants, cinemas, commercial buildings etc.

This product absorbs the essence of similar products at home and abroad, focuses on the future of air conditioning development, and serves customer needs.

1.1. Unit Pictures

1.1.1. Indoor unit

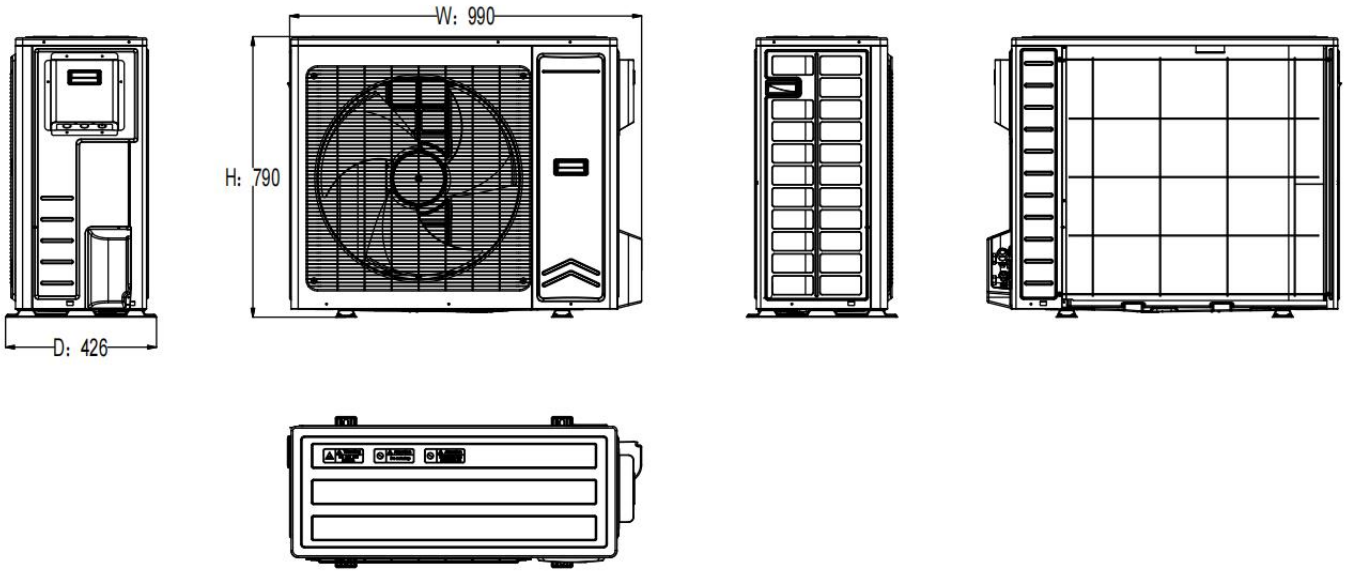


Picture 1. Indoor Unit Overview

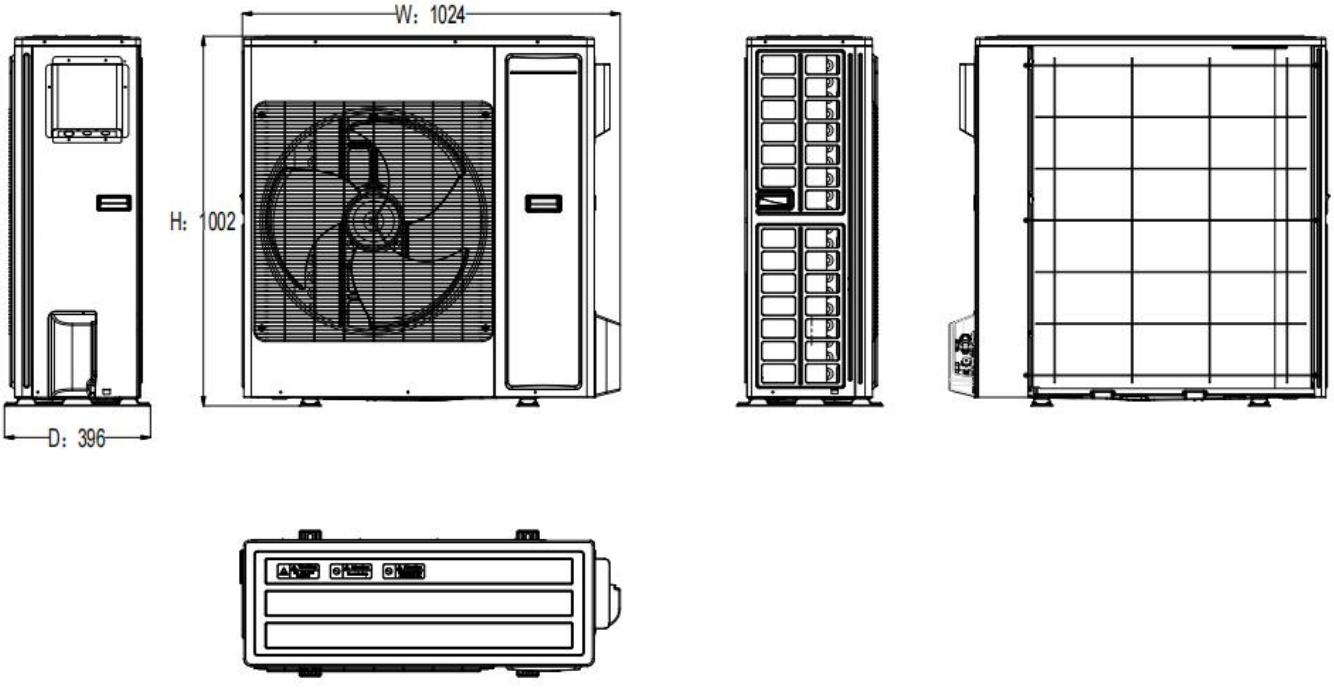
Note: Actual product may be different from above graphics, please refer to actual products.

Unit Introduction

1.1.2. Outdoor unit



Picture 2. Outdoor unit (Model:VUH24-VA6BA(O)/VUH36-VA6BA(O))



Picture 3. Outdoor unit (Model:VUH48-VA6BA(O)/VUH60-VA6BA(O))

Note: Actual product may be different from above graphics, please refer to actual products.

Unit Introduction

1.2. Unit Technical Data

1.2.1. Performance of Cooling

PERFORMANCE OF COOLING					
Model Size		**24K**	**36K**	**48K**	**60K**
Outdoor Unit Model No:	/	VUH24-VA6BA(O)	VUH36-VA6BA(O)	VUH48-VA6BA(O)	VUH60-VA6BA(O)
Indoor Unit Model No:	/	VUH24-VA6BA(I)	VUH36-VA6BA(I)	VUH48-VA6BA(I)	VUH60-VA6BA(I)
Rated Cooling Capacity	Btu/h	24,000	34,200	48,000	52,500
Min/Max Cooling Capacity	Btu/h	7,500~25,400	10,500~36,400	13,600~49,000	16,200~56,000
Standard Operating Range	°F	50~129°F			
Note: 1. Rated Cooling Conditions: Indoor: 80°F DB/67°F WB and Outdoor: 95°F DB/75°F WB; 2. The air handler unit and outdoor unit are powered by 230Vac/1ph/60Hz.					

1.2.2. Performance of Heating

PERFORMANCE OF HEATING					
Model Size		**24K**	**36K**	**48K**	**60K**
Outdoor Unit Model No:	/	VUH24-VA6BA(O)	VUH36-VA6BA(O)	VUH48-VA6BA(O)	VUH60-VA6BA(O)
Indoor Unit Model No:	/	VUH24-VA6BA(I)	VUH36-VA6BA(I)	VUH48-VA6BA(I)	VUH60-VA6BA(I)
@47°F Rated Heating Capacity	Btu/h	24,000	34,200	48,000	54,000
@47°F Min/Max Heating Capacity	Btu/h	7,600~26,000	11,000~36,000	14,000~50,000	15,000-56,000
@17°F Rated Heating Capacity	Btu/h	22,200	26,800	42,200	43,000
Capacity Ratio (17/47°F)	--	92.5%	76.6%	87.9%	78.2%
@5°F Max. Heating Capacity	Btu/h	21,000	25,600	41,000	42,000
Capacity Ratio (5/47°F)	%	87.5%	73.1%	85.4%	76.4%
COP@5°F	W/W	2.3	2.1	2.3	2.3
Standard Operating Range	°F	-13~86°F			
Note: 1. Rated Heating Conditions: 1.1 Indoor: 70°F DB/60°F WB, Outdoor: 47°FDB/43°F WB; 1.2 Rated Heating Conditions: Indoor: 70°F DB/60°F WB, Outdoor: 17°F DB/15°F WB; 1.3 Heating Conditions, Compressor Indoor operating at Max. Frequency: 70°F DB/60°F WB, Outdoor: 5°F DB/5°F WB. 1.4 The air handler unit and outdoor unit are powered by 230Vac/1ph/60Hz.					

Canadian technical edition, 2026-11-05: rated cooling at 95°F and heating at 47°F updated from AHRI. See final addendum.
Other performance points and supplier capacity ratios remain as supplied; ratios are not recalculated using AHRI 47°F ratings.

Unit Introduction

1.2.3. Energy Efficiency

EFFICIENCY					
Operating Mode	**/**	**VUH24-VA6BA**	**VUH36-VA6BA**	**VUH48-VA6BA**	**VUH60-VA6BA**
Cooling	SEER2	21.0	20.2	20.0	19.6
	EER2	13.0	11.5	12.0	11.5
Heating	HSPF2 IV	11.0	10.2	11.0	10.8
	COP	3.65	3.60	4.0	4.12

Note:

1. The air handler unit and outdoor unit are powered by 230Vac/1ph/60Hz.

1.2.4. Indoor Unit (Air Handler) Specification

INDOOR UNIT (AIR HANDLER) SPECIFICATION					
Indoor Unit Model		**VUH24-VA6BA(I)**	**VUH36-VA6BA(I)**	**VUH48-VA6BA(I)**	**VUH60-VA6BA(I)**
Indoor Air Flow	CFM	820	1,150	1,580	2,000
Indoor Noise Level	dB(A)	34-42	38-48	41-53	46-57
Dimension (W x D x H)	mm	503 x 562 x 1162		563 x 622 x 1352	
	Inch	19.8 x 22.13 x 45.75		22.17 x 24.49 x 53.23	
Package (W x D x H)	mm	620 x 682 x 1308		676 x 742 x 1512	
	Inch	24.4 x 26.85 x 51.5		26.62 x 29.22 x 59.53	
Net	kg/lbs	64/141		80/176	
Gross Weight	kg/lbs	74/163		90/198	

1.2.5. Outdoor Unit Specification

OUTDOOR UNIT SPECIFICATION					
Model		**VUH24-VA6BA(O)**	**VUH36-VA6BA(O)**	**VUH48-VA6BA(O)**	**VUH60-VA6BA(O)**
Compressor Type	/	Inverter Rotary			
Refrigerant	/	R32			
Factory Charge	oz.(kg)	91.7(2.6)		123.5(3.5)	
Refrigerant Oil	/	RB68GX or equivalent			
Outdoor Air Flow (Max)	CFM	2,650		2,790	
Outdoor Noise Level	dB(A)	57		59	
Dimension (W x D x H)	mm	990 × 426 × 790		1024 × 396 × 1002	
	Inch	38.98 x 16.77 x 31.1		40.31 × 15.59 × 39.45	
Package (W x D x H)	mm	1057 × 482 × 855		1101 × 448 × 1148	
	Inch	41.61 × 18.98 × 33.66		43.35 × 17.64 × 45.2	
Net	kg/lbs	60/132		95/209	
Gross Weight	kg/lbs	65/143		105/231	

Canadian technical edition, 2026-11-05: SEER2, EER2 and HSPF2 region IV updated from AHRI.
See the final editorial addendum for exact combinations, AHRI references, dates and source attribution.

Unit Introduction

1.2.6. Electrical Data

a) Outdoor Unit Electrical Data

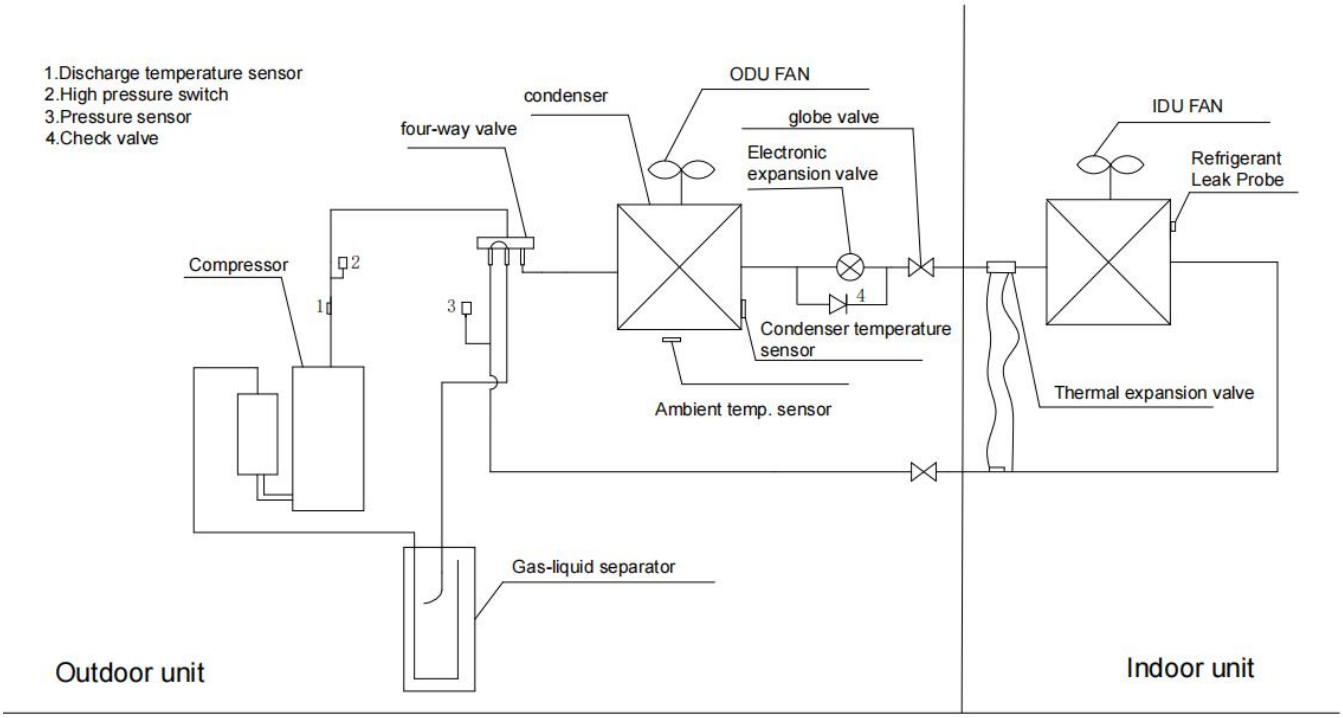
ELECTRICAL(ODU)					
Model		**VUH24-VA6BA**	**VUH36-VA6BA**	**VUH48-VA6BA**	**VUH60-VA6BA**
Power Supply	Vac/Ph/Hz	208/230V, 1Ph, 60Hz			
Unit MCA(ODU)	A	12	19	26	28
Weak Current Connection Wiring	AWG	AWG18	AWG18	AWG18	AWG18
Unit MOCP(ODU)	A	20	35	44	50
Suggest Breaker Size	A	20	25	40	50
Compressor RLA	A	8.74	15.44	18.76	20.46
Fan Motor FLA	A	1.8	1.8	1.8	1.8
Fan Motor Output	W	120	120	120	120
Rated Power Input@ Cooling	W	1,950	3,100	4,300	4,800
Power Input Range@ Cooling	W	350~2,200	440~3,350	580~4,680	720~5,150
Rated Power Input@ Heating	W	1,900	2,700	3,460	3,800
Power Input Range@ Heating	W	320~2,140	430~3,000	550~3,750	800~4,100
MCA: Min. circuit amps, A; MOCP: Max. Over-current protection amps, A; RLA: Rated load amps, A; FLA: Full load amps.					

b) Indoor Unit(Air Handler Unit) Electrical Data

ELECTRICAL(IDU)					
Model		**VUH24-VA6BA**	**VUH36-VA6BA**	**VUH48-VA6BA**	**VUH60-VA6BA**
Power Supply	Vac/Ph/Hz	115/208/230, 1Ph, 60Hz			
Unit MCA(IDU)	A	6.1/3.9/3.6	8.6/5.4/5.1	11.6/7.4/6.9	11.6/7.4/6.9
Weak Current Connection Wiring	AWG	AWG18	AWG18	AWG18	AWG18
MOCP@115V	A	6	10	25	25
MOCP@230V	A	6	6	15	15
Breaker Size@115V	A	6	10	20	20
Breaker Size@230V	A	6	6	10	10
Fan Motor FLA	A	4.4/2.6/2.4	6.4/3.8/3.6	11.6/7.4/6.9	11.6/7.4/6.9
Fan Motor Output	W	224	373	560	560
MCA: Min. circuit amps, A; MOCP: Max. Over-current protection amps, A; RLA: Rated load amps, A; FLA: Full load amps.					

2. Installation Prepare

2.1. Main Parts and Refrigerant System Diagram



2.2. Installation Tools

S.N	Tools	S.N	Tools
1	Level meter	8	Pipe cutter
2	Screw drivers	9	Leakage detector
3	Impact drill	10	Vacuum pump
4	Drill head	11	Pressure meter
5	Pipe expander	12	Universal meter
6	Torque wrench	13	Inner hexagon spanner
7	Open-end wrench	14	Measuring tape

2.3. Connecting Wires

Please refer to the "Electrical Installation" section of this manual for wire specifications.

2.4. Connection Pipes for Indoor and Outdoor Units

Please refer to the "Complete Unit Installation" section of this manual for the specifications of the connection pipes.

Installation Prepare

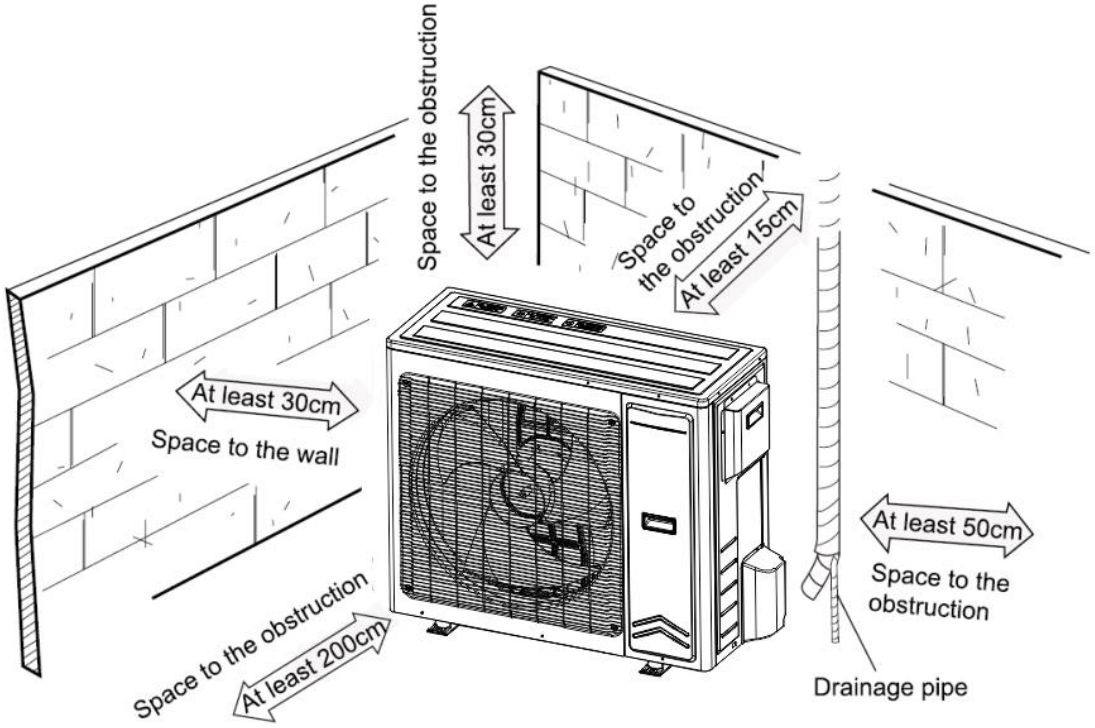
2.5. Other Installation Materials

a) Pipe supports and clamps for securing connection pipes
b) Conduit for electrical wires
d) Expansion bolts
e) Unit mounting brackets

2.6. Unit Installation Requirements

2.6.1. Unit Installation Space Requirements

1) To prevent air re-circulation in the finned heat exchanger and avoid operational failures, it is recommended to maintain a minimum distance for the unit. If this distance cannot be ensured, the airflow through the finned heat exchanger may be restricted or experience exhaust air re-circulation, potentially affecting performance or causing operational issues.
2) To ensure sufficient airflow into the finned heat exchanger, the influence of downdrafts from tall buildings around the unit should be considered during installation, as they may affect the unit's exhaust.
3) If the unit is installed in an area with strong air currents, such as an exposed rooftop, measures like low walls or louvered screens can be considered to prevent turbulence from interfering with the unit's air intake. If low walls are used, their height must not exceed that of the unit, and the distance between the unit and the low walls or louvered screens must also meet the minimum installation distance requirements.
4) If the unit needs to operate in winter and the installation site is prone to snow accumulation, the unit base must be at least 100mm above the maximum snow accumulation height in the area to ensure smooth airflow through the finned heat exchanger.
5) There must be no obstructions blocking the unit's air outlet, but louvered grilles can be installed. The grilles must have an effective opening rate of over 80%, with blades angled at more than 20 degrees and spaced over 100mm apart. If there are walls or other obstructions on the other three sides, the unit installation distance must meet the requirements shown in the diagram.



2.6.2. Unit Installation Location Selection

1) The installation space for the unit should meet the requirements of the schematic diagram to ensure normal airflow circulation and facilitate maintenance.
2) The installation location should be away from heat sources, steam, or flammable gases.
3) Do not install the unit in areas with strong winds or excessive dust.
4) Avoid installing the unit in locations where people frequently pass by the air outlet grille.
5) The installation location should allow for proper drainage, with a nearby drainage system available.



NOTICE

1. Installing the unit in the following locations may cause malfunctions:
2. Areas with excessive oil;
3. Humid locations;
4. Coastal areas with salt and alkali;
5. Locations with special environmental conditions;
6. Areas with high-frequency equipment, such as wireless devices, welding machines, and medical equipment.

2.7. Installation Precautions

1) Install the unit on a sturdy surface made of concrete or similar materials. The load-bearing surface or mounting bracket must meet strength requirements.
2) Secure the unit to the mounting bracket with bolts and nuts, and ensure it is level.
3) If installing on a wall or roof, the bracket must be firmly fixed to prevent damage from earthquakes or strong winds.
4) The positioning dimensions for the unit's installation foundation should follow the outline diagram, requiring four positioning anchor bolts with a diameter of 10mm.
5) Use at least four flexible lifting straps to lift and transport the unit.
6) To avoid scratches and deformation on the unit's surface, attach protective boards during lifting and transport.
7) Before final lifting and installation, verify the foundation is correct to prevent discrepancies with the actual unit.

3. Installation

3.1. Outdoor Unit Pipe Connections

NOTES
1) that 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;
2) Field-made refrigerant joints indoors shall be tightness tested. 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;

Following below steps to make the pipe connections.

Step 1: Secure the Outdoor Unit

a. Select the installation location based on the structure of the house.

b. Secure the outdoor unit at the selected location using expansion bolts.

Note:

- Take adequate protective measures when installing the outdoor unit.
- Ensure the support can withstand at least four times the weight of the unit.
- The outdoor unit should be installed at least 3 cm above the ground to allow for the installation of the drainage connector.

Step 2: Install the Drainage Connector

a. Connect the outdoor drainage connector to the hole in the chassis, as shown in the diagram.

b. Attach the drainage hose to the drainage outlet.

Step 3: Refrigerant Connection Pipe Routing

a. Select the appropriate connection pipe

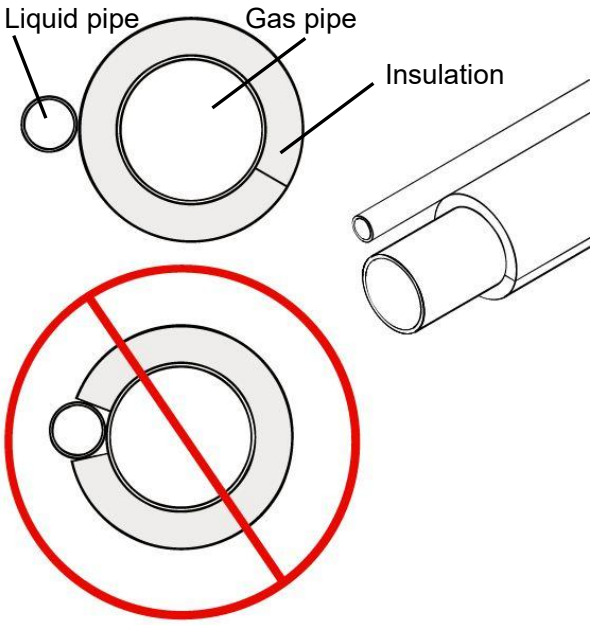
Use only the sizes shown in the table below and determine the required pipe length. If the return pipe length exceeds 15 meters, do not use a larger return pipe than recommended.

Unit Model	Liquid Pipe	Gas Pipe	Total equivalent pipe length, m			
			7.5	15	22.5	30
	Diameter, mm		Maximum height difference, m			
2/3Ton	Φ9.52	Φ19.05	7.5	15	15	15
4/5Ton	Φ9.52	Φ22.22	7.5	15	15	12
		Φ19.05	7.5	15	15	12

b. Refrigerant Connection Pipe Insulation

Installation

The return pipe must be insulated.
It is prohibited for the return pipe and liquid pipe to come into direct (metal-to-metal) contact.

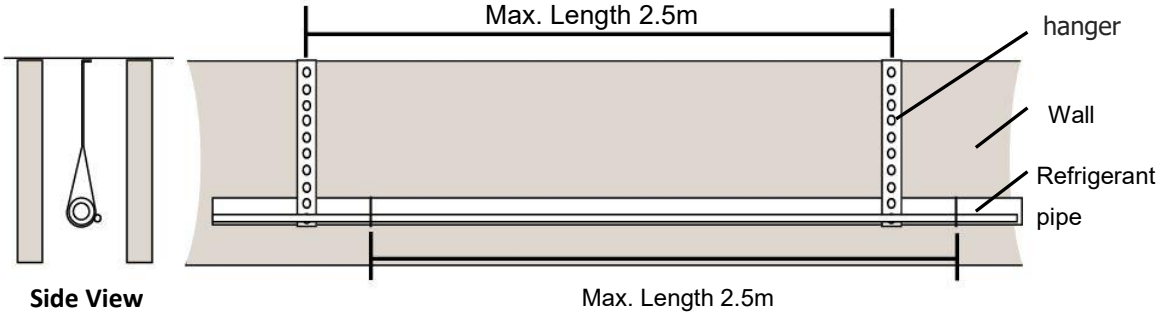


c. Refrigerant Pipe Routing

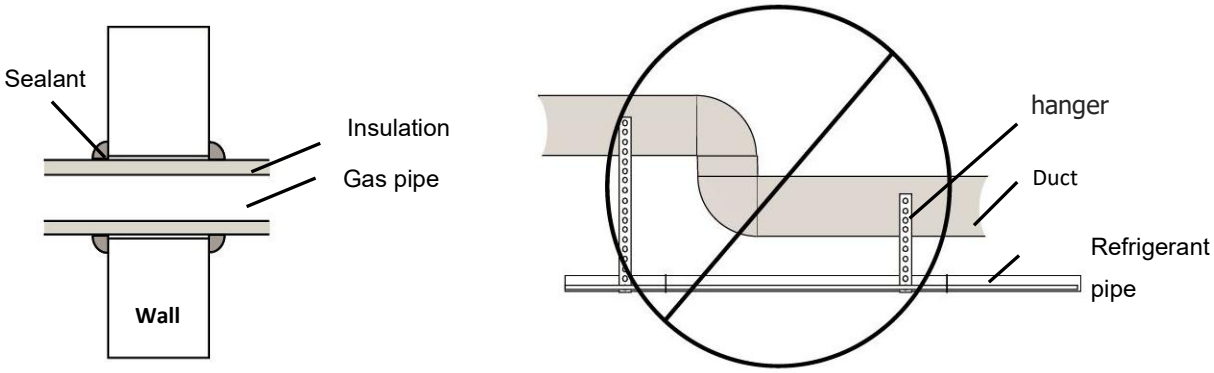
When suspending refrigerant pipes from beams, rafters, walls, or other structural components, national and local regulations must be followed. Take precautions to prevent noise within the building structure due to the transmission of vibrations from the refrigerant pipes. For example:

- When refrigerant pipes must be fixed to ceiling beams or other frameworks, use vibration-damping hangers.
- When refrigerant pipes pass through stud spaces or enclosed ceilings, vibration-damping hangers should also be used.
- When refrigerant pipes pass through walls or window sills, they should be insulated and isolated.
- Isolate the piping from all piping networks.
- Minimize the use of 90º elbows.

Installation

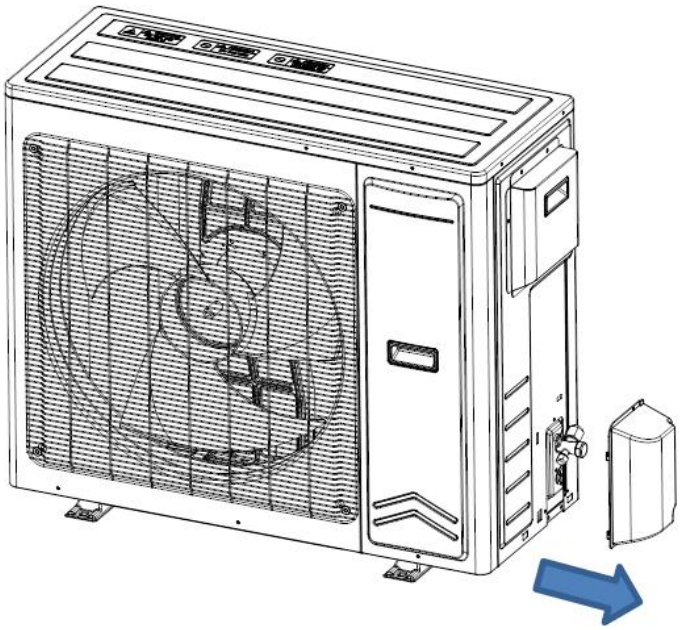


Note: The refrigerant pipe needs to be secured with vibration-damping hangers at least every 2.5 meters.



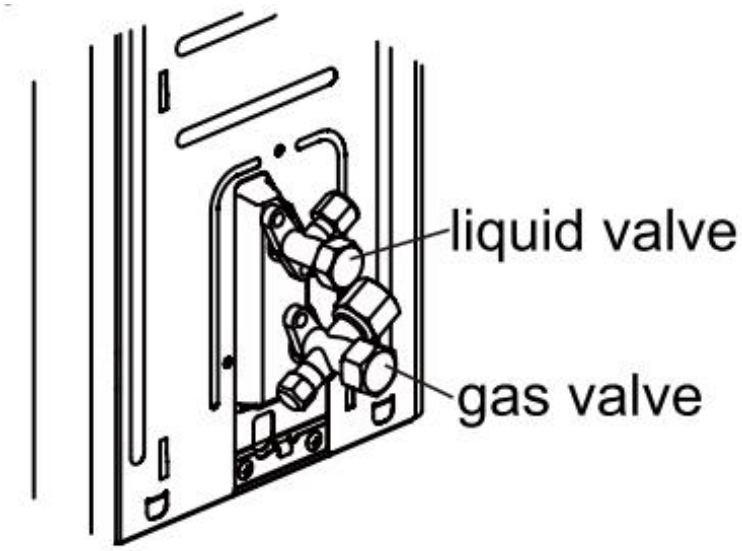
Step 4: Connecting the Refrigerant Pipes

a. Remove the screws from the right side panel of the outdoor unit, then remove the valve cover.

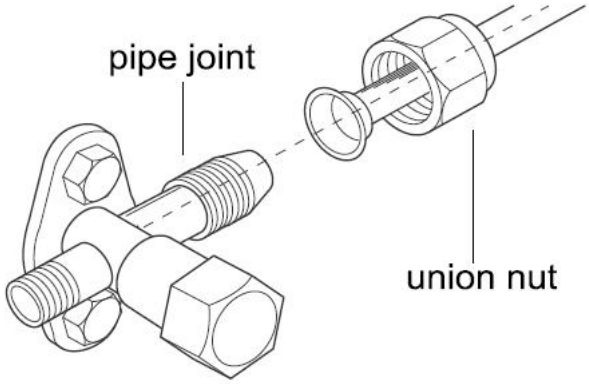


Installation

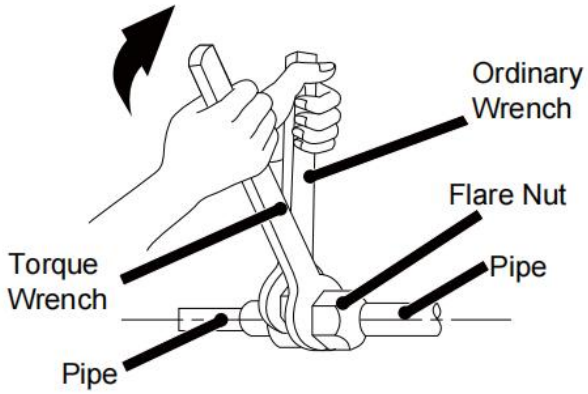
b. Remove the screw cap of valve and aim the pipe joint at the bell mouth of pipe.



c. Pre-tighten the union nut with hand



d. Tighten the union nut with torque wrench by referring to the sheet below.



Hex nut diameter	Tightening torque (N.m)
Φ 6	15~20
Φ 9.52	30~40
Φ 12	45~55
Φ 16	60~65
Φ 19	70~75

e. After the pipes connected to outdoor unit, bind the insulating material and plastic tape around the refrigerant pipes in order to prevent condensation.

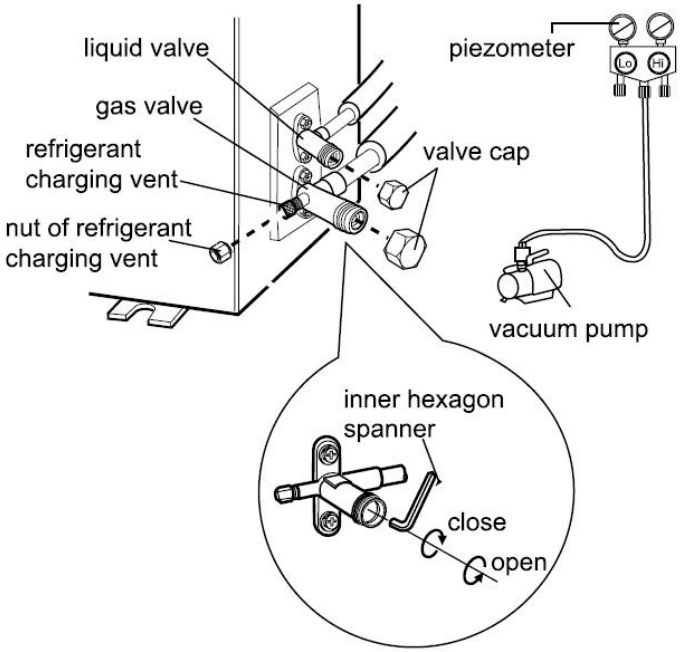
Installation

Step 5. Pump down the system with a Vacuum pump

a. Prepare Tools:
   - Vacuum pump
   - Manifold gauge set (with charging hoses)
   - Allen wrench

b. Check Connections:
   - Ensure that the pipes between the indoor and outdoor units are securely connected with no leaks.
   - Make sure the valve cores of the liquid valve and gas valve are closed (use an Allen wrench to tighten them).

c. Connect the Vacuum Pump:
   - Unscrew the refrigerant charging port cap on the gas valve (thicker pipe) of the outdoor unit.
   - Connect one end of the charging hose from the manifold gauge set to the charging port of the gas valve and the other end to the vacuum pump.



d. Start Vacuuming:
   - Open the valves on the manifold gauge set and start the vacuum pump.
   - Vacuum for 10~15 minutes until the pressure gauge shows -0.1MPa.

e. Check Vacuum Status:
   - Close the valves on the manifold gauge set and stop the vacuum pump.
   - Let the system sit for 1~2 minutes and observe the pressure gauge. If the pressure rises, it indicates a possible leak in the system, and the connections should be checked and repaired.

f. Remove the vacuum connector from refrigerant charging vent after the vacuum status confirmed.

g. Release the Refrigerant:
   - Once you confirm there are no leaks, use an wrench to fully open the liquid valve and gas valve on the outdoor unit (open the liquid valve first, then the gas valve).
   - The refrigerant will flow from the outdoor unit into the indoor unit, completing the evacuation process.

h. Finish the Procedure:
   - Disconnect the manifold gauge set and vacuum pump, then tighten the charging port cap.
   - Check all connection points for refrigerant leaks using soapy water or a leak detector.

Notes: Vacuum for a sufficient amount of time to ensure all air and moisture are removed from the system.

i. Put the handle back

Step 6. Check for refrigerant leaks

Use an electronic leak detector calibrated for R-32 with an accuracy of 5 grams per year or less.

After the leak detector indicates it is ready, move the detector to each connection on the IDU and ODU and move the leak detector slowly around all seams of the joint.

If a leak is detected repeat the joint connection procedure as detailed above.

Installation

3.2. Wring Connections

All wiring and grounding must comply with local electrical regulations.

Note: All wiring connections must be routed through conduits, and strong current and weak current must be separated.

NOTICE

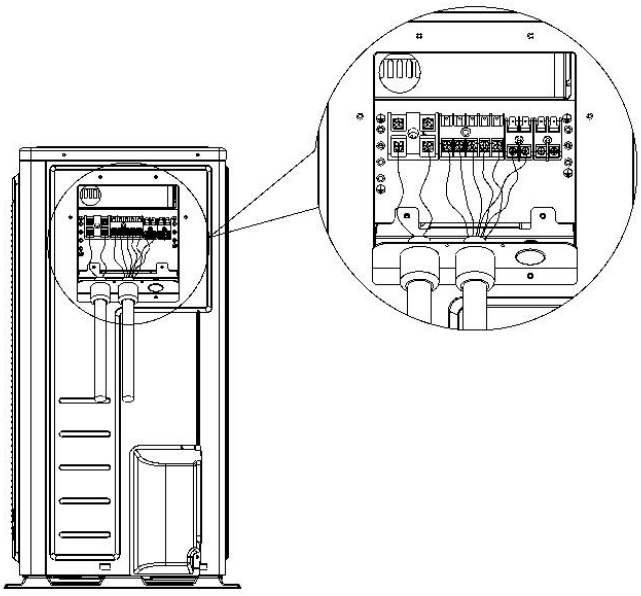
1) Carefully verify the electrical parameters on the unit's nameplate to ensure that the wiring meets the specified requirements and is correctly wired according to the wiring diagram.
2) The heat pump unit and auxiliary electric heater should each be equipped with an independent power supply that includes a circuit breaker and a leakage protector.
3) The power supply for the unit must meet the unit's usage requirements and must be reliably and effectively connected.
4) Electrical wires should not come into contact with copper pipes, compressors, motors, or other operating components.
5) Do not alter the internal wiring of the unit without authorization; the manufacturer will not be responsible for any consequences.
6) Do not power on before completing the electrical wiring to avoid personal injury.
7) The power supply voltage should vary within ±10% of the standard value.

3.2.1. Make prime power cable connection

On-site, the power supply cable for unit wiring must meet the requirements specified in below table.

Outdoor Unit	**Recommended Min. AWG (Copper)**		**Grounding Min.AWG (Copper)**
	208/230V		**208/230V**
	L1	L2	PE
24K	14AWG	14AWG	14AWG
36K	12AWG	12AWG	12AWG
48K	10AWG	10AWG	10AWG
60K	8AWG	8AWG	8AWG

1. Remove the unit's wiring cover and connect each wire to the corresponding terminal block according to the manual or the wiring diagram on the unit's top cover, ensuring a secure connection.
2. Secure the connecting wires with a wire clamp and replace the wiring cover.
3. Do not connect the wires incorrectly, as this may lead to electrical faults or even damage the machine.
4. Users need to provide their own power cables for this unit, using rubber and copper core wires according to the technical specifications.



Installation

5. Users need to provide their own signal connection cables for this unit, using the appropriate specifications according to the technical parameters, and choose shielded cables to avoid communication interference that could cause the unit to malfunction.

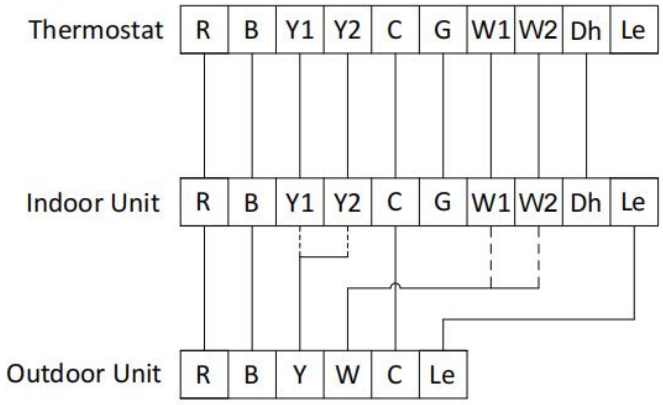
3.2.2. Make signal wires connection from Air handler to thermostat

Signal wires and power wires must be routed separately. Otherwise, communication failure may occur, and the unit may not operate properly.

Signal wires should be 0.75 mm² in size. If the wiring length exceeds 30 meters, 1 mm² wires should be used.

Connect the signal wires between the indoor and outdoor units according to the wiring diagram.

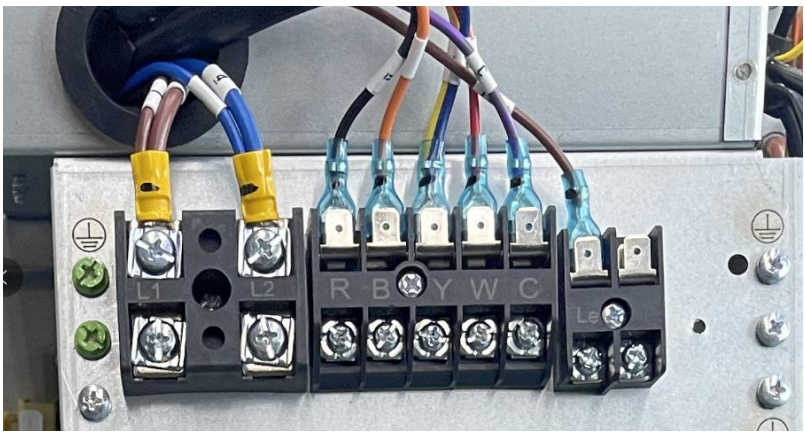
Ensure that signal wires and power wires are laid out separately.



Reference Terminal Definition

Indoor Unit		Outdoor Unit	
R	24VAC	R	24VAC
B	Receive 4-Way Valve Signal	B	Receive 4-Way Valve Signal
Y1	Receive Fan Low Speed Signal	Y	Receive Compressor Signal
Y2	Receive Fan Hi Speed Signal	W	Output Electric Auxiliary Heat Signal
C	Common Terminal		
G	Receive Fan ON/OFF Signal	C	Common Terminal
W1	Receive Electric Auxiliary Heat Signal 1	Le	Receive Refrigerant Leak Signal
W2	Receive Electric Auxiliary Heat Signal 2		
Dh	Receive Dehumidification Mode Signal		
Le	Output Refrigerant Leak Signal		

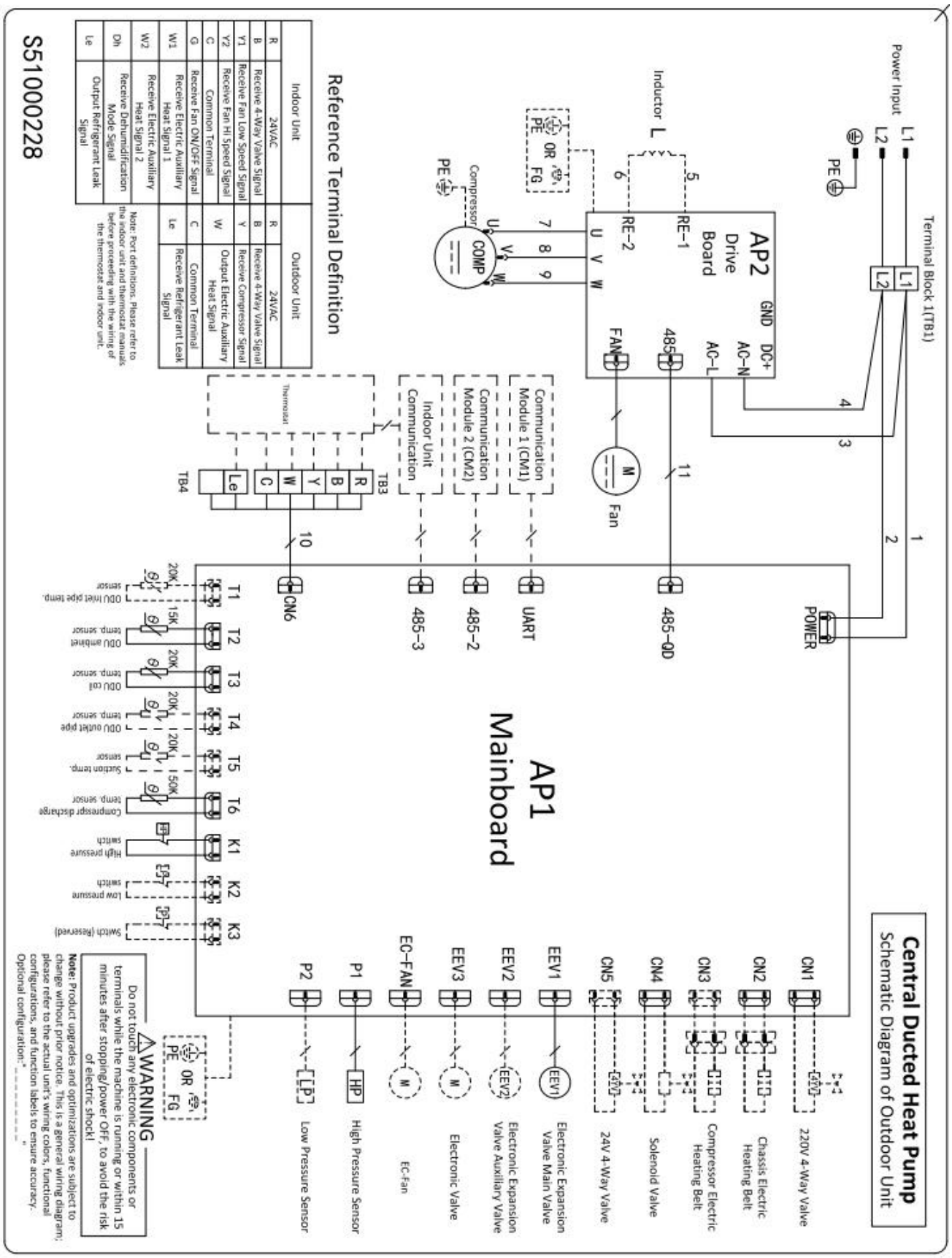
Note: Port definitions. Please refer to the indoor unit and thermostat manuals before proceeding with the wiring of the thermostat and indoor unit.



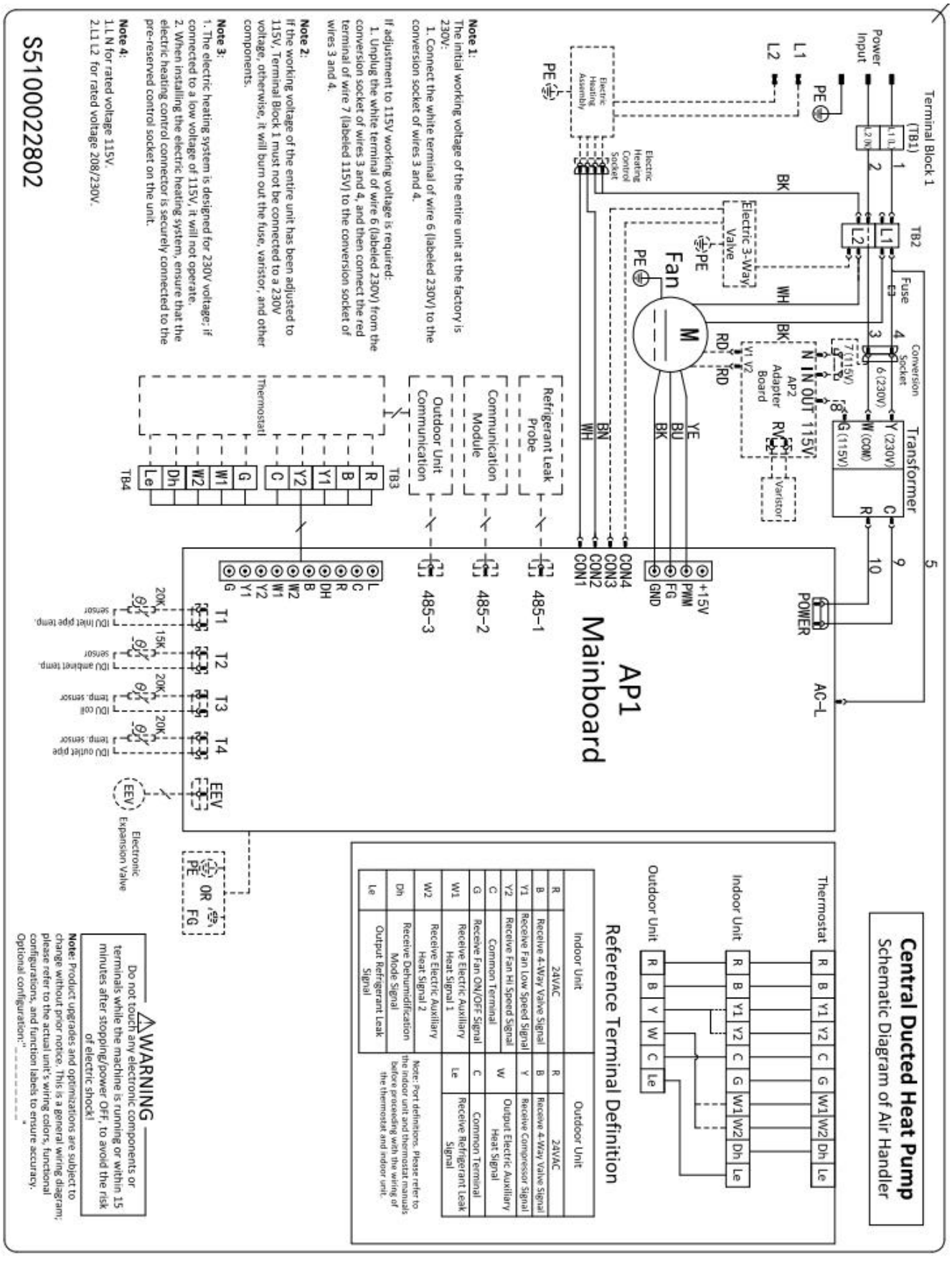
NOTE:

1. The power specifications must match those on the equipment nameplate, and wiring must comply with national and local regulations, following the wiring instructions.
2. A separate circuit breaker switch must be installed. High-voltage wiring must use flexible electrical conduits provided on-site.
3. The machine must be grounded in accordance with national and local regulations.
4. Before connecting all signal lines, read the terminal function definitions of the indoor unit and thermostat to ensure correct connection to the outdoor unit terminals.

Installation



Installation



3.2.3. Grounding

Warning

- The unit must be permanently grounded.
- Failure to ground the unit may result in electric shock, causing injury or death.

Grounding can be achieved by connecting the machine's casing to a grounded metal conduit as required by electrical codes, or by connecting the ground wire to the grounding terminal inside the machine's electrical control box.

For systems with multiple power circuits, the ground wire of each circuit must be connected to the machine's grounding terminal.

4. Commissioning

Before trial operation, check again:

a. All wiring is correct.

b. The outdoor unit valves are open.

4.1. System Refrigerant Charge Adjustment

The unit is pre-charged with refrigerant at the factory, sufficient for normal operation with pipe lengths up to 7.5 meters. If the pipe length exceeds this, add refrigerant as follows.

Method 1:

Add refrigerant according to the pipe length.

Model	Factory pre-charge amount, OZ(kg)	Liquid pipe diameter	Additional refrigerant amount based on liquid pipe length >7.5m
2/3Ton	91.7(2.6)	9.52	40g/m
4/5Ton	123.5(3.5)	9.52	

Calculation Method:

Standard pipe length for the unit is A, and the actual length is B.

The additional refrigerant amount W = (B - A) * 40.

For example, if the pipe length for a certain project is 15 meters, then the additional refrigerant amount for the unit should be W = (15 - 7.5) * 40 = 300g.

Method 2:

Add refrigerant based on subcooling.

Calculate the subcooling at the liquid pipe valve.

Measure the liquid pipe temperature = _____ ℃

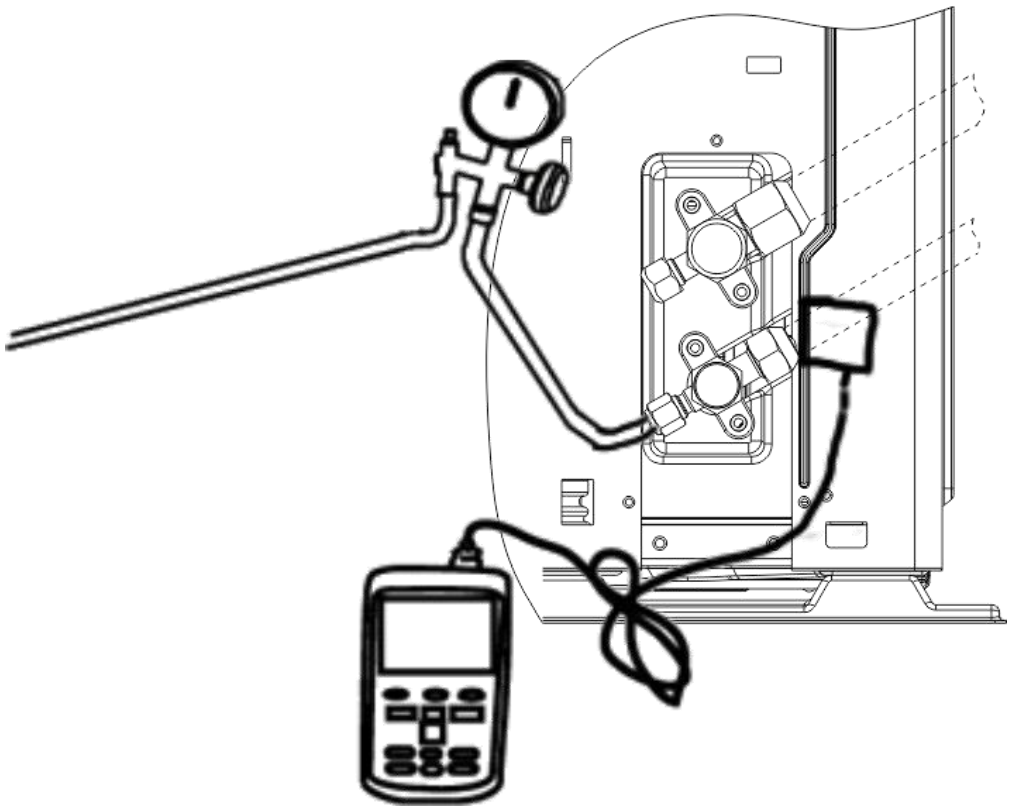
Measure the liquid pipe pressure = _____ MPa

Calculate the subcooling = _____ ℃

If the calculated subcooling value is lower than the design value, add refrigerant. Repeat the above steps. You can also quickly determine the subcooling using the table below. For example, if the liquid pipe temperature is 12.8℃ and the liquid pipe gauge pressure is 1.19, then the subcooling is 3.3℃.

Commissioning

Liquid pipe temp.（℃）	Subcooling（℃）							
	3.3	3.9	4.4	5.0	5.6	6.1	6.7	7.2
	Liquid pipe gauge pressure（MPa）							
12.8	1.19	1.21	1.23	1.25	1.28	1.30	1.32	1.34
15.6	1.30	1.32	1.34	1.37	1.39	1.41	1.43	1.45
18.3	1.41	1.43	1.45	1.48	1.50	1.52	1.55	1.58
21.1	1.52	1.55	1.58	1.60	1.63	1.65	1.68	1.70
23.9	1.65	1.68	1.70	1.73	1.76	1.79	1.81	1.83
26.7	1.79	1.81	1.83	1.86	1.90	1.92	1.95	1.98
29.4	1.92	1.95	1.98	2.01	2.03	2.07	2.10	2.13
32.2	2.07	2.10	2.13	2.16	2.19	2.22	2.25	2.28
35.0	2.22	2.25	2.28	2.32	2.35	2.39	2.42	2.45
37.8	2.39	2.42	2.45	2.48	2.52	2.55	2.59	2.63
40.6	2.55	2.59	2.63	2.66	2.70	2.74	2.77	2.81
43.3	2.74	2.77	2.81	2.85	2.88	2.92	2.96	3.00
46.1	2.92	2.96	3.00	3.04	3.08	3.12	3.16	3.21
48.9	3.12	3.16	3.21	3.25	3.29	3.33	3.37	3.42
51.7	3.33	3.37	3.42	3.46	3.50	3.55	3.59	3.64



The optimal design value for subcooling during unit operation is 4.5℃ (±1℃). If the subcooling is lower than the design value, add refrigerant; if the subcooling is higher than the design value, reduce refrigerant.

Commissioning

4.2. System Operating

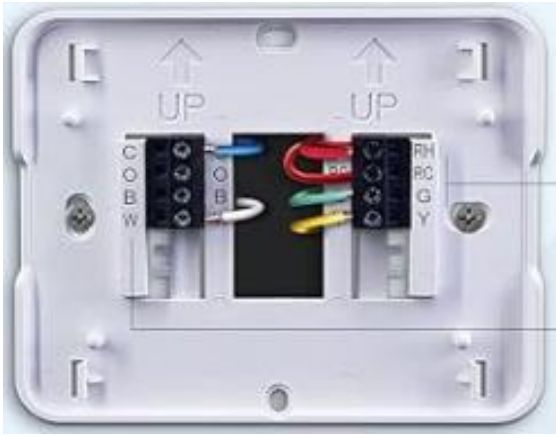
Commissioning the unit via universal 24V thermostat.



（Sample）

NOTE:

Before commissioning the unit, make sure the B (4-way valve control signal) on Heat (Factory default). If not，Please change it from O (cool) to B (heat) via/on the thermostat , as below pictures shown.



Terminal Function

RH,(or R, R5, 5) -24V Power (heating)
RC - 24V Power (Cooling)
G - Fan Relay
Y, (or Y1) - Cooling Relay

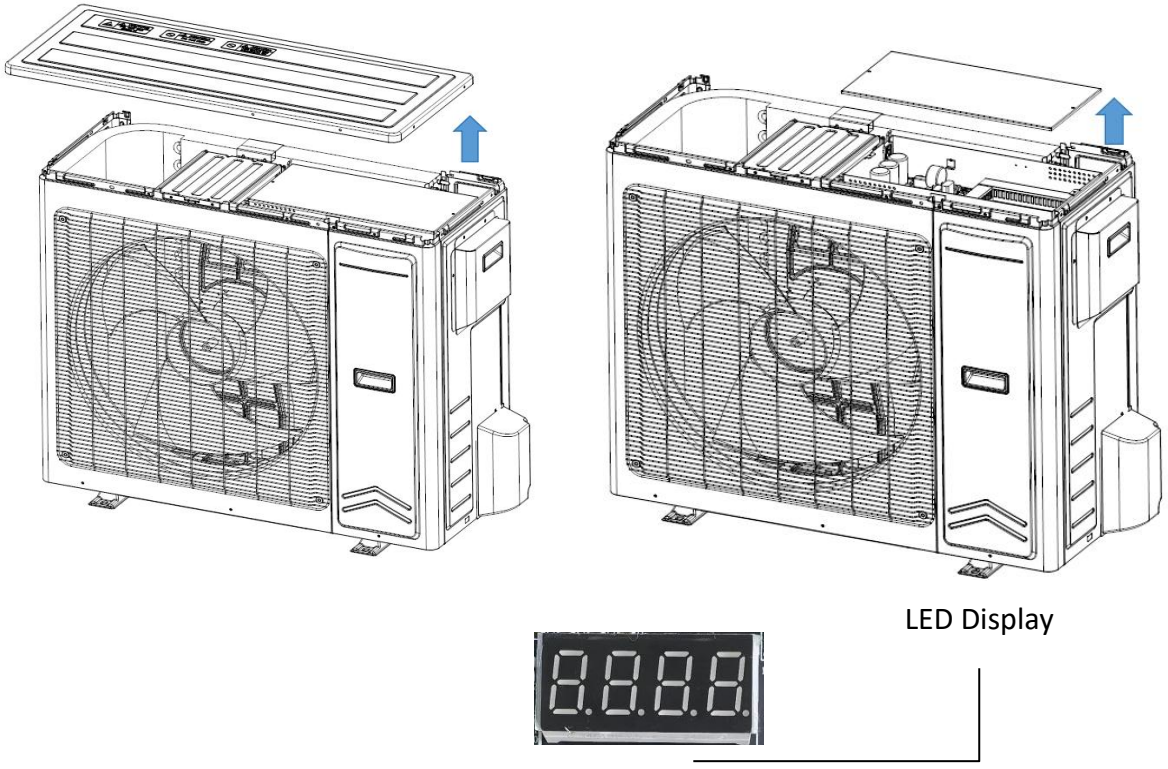
C - Common Wire
O --- Reversing Valve (for heat pump applications energized in Cool mode)
B - Reversing Valve (for heat pump applications energized in Heat mode)**-(Factory Default)**
W.(or W1, 4) - Heating Relay

The **C** terminal does not have to be connected when the thermostat is powered by batteries.

Maintenance and Service

Check outdoor unit operation through below method:

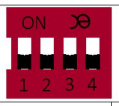
Open the top cover of the outdoor unit (ODU) and the electrical box. LED on the main board displays the operating status of the outdoor unit.



S.N	Working Mode	Symbol
1	Cooling	
2	Heating	

4.3. Unit Settings

The unit can achieve different functions through DIP switch settings. The specific settings are as follows.



S301, UNIT MODEL DIP SWITCH

#1	#2	#3	#4	Outdoor Unit Model	
1	2	3	4	60K	5-ton
ON	2	3	4	48K	4-ton
ON	ON	3	4	36K	3-ton
ON	2	ON	4	24K	2-ton

5. Maintenance and Service

5.1. Fault Codes

Fault codes for the unit and their corresponding meanings are shown in the table below.

If the unit experiences a fault and cannot operate normally, you may click the “Fault Reset”button to perform a reset. After the reset, the unit will automatically determine whether it can resume normal operation. If it can operate normally, it will restart automatically. If the unit cannot operate normally, it will fail to restart and the corresponding fault code will be displayed again. If the reset is ineffective, please contact your local distributor or authorized service centre.

S.N	Code	Code Name	Actions
1	C6	Indoor and outdoor unit communication fault (485 applicable)	Check the connection cable if secured.
2	E2	Outdoor ambient temperature sensor fault	1) Unit stop; 2) Check the circuit, and then replace a new sensor.
3	E3	Outdoor tube of coil temperature sensor fault	1) Unit stop; 2) Check the circuit, and then replace a new sensor.
4	E4	Outdoor exhaust temperature sensor fault	1) Unit stop; 2) Check the circuit, and then replace a new sensor.
5	E5	Outdoor ambient temperature sensor fault	1) Unit stop; 2) Check the circuit, and then replace a new sensor.
6	E8	Outdoor exhaust temperature sensor defective	1) Unit stop, Triggered 3 times/60 minutes, system lockout, need manual restart; 2) Automatic reset after temperature back to normal;
7	H0	High discharge temperature protection	1) Unit stop, Triggered 6 times/60 minutes, system lockout, need manual restart; 2) Automatic reset after temperature back to normal;
8	H1	Overload protection	1) Unit stop, Triggered 6 times/60 minutes 2) Check the unit working conditions, such as power supply, manual restart;
9	H3	Anti-freezing protection	1) Unit stop, Triggered 6 times/60 minutes, system lockout, need manual restart; 2) Automatic reset after temperature back to normal;
10	H4	Refrigerant system high pressure protection	1) Unit stop, Triggered 3 times/60 minutes, system lockout, need manual restart; 2) Automatic reset after pressure back to normal;
11	H7	Four-way valve reversal abnormal protection	1) Triggered 2 times/180minutes, system lockout, need manual restart; 2)Automatic reset after pressure back to normal;
12	H8	Outdoor Ambient temperature abnormal protection	1) Unit stop; 2) detect when turn the unit on;
13	LL	Prevent System Operation from Liquid Shock	1) triggered 2 times/200minutes, system lockout, need manual restart; 2)Automatic reset after pressure back to normal;
14	FL	Unit Lack of refrigerant protection	1) Check if the unit is lack of refrigerant; 2) Find the leaks, and discharge all refrigerant; 3) Then repair the leaks.
15	LE	Refrigerant leakage alarm and protection	1) Check and find the leaks, and discharge all refrigerant; 3) Then repair the leaks.

Maintenance and Service

If the drive has the faults, the unit will be shut down and the fault codes will be displayed as below table.

S.N	Code	Code Name
1	L0	Compressor out-of-step protection
2	L1	Compressor start failure protection
3	L2	Compressor phase current peak protection
4	L3	Compressor phase current RMS protection
5	L4	Compressor module protection
6	L5	Compressor module overheat protection
7	L6	Compressor phase current detection circuit fault
8	L7	Compressor phase loss protection
9	L8	Outdoor DC fan protection
10	L9	Outdoor DC fan phase current detection circuit fault
11	U0	Outdoor unit EEPROM fault
12	U1	Charging fault
13	U2	Feed-forward voltage protection
14	U3	DC input over-voltage protection
15	U4	DC input under-voltage protection
16	U5	DC bus voltage drop protection
17	U6	Unit current detection circuit fault
18	U7	Unit current protection
19	U8	PFC current detection circuit fault
20	U9	PFC protection
21	UE	Outdoor unit main control and drive communication fault

Note: If there are any alarms, can not be reset automatically, replace a new drive.

5.2. Fault Analysis and Troubleshooting

S.N	Code	Code Name	Unit Status	Root Cause	Solutions
1	C6	Indoor and outdoor unit communication fault (485 applicable)	Unit will be shut down	The connection cable may be loosen	Secured the connection cable between IDU and ODU.
				Indoor unit connection port may be broken.	Replace a new controller board.
				Outdoor unit connection port may be broken.	Replace a new controller board
2	E2	Outdoor ambient temperature sensor fault	Unit will be shut down	The sensor may be broken.	Check the circuit and the sensor, if there is no changes by holding it, please replace a new sensor.
3	E3	Outdoor tube of coil temperature sensor fault	Unit will be shut down	The sensor may be broken.	Check the circuit and the sensor, if there is no changes by holding it, please replace a new sensor.
4	E4	Outdoor exhaust temperature sensor fault	Unit will be shut down	The sensor may be broken.	Check the circuit and the sensor, if there is no changes by holding it, please replace a new sensor.
5	E5	Outdoor ambient temperature sensor fault	Unit will be shut down	The sensor may be broken.	Check the circuit and the sensor, if there is no changes by holding it, please replace a new sensor.
6	E8	Outdoor exhaust temperature sensor defective	Unit will be shut down and if the alarm triggered 3 times/ hour, the unit will be locked out.	The sensor may be broken.	Check the circuit and the sensor, if there is no changes by holding it, please replace a new sensor.
7	H0	High discharge temperature protection	Unit will be shut down and if the alarm triggered 6 times/ hour, the unit will be locked out.	The discharge temperature sensor may be broken	Check the circuit and the sensor, if there is no changes by holding it, please replace a new sensor.
				Lack of refrigerant	Check if the system low pressure and high pressure are in normal range. If the low pressure is OK, charge more refrigerant. If the low pressure is too low, even near zero, means there may be some leaks, find them and repair them according to the requirements.
8	H1	Overload protection	Unit will be shut down and if the alarm triggered 6 times/ hour, the unit will be locked out.	The power supply may be out of required range.	Check the power supply and improve it
				The condenser may be too dirty and blocked	Clean the condenser.
9	H3	Anti-freezing protection	Unit will be shut down and if the alarm triggered 6 times/ hour, the unit will be locked out.	The evaporating temperature is too low	Check if the supply fan motor is broken, if yes, Please replace a new fan motor.
				The thermal expansion valve is broken or defective	Check if the thermal expansion valve is broken, if yes, Please replace a new valve.

Maintenance and Service

11	H4	High pressure protection	Unit will be shut down and if the alarm triggered 3 times/ hour, the unit will be locked out.	Lack of the refrigerant.	Check if the system low pressure and high pressure are in normal range. If the low pressure is OK, charge more refrigerant. If the low pressure is too low, even near zero, means there may be some leaks, find them and repair them according to the requirements.
				The condenser is too dirty and blocked	Clean the condenser.
				The working temperature is too high and out of working range.	Check if there is air shorted around the condenser, change a place, or remove all obstacles.
12	H7	Four-way valve reversal abnormal protection	Unit will be shut down and if the alarm triggered 2 times/180 minutes, the unit will be locked out.	The prime power is low than minimum limit, such as lower than 160Vac.	Check if the prime power is too low, restart the unit after the prime power goes back.
				The four-way valve is broken	Check if the four way valve can work normal, If not, Please replace a new four-way valve.
				The actuator of four-way valve at the middle place due to the low pressure	Restart the unit, and check if the four way valve can go back to normal. If not, Please replace a new four-way valve.
13	H8	Outdoor Ambient temperature abnormal protection	Unit will be shut down	The operation temperature exceeds the normal working range.	Normal Cooling: 10~60℃ (50~129°F) Normal Heating range: -25~30℃ (-13~86°F)
14	LL	Prevent system operation from liquid shock	Unit will be shut down and if the alarm triggered 2 times/200 minutes, the unit will be locked out.	Too many refrigerant charged.	Discharge/recover some refrigerant.
15	FL	Unit Lack of refrigerant protection	Unit will be shut down.	Lack of refrigerant.	Check if the system low pressure and high pressure are in normal range. If the low pressure is OK, charge more refrigerant. If the low pressure is too low, even near zero, means there may be some leaks, find them and repair them according to the requirements.
16	LE	Refrigerant leakage alarm and protection via refrigerant leakage sensor	Unit will be shut down.	There may be some leaks in indoor unit.	Check and find the leaks, and discharge all refrigerant; Then repair the leaks.

6. After-sales and Service

Within the warranty period, if the machine fails to operate normally under reasonable usage conditions, please contact your nearest service office or seller for free repairs.

Users must designate a responsible person to manage and operate the unit according to the guidelines provided in "User Manual." Accidents caused by improper use are not covered by our warranty, and the repair costs, as well as repairs outside the warranty period, will be borne by the user.

6.1. After-sales Service

Maintenance and repairs must be carried out by the dealer. Improper maintenance or repair may result in water leakage, electric shock, or fire.

If moving or reinstalling is necessary, it must be done by the dealer. Improper installation may lead to water leakage, electric shock, or fire.

When after-sales service is required, please contact the dealer and provide the following details:

a) Heat pump unit model (see the warranty card).

b) Factory serial number and installation date (see the warranty card).

c) Detailed description of the fault.

d) Your name, address, and contact number.

For faults occurring beyond the warranty period or caused by improper use, a service fee will be charged by the company for after-sales service.

6.2. Maintenance (Preventive and Corrective)

After a period of use, the performance of the heat pump (chilled water) unit will decrease due to the accumulation of dust inside the unit. So, maintenance and upkeep are required.

In addition to performing daily maintenance and upkeep yourself, we recommend signing a maintenance contract with us.

For details about this professional service, please contact the dealer.

6.3. Inquiry

Please contact the dealer or the company's after-sales service department for after-sales service.

6.4. Warranty

This product has a warranty period. After the dealer fills in the necessary items, they will provide you with the warranty card. Please check the contents of the warranty card and keep it in a safe place.

To request free repairs during the warranty period, you must notify the dealer and present the warranty card. Otherwise, even within the warranty period, service may incur charges.

Maintenance and Service

Warranty Card

User Name		**Invoice No.**	
Purchase Store		**Purchase Date**	
Installer Company		**Installation Date**	
Model Type		**Installer Sign**	
Installation Service Center Contact Info.			
Complete Unit Barcode			

Maintenance and Service

Maintenance Record

Repair Date	Fault Description and Handling	Maintenance Company	Repair Technician Signature and Contact No.

DECLARATION:

With the technology updates of the product, the content of the user manual for products of the same model as this product may be changed, and the updated parts are subject to no further notice.
All illustrations shown in this manual are for illustrative purposes only. Please refer to the purchased product for actual appearance.
Due to continuous product upgrades, some parameters may be changed.
The modified parameters are not subject to further notice.
Please refer to the nameplate parameters of this product for accuracy.
Copy right © Zhuhai SAMYOU Environmental Technology Co., Ltd.

VINO CANADA

AHRI ratings update

Canadian technical edition · 5 November 2026

AERA ODU installation manual | editorial addendum
This edition updates only the rated cooling capacity at 95°F, rated heating capacity at 47°F, SEER2, EER2 and HSPF2 region IV to the verified AHRI records below. It is a VINO Canada editorial edition, not a manufacturer reissue or an AHRI certificate.

AHRI field	AERA 24	AERA 36	AERA 48	AERA 60
Outdoor model	VUH24-VA6BA(O)	VUH36-VA6BA(O)	VUH48-VA6BA(O)	VUH60-VA6BA(O)
Indoor model	VUH24-VA6BA(I)	VUH36-VA6BA(I)	VUH48-VA6BA(I)	VUH60-VA6BA(I)
AHRI reference	218597508	217447526	218597507	218361279
AHRI date	2026-07-28	2026-07-28	2026-06-16	2026-06-16
AHRI brand	VINO	SAMYOU	VINO	VINO
Status	Active	Active	Active	Active
Cooling at 95°F (BTU/h)	24,000	34,200	48,000	52,500
Heating at 47°F (BTU/h)	24,000	34,200	48,000	54,000
SEER2	21.0	20.2	20.0	19.6
EER2	13.0	11.5	12.0	11.5
HSPF2 region IV	11.0	10.2	11.0	10.8

AERA 36: AHRI-certified data for the exact combination under the SAMYOU manufacturer brand. The SAMYOU certificate is retained unchanged.

The remaining manufacturer information is preserved, including installation, safety, dimensions, electrical data, performance points at other temperatures and operating ranges. The supplier capacity ratios at 17/47°F and 5/47°F are retained as supplied; they are not recalculated from the AHRI 47°F ratings in this edition.

Source authority: AHRI governs the exact combination and certified ratings above. Official ENERGY STAR records govern its identifier and cold-climate designation. Hydro-Québec / LogisVert alone governs eligibility and financial assistance. No AERA 36 grant amount is stated or inferred.

Original manufacturer source (unchanged):
VNO_MANUAL-CENTRAL-ODU_S52420168_EN_091026_V01.pdf

https://drive.google.com/file/d/1qOhpCXH-D4WOsgTkWe8KmvlxjKkZRLiP/view

Editorial source: VNO_SITE_UPDATE-DATA_051126_V01.json · 2026-11-05

VINO Canada editorial addendum