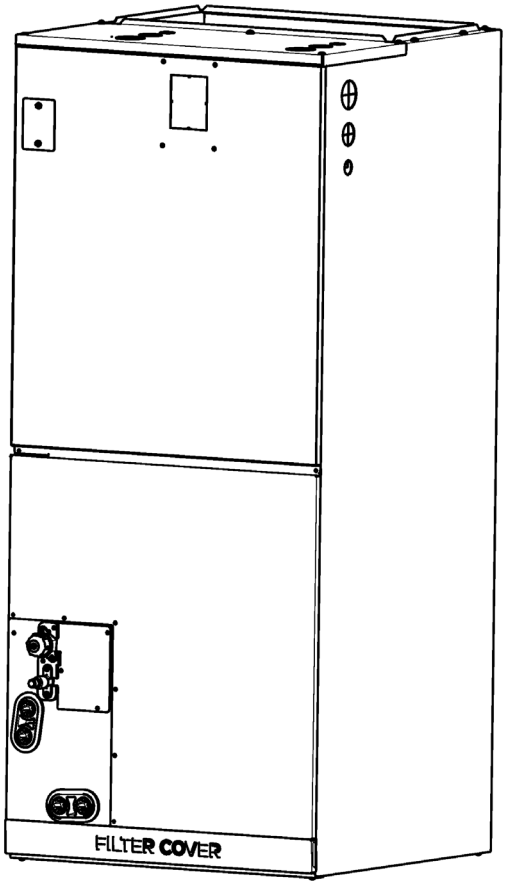
Installation Manual

SDi Decades Extreme

Air Handlers
3/5Ton Capacity
R-410A EEV Inside



NOTE: Appearance of unit may vary. Installation must be performed in accordance with the requirements of NEC and CEC by authorized personnel only.

Contents

All phases of this installation must comply with National, State and Local Codes.

IMPORTANT NOTE:
Read this manual carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.

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

AHRI CERTIFIED® www.ahridirectory.org Unitary Small AC AHRI Standard 210/240 Certification applies only when the complete system is listed with AHRI.

AHRI CERTIFIED® www.ahridirectory.org Unitary Small HP AHRI Standard 210/240 Certification applies only when the complete system is listed with AHRI.

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1. Safety

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

Explanation of Symbols

⚠ **WARNING** The signal word indicates a hazard with a medium level of risk which, if not avoided, may result in death or serious injury.

⚠ **CAUTION** The signal word indicates a hazard with a low degree of risk which, if not avoided, may result in minor or moderate injury.

⚠ **NOTICE** The signal word indicates important information (e.g. damage to property), but not danger.

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

⚠ WARNING

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

WARNINGS FOR PRODUCT USE

- If an abnormal situation arises (like a burning smell), immediately turn off the unit and disconnect the power. Call your dealer for instructions to avoid electric shock, fire or injury.
- **Do not** insert fingers, rods or other objects into the air inlet or outlet. This may cause injury, since the fan may be rotating at high speeds.
- **Do not** use flammable sprays such as hair spray, lacquer or paint near the unit. This may cause fire or combustion.
- **Do not** store gasoline or flammable substances near air conditioner. Emitted gas may collect around the unit and cause explosion.
- **Do not** Install your air conditioner in a wet room such as a bathroom or laundry room. Too much exposure to water can cause electrical components to short circuit.
- **Do not** expose your body directly to cool air for a prolonged period of time.
- **Do not** allow children to play with the air conditioner. Children must be supervised around the unit at all times.
- If the air conditioner is used together with burners or other heating devices, thoroughly ventilate the room to avoid oxygen deficiency and carbon monoxide build up.

- In certain environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.
- Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional HVAC installer or equivalent, service agency, or the gas supplier.

ELECTRICAL WARNINGS

- The product must be properly grounded at the time of installation, or electrical shock may occur.
- For all electrical work, follow all local and national wiring standards, regulations, and the Installation Manual. Connect cables tightly, and clamp them securely to prevent external forces from damaging the terminal. Improper electrical connections can overheat 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.
- 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 the wiring rules.

WARNINGS FOR PRODUCT INSTALLATIONF

- 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.
- (In North America, installation must be performed in accordance with the requirement of NEC and CEC by authorized personnel only.)
- Contact an authorized service provider for repair or maintenance of this unit. This appliance shall be installed in accordance with national wiring regulations.
- Only use the included accessories, parts, and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, fire, and can cause the unit to fail.
- Install the unit in a firm location that can support the unit's weight. If the chosen location cannot support the unit's weight, or the installation is not done properly, the unit may fall and cause serious injury and damage.
- Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.
- For units that have an auxiliary electric heater, do not install the unit within 1 meter (3 feet) of any combustible materials.
- **Do not** install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause fire.
- **Do not** turn on the power until all work has been completed.
- When moving or relocating the air conditioner, consult experienced service technicians for disconnection and reinstallation of the unit.

- How to install the appliance to its support, please read the information for details in "indoor unit installation" and "outdoor unit installation" sections .
- Excessive Weight Hazard - Use two or more people when moving and installing the unit. Failure to do so can result in back or other type of injury.

WARNINGS FOR CLEANING AND MAINTENANCE

- Turn of 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.

⚠ CAUTION

- Turn of the air conditioner and disconnect the power if you are not going to use it for a long time.
- Make sure that water condensation can drain unhindered from the unit.
- **Do not** operate the air conditioner with wet hands. This may cause electric shock.
- **Do not** use device for any other purpose than its intended use.
- **Do not** climb onto or place objects on top of the outdoor unit.
- **Do not** allow the air conditioner to operate for long periods of time with doors or windows open, or if the humidity is very high.
- As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

⚠ NOTICE

NOTE ABOUT FUSE SPECIFICATIONS

- **Do not** allow the air conditioner to operate for long periods of time with doors or windows open, or if the humidity is very high.
- As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

NOTE ABOUT FLUORINATED GASSES (NOT APPLICABLE TO THE UNIT USING R290 REFRIGERANT)

- This air-conditioning unit contains fluorinated greenhouse gasses. 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. (European Union products only).
- Installation, service, maintenance and repair of this unit must be performed by a certified technician.
- Product uninstallation and recycling must be performed by a certified technician.
- When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.

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

MODEL	36K	60K
Test pressure	0.5 in H2O(125Pa)	0.5 in H2O(125Pa)

2. Locations and Dimensions

2.1 Locations

⚠ CAUTION

Install the indoor and outdoor units, cables and wires at least 1m (3-1/5′) from televisions or radios to prevent static or image distortion. Depending on the appliances, a 1m (3-1/5′) distance may not be sufcient.

The Indoor unit must be electrically grounded per national and local electrical code.

Select the installation location of 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.

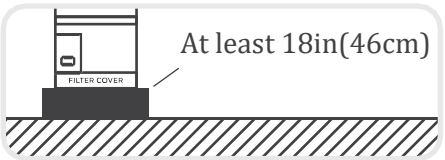
Areas that store flammable materials or gas.

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.

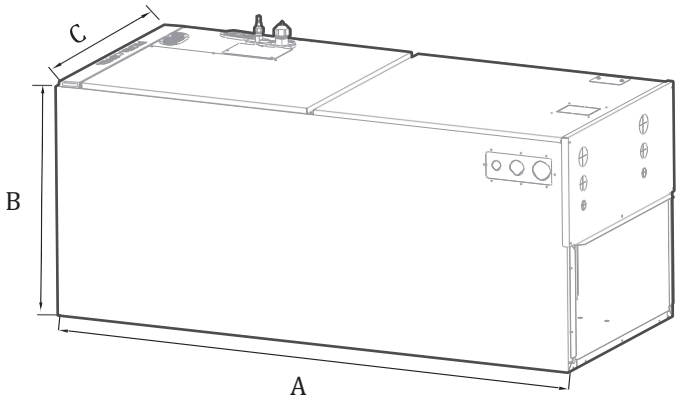
☑ Enough room for installation and maintenance.

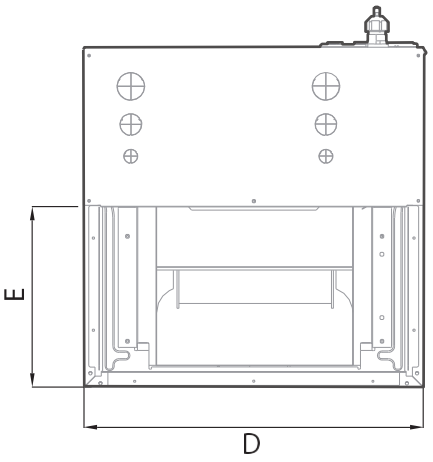
☑ Enough room for the connecting pipe and drainpipe.

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

2.2 Dimensions

Indoor units parts installation size





Model	Dimensions (in./mm)				
	A	B	C	D	E
36K	49(1245)	21(533)	21-1/50(534)	19-5/16(490)	10-1/4(260)
60K	53(1346)	21(533)	24-1/2(622)	22-27/32(580)	10-1/4(260)

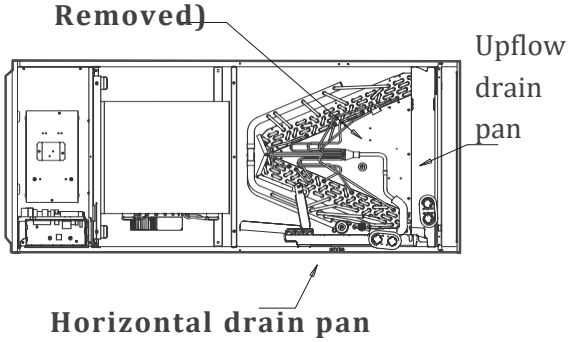
3. Applications

3.1 Indoor unit installation

⚠ WARNING

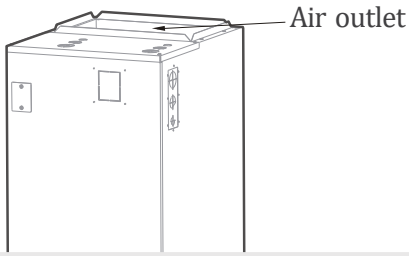
There must be an airtight seal between the bottom of the air handler and the return air plenum. Use fiberglass sealing strips, foil duct tape, caulking, or equivalent sealing method between the plenum and the air handler cabinet to ensure a tight seal. Return air must not be drawn from a room where this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

Preparation and precautions for indoor unit installation



⚠ WARNING

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



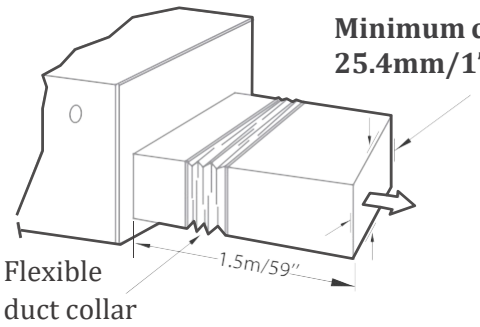
⚠ NOTICE

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

Recommended Distances Between the Indoor Unit

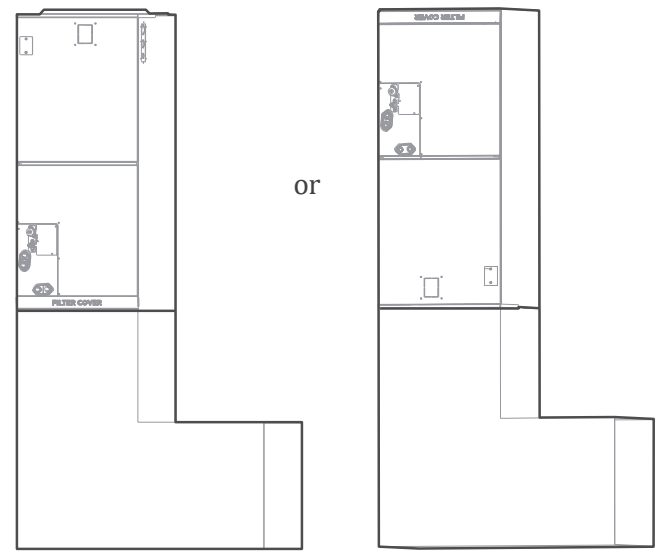
The distance between the mounted indoor unit should meet the specifications illlustrated in the following diagram.

Horizontal installations



The outlet side pipe length 1.5m/59".

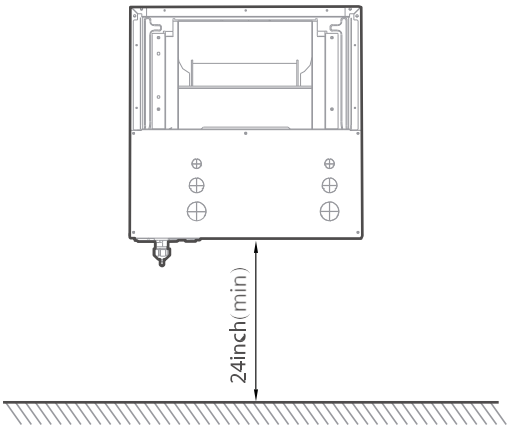
Vertical installations



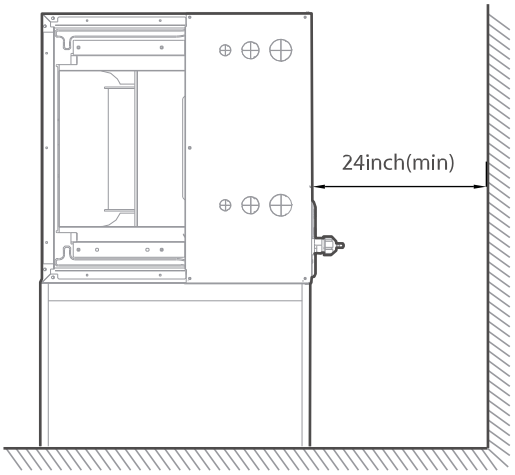
Fixing instructions: When installed vertically (upward or downward), the lower end of the air outlet needs to be connected to the L-shaped metal air duct and fastened by screws.

Select a solid and level site, keep enough space for proper installation and maintenance.

Adjust motor speed tap on indoor main control board (MCB) to select correct air flow according to blower performance table.



Vertical installations



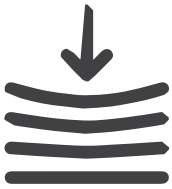
Horizontal installations

⚠ NOTICE

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 non-ducted (free blow) applications.
- Duct work should be fabricated and installed in accordance with local and/or national codes.

3.2 Indoor unit installation directions

⚠ 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.

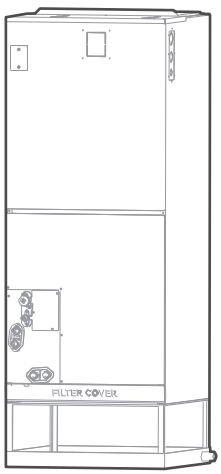
Selection of installation direction

Diferent installation directions

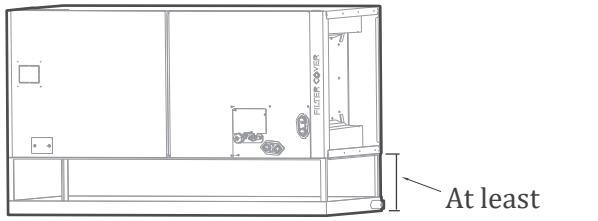
The units can be installed in a vertical (down and up)and Horizontal(right and left) configuration.

⚠ NOTICE

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

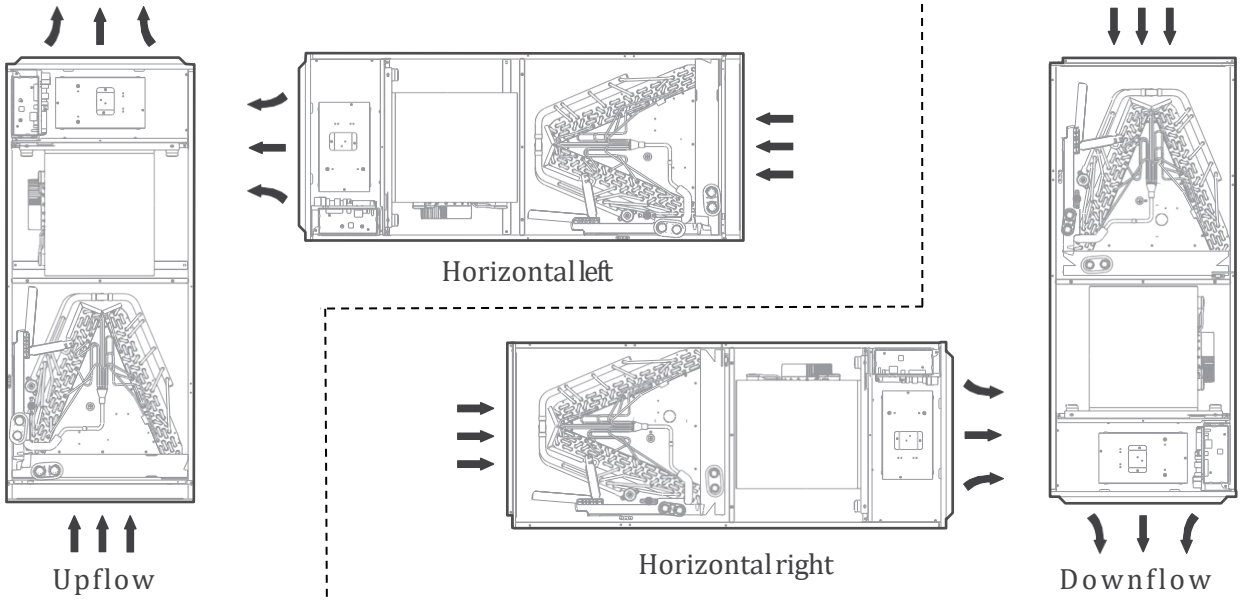


Verticalu p



Horizontal

Airflow direction of diferent installation directions

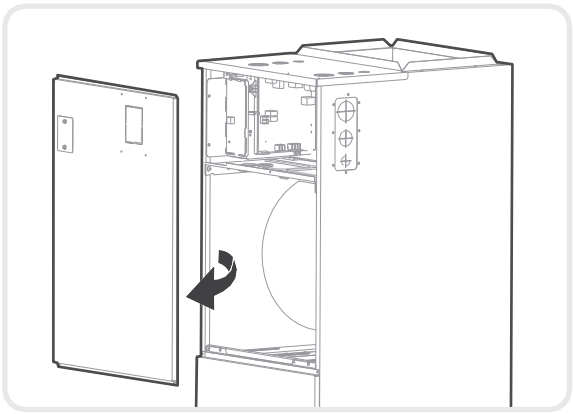


⚠ NOTICE

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

3.3 Vertical up-flow and Horizontal left-flow

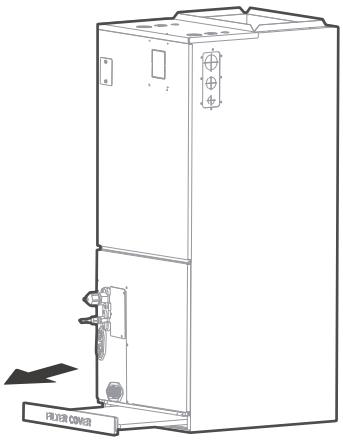
Vertical up-flow and horizontal left-flow configurations are the factory settings on all models.



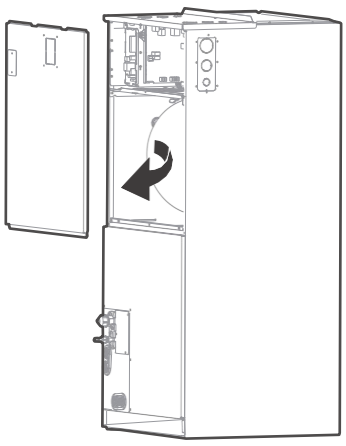
Step 1
Go straight to the regular installation.

3.4 Vertical down-flow and horizontal right-flow

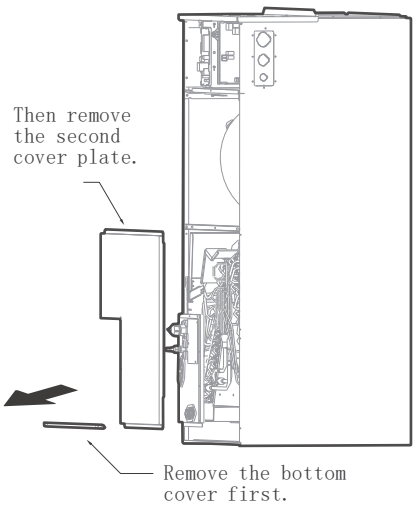
⚠ NOTICE
Vertical down-flow and horizontal right-flow configurations need to be field settings on all models.



Step 1
Remove the filter door, then take the filter of.



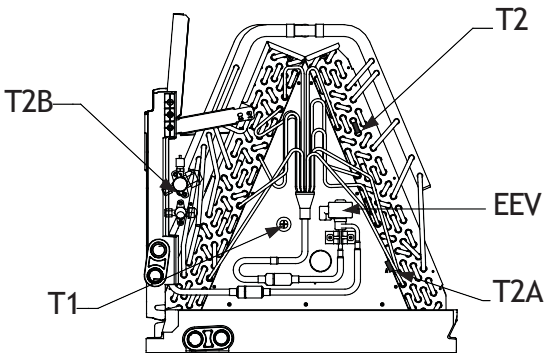
Step 2
Remove the upper cover assembly.



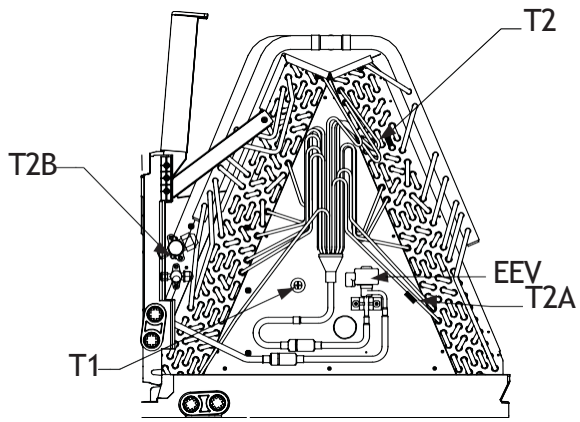
Step 3
Remove evaporator cover plate.

Step 4
Indication of the position of each temperature sensor of the evaporator:

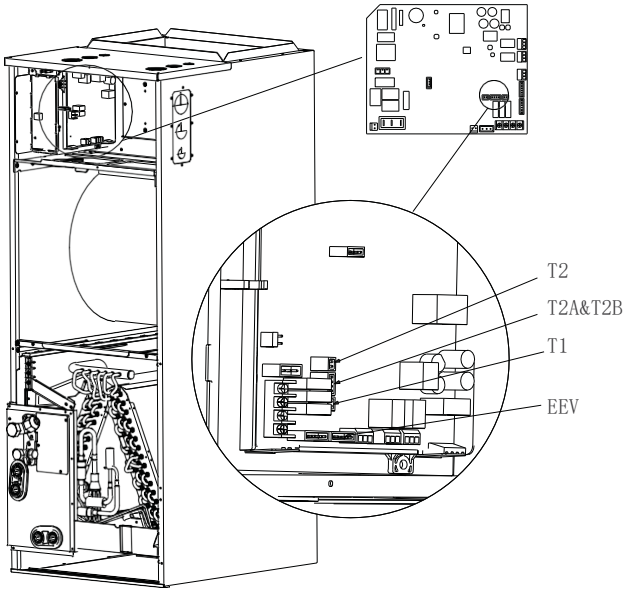
36K model



60K model



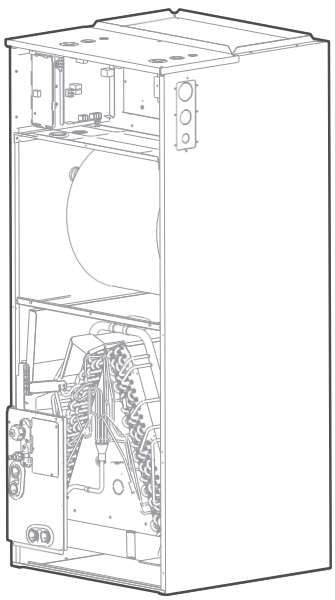
Step 5
Unplug temperature sensors T1, T2, T2A, T2B and electronic expansion valve (EEV) from the control board.
T1: Room temperature sensor
T2: Evaporator central sensor plug
T2A: Evaporator input sensor plug
T2B: Evaporator output sensor plug



⚠ NOTICE

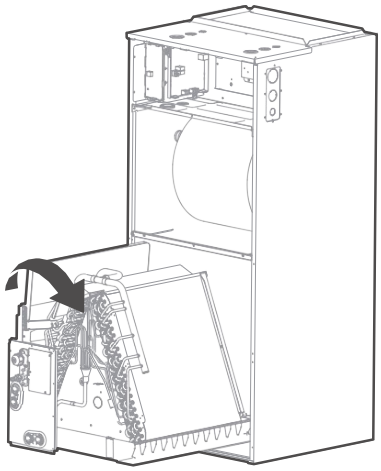
T2A and T2B are only available for some models.

Step 6
Remove T1, T2, T2A, T2B, EEV sensor wire ties.



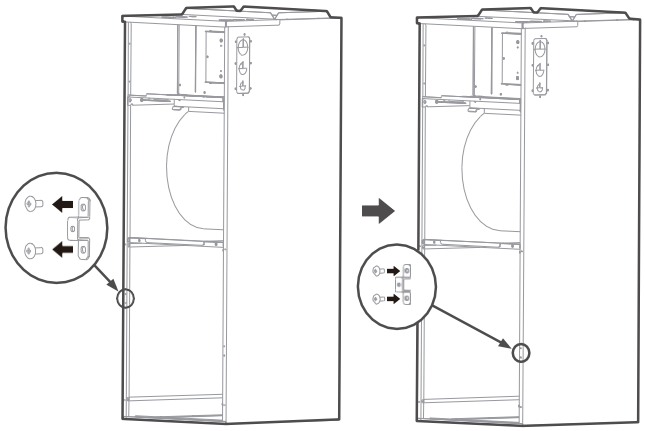
Step 7

Take out the evaporator and drain pan and rotate 180° (when your equipment need to be vertical downed configuration).



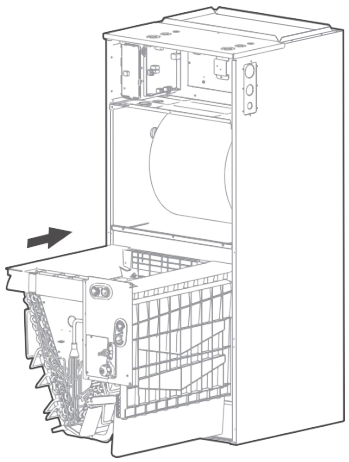
Step 8

Adjust the mounting parts position according to the direction of equipment.



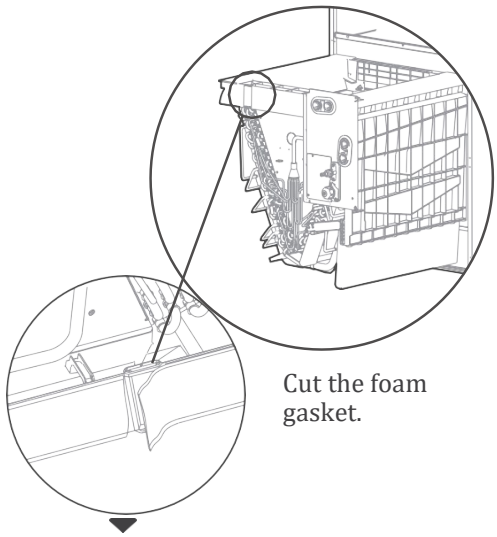
Step 9

Reinstall the evaporator and drain pan.

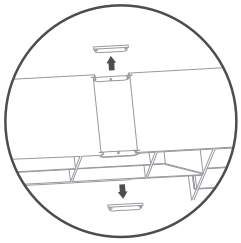


Step10

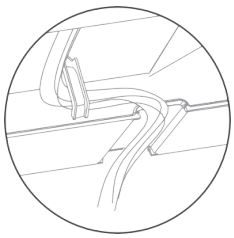
Reinstall T1, T2, T2A, T2B sensor plugs and electronic expansion valve (EEV) and tie up the sensor wires.



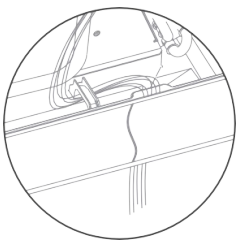
Cut the foam gasket.



Remove knockouts as shown in the figure.



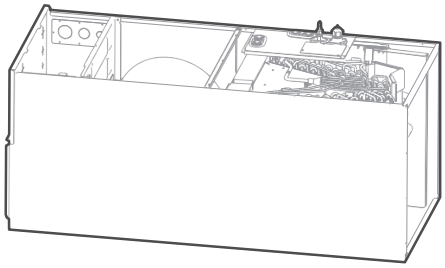
Hook the wire into the buckle and go down from the wire slot.



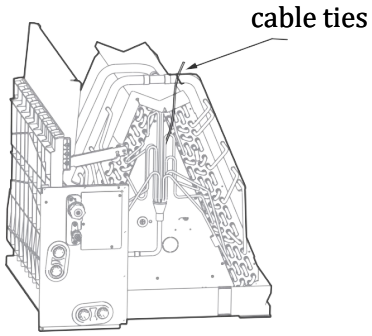
Replace foam gasket over wires.

⚠ NOTICE

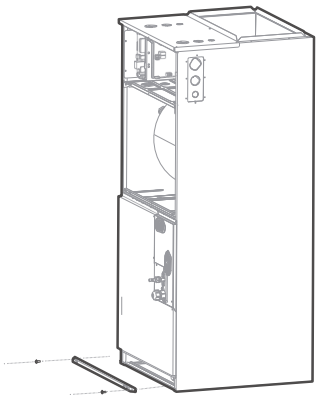
The wire body needs to pass through the wire groove from the drain pan and be stuck on the hook of the drain pan.



Step 12
Use cable ties to fix the room temperature sensor as shown in the figure.

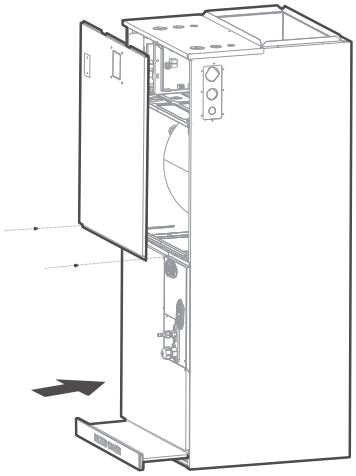


Step 13
Reinstall evaporator cover plate.



Step 14
Connect the wire according to the wiring diagram.

Step 15
Reassenble the upper cover and Reinstall the filter, filter cover plate.



⚠ CAUTION

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.

3.5 Air-handler refrigerant piping connection

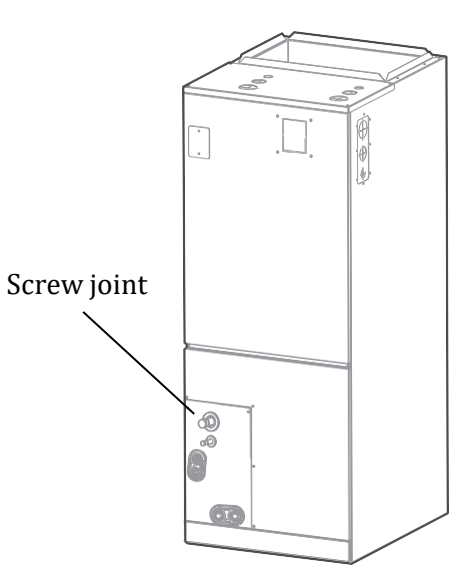
- Thread this pipeline through the wall and connect it to the outdoor unit.
- Insulate all the piping, including the valves of the outdoor unit.
- Open the stop valves of the outdoor unit to start the flow of the refrigerant between the indoor and outdoor unit.

⚠ CAUTION

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

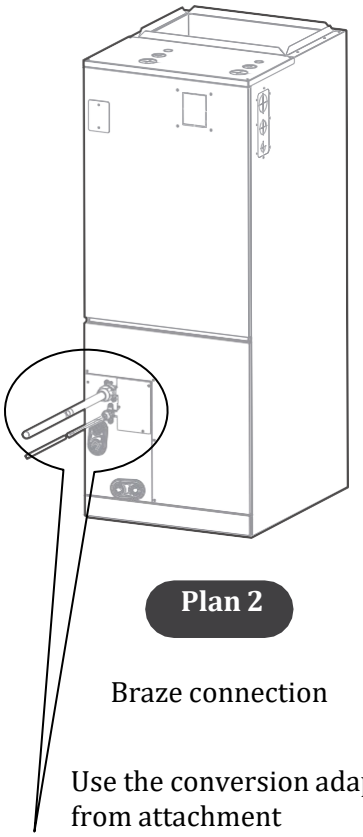
If there is a refrigerant leak, ventilate the area immediately and evacuate the system (refer to the Air Evacuation section of this manual).

Correct Refrigerant piping Connecting installation methods



Plan 1

Threaded connection

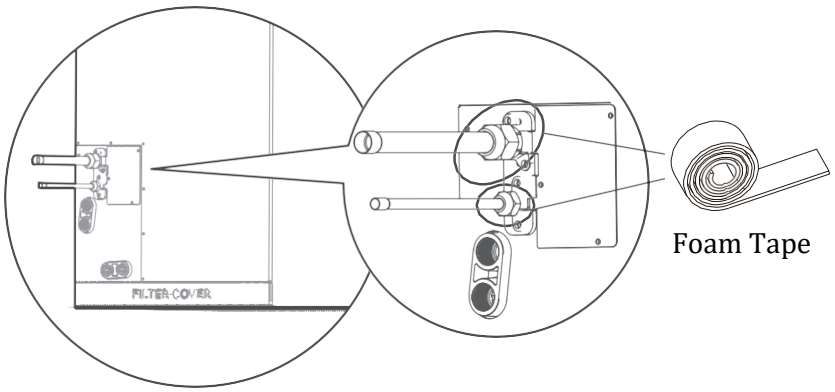


Plan 2

Braze connection

Use the conversion adapter from attachment

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



4. Electrical Wiring

⚠ WARNING

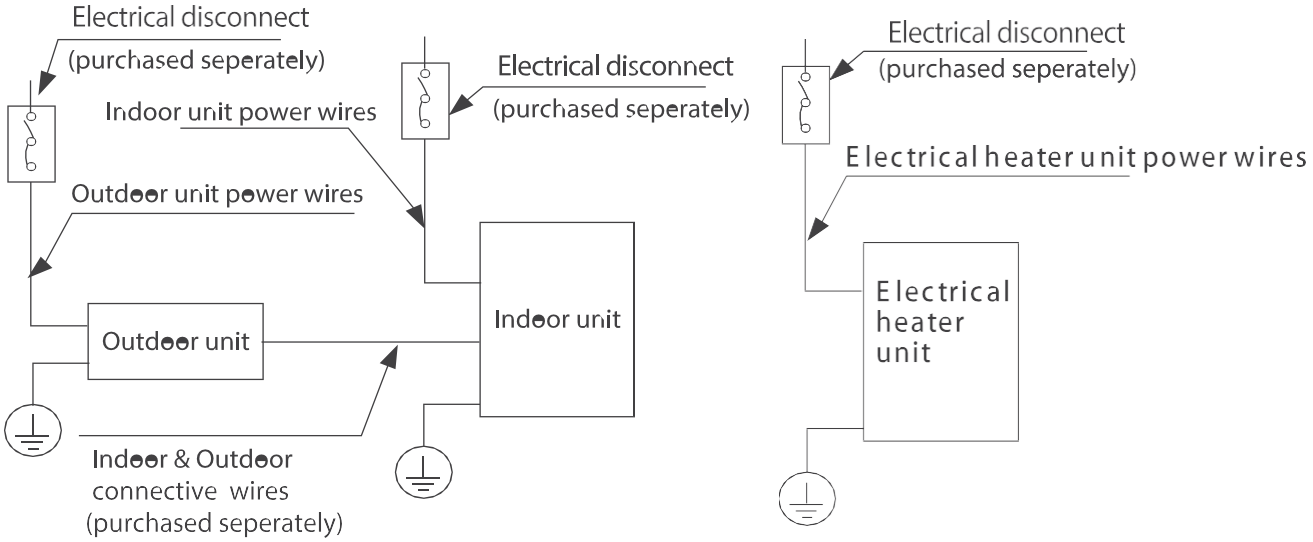
BEFORE PERFORMING ANY ELECTRICAL WORK, READ THESE WARNINGS.

- 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 Diagramlocated 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. Insufcient 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 circult 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.
- 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.
- Only connect the unit to an individual branch circuit. Do not connect another appliance to that Circuit.
- 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 of. After turning of the power, always wait 10 minutes or more before you touch the electrical components.
- Make sure that you do not cross your electrical wiring with your signal wiring. This may cause distortion, interference or possibly damage to circuit boards.
- No other equipment should be connected to the same power circuit.
- Connect the outdoor wires before connecting the indoor wires.

⚠ WARNING

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

Wiring overview



⚠ NOTICE

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

4.1 Power Wiring

⚠ CAUTION

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

Step 1: Prepare the cable for connection.

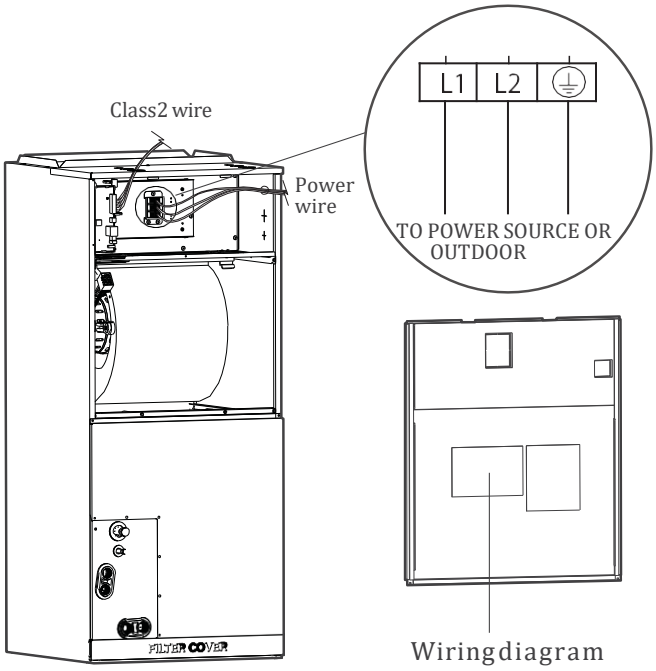
1.Using wire strippers, strip the insulating jacket from both ends of the signal cable to reveal about 15cm (5.9”) of the wire.
2.Strip the insulation from the ends of the wires.

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

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

Step 3: Connect the wires to the terminals.

1. Thread the power cable and the signal cable through the wire outlet
2. Match the wire colors/labels with the labels on the terminal block. Firmly screw the wires of each wire to its corresponding terminal. Refer to the Serial Number and Wiring Diagram located on the cover of the electric control box.



Wiringdiagram

⚠ WARNING

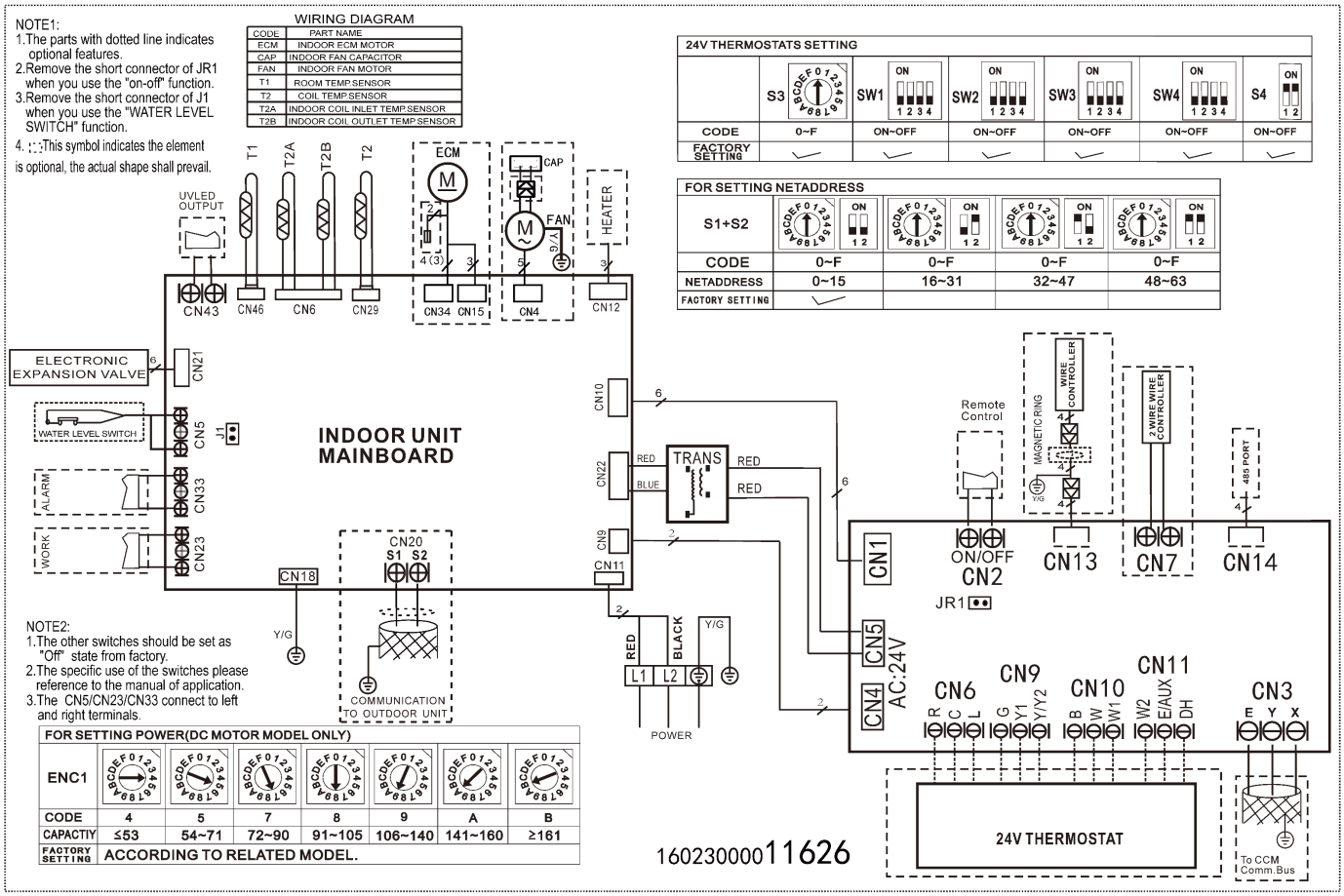
ISOLATE THE POWER SUPPLY LEADS AND COMMUNICATION LEADS BY THE STRAIN RELIF AND KEEP POWER SUPPLY LEADS AWAY FROM COMMUNICATION LEADS.

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

⚠ CAUTION

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

Wiring Diagram



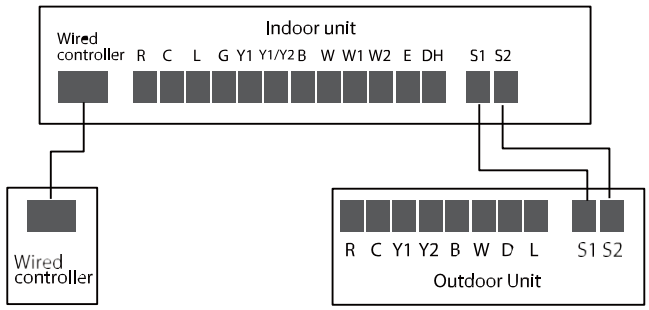
4.2 Control Wiring

⚠ WARNING

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

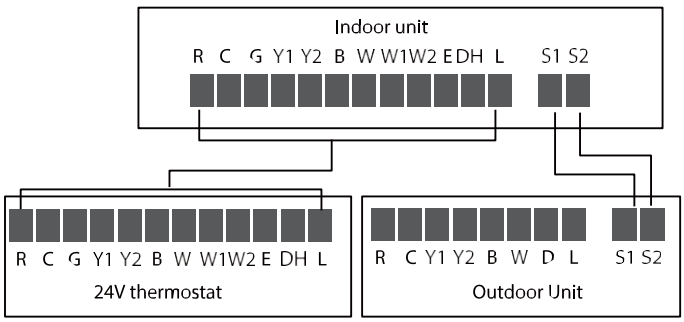
Connection method A:

Refer to the wiring method of internal and external machine communication and wired controller as follows:



Connection method B:

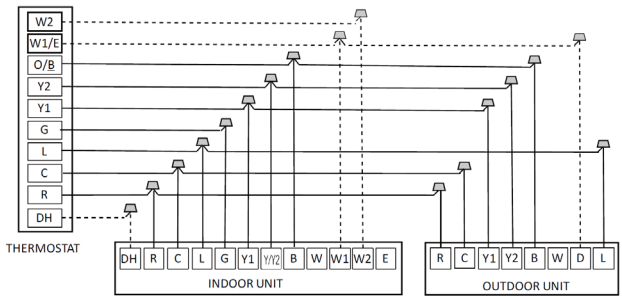
To use a 24V thermostat, you need to refer to the following wiring:



Connection method C:

When using a 24v thermostat, please refer to the non-communicating wiring diagrams, the following wiring diagram are suitable for the AHU and ODU with 24v thermostat:

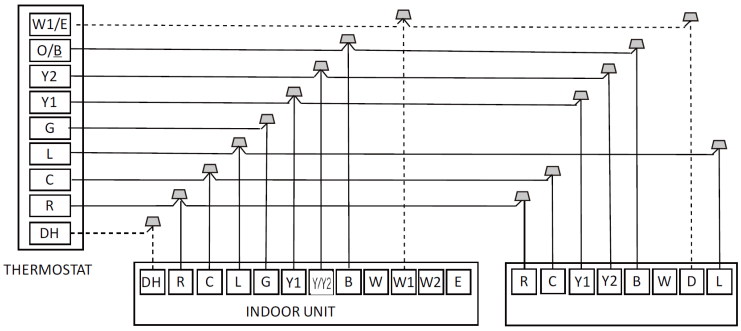
- Wiring for 4H and 2C thermostat



S4-1 Default on， DH function off. Turn switch off to activate DH function.

S4-2 Default on, W1 and W2 shorted for single stage Aux heat operation. Turn off to separate stages.

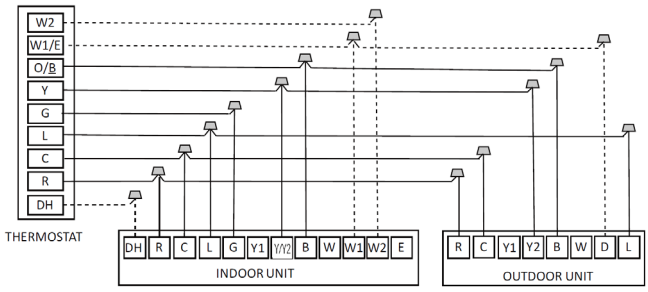
- Wiring for 3H and 2C thermostat



S4-1 Default on， DH function off. Turn switch off to activate DH function.

S4-2 Default on, W1 and W2 shorted for single stage Aux heat operation. Turn off to separate stages.

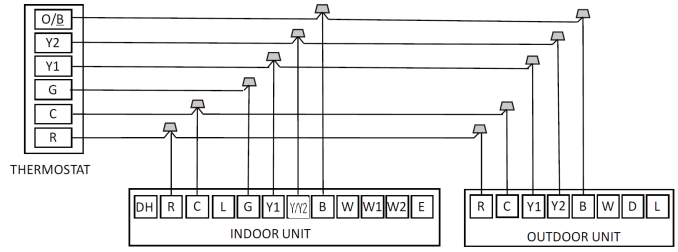
- Wiring for 3H and 1C thermostat



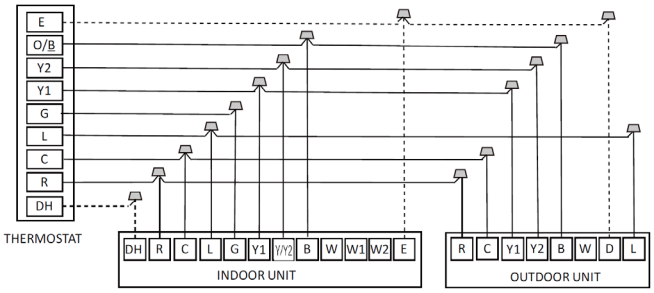
S4-1 Default on， DH function off. Turn switch off to activate DH function.

S4-2 Default on, W1 and W2 shorted for single stage Aux heat operation. Turn off to separate stages

- Wiring for 2H and 2C thermostat



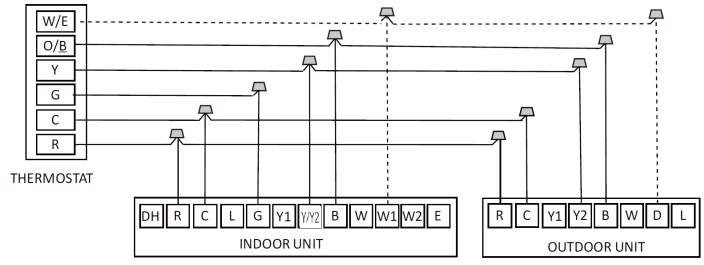
- Wiring for 3H and 2C thermostat



S4-1 Default on， DH function off. Turn switch off to activate DH function.

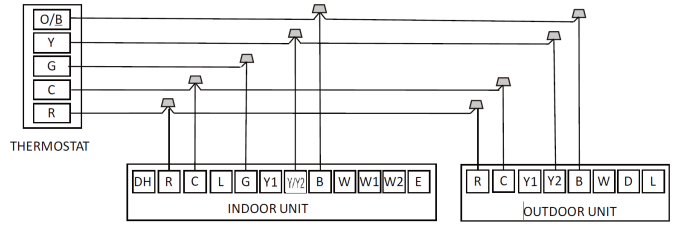
S4-2 Default on, W1 and W2 shorted for single stage Aux heat operation. Turn off to separate stages.

- Wiring for 2H and 1C thermostat

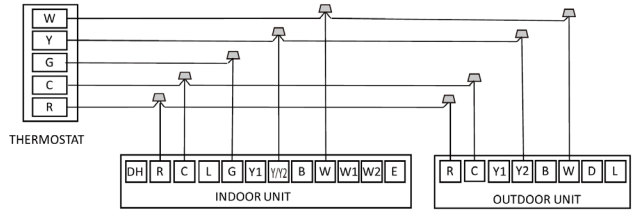


S4-2 Default on, W1 and W2 shorted for single stage Aux heat operation. Turn off to separate stages.

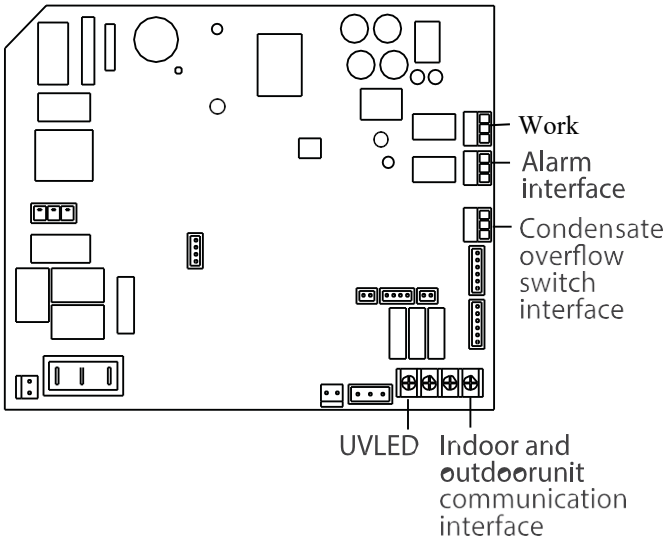
- Wiring for 1H and 1C thermostat



- Wiring for 1H and 1C thermostat

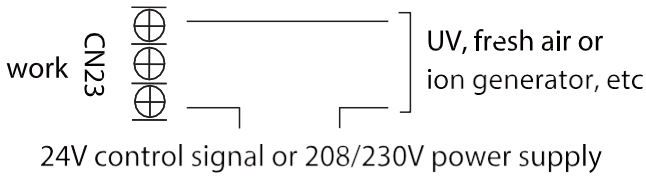


Optional function wiring:



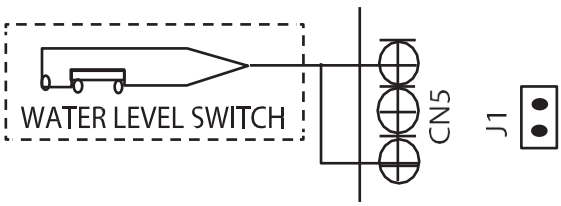
UV, fresh air or ion generator wiring

The WORK port is linked with the fan. When the fan is running, the relay is closed; If an active 24V signal is required, it can be directly connected to the G and C ports..



Condensate overflow switch:

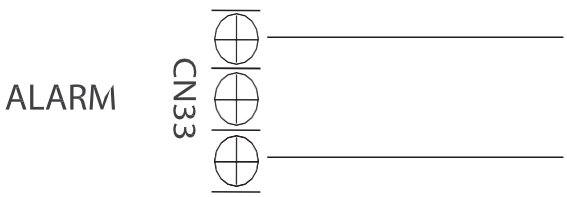
The unit will accommodate a remote condensate overflow switch. To enable, remove jumper J1, and connect the installer provided condensate overflow device to CN5 per below. When an overflow condition happens, the device will send signal to the unit to turn off the system.



Alarm output:

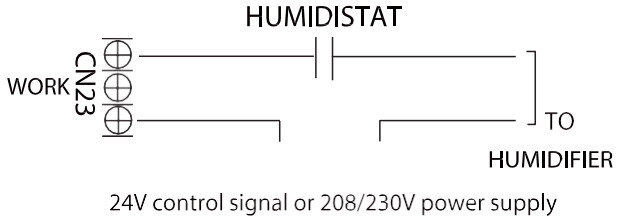
An alarm output (CN33) can be utilized if actions are required when a fault is present. This is a passive outlet port, so you will need to input a voltage signal. The relay is normally-open for normal operation, and closed when a fault condition is active.

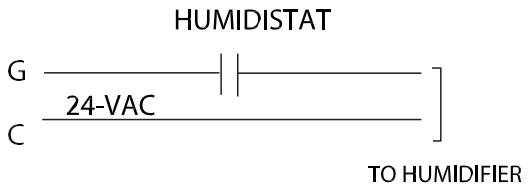
The fault warning:



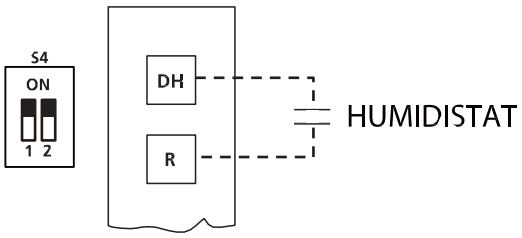
Humidifier control:

To connect a humidifier, utilize the passive signal “WORK” output (CN23) port as well as the G and C wires on the controller, and wire the humidistat and humidifier per above wiring diagram. When the fan is running, the CN23 relay will be closed, which will allow power to the humidifier when the humidistat is below humidity setpoint. If the thermostat or zone controller has an HUM interface, connect the humidifier directly to the HUM and C ports.





Dehumidification control wiring



Dehumidification control requires external Humidistat at DH and R. Set S4-2 as OFF. When the humidity rises and exceeds the set value of the Humidistat, the 24V signal of DH changes to 0V, the cooling system starts the dehumidification operation, and the air volume drops to 80% of the nominal cooling air volume.

.

Control logic

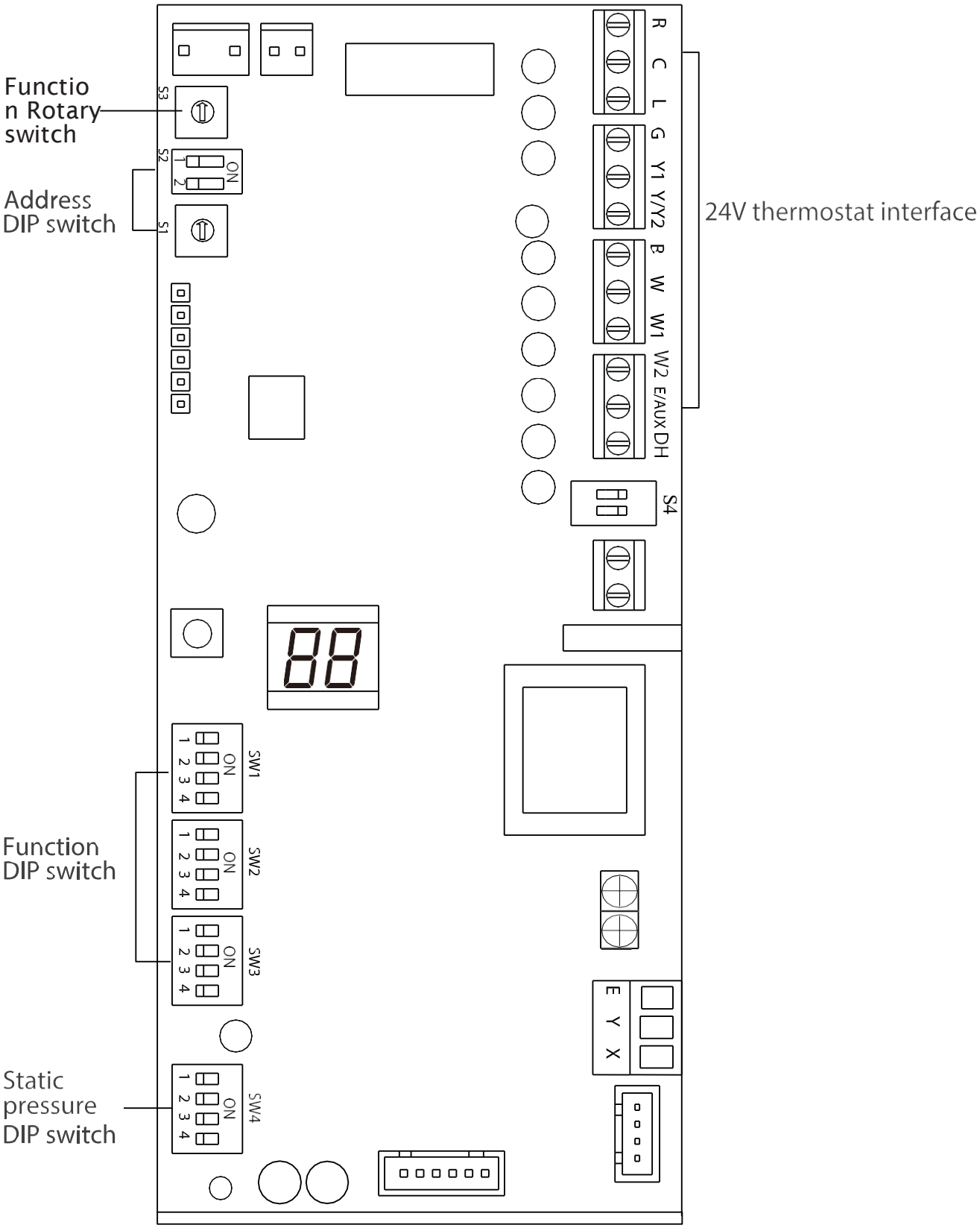
Indoor unit connector	
Connector	**Purpose**
R	24V power Connection
C	Common
G	Fan Control
Y1	Low Cooling
Y/Y2	High Cooling
B	Heating Reversing Valve
W	Heating control
W1	Stage 1 Electric Heating
W2	Stage 2 Electric Heating
E/AUX	Emergency Heating
DH/DS/BK	Dehumidification/Zoning control
L	System Fault Signal

Outdoor unit connector	
Connector	**Purpose**
R	24V power Connection
C	Common
Y1	Low Cooling
Y2	Heat Cooling
B	Heating Reversing Valve
W	Heating control
D	**Defrost control**
L	System Fault Signal

LED display

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

DIP switch definitions



Function DIP switch settings:

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

Control combination definition of SW1-1 and SW1-4 setting:

SW1	Function	DIP setting	Define
SW1-1	Controller Type with Thermostat	ON	Conventional(24V)
		OFF[default]	Communication(Special)
SW1-4	Control type with OD	ON	Conventional(24V)
		OFF[default]	Communication(S1/S2)

Control match	SW1-1 (Controller Type with Thermostat)	SW1-4 (Control type with OD)	Control match Define
Connection method B	ON	OFF	1
Connection method A	OFF	OFF	2
Connection method C	ON	ON	3

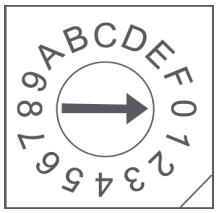
Indoor unit dial code

No.	Dial Code	Control define	Function	ON	OFF	Note
1	SW1-2	1,2	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℉/1℃	[Default] 4℉ /（2℃ ）	
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	2	Compressor/Auxiliary heat outdoor ambient lockout	The compressor will not operate if the outdoor temperature is lower than the temperature represented by S3	[Default] The heater will not operate if the outdoor temperature is greater than the temperature represented by S3	SW2-4 and S3 need to working together
8	Rotary Switch S3	2	Set outdoor temperature Limitation (for auxiliary heating or compressor)	[Default] 0 means that the temperature protection is not turned on, and it is for the ambient temperature selection, please see the S3 setting table.		

Indoor unit dial code						
No.	**Dial Code**	**Control define**	**Function**	**ON**	**OFF**	**Note**
9	SW3-1	1	Maximum continuous runtime allowed before system automatically stages up capacity to satisfy set point. This adds 1 to 5° F to the user set point in the calculated control point to increase capacity and satisfy user set point	30 minutes	[Default] 90 minutes	
10	SW3-2	1	Cooling and heating Y/Y2 temperature differential adjustment.	Compressor slower speed	[Default] Faster Compressor	Only affects compressor
11	SW3-3	1	Compressor Running (demand working with heat pump+ Electric heat)	Compressor slower speed	[Default] Faster Compressor	Only affects compressor and W2
12	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℉/2℃	[Default] 4℉/(2℃)	
13	SW3-4	1,3	Fan speed of cooling mode when 24V Thermostat is applied for.	Turbo	[Default] High	
14	SW4-1/2/3	1,2,3	Electric heat nominal CFM adjustment	000 is the default, It is for airflow selection Settings, please see the airflow performance table.		
15	SW4-4	/	Reserved			
15	S4-1	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.	
16	S4-2	1,3	DH function selection	[Default] Dehumidification control not available	Dehumidification feature is enabled through thermostat	

Rotary Switch definition of S3 setting:

S3



S3	S3 (°F)	S3 (°C)
0[Default]	OFF	OFF
1	-4	-20
2	-0	-18
3	3	-16
4	7	-14
5	10	-12
6	14	-10
7	18	-8
8	21	-6
9	25	-4
A	28	-2
B	32	0
C	36	2
D	39	4
E	43	6
F	46	8

Rotary Switch definition of S1/S2 setting:

Reserved

4.3 Electrical data

NOTICE

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

After the electric heating wiring is connected, please confirm before power on:

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

Specifications	Number of circuit breakers	Number of relays	Number of power cord groups	Number of power cord grounding screws
8kW	1	2	2	2
10kW	1	2	2	2
15kW	2	3	3	3
20kW	2	4	4	4

Air-handler Data without electrical heat

Model Number	Voltage-Phase-Hz	Power Supply Wiring Gauge	Rated current(A)	Minimum Circuit AMPS.	Fuse (A)
36K	208/230-1Ph-60Hz	14#	4.0	5.0	15
60K			7.0	9.0	

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

NOTICE

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

4.4 Electric heat data

Kit Model	Model Number	Electric Heat (kW)	Internal Circuit Protection	Electric Rating Ampacity		MIN. Circuit Ampacity		MAX. Fuse or Breaker (HACR) Ampacity	
				230	208	230	208	230	208
E-EAH08B(UL)	36	8	Ckt Bkr	32	28.8	42	37	45	40
E-EAH10B(UL)		10	Ckt Bkr	40	36	53	46	60	50
E-EAH15B(UL)		5+10	Ckt Bkr	20+40	18+36	27+53	23+46	30+60	25+50
E-EAH20B(UL)		10+10	Ckt Bkr	40+40	36+36	53+53	46+46	60+60	50+50
E-EAH10B(UL)	60	10	Ckt Bkr	40	36	53	46	60	50
E-EAH15B(UL)		5+10	Ckt Bkr	20+40	18+36	27+53	23+46	30+60	25+50
E-EAH20B(UL)		10+10	Ckt Bkr	40+40	36+36	53+53	46+46	60+60	50+50

4.5 Electric heat installation guide

> **⚠ NOTICE**
>
> Installation must be performed by an licensed contractor. Please make necessary precaution when performing the installation operation.

Accessories

Name	Quantity	Name	Quantity
Manual	2	Silicone breaker cover	1
Foam gasket	1	Electric auxiliary heating wiring diagram	1
Screws	7	Circuit breaker label	1

Model size selection

For installations requiring supplemental heating, the optional Electric Auxiliary Heat Module is available in sizes from 8kW to 20kW to accommodate appropriate sizing given the specific heat load and electrical requirements of each installation. Please refer to the table below for selection of available sizes of each model, being sure to avoid improper matching.

Model	8kW	10kW	15kW	20kW
36K	Y	Y	Y	Y
60K	-	Y	Y	Y

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

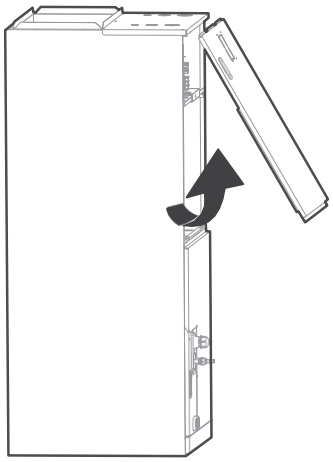
Preparations for Installation

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

Electric Auxiliary Heat Module installation and Wiring Operation

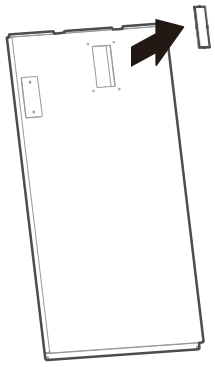
Step 1

Open the upper cover.



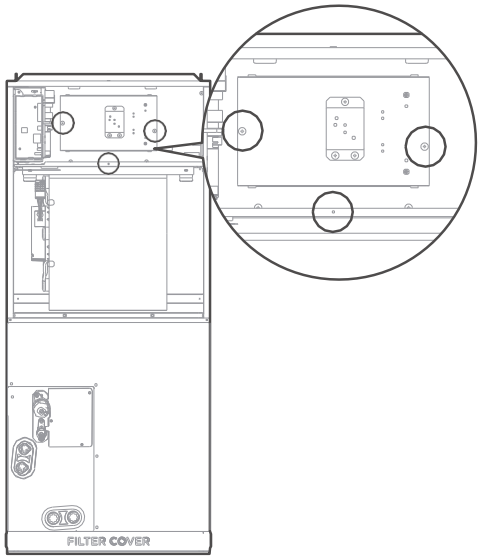
Step 2

Use tools to remove the knock-out holes of upper cover.



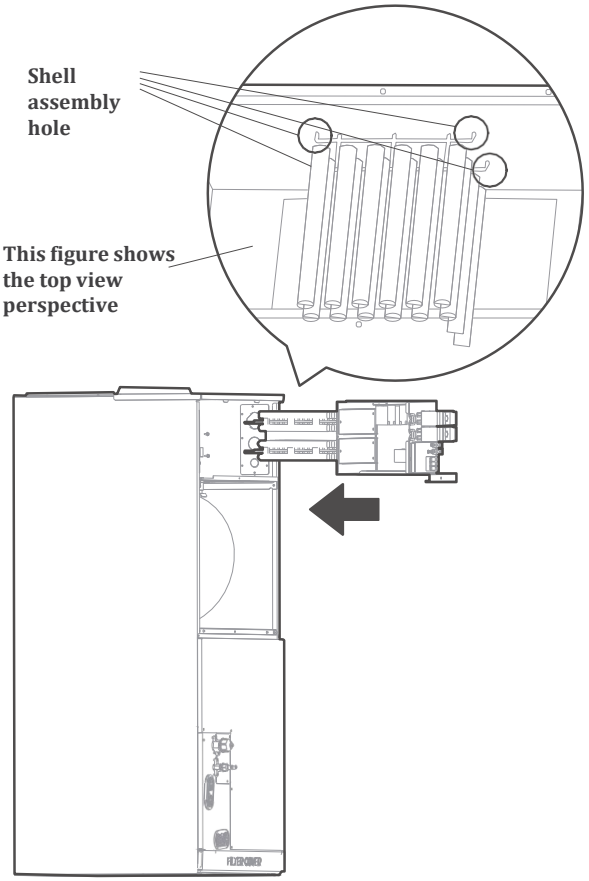
Step 3

Remove the terminal block and power wires, loosen the screws, and remove the electric auxiliary heating cover.



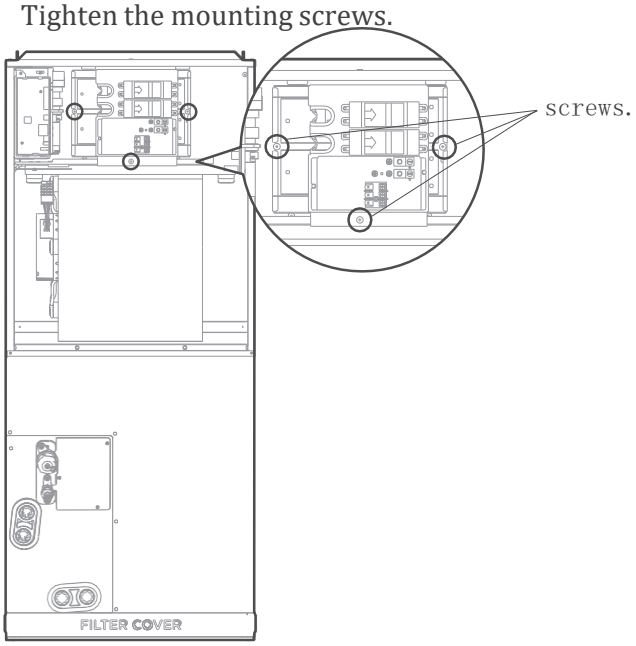
Step 4

Install the electric auxiliary heating assembly the front, and note that the support assembly must lock into the support holes in the back of the cabint.



Step 5

Tighten the mounting screws.

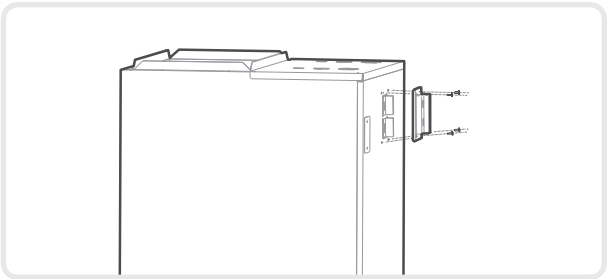


Step 6

Wire according to the wiring nameplate. Apply the wiring diagram to the inside cover wiring is completed for future reference and maintenance.

Step 7

Install the upper cover,and the silicone breaker cover.

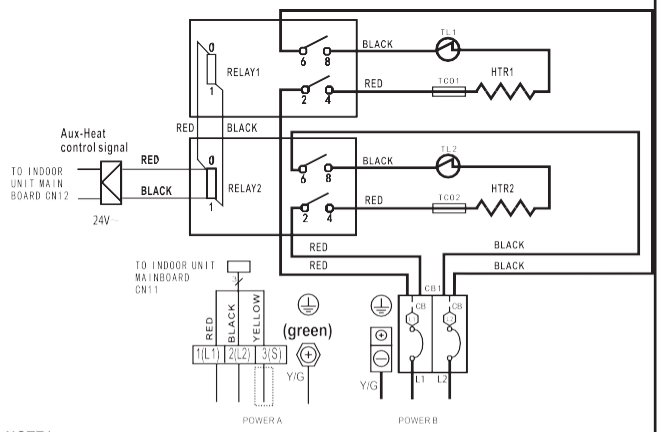


Step 8

After installing the electric auxiliary heat module, apply the circuit breaker label near the silicone breaker cover that was just applied.

8KW/10KW HEAT KIT

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



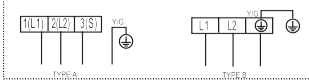
NOTE1:
This symbol indicates the element is optional, The wiring type of the actual unit shall prevail.

NOTE2:
Please attach the nameplate to the cover of the electric control box. All the round holes located on the plate represent numbers. Please refer to the Installation Manual for details.

Round hole number	Relay number	Round hole number	Circuit breaker number
○	RELAY 1	○	CB1
○○	RELAY 2		
○○○			
○○○○			
○○○○○			

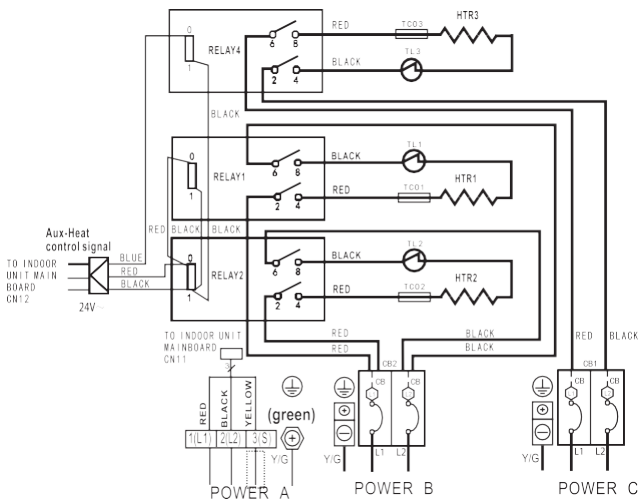
NOTE3: TO BE WIRED IN ACCORDANCE WITH NEC AND LOCAL CODES.
NOTE4: POWER A,B,C,D ARE DIFFERENT POWERS.

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



15KW HEAT KIT

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



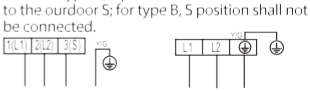
NOTE1:
This symbol indicates the element is optional, The wiring type of the actualunit shall prevail.

NOTE2:
Please attach the nameplate to the cover of the electric control box. All the round holes located on the plate represent numbers. Please refer to the Installation Manual for details.

Round hole number	Relay number	Round hole number	Circuit breaker number
○	RELAY 1	○	CB1
○○	RELAY 2	○○	CB2
○○○	RELAY 4		
○○○○			
○○○○○			

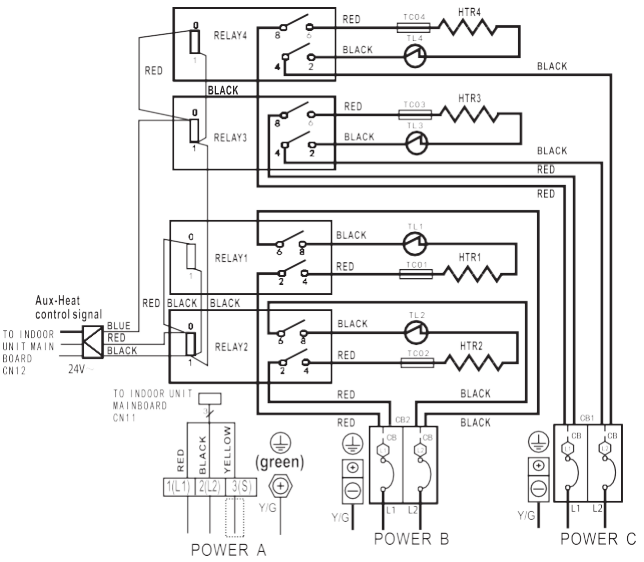
NOTE3: TO BE WIRED IN ACCORDANCE WITH NEC AND LOCAL CODES.
NOTE4: POWER A,B,C,D ARE DIFFERENT POWERS.

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



20KW HEAT KIT

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



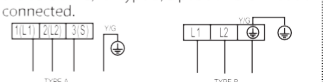
NOTE1:
This symbol indicates the element is optional, The wiring type of the actual unit shall prevail.

NOTE2:
Please attach the nameplate to the cover of the electric control box. All the round holes located on the plate represent numbers. Please refer to the Installation Manual for details.

Round hole number	Relay number	Round hole number	Circuit breaker number
○	RELAY 1	○	CB1
○○	RELAY 2	○○	CB2
○○○	RELAY 3		
○○○○	RELAY 4		
○○○○○			

NOTE3: TO BE WIRED IN ACCORDANCE WITH NEC AND LOCAL CODES.
NOTE4: POWER A,B,C,D ARE DIFFERENT POWERS.

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



5. Airflow Performance

Airflow settings and performance volume table

Air volume table								
Capacity	External Static Pressure Range	Fan Speed	Electric heater kit	24V thermostat		Wired controller		Airflflow volume (CFM)
				DIP Switch	24V terminal engaged	DIP Switch	Mode	
36K（3 Ton）	0 - 0.80 in. w.g.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	1188
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	1082
		Cooling Medium	—	—	Y1	—	Cool	971
		Cooling Low	—	—	—	—	Cool	865
		Heat Pump Turbo	—	—	—	—	Heat	1112
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	1059
		Heat Pump Medium	—	—	Y1	—	Heat	794
		Heat Pump Low	—	—	—	—	Heat	582
		Electric heater kit 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 heater kit 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 heater kit 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 heater kit 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
60K（5 Ton）	0 - 0.80 in. w.g.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	1806
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	1582
		Cooling Medium	—	—	Y1	—	Cool	1359
		Cooling Low	—	—	—	—	Cool	1135
		Heat Pump Turbo	—	—	—	—	Heat	1659
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	1582
		Heat Pump Medium	—	—	Y1	—	Heat	1247
		Heat Pump Low	—	—	—	—	Heat	976
		Electric heater kit 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 heater kit 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 heater kit 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 heater kit 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

⚠ NOTICE

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

6. Ductwork

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

⚠ WARNING

Do not, under any circumstances, connect return ductwork to any other heat producing device such as fireplace insert, stove, etc. Unauthorized use of such devices may result in fire, carbon monoxide poisoning, explosion, personal injury or property damage.

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

- Duct system must be designed within the range of external static pressure the unit is designed to operate against. It is important that the system airflow be adequate. Make sure supply and return ductwork, grilles, special filters, accessories, etc. are accounted for in total flow resistance. Refer to the airflow performance table in this manual.
- Design the duct system in accordance with “ACCA” Manual “D” Design for Residential Winter and Summer Air Conditioning and Equipment Selection. Latest editions are available from: “ACCA” Air Conditioning Contractors of America, 1513 16th Street, N.W., Washington, D.C. 20036. If duct system incorporates flexible air duct, be sure that the pressure drop Information (straight length plus all turns) shown in “ACCA” Manual “D” is accounted for in system.
- Supply plenum is attached to the 3/4” duct flanges supplied with the unit. Attach flanges around the blower outlet.
- Secure the supply and return ductwork to the unit flanges, using proper fasteners for the type of duct used and tape the duct-to-unit joint as required to prevent air leaks.

IMPORTANT

If an elbow is included in the plenum close to the unit, it must not be smaller than the dimensions of the supply duct flange on the unit.

The front flange on the return duct connected to the blower casing must not be screwed into the area where the power wiring is located. Drills or sharp screw points can damage insulation on wires located inside unit.

7. Pipe Connections

⚠ NOTICE

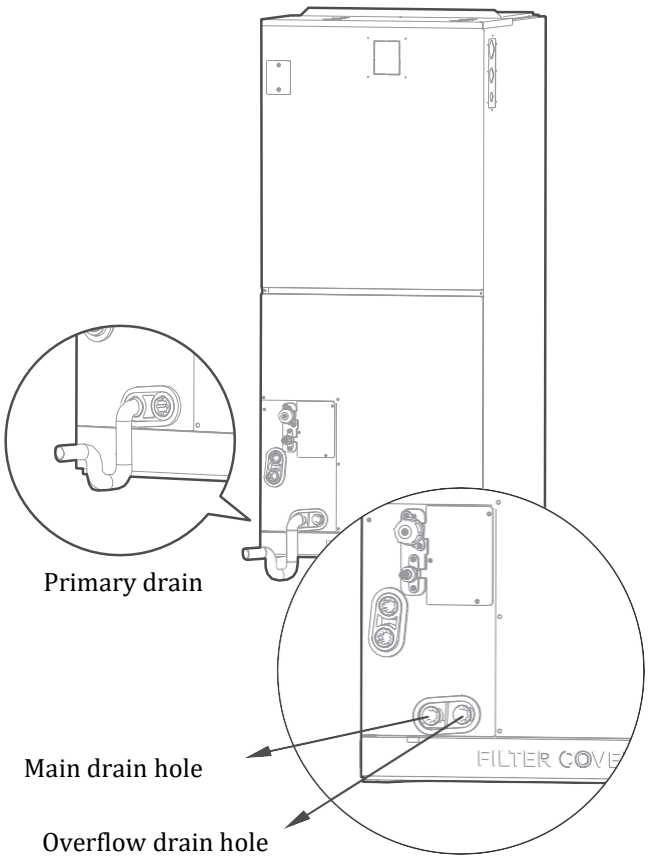
NOTICE ON PURCHASING PIPES

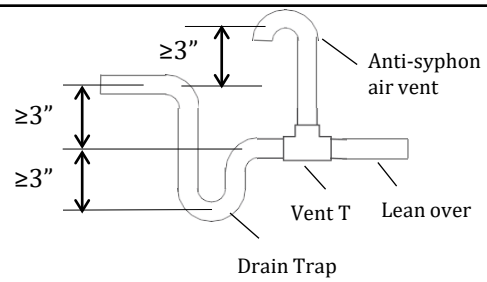
Installation requires pvc pipe or other suitable material per local and national codes, which can be obtained at your local hardware store or dealer.

⚠ WARNING

- 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 make sure 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.

These units operate with a negative pressure at the drain connections and a drain trap is required. The trap needs to be installed as close to the unit as possible. Make sure the top of the trap is below the connection to the drain pan to allow complete drainage of the pan.





⚠ NOTICE

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

- The Figure shows how to trap or plug all drains during vertical discharge.
- The Figure shows how to trap or plug all drains during right-hand discharge.
- The seal plug 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.

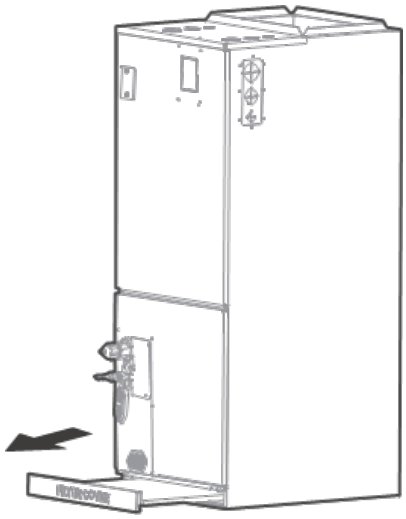
⚠ CAUTION

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

8. Air Filter

⚠ WARNING

Do not operate the system without filters. A portion of the dust suspended in the air may temporarily lodge in the duct. Any circulated dust particles could be heated and charred by contact with the air handler elements. This residue could soil ceilings, walls, drapes, carpets and other articles in the house. Soot damage may occur without filters in place when certain types of candles, oil lamps or standing pilots are burned.

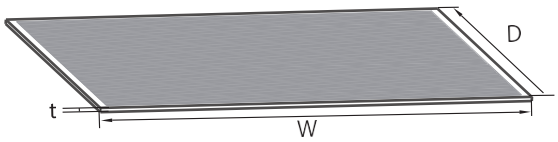


Air Filter Clean/Replacement

1. Take the filter cover away.
2. Hold the edge of the air filter and extract it out .
3. Clean the air filter or use a new one to replace.

NOTE: AIR FILTER IS FACTORY INSTALLED.

Recommended size of Air Filter



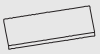
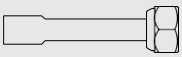
Model	Dimensions (in./mm)		
	W	D	t
36K	20(495.3)	20(508)	1(25.4)
60K	23(584.2)	20(508)	1(25.4)

⚠ NOTICE

Refer to the label on filter cover to install the correct filter size.

9. ACCESSORIES

The air conditioning system comes with the following accessories. Use all of the installation parts and accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock and fire, or equipment failure.

Accessories (Packed with the indoor unit)		
Name	Picture	Quantity
Manual		3
Cable ties		2
Foam		4
Flare nut (optional)		2
Braze to flare adapter (optional)		2
Remote controller		1
Battery		2

⚠ NOTICE

- The remote controller must be retained with the indoor unit to adjust parameters, and for troubleshooting.
- When the special communication wire controller (ECT01) is selected, the remote controller can be used as its accessory mobile operating terminal. The special communication wire controller has a IR receiver for the remote controller.

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