GREE

MULTI 21

CEILING CASSETTE INSTALLATION MANUAL

Models:

CAS12HP230V1AC
CAS18HP230V1AC
CAS24HP230V1AC

Thank you for choosing a Multi21 Ceiling Cassette Ductless Heat Pump System for your customer.

Please read this installation manual carefully before installing and starting up the Ceiling Cassette Ductless System. Take a moment to fill out the product and installation form on the back cover. Retain both the manual and installation record for future reference.

Table of Contents

SAFETY PRECAUTIONS

Please read the following before installation.

⚠	*This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.*
⚠ **WARNING**	*This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.*
⚠ **CAUTION**	*This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.*
NOTICE	*Notice is used to address practices not related to personal injury.*

General Safety Precautions

1. *Instructions for installation and use of this product are provided by the manufacturer. For proper operation, the system must be installed in accordance with this installation manual.*
2. *Installation must be performed in accordance with local laws, regulations and National Electrical Codes (NEC).*
3. *If there is a refrigerant leak while work is being carried out, ventilate the area. Do not allow refrigerant to come in contact with a flame as it produces toxic gas.*
4. *Disconnect all electrical power to the indoor and outdoor units until the system is ready for start-up and checkout.*
5. *When installing or repairing the system, use only R410A refrigerant. Do not mix refrigerant with other gases. If air or other gas enter the refrigeration system, the pressure inside the system may rise to an abnormally high value and cause damage or injury.*

⚠ 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.

NOMENCLATURE

Example: CAS18HP230V1AC

CAS 18 HP 230V 1 A C

Series Designation
CAS - Ceiling Cassette

Cooling Capacity
12 - 12,000 BTUH
18 - 18,000 BTUH
24 - 24,000 BTUH

Model Type
AC - Cooling Only
HP - Heat Pump
HC - Heat/Cool

Product Type
S - System
O - Outdoor units
H - Indoor High Wall
D - Indoor Duct
C - Indoor Cassette
F - Indoor Floor/Ceiling

Revision Level

Style/Color Designation

Electrical Rating
230V - 208/230V 60Hz 1PH
115V - 115V 60Hz 1PH

SYSTEM REQUIREMENTS

PIPE SIZE *in (mm)*

Unit Size (BtuH)	*Liquid Line*	*Suction/Gas Line*	*Net/Gross Weight*
12,000	*1/4 (6)*	*3/8 (9.5)*	*44/51 lbs.*
18,000	*1/4 (6)*	*1/2 (12)*	*48/55 lbs.*
24,000	*3/8 (9.5)*	*5/8 (16)*	*66/84 lbs.*

Interconnecting Cable

The ceiling cassette unit is powered from the outdoor unit. Use recommended 14/4 AWG stranded bare copper conductors THHN 600V unshielded wire.

NOTE: *Use shield cable if installation is in close proximity of RF and EMI transmitting devices.*

Condensate Drainage

It is recommended that condensate drainage systems use pipe either the same diameter or larger (excluding the raising section) than that of the connecting pipe. The unit condensate port is 1.2 in. (31mm) outside diameter.

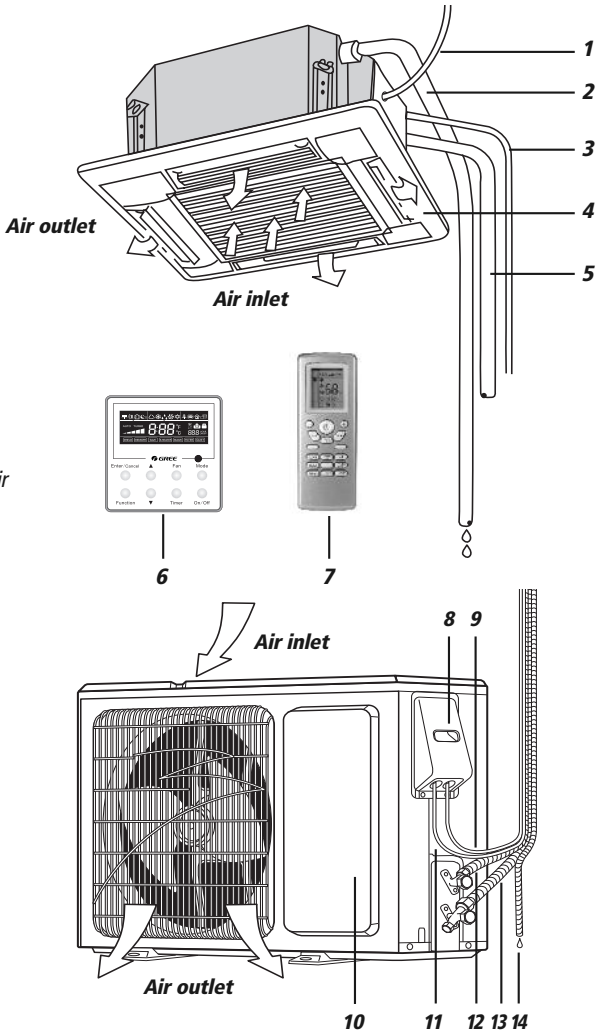
NOTE: *Insulate all condensate drain pipes to prevent sweating and possible water damage.*

SUGGESTED TOOLS

- *Standard Wrench*
- *Adjustable/Crescent Wrench*
- *Torque Wrench*
- *Hex Keys or Allen Wrenches*
- *Drill & Drill Bits*
- *Hole Saw*
- *Pipe Cutter*
- *Screw drivers (Phillips & Flat blade)*
- *Manifold and Gauges*
- *Level*
- *R410A Flaring Tool*
- *Clamp on Amp Meter*
- *Vacuum Pump*
- *Safety Glasses*
- *Work Gloves*
- *Refrigerant Scale*
- *Micron Gauge*

SYSTEM PARTS

Indoor unit



Part Name

1. Power Supply and Communication Wires
2. Drain Pipe
3. Liquid Pipe
4. Decorative Discharge Air Grille (sold separately)
5. Gas Pipe
6. Wired Tether Controller
7. Remote Controller
8. Service Cover
9. Power Supply and Communication Wires
10. Front Panel
11. Outdoor Power Supply
12. Liquid Pipe
13. Gas Pipe
14. Drain Hose

Outdoor Unit

Part Numbers	Description
CASGRILLE1SM	Decorative Grille for 12,000 & 18,000 BTU Cassettes
CASGRILLE1LG	Decorative Grille for 24,000 BTU Cassette
MC20700140	XK-19 Wired Tether Controller with touch buttons.

⚠ CAUTION

The refrigerant pipe, drain pipe and electrical wiring for this unit should be installed by a qualified HVAC professional only.

INSTALLATION SITE INSTRUCTIONS

Indoor Unit

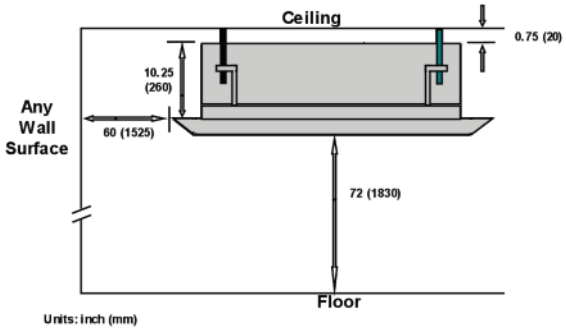
⚠ WARNING

The unit must be installed in a location which can withstand four times the weight of the unit. Inadequate support may result in serious property damage and injuries.

Select a site that allows for the following:

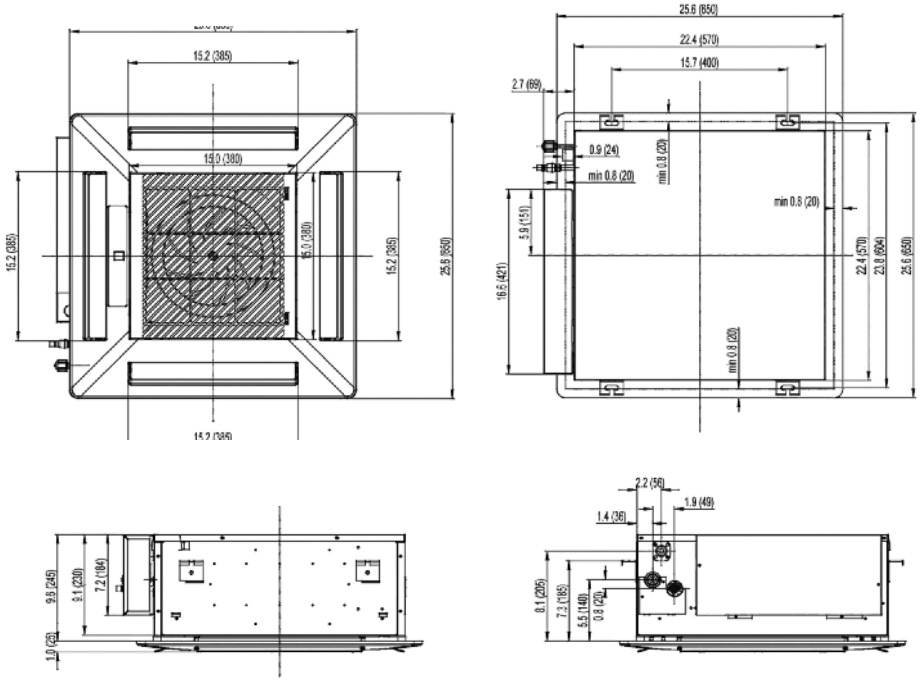
- *Ensure the installation complies with the installation minimum dimensions and meets the minimum and maximum connecting piping length and maximum change in elevation.*
- *Air inlet and outlet should be clear of obstructions, ensuring proper airflow throughout the room.*
- *Condensate can be easily and safely drained.*
- *All connections can be easily made to outdoor unit.*
- *Indoor unit is out of reach of children.*
- *A structure strong enough to withstand four (4) times the full weight and vibration of the unit.*
- *Filter can be easily accessed for cleaning.*
- *Leave enough free space to allow access for routine maintenance.*
- *Do not install in a laundry room or by a swimming pool due to chemicals corroding cassette coil.*

Minimum Indoor Clearances



INDOOR UNIT DIMENSIONS

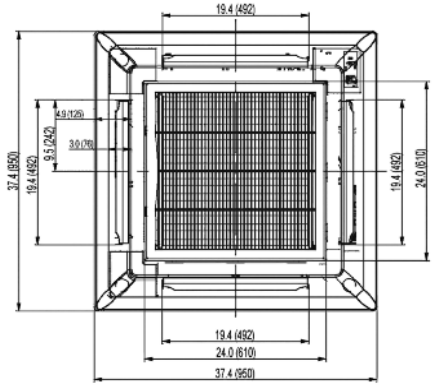
12-18K Indoor Unit Dimensions

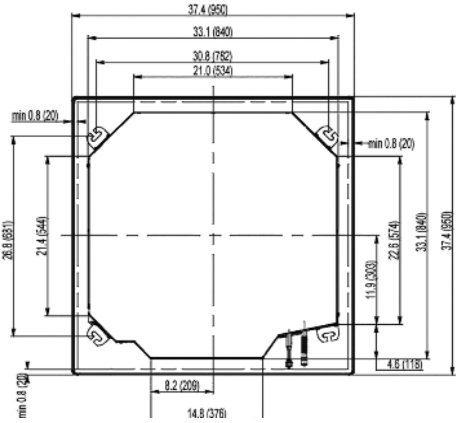


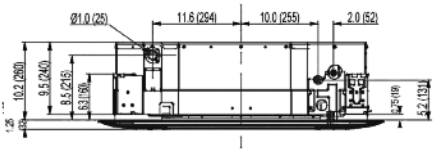
Model	Suction/Gas Line Port Size	Liquid Line Port Size	Drain Line Connection
12,000	3/8-in OD Flared	1/4-in OD Flared	1.2-in OD
18,000	1/2-in OD Flared	1/4-in OD Flared	1.2-in OD

INDOOR UNIT DIMENSIONS

24K Indoor Unit Dimensions



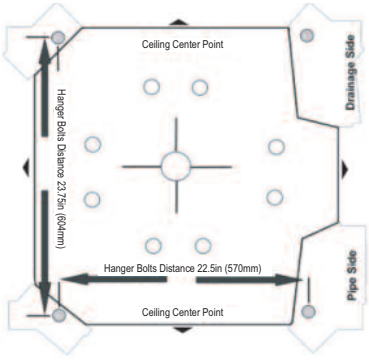


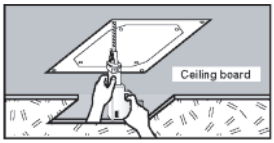


Suction/Gas Line Port Size	Liquid Line Port Size	Drain Line Connection
5/8-in OD Flared	3/8-in OD Flared	1.2-in OD

Laying Out Indoor Location

- *Locate the factory supplied installation template included in carton.*
- *Use the template to make an opening in the ceiling for the ceiling cassette main body.*
- *Mark the position of the 4 hanger bolts, refrigerant lines and condensate drain pipes.*

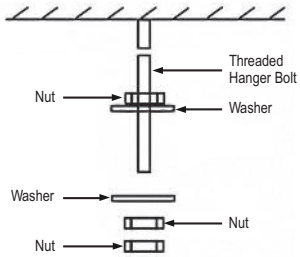




INDOOR UNIT INSTALLATION

Indoor Unit Hanger Mounting

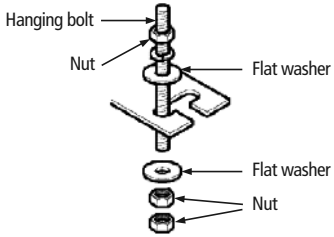
Depending on the type of ceiling, attach the threaded hanger bolts securely to the support stud. Before lifting the indoor unit to the installation location, insert the upper nuts, flat washers (with insulation), flat washers (without insulation), lower nuts and double locking nuts on the threaded hanger bolts.



> ***NOTE:*** *The hanger bolts, nuts, and washers are field supplied. Install the washer with cushion so that the insulation faces downward.*

Installation of Ceiling Cassette

Lift the Ceiling Cassette main body to the threaded hanger bolts. Insert the unit mounting brackets between washers and then fasten it securely.



Confirm the position of the Indoor Unit

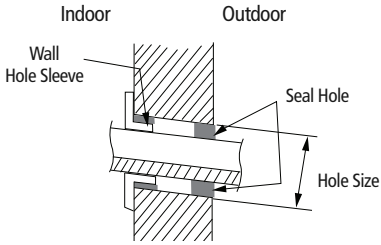
1. *Adjust the height of the Indoor Unit main body to align with false ceiling. Be sure to confirm this, otherwise condensation may form during cooling mode. Adjust mounting nuts as needed.*
2. *Confirm that the indoor unit main body is level. Adjust mounting nuts as needed.*
3. *After checking the positioning of the indoor unit main body, tighten the nuts of the hanger bolts securely to fasten the Indoor Unit main body in place.*

PIPING INSTALLATION

Refrigerant Piping

Drill Hole in Wall

1. *Locate and mark proper location for the wall hole.*
2. *Cut the 2 3/4" wall hole with a 5° to 10° downward slant to the outdoors.*
3. *Insert a wall sleeve (field supplied) into hole to to prevent damage to refrigerant pipes, insulation, condensate drain hose and wiring.*
4. *Proper weather proofing of the wall surface and wall sleeve is essential to assure a trouble-free installation. Apply sealant, caulking or equivalent weather proofing material around the perimeter of the wall sleeve (interior & exterior) to eliminate outdoor air and water leaks into the indoor space.*



Wall Hole Diagram

Unit Size (BtuH)	*Wall Hole Size Dia - inch (mm)*
12,000	*2 1/4 (55)*
18,000	*2 3/4 (70)*
24,000	*2 3/4 (70)*

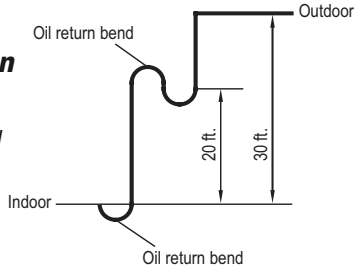
NOTE: *Expandable foam insulation may be added to fill large wall gaps. Apply per manufacturer's instructions.*

Piping Preparation

1. *Do not open service valves or remove protective caps on pipes until instructed by this manual.*
2. *Keep tubing free of dirt, sand, moisture and contaminants.*
3. *Insulate each refrigerant pipe and condensate hose with minimum 3/8" (10 mm) wall thermal pipe insulation.*
4. *Bind refrigerant pipes and communication cable together with cable ties at 12-inch intervals.*
5. *Include the condensate hose in bundle for exterior portion only.*

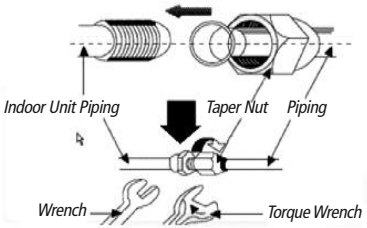
Indoor Unit below Outdoor Unit Application

When height difference between indoor unit and outdoor unit is more than 30 feet, an oil return bend should be added for every 20 feet of connection pipe as shown.



Connecting Refrigerant Pipes to Ceiling Cassette

1. Feed refrigerant pipes, drain hose and communication cable assembly through wall hole from outdoor to the Ceiling Cassette.
2. Pull the piping assembly to the indoor unit. Carefully bend refrigerant pipes to meet indoor unit connection ports. Use proper tools to avoid kinks.
3. Add a small amount of refrigerant oil to both ends of the flare fittings.
4. Properly align piping and tighten flare nut using a standard wrench and a torque wrench as shown in figure to the below. Carefully tighten flare nuts to correct torque level referring to the illustration and Torque Table below:

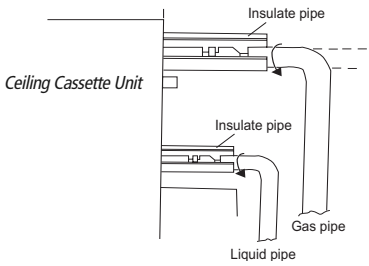


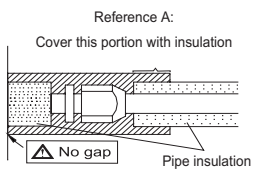
Pipe Diameter inch (mm)	Nut Size inch (mm)	Tightening Torque ft-lbs	N-m
1/4 (6.35)	1/4 (17)	10 to 13	14 to 18
3/8 (9.5)	3/8 (22)	25 to 30	34 to 42
1/2 (12.7)	1/2 (25)	36 to 45	49 to 61
5/8 (15.9)	5/8 (29)	50 to 60	68 to 82

⚠ CAUTION

Over tightening may damage flare connections and cause leaks.

5. Individually insulate each bare refrigerant pipe and joint as shown below to prevent sweating.

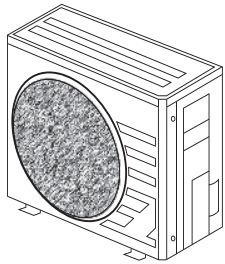




PIPING INSTALLATION

Outdoor Unit Pipe Connections

Carefully bend and adjust length of refrigerant pipes to meet outdoor unit port connections. See installation instructions shipped with the outdoor unit for further instructions..



Indoor Condensate Drain Piping

⚠ WARNING

Observe all local sanitary codes when installing condensate drains.

It is recommended to install the condensate drain system with hard polyvinyl chloride (PVC) pipe and matching connectors. Use piping of the same diameter or larger as the unit connection.

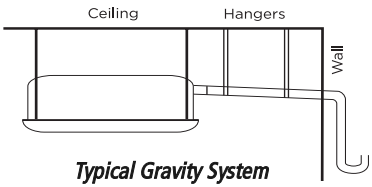
The Ceiling Cassette drainage port diameter is 1.2 in. (31mm) OD.

Pitch the condensate drain pipe at a gradual 2.5% pitch (Example: ¼-in drop over a 10-in length) without obstructions. Use pipe hanger/brackets to support the condensate drain pipe from dropping.

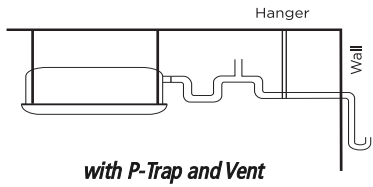
NOTE: *Insulate condensate hose and/or pipes to prevent sweating which may cause water stains or wall damage.*

Gravity Drainage Systems

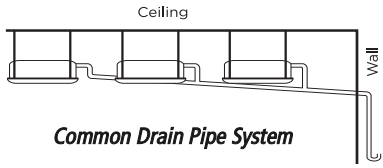
The following are recommended gravity drainage systems for the ceiling cassette.



Typical Gravity System



with P-Trap and Vent

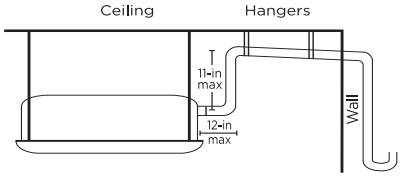


Common Drain Pipe System

PIPING INSTALLATION

Vertical Lift Drainage System

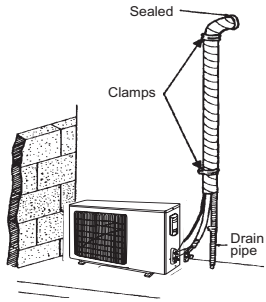
If a gradual pitch from the drainage port is not obtainable, the Ceiling Cassette contains an internal condensate drain pump with limited head or lift. The condensate drain pipe may have a vertical height of 11-in. (280mm) maximum above the unit drainage port within the first 12-in as long as the remaining condensate drain pipe gradually descends from that point and is aligned with drainage port.



Use an auxiliary condensate pump with float valve for vertical height greater than of 11-in. (280 mm) above the unit drainage port. A float valve is recommended to shut off the system if the auxiliary pump fails.

Completing Condensate Drainage Piping

- *Include the exterior section of condensate hose in the pipe/wire bundle.*
- *Fasten the refrigerant and condensate pipe assembly to the exterior wall for support.*
- *The drain pipe should terminate 6 inches above grade.*



POWER AND WIRING INSTALLATION

⚠ WARNING

1. *Before obtaining access to wire terminals, all electrical supply circuits must be disconnected, locked out and tagged.*
2. *Always use an independent (dedicated) circuit and provide an independent (dedicated) circuit breaker to supply power to the system.*
3. *Use a circuit breaker with adequate capacity to meet the requirements of the total system.*
4. *All circuit breakers or fuses for the indoor and outdoor units should be installed per the National Electric Code (NEC) and local regulations.*
5. *Electrical wiring must be completed in accordance with NEC, local laws, and regulations of the electric company so that the system will operate properly.*
6. *Provide a GFI circuit breaker at the electrical panel in accordance with the NEC and the local electrical company standards.*
7. *Connect the power supply firmly to the terminal block. Improper installation may cause a fire.*

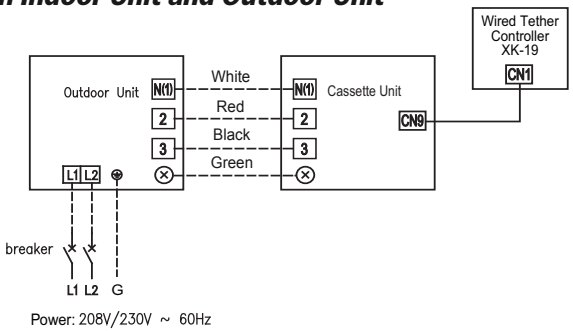
⚠ CAUTION

1. *The main power supplies are high-voltage, while the communication wire and the Tether Controller are low-voltage. They should be installed separately to avoid electromagnetic interference.*
2. *High-voltage and low-voltage lines should pass through separate rubber rings at electric box covers.*
3. *If the indoor unit communication wire (to the outdoor unit) and power wire are connected incorrectly, the air conditioner may be damaged.*
4. *Ground both indoor unit and outdoor unit to earth ground in accordance with the applicable local and national codes.*

POWER AND WIRING INSTALLATION

Electric Wiring Between Indoor Unit and Outdoor Unit

Typical Wiring Diagram



Outdoor Electrical Wiring

For Outdoor Unit wire connections, see installation instructions shipped with the outdoor unit.

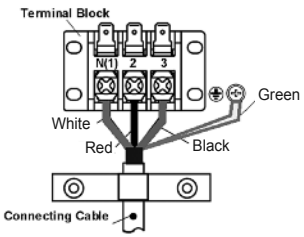
Electrical Connections to Ceiling Cassette

> **⚠ WARNING**
>
> *Disconnect all electrical power to indoor and outdoor units including disconnects, fuses and circuit breakers. Lockout and tag all disconnect switches.*

1. *Adjust the length of the interconnecting wires so that it can easily reach the Ceiling Cassette electrical control box.*
2. *Open electrical control box cover and route the interconnecting wires to field wiring terminal block.*

> ***NOTE:*** *The indoor unit is powered from the outdoor unit, depending on local code, a disconnect switch may need to be installed to a power supply circuit.*

3. *Secure interconnecting wires to the terminal block as shown in the connection diagram at right:*



> ***NOTE:*** *Record wire colors and terminal references for uses with Outdoor Unit wire connections.*

4. *Secure all wires inside wire clamp/strain relief. Verify wires are secure, not loose and no external force on wires affects the connections at the terminals.*

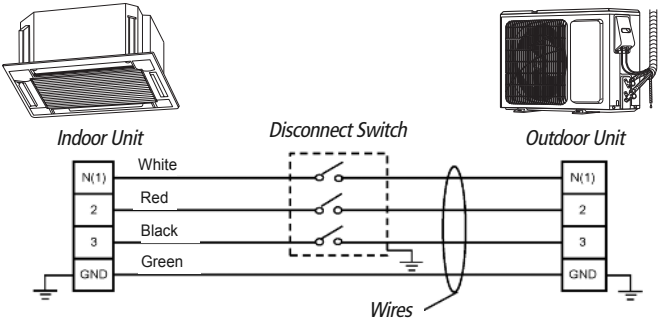
> ***NOTE:*** *Crossing interconnecting wires will cause system malfunction and possible damage.*

5. *Replace field wiring cover on unit.*

POWER AND WIRING INSTALLATION

Indoor Disconnect Switch (Optional)

Local codes may require a disconnect switch within sight of the indoor unit. Use a DFS Disconnect Switch Accessory Kit (Part No: DFS-SWITCH-A) to break interconnecting wires going to the N(1), 2, 3, terminals on the indoor unit, as shown in the wiring diagram below:

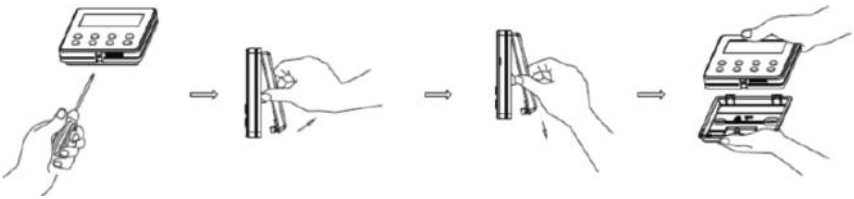


Installing Wired Tether Controller to Ceiling Cassette

1. *Open decorative grille and locate 4 pin connector for wired controller on Ceiling Cassette main body*
2. *Route wired controller wires to 4-pin connector and connect Tether Controller to ceiling cassette.*

NOTE: *Use the supplied cable, with OEM plugs on either end. Do not cut or splice. Conceal any excess cable.*

1. *Replace decorative grille being careful not to pinch wires.*
2. *Remove back plate from Wired Controller.*

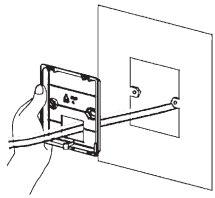


CONTROLLER INSTALLATION AND SETUP (Optional)

The following is a brief overview of the Wired Tether Controller installation. See Tether Controller Owner's Manual for more detailed instructions for setup and operation.

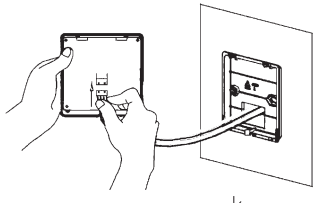
Preparation for Installation

Select a proper location on the wall for mounting the Tether Controller. Install switch box, if required by code. The maximum wire length between indoor and Tether Controller is 26 ft (8m). Run communication cable (as desired) between indoor unit and selected wall mounting location. See Indoor Unit wiring section for instruction to connect the Wired Tether Controller to the indoor unit.



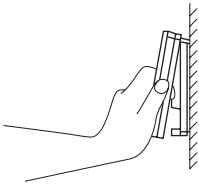
Wired Tether Controller Installation

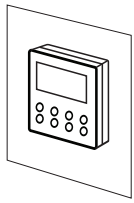
Pull communication cable through switch box (if one is used) and Wired Tether Controller backplate. Securely fasten backplate to the switch box or wall.



Locate wire terminals connector on rear of Tether Controller panel. Carefully connect wire to controller connector. Verify connector is secure, not loose and no external force on wires affects the connections at the terminals. Push extra cable into wall and secure controller panel to backplate mounted on the wall.

NOTE: Do not cut or splice communication cable.





FRESH AIR INTAKE (24K Size Only)

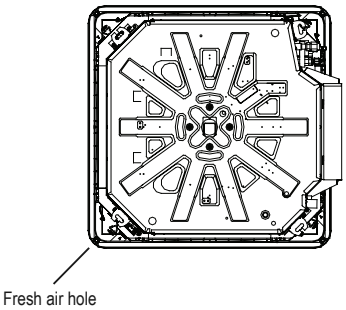
Connecting Fresh Air Duct

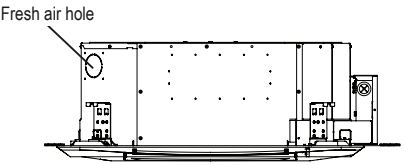
The indoor ceiling cassettes have a fresh air intake port for ventilation. A booster fan and duct (field supplied) must be used to feed outdoor air to the indoor unit.

Determine the duct diameter, length and booster fan size based on the required airflow. See table below for duct and hole sizes:

Unit Size (BtuH)	Hole Diameter inch (mm)	Duct Diameter inch (mm)
24,000	4.4 (113)	2.9 (73)

NOTE: *Fresh air intake amount should be 10% or less of whole air amount to prevent condensation.*



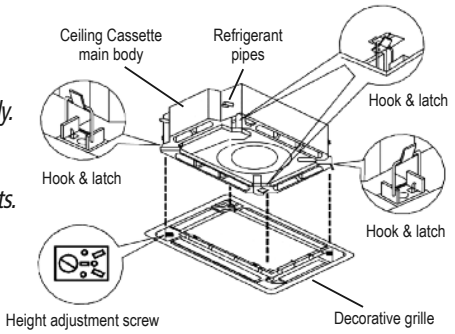


To install fresh air intake:

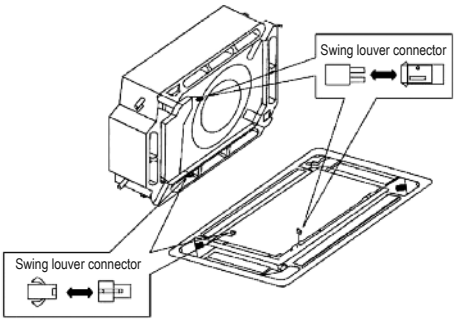
1. *Locate and remove the pre-punched knockouts hole for ventilation duct on ceiling cassette unit. Do not remove the knockout and open the hole at this point.*
2. *Remove the factory installed insulation on the outside of ceiling cassette where the pre-punched knockout was located.*
3. *Install field supplied ductwork. Recommended ductwork is either an insulated flex duct, or insulated sheet metal duct suitable for working temperatures up to 140° F (60° C).*
4. *Use a field-supplied power ventilation fan to increase airflow to meet job requirements. Follow the manufacturer's installation instructions provided with the power ventilation kit.*
5. *Install a field supplied air filter to prevent dust and dirt from entering the ceiling cassette unit and fouling indoor coil.*
6. *Install a field supplied mechanical duct damper to close during shutdown periods.*
7. *All metal ductwork should be covered with insulation to prevent condensation forming.*

DECORATIVE GRILLE INSTALLATION

Mounting Decorative Grille

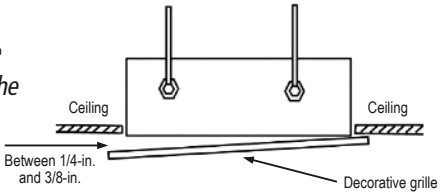


1. *Carefully unpack decorative grille and align the decorative grille to the Ceiling Cassette main body.*
2. *Temporarily attach the decorative grille to the ceiling cassette main body at two (2) corner points.*
3. *Locate the two (2) Swing Louver electrical connectors on the decorative grille.*
4. *Connect both Swing Louver connectors on decorative grille to matching connectors on the Ceiling Cassette body.*
5. *Complete the decorative grille attachment by hooking the remaining two (2) corners to the Ceiling Cassette main body.*



> ***Note:*** *Be careful not to pinch the swing louver motor wires between the decorative grille and ceiling cassette main body.*

6. *Find the four (4) height adjustment screws located on the corners of the decorative grille. Use the four (4) height adjustment screws to adjust gap between decorative grille and Ceiling Cassette body so that gap is reduced to 1/4-in (6mm) to 3/8-in (9mm). Make certain the decorative grille is not distorted by excessive tightening.*
7. *Verify that the seal between decorative grille and Ceiling Cassette main body is tight all the way around the unit to prevent air leak. Use the height adjustment screws to adjust the gap.*



TESTING AND INSPECTION

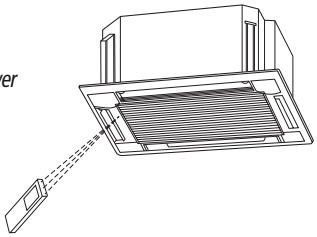
Start-up Checklist

☐ ***Turn on main power to indoor and outdoor units.***

- *Verify the system is not displaying an error code on the indoor unit display.*

☐ ***Point the Remote Controller at the Ceiling Cassette and Press the On button.***

- *Verify the remote controller display turns ON and the Power Indicator lights up on the Ceiling Cassette.*



☐ ***Press the Mode button to Cooling.***

Adjust the room setpoint to bring the system on in cooling mode. The system should start cooling mode within 3-5 min.

- *Verify the setpoint lights up on the Ceiling Cassette display.*
- *Verify the outdoor fan and compressor are operating.*
- *Verify the indoor fan is operating.*
- *Verify the indoor discharge air is cooling the room.*

☐ ***Press the Mode button to Heating.***

Adjust the room setpoint to bring the system on in heating mode. The system should start heating mode within 3-5 min.

- *Verify the new setpoint lights up on the Ceiling Cassette display.*
- *Verify the outdoor fan and compressor are operating.*
- *Verify the indoor fan is operating.*
- *Verify the indoor discharge air is heating the room.*

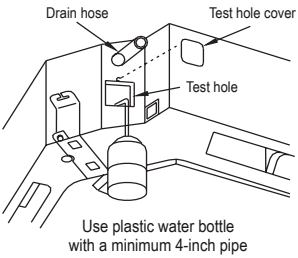
☐ ***Press the OFF button on the Remote Controller.***

- *Verify Remote Controller display turns OFF and the system shuts OFF.*

☐ ***Test the Drain Piping.***

The Ceiling Cassette contains a condensate pump and float switch. Test the condensate disposal system by the following:

1. *Remove grille and frame from the unit and find the drainage port.*
2. *Locate and remove the access cover.*
3. *Place the unit in cooling mode and wait until the compressor turns on.*
4. *Slowly add 20 to 24 oz. of a water bottle to the drain pan.*
5. *Water must drain freely from the unit with condensate pump energized. If not, check the pipe slope or see if there are any pipe restrictions. Verify all piping joints are leak free.*



Note: *This unit is equipped with a safety float switch to de-energize the compressor if the water level gets too high.*

TROUBLESHOOTING

PROBLEM	CAUSE/SOLUTION
System does not restart.	***Cause:*** *The system has a built-in three-minute delay to prevent short and/or rapid cycling of the compressor.* ***Solution:*** *Wait three minutes for the protection delay to expire.*
Indoor unit emits unpleasant odor when started	***Cause:*** *Typically unpleasant odors are the result of mold or mildew forming on the coil surfaces or the air filter.* ***Solution:*** *Wash indoor air filter in warm water with mild cleaner. If odors persist, contact a qualified service professional to clean the coil surfaces.*
You hear a "water flowing" sound.	***Cause:*** *It is normal for the system to make "water flowing" or "gurgling" sounds from refrigerant pressures equalizing when the compressor starts and stops* ***Solution:*** *The noises should discontinue as the refrigerant system equalizes after two or three minutes.*
A thin fog or vapor coming out of the discharge register when system is running.	***Cause:*** *It is normal for the system to emit a slight fog or water vapor when cooling extremely humid warm air.* ***Solution:*** *The fog or water vapor will disappear as the system cools and dehumidifies the room space.*
You hear a slight cracking sound when the system stops or starts.	***Cause:*** *It is normal for the system to make "slight cracking" sounds from parts expanding and contracting during system starts and stops.* ***Solution:*** *The noises will discontinue as temperature equalizes after two or three minutes.*
The system will not run.	***Cause:*** *There are a number of situations that will prevent the system from running.* ***Solution:*** *Check for the following:* • *Circuit breaker is "tripped" or "turned off."* • *Power button of controller is not turned on.* • *Controller is in sleep mode or timer mode.* • *Otherwise, contact a qualified service professional for assistance.*
The unit is not heating or cooling adequately.	***Cause:*** *There are a number of reasons for inadequate cooling or heating.* ***Solution:*** *Check the following:* • *Remove obstructions blocking airflow into the room.* • *Clean dirty or blocked air filter that is restricting airflow into the system.* • *Seal around door or windows to prevent air infiltration into the room.* • *Relocate or remove heat sources from the room.*
Water leaking from the indoor unit into the room.	***Cause:*** *While it is normal for the system to generate condensate water in cooling mode, it is designed to drain this water via a condensate drain system to a safe location.* ***Solution:*** *If water is leaking into the room, it may indicate one of the following.* • *The indoor unit is not level right to left. Level indoor unit.* • *The condensate drain pipe is restricted or plugged. All restrictions must be removed to allow continuous drainage by gravity.* • *If problem persists, contact a qualified service professional for assistance.*
The unit will not deliver air.	***Cause:*** *There are a number of system functions that will prevent air flow.* ***Solution:*** *Check for the following:* • *In heating mode, the indoor fan may not start for three minutes if the room temperature is very low. This is to prevent blowing cold air.* • *In heat mode, if the outdoor temperature is low and humidity is high, the system may need to defrost for up to 10 minutes before beginning a heating cycle.* • *In dry mode, the indoor fan may stop for up to three minutes during the compressor off delay.* • *Otherwise, you should contact a qualified service professional for assistance.*

DIAGNOSTIC CODES

Troubleshooting

The unit has onboard diagnostics. The outdoor unit will provide status indicators. The indoor wall unit and remote controller will display error codes. The following is a summary of the codes with explanation:

Malfunction Name	Indoor Unit & Remote Display	Outdoor Unit Indicators		Possible Causes
		Yellow	Red	
X-fan Mode	AL			Operation status
Indoor Evap Coil Temperature Sensor Malfunction	b5			1) Loose or bad connection between sensor and control board 2) Indoor Evap Coil temperature sensor damaged 3) Control board malfunction
Gas valve temperature sensor is open/short circuited	b7			Hardware malfunction
System Configuration Malfunction	C5			1) No jumper cap inserted on the control board 2) Incorrect or damaged jumper cap on control board 3) Indoor and outdoor units are not compatible
Communication wire error or electronic expansion valve malfunction	dd			Operation status
Wrong connection of communication wire or malfunction of electronic expansion valve	dn			Hardware malfunction
System High Pressure	E1			1) Over charged with refrigerant 2) Blocked or dirty outdoor coil 3) Extreme outdoor ambient conditions
Indoor Anti-Freeze Protection	E2	3 flashes and 1 sec Off		1) Low return airflow 2) Indoor fan speed is too low 3) Indoor coil is blocked or dirty
Low Pressure Protection	E3		9 flashes and 1 sec Off	1) Low on refrigerant 2) Pressure sensor is damaged
Compressor High Discharge Temperature Protection	E4	7 flashes and 1 sec Off		Please refer to the malfunction analysis (discharge temperature, overload) in service manual
Overcurrent Protection	E5	5 flashes and 1 sec Off		1) Supply voltage is unstable 2) Supply voltage is too low and system load is too high 3) Indoor coil is blocked or dirty
Communication Malfunction	E6	Continuous On		1) Communication cable is mis-wired between indoor and outdoor units 2) Indoor or Outdoor control board malfunction
Mode conflict (Indoor units calling for simultaneously Heating and Cooling)	E7			Operation status

DIAGNOSTIC CODES

Malfunction Name	Indoor Unit Display	Outdoor Unit Indicators		Possible Causes
		Yellow	Red	
High Temperature Resistant Protection	E8	6 flashes and 1 sec Off		1) Incorrect refrigerant charge level 2) Refrigerant metering device malfunction 3) Compressor malfunction
Cold Air Protection	E9			1) Indoor coil has not reach minimum heating temperature 2) Indoor ambient is abnormally cold 3) Indoor control board malfunction
EEPROM Memory Malfunction	EE	11 flashes and 1 sec Off		Control board malfunction
Module Phase Current Protection - Frequency Decrease/Limit Mode	En			Outdoor control board malfunction
Module Temperature Protection - Frequency Decrease/Limit Mode	EU		11 flashes and 1 sec Off	1) IPM module over heating or malfunctioning 2) Improper voltage at IPM Module
Refrigerant Leakage Protection	F0		9 flashes and 1 sec Off	1) refrigerant leak(s) 2) Indoor coil temperature sensor no calibrated 3) Refrigerant flow is restricted (ex. valve, exv, debris)
Indoor Ambient Temperature Sensor Malfunction	F1			1) Loose or bad connection between sensor and control board 2) Indoor ambient temperature sensor damaged 3) Control board malfunction
Indoor Coil Temperature Sensor Malfunction	F2			1) Loose or bad connection between sensor and control board 2) Indoor coil temperature sensor damaged 3) Control board malfunction
Outdoor Ambient Temperature Sensor Malfunction	F3		6 flashes and 1 sec Off	1) Loose or bad connection between sensor and control board 2) Outdoor ambient temperature sensor damaged 3) Control board malfunction
Outdoor Coil Temperature Sensor Malfunction	F4		5 flashes and 1 sec Off	1) Loose or bad connection between sensor and control board 2) Outdoor coil temperature sensor damaged 3) Control board malfunction
Outdoor Discharge Temperature Sensor Malfunction	F5		7 flashes and 1 sec Off	1) Loose or bad connection between sensor and control board 2) Discharge temperature sensor damaged 3) Control board malfunction
Compressor Overload Protection - Frequency Decrease/Limit Mode	F6		3 flashes and 1 sec Off	1) Incorrect refrigerant charge 2) Metering device malfunction 3) Compressor malfunction
Oil Return Protection - Frequency Decrease/Limit Mode	F7			Normal function status code only
System Current Overload Protection - Frequency Decrease/Limit Mode	F8		1 flashes and 1 sec Off	1) Input voltage too low 2) System pressure too low
High Compressor Discharge Temperature - Frequency Decrease/Limit Mode	F9		2 flashes and 1 sec Off	1) Cooling load is too great 2) Outdoor ambient temperature too high 3) Refrigerant charge too low 4) Metering device malfunction

DIAGNOSTIC CODES

Malfunction Name	Indoor Unit Display	Outdoor Unit Indicators		Possible Causes
		Yellow	Red	
Indoor Coil Freeze Protection - Frequency Decrease/Limit Mode	FH		4 flashes and 1 sec Off	1) Indoor coil has not reach minimum heating temperature 2) Indoor ambient is abnormally cold 3) Indoor control board malfunction
Pump Down or Gathering Refrigerant Status	Fo	17 flashes and 1 sec Off		Optional Service Mode
High Indoor Coil Temperature in Heating- Frequency Decrease/Limit Mode	H0			1) Incorrect refrigerant charge 2) Metering device malfunction 3) Compressor malfunction
Defrost Mode in Heating	H1			Operation status
Compressor Overload Protection	H3	8 flashes and 1 sec Off		1) Wiring terminal OVC-COMP is loose 2) Refer to the malfunction analysis in Service Manual
Compressor Overload Protection	H4	6 flashes and 1 sec Off		1) Incorrect refrigerant charge 2) Metering device malfunction 3) Compressor malfunction
IPM Module Protection	H5	4 flashes and 1 sec Off		1) IPM module over heating 2) Improper or Low voltage at the IPM module 3) IPM module malfunction
Indoor DC Fan Motor Malfunction	H6			1) Loose connections between fan motor and control board 2) Fan motor or blower wheel bearings malfunction 3) Control board malfunction
Compressor De-Synchronized Malfunction	H7			1) Compressor voltage is not balance 2) Control board malfunction 3) Compressor malfunction
Power Factor Correction (PFC) Protection	HC	14 flashes and 1 sec Off		1) Mis-wiring of the reactor filter and PFC capacitor 2) Reactor filter or PFC capacitor malfunction 3) Control board malfunction
Compressor Demagnetization Protection	HE			Compressor malfunction
Outdoor Fan Motor Malfunction	L3		14 flashes and 1 sec Off	1) Loose connections between fan motor and control board 2) Fan motor malfunction 3) Control board malfunction
High Input Power Protection	L9	9 flashes and 1 sec Off		1) Compressor malfunction 2) Power circuit malfunction
Start-Up Malfunction	LC			1) Over charged with refrigerant 2) Control board malfunction 3) Compressor malefaction
Compressor phase-lacking/ phase-inverse protection	Ld			Hardware malfunction

DIAGNOSTIC CODES

Malfunction Name	Indoor Unit Display	Outdoor Unit Indicators		Possible Causes
		Yellow	Red	
Incompatible Indoor and Outdoor Units	LP	16 flashes and 1 sec Off		Indoor and outdoor units are not compatible
Defrosting Status	note 1	16 flashes and 1 sec Off		
Compressor Phase Current Protection	P5			1) IPM module malfunction 2) Outdoor control board malfunction 3) Compressor malfunction
Module Temperature Sensor Malfunction	P7			Outdoor control board malfunction
Module Temperature Protection	P8			1) Lack of thermal grease on IPM module 2) Heat sink (radiator) not tightly mounted 3) Control board malfunction
High DC Bus Voltage Protection	PH	13 flashes and 1 sec Off		1) Supply voltage on L1 and N is above 265Vac 2) Capacitor on control board malfunction 3) Outdoor control board malfunction
Low DC Bus Voltage Protection	PL	12 flashes and 1 sec Off		1) Supply voltage on L1 and N is below 150Vac 2) Capacitor on control board malfunction 3) Outdoor control board malfunction
Capacitor Charging Malfunction	PU			Capacitor malfunction
Compressor Phase-Current Detection Malfunction	U1			Outdoor control board malfunction
DC Bus Voltage Level Dropping Malfunction	U2			Unstable supply voltage
Current Detection Malfunction	U3			Outdoor control board malfunction
Reversing Valve Malfunction	U4			1) Voltage to reversing valve is less than 175V 2) Loose connections between reversing valve and control board 3) Reversing valve solenoid malfunction
Input Current Detection Malfunction	U5			Outdoor control board malfunction
The four-way valve is abnormal	U7			Hardware malfunction
Zero cross detection circuit malfunction(for indoor unit)	U8			Hardware malfunction
Zero cross detection malfunction	U9			Outdoor control board malfunction

Notes: 1) During defrosting process, the heating indicator is on for 10s and off for 0.5s.
2) Refer to Service Manual for additional information.

GREE ELECTRIC APPLIANCES, INC.

www.greecomfort.com

PRODUCT & INSTALLATION RECORD

For your convenience, please record the model and serial numbers of your new equipment in the spaces provided. This information, along with the installation data and dealer contact information, will be helpful should your system require maintenance or service.

UNIT INFORMATION

Outdoor Unit:

Model No. _____

Serial No. _____

Indoor Unit:

Model No. _____

Serial No. _____

INSTALLATION INFORMATION

Date Installed: _____

DEALERSHIP/INSTALLER INFORMATION

Company Name: _____

Address: _____

_____

Phone Number: _____

Technician Name: _____

 Cat No: DFS-CASS-HP-2IN v2.0