



Multi V Floor Standing Indoor Units Install Tips

The following pages present an overview of LG's Multi V floor standing indoor unit installation concepts, and is intended to supplement the technical and installation information provided with each product and through www.lghvac.com. The review of basic operation and maintenance skills must reinforce industry established practices and provide helpful tips to make equipment operation successful.

Note:

⊘ *The installation guide is NOT intended to be a replacement for LG installation manuals, nor is it intended to cover ALL the logistics of installing floor standing indoor units. For detailed information on the procedures mentioned here, refer to the installation manual specific to your product. Always comply with applicable local, state, and federal codes.*

Safety Instructions - Installation

⚠ DANGER

⊘ Do not store or use flammable gas or combustibles near the unit.
There is risk of fire, explosion, and physical injury or death.

⚠ WARNING

An authorized, trained technician licensed locally and at the state level must install the unit. *Improper installation by the user may result in fire, explosion, electric shock, physical injury or death.*

Wear protective gloves when handling equipment. Sharp edges may cause personal injury.

Always check for system refrigerant leaks after the unit has been installed or serviced. *Exposure to high concentration levels of refrigerant gas may lead to illness or death.*

Note:

Properly insulate all cold surfaces to prevent "sweating."

Cold surfaces such as uninsulated piping can generate condensate that may drip and cause a slippery surface condition and / or water damage to interior surfaces.

Always check for system refrigerant leaks after the unit has been installed. *Low refrigerant levels may cause product failure.*

⊘ Do not make refrigerant substitutions. Use R-410A only. *If a different refrigerant is used, or air mixes with original refrigerant, the unit will malfunction and be damaged.*

When connecting refrigerant tubing, remember to allow for pipe expansion. *Improper piping may cause refrigerant leaks and system malfunction.*

⚠ CAUTION

Be very careful when transporting the product. There is a risk of the product falling and causing physical injury.
Use appropriate moving equipment to transport each frame; ensure the equipment is capable of supporting the weight of the equipment.

Dispose the packing materials safely. *Packing materials, such as nails and other metal or wooden parts, may cause puncture wounds or other injuries. Tear apart and throw away plastic packaging bags so that children will not play with them and risk suffocation and death.*

Install the unit considering the potential for strong winds or earthquakes. *Improper installation may cause the unit to fall over, resulting in physical injury or death.*

Keep the unit upright during installation to avoid vibration or water leakage.

⊘ Do not install the unit in a noise-sensitive area. Periodically check that the frame is not damaged.
There is a risk of equipment damage.

Install the unit in a safe location where nobody can step on or fall onto it. ⊘ Do not install the unit on a defective stand.
There is a risk of unit and property damage.

Install the drain hose to ensure adequate drainage.
There is a risk of water leakage and property damage.

⊘ Do not store or use flammable gas / combustibles near the unit.
There is a risk of product failure.

Install the unit in a safe location where nobody can step on or fall onto it. ⊘ Do not install the unit on a defective stand.
It may result in an accident that causes physical injury or death.

Properly insulate all cold surfaces to prevent "sweating."
Cold surfaces such as uninsulated piping can generate condensate that could drip, causing a slippery surface that creates a risk of slipping, falling, and personal injury.

⊘ Do not use this equipment in mission critical or special-purpose applications such as preserving foods, works of art, wine coolers or refrigeration. This equipment is designed to provide comfort cooling and heating.

⊘ Do not place IDUs in an environment where the IDUs may be exposed to harmful volatile organic compounds (VOCs), or in environments where there is improper air make up or supply or inadequate ventilation. If there are concerns about VOCs in the environment where the IDUs are installed, proper air make up or supply and/or adequate ventilation should be provided. Additionally, in buildings where IDUs will be exposed to VOCs, consider a third party factory-applied epoxy coating to the fan coils for each IDU where the entire coil is dipped, not sprayed.

Safety Instructions - Wiring

⚠ DANGER

High voltage electricity is required to operate this system. Adhere to the U.S. National Electric Code (NEC) and these instructions when wiring.
Improper connections and inadequate grounding can cause accidental injury or death.

⚠ WARNING

The information contained in this manual is intended for use by an industry-qualified, experienced, certified electrician familiar with the NEC who is equipped with the proper tools and test instruments.
Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury or death.

Refer to local, state, and federal codes, and use power wires of sufficient current capacity and rating.
Wires that are too small may generate heat and cause a fire.

Note:

⊘ Do not supply power to the unit until all electrical wiring, controls wiring, piping, installation, and refrigerant system evacuation are completed.

Always ground the unit following local, state, and NEC codes.
There is risk of fire, electric shock, and physical injury or death.

All electric work must be performed by a licensed electrician and conform to local building codes or, in the absence of local codes, with the NEC, and the instructions given in this manual.
If the power source capacity is inadequate or the electric work is not performed properly, it may result in fire, electric shock, physical injury or death.

Secure all field wiring connections with appropriate wire strain relief.
Improperly securing wires will create undue stress on equipment power lugs. Inadequate connections may generate heat, cause a fire and physical injury or death.

Properly size all circuit breakers or fuses.
There is risk of fire, electric shock, explosion, physical injury or death.

Properly tighten all power lugs.
Loose wiring may overheat at connection points, causing a fire, physical injury or death.

⊘ Do not change the settings of the protection devices.
If the pressure switch, thermal switch, or other protection devices are bypassed or forced to work improperly, or parts other than those specified by LG are used, there is risk of fire, electric shock, explosion, and physical injury or death.

Floor Standing Indoor Units General Installation Information

Floor Standing Indoor Units Installation Tips

This document contains general installation tips for installing LG Multi V cased and uncased floor standing indoor units (IDU). Follow all applicable local and national codes during installation. For more detailed information, refer to the individual unit's installation manual on www.lghvac.com.

The typical unit installation includes:

- Selecting the installation location
- Installing the unit
- Connecting refrigerant pipes
- Connecting drain pipe
- Connecting communication and power wiring
- Installing the remote controller (if applicable)

Always follow the system diagrams, including the LATS diagram (if applicable).

Selecting the Installation Location

⚠ DANGER

To avoid the possibility of fire, Ⓞ do not install the unit in an area where combustible gas may generate, flow, stagnate, or leak. Failure to do so will cause serious bodily injury or death. Before beginning installation, read the safety summary at the beginning of this manual.

Note:

Select a location for installing the floor standing indoor units that meets the following conditions:

- Where the floor / wall is solid and has enough structural strength to bear the weight of the indoor unit.
- Operating sound from the unit will not disturb occupants.
- Include enough space for service access.
- Include space for drainage to ensure condensate flows properly out of and away from the unit when it is in cooling mode.
- Use a level indicator to ensure the unit is installed on a level plane.
- Where air circulation will not be blocked and following the required clearances.
- Install the indoor unit in a location where it can be easily connected to the outdoor unit / heat recovery unit.

Note:

The unit may be damaged, may malfunction, and / or will not operate as designed if installed in any of these conditions:

- Ⓞ Do not install the unit near a heat or steam source, or where considerable amounts of oil, iron powder, or flour are used. These materials may generate condensate, cause a reduction in heat exchanger efficiency, or malfunction of the condensate drain. If this is a potential problem, install a ventilation fan large enough to vent out these materials.
- Ⓞ Do not install the unit where it will be subjected to direct thermal radiation from other heat sources.
- Ⓞ Do not install the unit in an area where combustible gas may generate, flow, stagnate, or leak. There is the possibility of fire.
- Ⓞ Do not install the unit in a location where acidic solution and spray (sulfur) are often used.
- Ⓞ Do not use the unit in environments where oil, steam, or sulfuric gas are present.
- Ⓞ Do not install additional ventilation products on the chassis of the unit.
- Ⓞ Do not install the unit near high-frequency generator sources.
- Ⓞ Do not install the unit near a doorway.
- Ⓞ Do not install in an area where the unit will be exposed to volatile organic compounds.

Installing in an Area Exposed to Unconditioned Air

In some installation applications, areas (floors, walls) in some rooms may be exposed to unconditioned air (room may be above or next to an unheated garage or storeroom). To countermeasure:

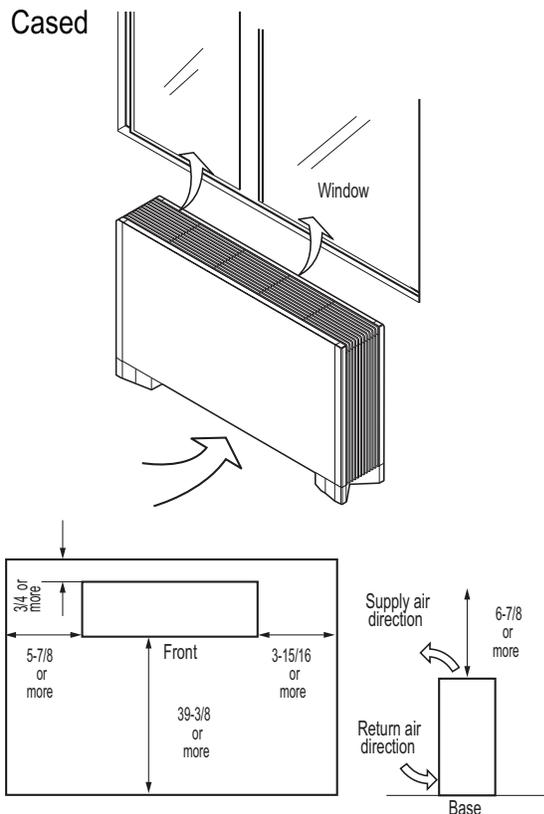
- Verify that carpet is or will be installed (carpet may increase the temperature by three [3] degrees).
- Install radiant heat or another type of heating system to the floor.
- Add insulation between the floor joists.

Floor Standing Minimum Maintenance Requirements.

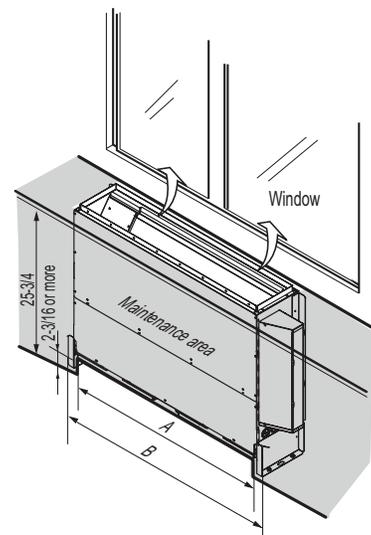
Indoor Unit	A (Inch)	B (Inch)
Floor Standing Cased and Uncased CEA / CEU Frames	≥31	≥42-1/2
Floor Standing Cased and Uncased CFA / CFU Frames	≥42	≥53-1/2

Minimum Clearance Requirements.

Cased



Uncased



Installing the Indoor Unit

Mounting the IDU Chassis

1. To provide stabilization, floor standing indoor units need to be secured to a wall. Ensure the wall is strong enough to bear the weight of the unit. If necessary, reinforce the wall before installing the unit.
2. Mark the appropriate location on the wall for the holes, then drill the holes.
3. Apply the installation mount and install the floor standing indoor unit.

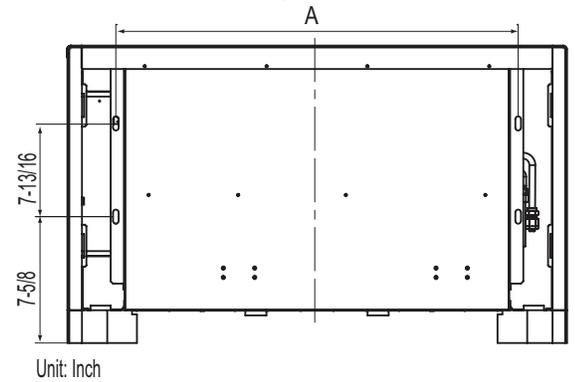
Note:

- *The unit requires a minimum clearance of 3-15/16 inches below the unit for air intake.*
- *Verify that the floor standing indoor unit is level so that drainage flows smoothly. If there is an incline, water may leak.*
- *Depending on the shape and type of the wall surface, the indoor unit operating sound could increase.*

Location of the Wall Bolts for Floor Standing Indoor Units.

Type	A (Inch)
Floor Standing Cased and Uncased CEA / CEU Frames	33-3/4
Floor Standing Cased and Uncased CFA / CFU Frames	44-3/4

Bolt Pitch for Floor Standing Indoor Units.



⚠ WARNING

- *Installation mount must be securely installed to prevent the chassis falling from its installation location. There is risk of personnel injury from falling equipment.*
- *When choosing a location for the installation mount, be sure to take into consideration routing of wiring for power outlets within the wall. Touching wiring can cause serious bodily injury or death.*
- *Installation work must be performed by trained personnel and in accordance with all local or other applicable codes. There is risk of injury to personnel from incorrect installation.*

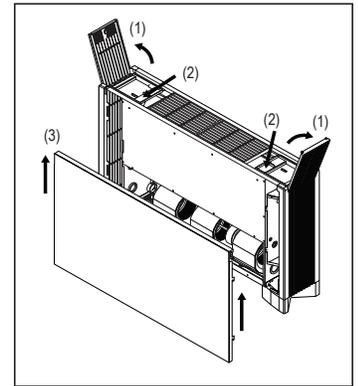
Note:

- *Installation mount must be securely installed to prevent the chassis falling from its installation location. There is risk of property damage from falling equipment.*
- *Ensure the unit is properly installed. Incorrectly installed units can result in degraded performance or an inoperative unit / system.*
- *Use a level to ensure the installation mount and chassis are installed on a level plane.*

Opening / Closing the Front Panel

1. Open the lid of control panel on both the left and right sides.
2. Remove the screws on both the left and right sides.
3. Remove the front panel from the floor-standing indoor unit.
4. To close the front panel, reverse the steps listed.

Opening / Closing the Front Panel.



Connecting the Refrigerant Pipes

Refrigerant Pipe Connections

Indoor units come with flare type connections. It is the installer's option to use the flare fittings provided or braze the indoor unit to the refrigerant piping system.

Flare Fittings

- All unit flare fittings are 45° and are rated for high-pressure R410A refrigerant.
- Properly form all flare fittings using best practices.
- Place a drop of PVE oil on the outside of flare fitting before tightening.

Note:

- *Do not use any other type of oil (including traditional POE refrigeration oil) as a lubricant. Failure to follow this procedure may lead to restrictions in the refrigeration components.*
- *Do not over-tighten flare nuts. Excessive tightening will cause fittings to crack.*

Brazing

- Use a dry nitrogen purge operating at a minimum pressure of three (3) psig and maintain a steady flow.
- Use a 15% silver phosphorous copper brazing alloy to avoid overheating and produce good flow.
- Protect isolation valves, electronic expansion valves, and other heat-sensitive components from excessive heat with a wet rag or heat barrier spray.

Note:

Multi V refrigeration system components contain very small capillary tubes, small orifices, electronic expansion valves, oil separators, and heat exchangers that can easily become blocked.

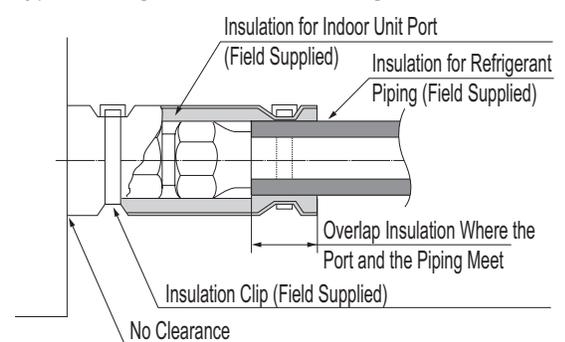
Insulate Refrigerant Pipes

Sufficiently insulate all cold surfaces to prevent moisture forming. All pipes must be insulated and each pipe must be separately wrapped. Use field-provided one-half (1/2) inch thick (or thicker) closed-cell insulation. The thickness may need to be increased based on ambient conditions and local codes.

Wrap all refrigerant piping. Glue all insulation joints with no air gaps between insulation segments, and between insulation segments and the unit case. Ensure insulation material fits snugly against the refrigeration pipe with no air space between the pipe surface and the surrounding insulation.

Protect insulation inside hangers and supports with a second insulation layer. Ensure insulation on all pipe passing through pipe hangers, inside conduit, and/or sleeves is / are not compressed.

Typical Refrigerant Line Flare Fitting Insulation Detail.



Connecting the Drain Pipe

Condensate Drain Pipe

Floor standing indoor units apply the gravity drain method, but a field-supplied condensate pump can be installed (optional, sold separately). Depending on the location of the indoor unit, condensation can be drained directly to the outside of the building, or a common indoor unit drainage piping system can be installed.

Drain Hose

Floor standing indoor units have a built in drain hose with a drain pipe I.D. of one (Ø1) inch. If necessary, the drain hose can be extended.

- When the bottom surface of the indoor unit is at an elevation below the receiving building drain line connection, install an inverted trap at the top of the condensate pump discharge riser before connection to the building drain pipe.
- When the receiving drain line is mounted horizontal, connect the inverted trap to the top half of the pipe. The connection point of the inverted trap to the building drain pipe must always be to the top half of the pipe and ∅ must never be over 45° either side of the upper most point of the horizontal building drain line.
- If connecting to a vertical drain line or plumbing system vent line, connect the IDU condensate pump discharge line using a Y-45 fitting with the double end of the Y-45 fitting facing up. When connecting to a vertical drain line include an inverted trap at the top of the IDU condensate pump discharge riser before connection to the Y-45 fitting.

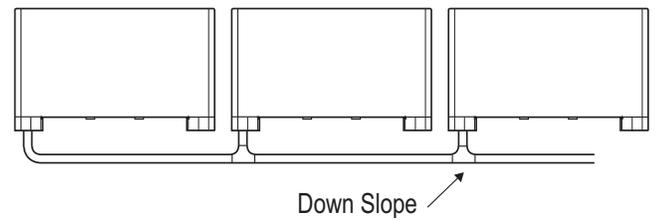
Drain Piping

- Drain piping must have a down slope (1/50 to 1/100).
- Any holes through the ceilings, walls, etc., must be large enough to accommodate the drain piping and insulation.

Note:

- To prevent reversal flow, ∅ do not provide up and down slope.
- ∅ Do not exert extra force on the drain port on the indoor unit during drain piping connection.

Floor Standing Indoor Unit with Gravity Drain and Down Slope.



Connecting Power Wiring and Communication Cable

Connecting Power Wiring and Communications Cable

Indoor unit installation best practices are to connect control wiring (low voltage) and then connect power wiring (high voltage). ∅ Do not apply power to the indoor unit or any system component until authorized to do so by the system commissioning agent.

⚠ DANGER

High voltage electricity is required to operate this system. Adhere to the U.S. National Electric Code (NEC) and these instructions when wiring. Improper connections and inadequate grounding can cause accidental injury or death.

Always ground the unit following local, state, and NEC codes. There is risk of fire, electric shock, and physical injury or death.

Properly size all circuit breakers or fuses. There is risk of fire, electric shock, explosion, physical injury or death.

⚠ WARNING

The information contained in this manual is intended for use by a trained electrician familiar with applicable local codes and the U.S. National Electric Code (NEC), and who is equipped with the proper tools and test instruments. Failure to carefully read and follow all instructions in this manual can result in personal injury or death.

Connect the indoor unit input power cable but do not apply power to the indoor unit until authorized to do so by the system commissioning agent. Inappropriate power connection can result in personal injury or death.

Refer to local, state, and federal codes, and use power wires of sufficient current capacity and rating. Wires that are too small may generate heat and cause a fire, resulting in physical injury or death.

Properly tighten all power connections. Loose wiring may overheat at connection points, causing a fire, physical injury or death.

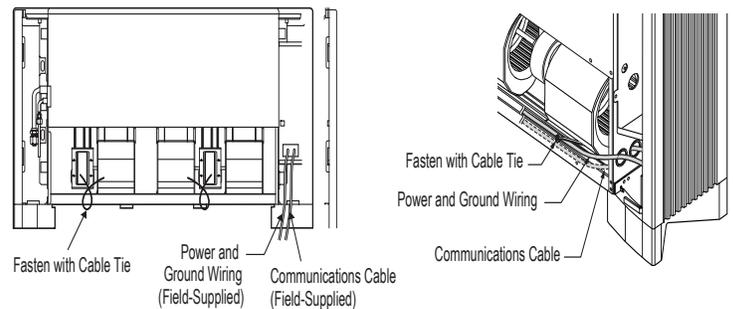
∅ Don'ts

- Never use wire caps and never splice communications cables.
- Star and Wye communications cable configurations are not acceptable.
- Never connect zone controllers or other central control products such as AC Smart, PDI, or LG building management system gateway products to the IDU/ODU communications cable.

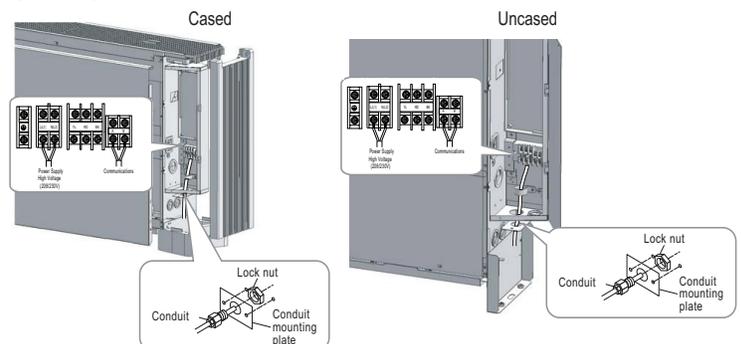
Multi V Floor Standing Indoor Unit Wiring Configuration

Multi V IDUs require separate power and communication cables. Keep communications cables away from line voltage wiring, lighting ballasts, and other devices emitting EMF energy. Maintain a minimum of two (2) inches between line voltage wires and communications or zone controller cables.

Typical Floor Standing IDU Cable Routing and Connections.



Typical Floor Standing IDU Power Wiring and Communications Cable Terminals.



Connecting Power Wiring and Communication Cable

Power Wiring Specifications

The IDU requires single-phase, 208-230 volt facility power. Be sure the power cables meet applicable local and national codes.

Communication Wiring Specifications

- Field-supplied communications cable must be minimum 18-2 AWG, twisted, stranded, shielded or unshielded ((if shielded, must be grounded to chassis at outdoor unit only), PVC or vinyl jacket, between the indoor units, heat recovery boxes (if applicable), and outdoor units.
- The outdoor/indoor/heat recovery unit (if applicable) communications cable must be run between components in a daisy chain configuration.
- Polarity matters for communication cable. When connecting the communications cable conductors at each Multi V system component, be careful the conductor connected to the IDU(A) terminal on the outdoor unit is connected to the A/3(A) terminal at each indoor unit. The conductor connected to the IDU(B) terminal on the outdoor unit must be connected to the B/4(B) terminals at each indoor unit. Cross connecting the A/3(A) and B/4(B) terminals will cause communications errors and system malfunction.
- Ground the shield of the communications cable at one end only, at the master outdoor unit.

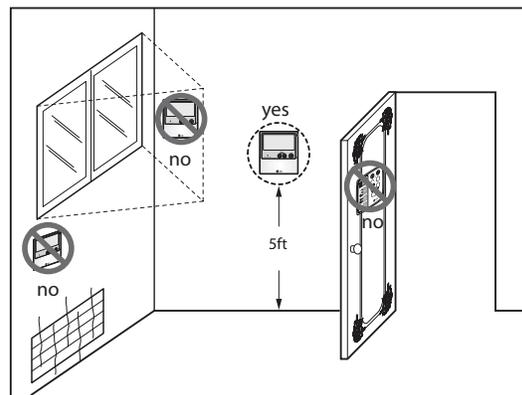
Optional Wired Wall Controller Installation

Since the room temperature sensor is inside the wired wall controller, to maintain proper space temperature, install the remote controller in a place away from direct sunlight, high humidity, and direct supply of hot or cold air. Install the remote controller about five (5) feet above the floor in an area with good air circulation and an average temperature.

⊘ Do not install the remote controller where it can be affected by the following:

- Drafts or dead spots behind doors and in corners
 - Hot or cold air from ducts
 - Radiant heat from sun or appliances
 - Concealed pipes and chimneys
 - Uncontrolled areas such as an outside wall behind the remote controller
1. Pull communications cable between the zone controller handy box (if used) and the indoor unit. Use field supplied 22-3 twisted, stranded and unshielded cable or LG supplied cable.
 2. Store a minimal amount of cable in the handy box. Any additional cable should be coiled and stored near the indoor unit control panel.
 3. If using LG cable and additional cable length is needed, order a thirty-three (33) foot LG Wired Remote Group Control Extension cable (Model No. PZCWRC1).
 4. If using LG supplied cable and the cable between the zone controller and the indoor unit is too long, ⊘ do not cut the cable and shorten. Coil any spare communications cable, tie-wrap it, and leave it next to the indoor unit location.

Typical Wired Remote Controller Installation



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