



Multi V, Multi F, and Single Zone Cassette Indoor Units Install Tips

The following pages present an overview of installation of LG's Multi V, Multi F, and Single Zone cassette indoor units, and is intended to supplement the technical and installation information provided 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:

⊗ *This installation guide is NOT intended to be a replacement for LG installation manuals, nor is it intended to cover ALL the logistics of installing LG cassette 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 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.

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

When connecting refrigerant tubing, remem-

⚠ 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 may not play with them and risk suffocation and death.

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

ber to allow for pipe expansion.
Improper piping may cause refrigerant leaks and system malfunction.

⊗ 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 mounting.
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.

Cassette Indoor Units Installation Tips

This document contains general installation tips for installing LG cassette 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 your 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 indoor unit (IDU) that meets the following conditions:

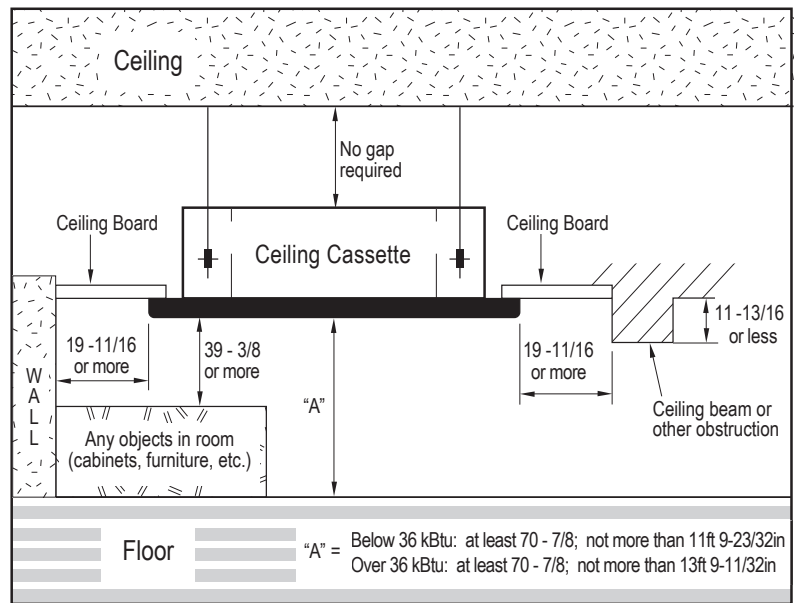
- Where there is enough structural strength to bear the weight of the unit.
- Operating sound from the unit will not disturb occupants.
- Include enough space for service access.
- Include space for drainage to ensure condensate flows properly out of the unit when it is in cooling mode.
- Use a level indicator to ensure the unit is installed on a level plane.

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 in an area where the unit will be exposed to volatile organic compounds.

Typical Clearances Around Installed Unit



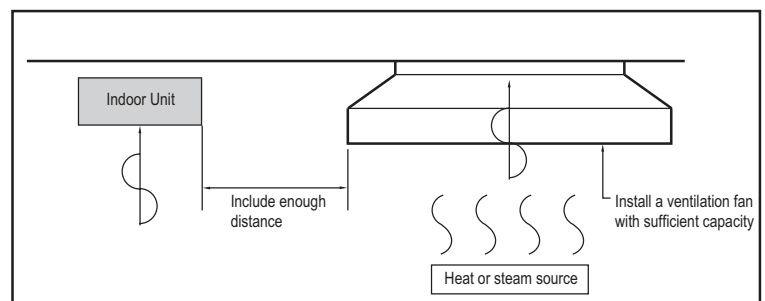
Unit: inch

Installing in an Area Exposed to Unconditioned Air

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

- 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.

Installing Near a Heat or Steam Source



Mounting the IDU Chassis

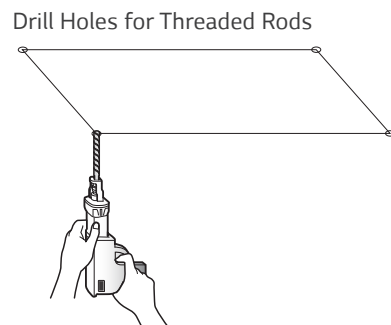
- The ceiling should be strong and solid enough to prevent indoor unit vibration.
- Install the unit with a slight slope towards the drainage point to ensure condensate drains easily.
- Select and mark the areas where the hanging bolts should be placed.

⚠ WARNING

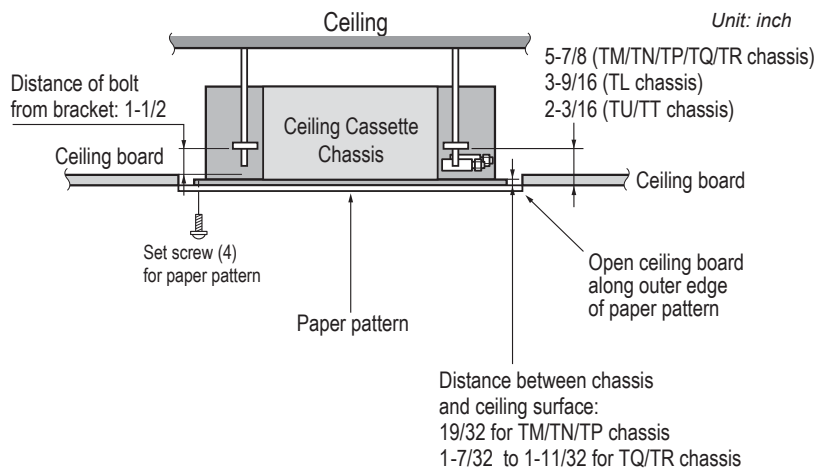
The threaded rod hangers (bolts) and hardware must be securely tightened to prevent the unit from falling into location.

There is a risk of personal injury or death from falling equipment.

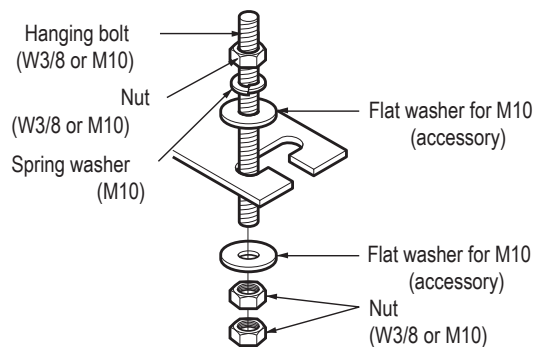
- Drill the holes and install the hanging bolts (threaded rods).
- Position the IDU and secure to the hanging bolts. Use a level to ensure the IDU is level with a slight slope to the drainage point.



Typical Cassette Unit Installation



Hang Indoor Unit on Threaded Rods



Connecting 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.

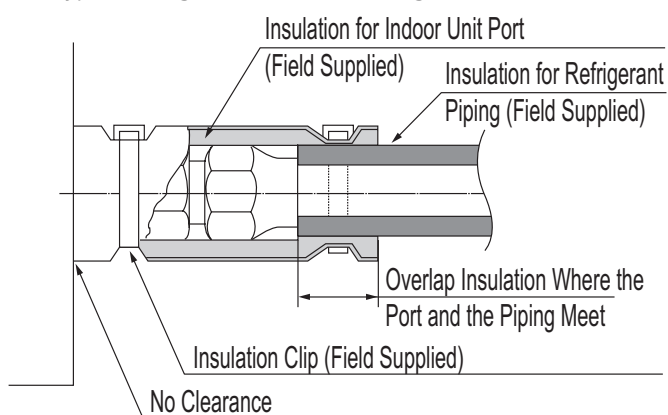
Insulate Refrigerant Pipes

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 and condensate 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 not compressed.

Typical Refrigerant Line Flare Fitting Insulation Detail



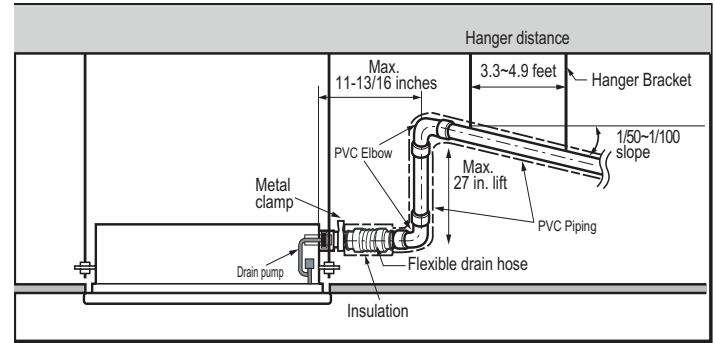
Condensate Drain Pipe

All cassette indoor units have a factory-mounted condensate pump that runs continuously while the unit is in cooling mode. The pump has an internal high-level float switch that stops the unit if the water level in the pan rises too high.

All cassette indoor units have a flexible drain hose kit and one or two clamps. The hose can be used to connect the condensate pipe to the condensate pump connection.

- Indoor units DO NOT come with check valves or a backflow prevention device. If check valves are needed, they must be field supplied.
- The maximum lift of all condensate pumps is 27 in.
- Measure lift distance from the bottom surface of the indoor unit, NOT from the condensate pipe connection.
- Slope all horizontal condensate pipe segments a minimum of 1/4 inch per foot away from the indoor unit.
- Ceiling cassette indoor units do not have a gravity condensate pipe connection. There is a service drain plug on the bottom of each unit under the decorative panel. This drain plug is intended as a service feature and is not to be used as a permanent gravity drain connection.

Typical Indoor Unit Drain Pump to Drain Piping System Configuration



Connecting Communication and Power Wiring

Connecting Communication and Power Wiring

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 National Electrical Codes and these instructions when wiring.

Improper connections and inadequate grounding can cause accidental injury or death.

Always ground the unit following local, state, and National Electrical Codes.

Improper connections and inadequate grounding can cause accidental 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

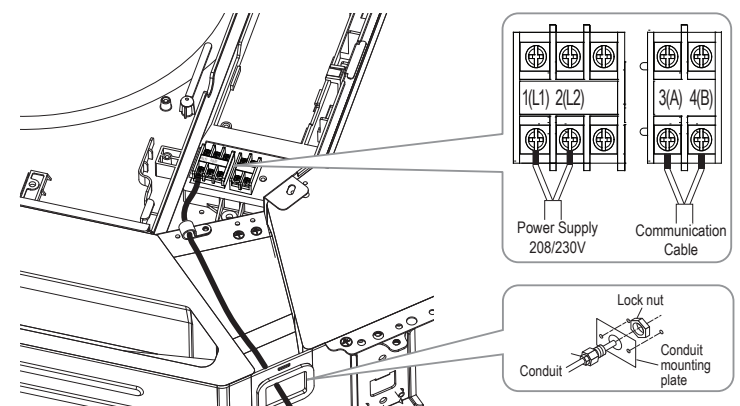
- Never use wire caps and never splice communications cables.
- Star and Wye communications cable configurations are not acceptable.
- Never connect zone controllers or other central control products such as AC Smart, PDI, or LG building management system gateway products to the IDU/ODU communications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

Multi V Indoor Unit Wiring Configuration

Multi V IDUs require separate power and communication cables. The IDU requires single-phase, 208-230 volt facility power. Be sure the power cables meet applicable local and national codes.

The field-supplied communications cable from the outdoor unit must be minimum 18-2, stranded and shielded. 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. Communication cables must be connected in a daisy chain configuration.

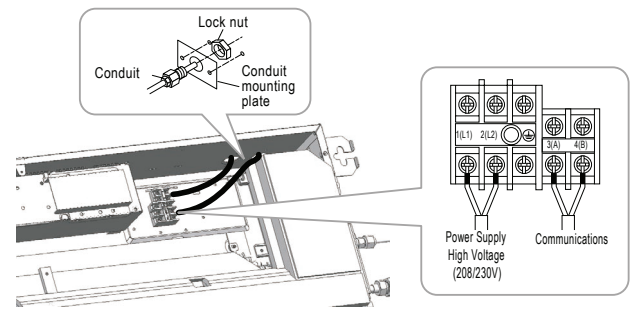
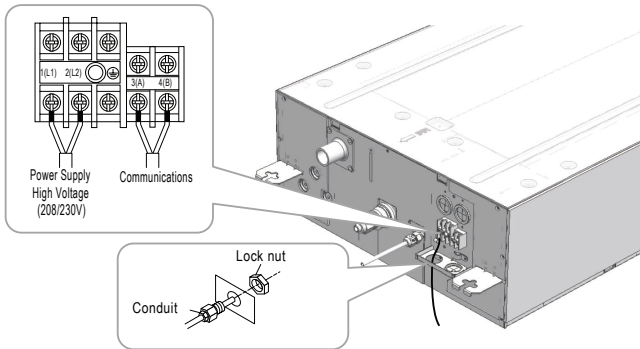
Typical Multi V 4-way Cassette IDU Power Wiring and Communications Cable Terminals



- 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.
- Field provide a minimum of 18-2 AWG, stranded and shielded, PVC or vinyl jacket communications wiring between the indoor units, heat recovery boxes (if applicable), and outdoor units.
- The outdoor/indoor unit communications cable must be run between components in a daisy chain configuration. Star or wye configurations are not allowed.
- Connect the communications cables to the A/3(A) and B/4(B) terminals at indoor units and/or heat recovery units. Maintain polarity throughout the communications bus. Be sure A/3(A) terminals are connected to A/3(A) terminals and B/4(B) terminals are connected to B/4(B) terminals.
- Connect the shields of the communications cable segments together at each indoor unit. Insulate each shield connection to prevent electrical contact with the IDU. Ground the shield of the communications cable at one end only, at the master outdoor unit.

Typical Multi V 2-way Cassette IDU Power Wiring and Communications Cable Terminals

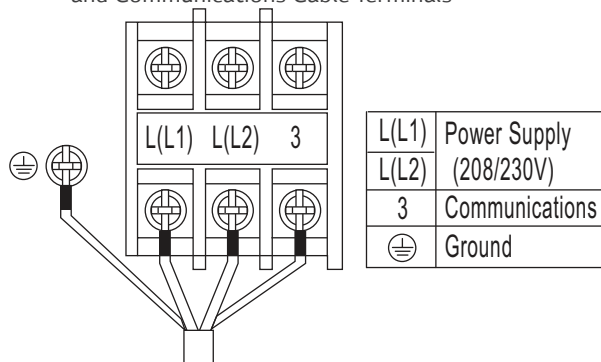
Typical Multi V 1-way Cassette IDU Power Wiring and Communications Cable Terminals



Multi F and Single Zone Indoor Unit Wiring Configuration

Multi F and Single Zone IDUs have a single cable from the outdoor unit that supplies both power and communication. This field-supplied cable must be minimum 18-4 stranded and shielded. Be sure the power conductors are connected to the line power terminals of the IDU. Be sure the communication conductor is connected to the communication terminal of the IDU and ground is connected to ground.

Typical Multi F and Single Zone IDU Power Wiring and Communications Cable Terminals

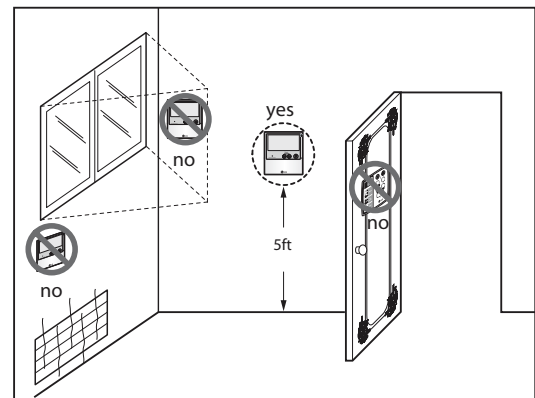


Optional Wired Wall Controller Installation

Since the room temperature sensor is inside the remote 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 5 ft 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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