

# **MULTI V™**

## **WALL-MOUNTED INDOOR UNIT INSTALLATION MANUAL**

### **GEN 4 Art Cool Gallery Models:**

- ARNU093SFA4
- ARNU123SFA4



### **GEN 4 Standard Models:**

- ARNU053SBL4
- ARNU073SBL4
- ARNU093SBL4
- ARNU123SBL4
- ARNU153SBL4
- ARNU183SCL4
- ARNU243SCL4
- ARNU303SVA4
- ARNU363SVA4



### **GEN 4 Art Cool Mirror Models:**

- ARNU053SBR4
- ARNU073SBR4
- ARNU093SBR4
- ARNU123SBR4
- ARNU153SBR4
- ARNU183SCR4
- ARNU243SCR4



### **GEN 2 Art Cool Mirror Models:**

- ARNU073SER2
- ARNU093SER2
- ARNU123SER2
- ARNU153SER2
- ARNU183S8R2
- ARNU243S8R2



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Please read carefully and store in a safe place for future reference.  
Content familiarity required for proper installation.

*The instructions included in this manual must be followed to prevent product malfunction, property damage, injury, or death to the user or other people. Incorrect operation due to ignoring any instructions will cause harm or damage. A summary of safety precautions begins on page 4.*

*For more technical materials such as submittals, engineering databooks, and catalogs, visit [www.lghvac.com](http://www.lghvac.com).*

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The instructions below must be followed to prevent product malfunction, property damage, injury or death to the user or other people. Incorrect operation due to ignoring any instructions will cause harm or damage. The level of seriousness is classified by the symbols below.

## TABLE OF SYMBOLS

<b>DANGER</b>	<i>This symbol indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.</i>
<b>WARNING</b>	<i>This symbol indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.</i>
<b>CAUTION</b>	<i>This symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.</i>
<b>Note:</b>	<i>This symbol Indicates situations that may result in equipment or property damage accidents only.</i>
	<i>This symbol indicates an action that should not be performed.</i>

## INSTALLATION

### **DANGER**

**Don't use or store flammable gas or combustibles near the unit.**  
*There is risk of product failure, fire, explosion, and physical injury or death.*

### **WARNING**

**Do not install, remove, or re-install the unit by yourself (customer). Ask the dealer or an authorized technician to install the unit.**

*Improper installation by the user may result in water leakage, fire, explosion, electric shock, physical injury or death.*

**For replacement of an installed unit, always contact a trained LG service provider.**

*There is risk of fire, electric shock, explosion, and physical injury or death.*

**The outdoor unit is shipped with refrigerant and the service valves closed. Do not open service valves on the unit until all non-condensibles have been removed from the piping system and authorization has been obtained from the commissioning agent.**

*There is a risk of physical injury or death.*

**Do not run the compressor with the service valves closed.**  
*There is risk of explosion, physical injury, or death.*

**Periodically check that the outdoor unit is not damaged.**  
*There is risk of explosion, physical injury, or death.*

**Replace all control box and panel covers.**  
*If cover panels are not installed securely, dust, water and animals may enter the unit, causing fire, electric shock, and physical injury or death.*

**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.*

**Do not install the unit using defective hanging, attaching, or mounting hardware.**  
*There is risk of physical injury or death.*

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

**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.*

**Do not install the unit in any location exposed to open flame or extreme heat. Do not touch the unit with wet hands.**  
*There is risk of fire, electric shock, explosion, and physical injury or death.*

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

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

**If the air conditioner is installed in a small space, take measures to prevent the refrigerant concentration from exceeding safety limits in the event of a refrigerant leak.**  
*Consult the latest edition of ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers) Standard 15. If the refrigerant leaks and safety limits are exceeded, it could result in personal injuries or death from oxygen depletion*

## INSTALLATION – CONTINUED

### **⚠ CAUTION**

**Be very careful when transporting the product.**

- Ⓞ Do not attempt to carry the product without assistance.
- Some products use polypropylene bands for packaging. Ⓞ Do not use polypropylene bands to lift the unit.
- Suspend the unit from the base at specified positions.
- Support the unit a minimum of four points to avoid slippage from rigging apparatus.

### **Note:**

**Properly insulate all cold surfaces to prevent “sweating.”**

*Cold surfaces such as uninsulated pipe can generate condensate that may drip and cause a slippery floor condition and/or water damage to walls.*

**When installing the unit in a hospital, mechanical room, or similar electromagnetic field (EMF) sensitive environment, provide sufficient protection against electrical noise.**

*Inverter equipment, power generators, high-frequency medical equipment, or radio communication equipment may cause the air conditioner to operate improperly. The unit may also affect such equipment by creating electrical noise that disturbs medical treatment or image broadcasting.*

Ⓞ **Do not use the product for special purposes such as preserving foods, works of art, wine coolers, or other precision air conditioning applications. This equipment is designed to provide comfort cooling and heating.**

*There is risk of property damage.*

Ⓞ **Do not make refrigerant substitutions. Use R410A only.**

*If a different refrigerant is used, or air mixes with original refrigerant, the unit will malfunction and be damaged.*

Ⓞ **Do not install the unit in a noise sensitive area.**

**When connecting refrigerant tubing, remember to allow for pipe expansion.**

*Improper piping may cause refrigerant leaks and system malfunction.*

**Take appropriate actions at the end of HVAC equipment life to recover, recycle, reclaim or destroy R410A refrigerant according to applicable U.S. Environmental Protection Agency (EPA) rules.**

**Periodically check that the outdoor unit is not damaged.**

*There is a risk of equipment damage.*

**Install the unit in a safe location where no one can step on or fall onto it. Ⓞ Do not install the unit with defective hanging, attaching, or mounting hardware.**

*There is risk of unit and property damage.*

**Install the drain hose to ensure adequate drainage.**

*There is a risk of water leakage and property damage.*

Ⓞ **Don't store or use flammable gas / combustibles near the unit.**

*There is risk of product failure.*

**Always check for system refrigerant leaks after the unit has been installed or serviced.**

*Low refrigerant levels may cause product failure*

**The unit is shipped with refrigerant and the service valves closed. Ⓞ Do not open service valves on the unit until all non-condensibles have been removed from the piping system and authorization to do so has been obtained from the commissioning agent.**

*There is a risk of refrigerant contamination, refrigerant loss and equipment damage.*

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## WIRING

### DANGER

High voltage electricity is required to operate this system. Adhere to the 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.**

**Turn the power off at the nearest disconnect before servicing the equipment.**

*Electric shock can cause physical injury or death.*

**Properly size all circuit breakers or fuses.**

*There is risk of fire, electric shock, explosion, physical injury or death.*

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### WARNING

The information contained in this manual is intended for use by an industry-qualified, experienced, certified electrician familiar with the U.S. National Electric Code (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.*

**Ensure the unit is connected to a dedicated power source that provides adequate power.**

*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.*

**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.*

**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 tighten all power connections.**

*Loose wiring may overheat at connection points, causing a fire, physical injury or death.*

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#### Note:

⊘ Do not cut, lengthen or shorten the communications and power cable between any dry contact unit and its connected indoor unit. ⊘ Do not install the unit in a location where the communications and power cable cannot be safely and easily connected between the two units. ⊘ Do not allow strain on this cable.

*Poor cable connections can cause equipment malfunction.*

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## OPERATION

### **⚠ DANGER**

⊘ **Do not provide power to or operate the unit if it is flooded or submerged.**

*There is risk of fire, electric shock, physical injury or death.*

**Use a dedicated power source for this product.**

*There is risk of fire, electric shock, physical injury or death.*

⊘ **Do not operate the disconnect switch with wet hands.**

*There is risk of fire, electric shock, physical injury or death.*

**Periodically verify the hanging bolts and other hardware securing the unit have not deteriorated.**

*If the unit falls from its installed location, it can cause property damage, product failure, physical injury or death.*

**If refrigerant gas leaks out, ventilate the area before operating the unit.**

*If the unit is mounted in an enclosed, low-lying, or poorly ventilated area and the system develops a refrigerant leak, it may cause fire, electric shock, explosion, physical injury or death.*

### **⚠ WARNING**

⊘ **Do not allow water, dirt, or animals to enter the unit.**

*There is risk of unit failure, fire, electric shock, physical injury or death.*

**Avoid excessive cooling and periodically perform ventilation to the unit.**

*Inadequate ventilation is a health hazard.*

⊘ **Do not touch the refrigerant piping during or after operation.**

*It can cause burns or frostbite.*

⊘ **Do not operate the unit with the panel(s) or protective cover(s) removed; keep fingers and clothing away from moving parts.**

*The rotating, hot, cold, and high-voltage parts of the unit can cause physical injury or death.*

**Periodically check power cable and connection for damage.**

*Cable must be replaced by the manufacturer, its service agent, or similar qualified persons in order to avoid physical injury and/or electric shock.*

⊘ **Do not open the inlet grille of the unit during operation.**  
 ⊘ **Do not operate the unit with the panels or guards removed.**  
 ⊘ **Do not insert hands or other objects through the inlet or outlet when the unit is powered.** ⊘ **Do not touch the electrostatic filter, if the unit includes one.**

*The unit contains sharp, rotating, hot, and high voltage parts that can cause personal injury and/or electric shock.*

**Ensure no power is connected to the unit other than as directed in this manual. Remove power from the unit before removing or servicing the unit.**

*There is risk of unit failure, fire, electric shock, physical injury or death.*

**Securely attach the electrical cover to the unit.**

*Non-secured electrical covers can result in burns or electric shock due to dust or water in the service panel.*

### **⚠ CAUTION**

**To avoid physical injury, use caution when cleaning or servicing the air conditioner.**

#### **Note:**

**Clean up the site after installation is finished, and check that no metal scraps, screws, or bits of wiring have been left inside or surrounding the unit.**

⊘ **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.**

**Provide power to the compressor crankcase heaters at least six (6) hours before operation begins.**

*Starting operation with a cold compressor sump(s) may result in severe bearing damage to the compressor(s). Keep the power switch on during the operational season.*

⊘ **Do not block the inlet or outlet.**

*Unit may malfunction.*

**Securely attach the electrical cover to the indoor unit. Non-secured covers can result in fire due to dust or water in the service panel.**

**Periodically verify the equipment mounts have not deteriorated.**

*If the base collapses, the unit could fall and cause property damage or product failure.*

⊘ **Do not allow water, dirt, or animals to enter the unit.**

*There is risk of unit failure.*

## Gallery and Wall-Mounted Indoor Units

This manual describes how to install LG Art Cool™ Gallery, Standard, and Art Cool™ Mirror Wall-Mounted indoor units (IDU) for Multi V Variable Refrigerant Flow (VRF) heat pump and heat recovery systems. Table 1 lists the available models. Refer to LG's Multi V Indoor Unit Engineering Manual for complete detailed engineering data and selection procedures.

### Safety

Safety of personnel is the primary concern during all procedures. Read and understand the safety summary at the front of this manual. Read and understand this installation procedure before beginning installation. Use the appropriate tools and accessories during installation. Plan your work and do not work alone, if possible. Know how to obtain emergency medical and fire fighting assistance.

#### Installation Personnel

This equipment is intended for installation by personnel trained in the required construction, mechanical, electrical, and/or other disciplines.

#### Applicable Codes

Personnel must be familiar with and follow the applicable national, state, and/or local codes. In the event of a conflict between any applicable code and the instructions in this manual, comply with the applicable code.

### **⚠ WARNING**

*Installation work must be performed by trained personnel and in accordance with national wiring standards and all local or other applicable codes. Improper installation can result in fire, electric shock, physical injury, or death and can prevent proper operation of the unit.*

#### **Note:**

*Please read all instructions before installing this product. Become familiar with the unit's components and connections, and the order of installation. Incorrect installation can degrade or prevent proper operation.*

Figure 1: Art Cool Gallery (Gen 4) Indoor Unit.



Figure 2: Standard and Art Cool Mirror (Gen 4) Wall-Mounted Indoor Unit.



Figure 3: Art Cool Mirror (Gen 2) Wall-Mounted Indoor Unit.



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**Required Parts (factory provided)****Art Cool Gallery (Gen 4) Indoor Units**

- Installation guide (One [1] Each)
- Type "A" screws (Four [4] Each)
- Plastic anchors (Four [4] Each)

**Standard and Art Cool Mirror (Gen 4) Wall-Mounted Indoor Units**

- Installation plate (One [1] Each)
- Type "A" screws (Five [5] Each)
- Plastic anchors (Five [5] Each)
- Type "B" screws (Two [2] Each)

**Art Cool Mirror (Gen 2) Wall-Mounted Indoor Units**

- Installation plate (One [1] Each)
- Type "A" screws (Four [4] Each)
- Plastic anchors (Four [4] Each)
- Type "B" screws (Two [2] Each)

**Required Parts (field provided)**

- Connecting cable (power and control)
- Pipes - vapor line and liquid line, with insulation
- Additional drain hose

**Required Tools (field provided)**

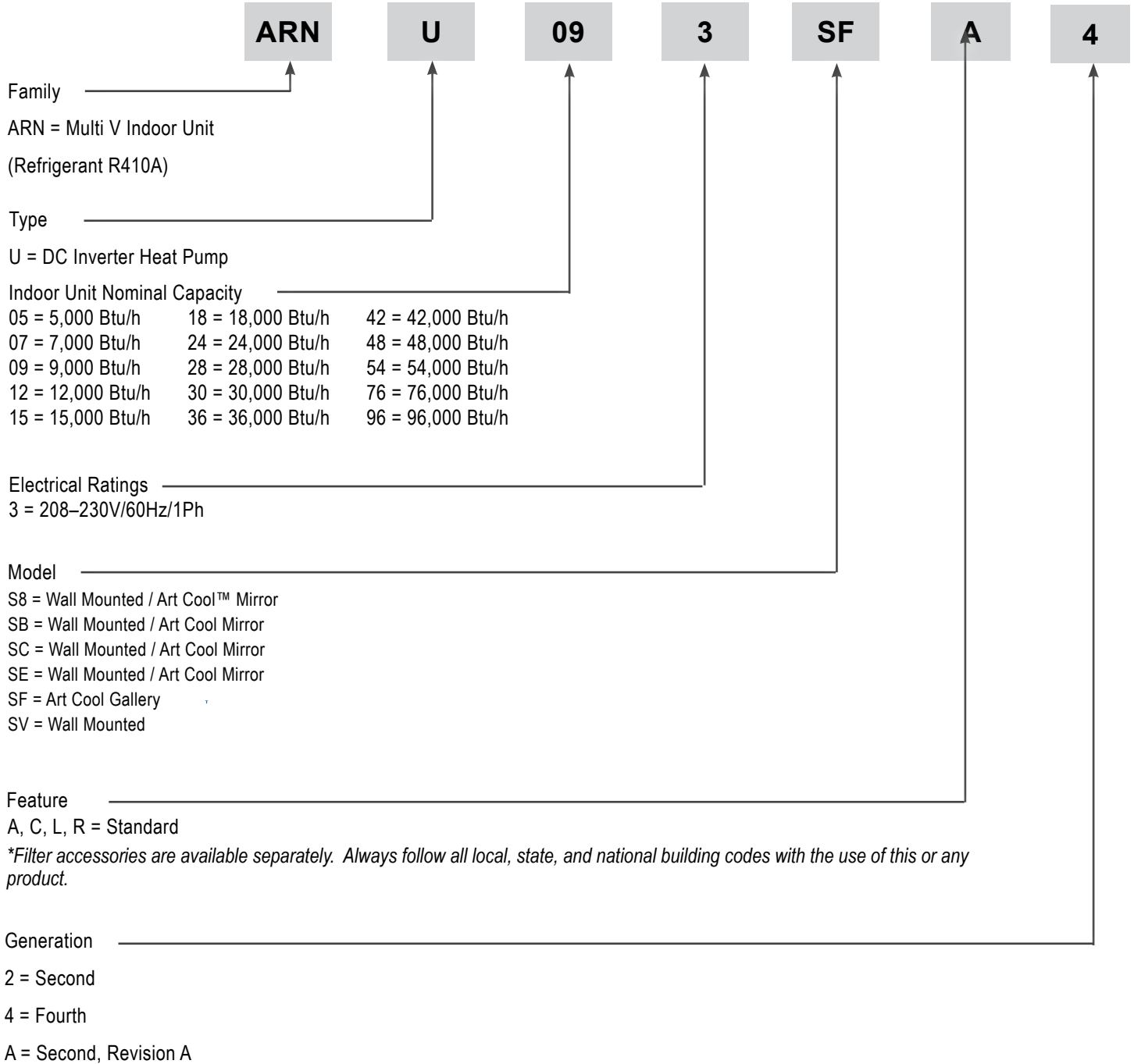
- Level
- JIS and other screwdrivers
- Electrical lineman pliers
- Electric drill
- Holesaw
- Drill
- Flaring tool set
- Tubing cutter
- Tube/pipe reamer
- Torque wrenches
- Allen wrench
- Gas-leak detector
- Thermometer

Table 1: Multi V Gallery and Wall-Mounted Indoor Units

Unit	Model Number
ART COOL Gallery (Gen 4) 	ARNU093SFA4
	ARNU123SFA4
Standard (Gen 4) 	ARNU053SBL4
	ARNU073SBL4
	ARNU093SBL4
	ARNU123SBL4
	ARNU153SBL4
	ARNU183SCL4
	ARNU243SCL4
Standard (Gen 4) 	ARNU303SVA4
	ARNU363SVA4
ART COOL Mirror (Gen 4) 	ARNU053SBR4
	ARNU073SBR4
	ARNU093SBR4
	ARNU123SBR4
	ARNU153SBR4
	ARNU183SCR4
	ARNU243SCR4
ART COOL Mirror (Gen 2) 	ARNU073SER2
	ARNU093SER2
	ARNU123SER2
	ARNU153SER2
	ARNU183S8R2
	ARNU243S8R2

Multi V Wall-Mounted Indoor Unit

**Wall-Mounted Indoor Units Nomenclature**



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## R410A Refrigerant

R410A refrigerant has a higher operating pressure in comparison to R22 refrigerant and, therefore, all piping system materials installed must have a higher resisting pressure than the materials traditionally used in R22 systems.

R410A refrigerant is an azeotrope of R32 and R125, mixed at 50:50, so the ozone depletion potential (ODP) is 0.

### **⚠ WARNING**

⊘ Do not place refrigerant cylinder in direct sunlight. Refrigerant cylinder may explode causing severe injury or death.

### **Note**

- Because R410A is a combination of R32 and R125, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in its gaseous state, its composition changes and the system will not work properly.
- ⊘ Do not heat piping more than necessary during installation. Piping may become soft and fail when pressurized.
- ⊘ Do not use any piping that has not been approved for use in high-pressure refrigerant systems. Piping wall thickness must comply with the applicable local, state, and federal codes for the 551 psi design pressure of R410A. Inadequate piping may fail when pressurized.

Table 2: Art Cool Gallery Units Specifications

Type	Art Cool Gallery – SF Chassis	
	ARNU093SFA4	ARNU123SFA4
<b>Cooling Mode Performance</b>		
Capacity (Btu/h)	9,600	12,300
Power Input <sup>1</sup> (W)	35	35
<b>Heating Mode Performance</b>		
Capacity (Btu/h)	10,900	13,600
Power Input <sup>1</sup> (W)	35	35
<b>Entering Mixed Air</b>		
Cooling Max (°F WB)	76	76
Heating Min (°F DB)	59	59
<b>Unit Data</b>		
Refrigerant Type <sup>2</sup>	R410A	R410A
Refrigerant Control	EEV	EEV
Sound Pressure <sup>3</sup> dB(A) (H/M/L)	38 / 32 / 27	44 / 38 / 32
Net Unit Weight (lbs.)	33.1	33.1
Shipping Weight (lbs.)	38.1	38.1
Communication Cable <sup>4</sup> (No. x AWG)	2 x 18	2 x 18
<b>Fan</b>		
Type	Turbo Fan	Turbo Fan
Quantity	1	1
Motor/Drive	Brushless Digitally Controlled / Direct	
Airflow Rate H/M/L (CFM)	286 / 222 / 148	328 / 272 / 212
<b>Piping</b>		
Liquid Line (in., O.D.)	1/4 Flare	1/4 Flare
Vapor Line (in., O.D.)	1/2 Flare	1/2 Flare
Condensate Line (in., I.D.)	5/8	5/8

EEV: Electronic Expansion Valve

Power wiring is field supplied and must comply with the applicable local and national codes.

This unit comes with a dry nitrogen charge.

This data is rated 0 ft above sea level, with 25 ft of refrigerant line per indoor unit and a 0 ft level difference between outdoor and indoor units. All capacities are net with a combination ratio between 95-105%.

Cooling capacity rating obtained with air entering the indoor coil at 80°F dry bulb (DB) and 67°F wet bulb (WB) and outdoor ambient conditions of 95°F dry bulb (DB).

Heating capacity rating obtained with air entering the indoor unit at 70°F dry bulb (DB) and outdoor ambient conditions of 47°F dry bulb (DB) and 43°F wet bulb (WB).

<sup>1</sup>Power Input is rated at high speed.

<sup>2</sup>Take appropriate actions at the end of HVAC equipment life to recover, recycle, reclaim or destroy R410A refrigerant according to applicable regulations (40 CFR Part 82, Subpart F) under section 608 of CAA.

<sup>3</sup>Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.

<sup>4</sup>All communication cable to be minimum 18 AWG, 2-conductor, twisted, stranded, shielded and must comply with applicable local and national codes. Ensure the communication cable is properly grounded at the master outdoor unit only. Ⓢ Do not ground the ODU-IDU communication cable at any other point.

# GENERAL DATA



## Specifications

Table 3: Standard (Gen 4) Wall-Mounted Units Specifications

Type	Standard Wall-Mounted – SB Chassis				
	ARNU053SBL4	ARNU073SBL4	ARNU093SBL4	ARNU123SBL4	ARNU153SBL4
<b>Cooling Mode Performance</b>					
Capacity (Btu/h)	5,500	7,500	9,600	12,300	15,400
Power Input <sup>1</sup> (W)	21	21	21	21	21
<b>Heating Mode Performance</b>					
Capacity (Btu/h)	6,100	8,500	10,900	13,600	17,100
Power Input <sup>1</sup> (W)	21	21	21	21	21
<b>Entering Mixed Air</b>					
Cooling Max (°F WB)	76	76	76	76	76
Heating Min (°F DB)	59	59	59	59	59
<b>Unit Data</b>					
Refrigerant Type <sup>2</sup>	R410A	R410A	R410A	R410A	R410A
Refrigerant Control	EEV	EEV	EEV	EEV	EEV
Sound Pressure <sup>3</sup> dB(A) (H/M/L)	30 / 29 / 28	32 / 30 / 28	34 / 32 / 28	37 / 34 / 30	40 / 36 / 32
Net Unit Weight (lbs.)	22	22	22	22	22
Shipping Weight (lbs.)	26	26	26	26	26
Communication Cable <sup>4</sup> (No. x AWG)	2 x 18	2 x 18	2 x 18	2 x 18	2 x 18
<b>Fan</b>					
Type	Cross Flow	Cross Flow	Cross Flow	Cross Flow	Cross Flow
Quantity	1	1	1	1	1
Motor/Drive	Brushless Digitally Controlled / Direct				
Airflow Rate H/M/L (CFM)	230 / 212 / 194	247 / 230 / 194	290 / 247 / 194	336 / 290 / 230	371 / 318 / 247
<b>Piping</b>					
Liquid Line (in., O.D.)	1/4 Flare	1/4 Flare	1/4 Flare	1/4 Flare	1/4 Flare
Vapor Line (in., O.D.)	1/2 Flare	1/2 Flare	1/2 Flare	1/2 Flare	1/2 Flare
Condensate Line (in., I.D.)	5/8	5/8	5/8	5/8	5/8

EEV: Electronic Expansion Valve

Power wiring is field supplied and must comply with the applicable local and national codes.

This unit comes with a dry nitrogen charge.

This data is rated 0 ft above sea level, with 25 ft of refrigerant line per indoor unit and a 0 ft level difference between outdoor and indoor units. All capacities are net with a combination ratio between 95-105%.

Cooling capacity rating obtained with air entering the indoor coil at 80°F dry bulb (DB) and 67°F wet bulb (WB) and outdoor ambient conditions of 95°F dry bulb (DB).

Heating capacity rating obtained with air entering the indoor unit at 70°F dry bulb (DB) and outdoor ambient conditions of 47°F dry bulb (DB) and 43°F wet bulb (WB).

<sup>1</sup>Power Input is rated at high speed.

<sup>2</sup>Take appropriate actions at the end of HVAC equipment life to recover, recycle, reclaim or destroy R410A refrigerant according to applicable regulations (40 CFR Part 82, Subpart F) under section 608 of CAA.

<sup>3</sup>Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.

<sup>4</sup>All communication cable to be minimum 18 AWG, 2-conductor, twisted, stranded, shielded and must comply with applicable local and national codes. Ensure the communication cable is properly grounded at the master outdoor unit only. ⚡ Do not ground the ODU-IDU communication cable at any other point.

Table 4: Standard (Gen 4) Wall-Mounted Indoor Units Specifications – continued

Type	Standard Wall-Mounted – SC Chassis		Standard Wall-Mounted – SV Chassis	
	ARNU183SCL4	ARNU243SCL4	ARNU303SVA4	ARNU363SVA4
<b>Cooling Mode Performance</b>				
Capacity (Btu/h)	19,100	24,200	30,000	35,500
Power Input <sup>1</sup> (W)	39.5	39.5	67.0	104.0
<b>Heating Mode Performance</b>				
Capacity (Btu/h)	21,500	27,300	32 000	37 000
Power Input <sup>1</sup> (W)	39.5	39.5	67.0	104.0
<b>Entering Mixed Air</b>				
Cooling Max (°F WB)	76	76	76	76
Heating Min (°F DB)	59	59	59	59
<b>Unit Data</b>				
Refrigerant Type <sup>2</sup>	R410A	R410A	R410A	R410A
Refrigerant Control	EEV	EEV	EEV	EEV
Sound Pressure <sup>3</sup> dB(A) (H/M/L)	38 / 35 / 33	43 / 39 / 35	49 / 44 / 42	52 / 47 / 43
Net Unit Weight (lbs.)	31	31	37	37
Shipping Weight (lbs.)	37	37	48	48
Communication Cable <sup>4</sup> (No. x AWG)	2 x 18	2 x 18	2 x 18	2 x 18
<b>Fan</b>				
Type	Cross Flow	Cross Flow	Cross Flow	Cross Flow
Quantity	1	1	1	1
Motor/Drive	Brushless Digitally Controlled / Direct			
Airflow Rate H/M/L (CFM)	441 / 424 / 399	494 / 449 / 406	812 / 706 / 600	918 / 812 / 671
<b>Piping</b>				
Liquid Line (in., O.D.)	1/4 Flare	3/8 Flare	3/8 Flare	3/8 Flare
Vapor Line (in., O.D.)	1/2 Flare	5/8 Flare	5/8 Flare	5/8 Flare
Condensate Line (in., I.D.)	5/8	5/8	5/8	5/8

EEV: Electronic Expansion Valve

Power wiring is field supplied and must comply with the applicable local and national codes.

This unit comes with a dry nitrogen charge.

This data is rated 0 ft above sea level, with 25 ft of refrigerant line per indoor unit and a 0 ft level difference between outdoor and indoor units. All capacities are net with a combination ratio between 95-105%.

Cooling capacity rating obtained with air entering the indoor coil at 80°F dry bulb (DB) and 67°F wet bulb (WB) and outdoor ambient conditions of 95°F dry bulb (DB).

Heating capacity rating obtained with air entering the indoor unit at 70°F dry bulb (DB) and outdoor ambient conditions of 47°F dry bulb (DB) and 43°F wet bulb (WB).

<sup>1</sup>Power Input is rated at high speed.

<sup>2</sup>Take appropriate actions at the end of HVAC equipment life to recover, recycle, reclaim or destroy R410A refrigerant according to applicable regulations (40 CFR Part 82, Subpart F) under section 608 of CAA.

<sup>3</sup>Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.

<sup>4</sup>All communication cable to be minimum 18 AWG, 2-conductor, twisted, stranded, shielded and must comply with applicable local and national codes. Ensure the communication cable is properly grounded at the master outdoor unit only. ⚡ Do not ground the ODU-IDU communication cable at any other point.

# GENERAL DATA



## Specifications

Table 5: Art Cool Mirror (Gen 4) Wall-Mounted Indoor Units Specifications

Type	Art Cool Mirror (Gen 4) Wall-Mounted – SB Chassis				
	ARNU053SBR4	ARNU073SBR4	ARNU093SBR4	ARNU123SBR4	ARNU153SBR4
<b>Cooling Mode Performance</b>					
Capacity (Btu/h)	5,500	7,500	9,600	12,300	15,400
Power Input <sup>1</sup> (W)	21	21	21	21	21
<b>Heating Mode Performance</b>					
Capacity (Btu/h)	6,100	8,500	10,900	13,600	17,100
Power Input <sup>1</sup> (W)	21	21	21	21	21
<b>Entering Mixed Air</b>					
Cooling Max (°F WB)	76	76	76	76	76
Heating Min (°F DB)	59	59	59	59	59
<b>Unit Data</b>					
Refrigerant Type <sup>2</sup>	R410A	R410A	R410A	R410A	R410A
Refrigerant Control	EEV	EEV	EEV	EEV	EEV
Sound Pressure <sup>3</sup> dB(A) (H/M/L)	30 / 29 / 28	32 / 30 / 28	34 / 32 / 28	37 / 34 / 30	40 / 36 / 32
Net Unit Weight (lbs.)	24	24	24	24	24
Shipping Weight (lbs.)	29	29	29	29	29
Communication Cable <sup>4</sup> (No. x AWG)	2 x 18	2 x 18	2 x 18	2 x 18	2 x 18
<b>Fan</b>					
Type	Cross Flow	Cross Flow	Cross Flow	Cross Flow	Cross Flow
Quantity	1	1	1	1	1
Motor/Drive	Brushless Digitally Controlled / Direct				
Airflow Rate H/M/L (CFM)	230 / 212 / 194	247 / 230 / 194	290 / 247 / 194	336 / 290 / 230	371 / 318 / 247
<b>Piping</b>					
Liquid Line (in., O.D.)	1/4 Flare	1/4 Flare	1/4 Flare	1/4 Flare	1/4 Flare
Vapor Line (in., O.D.)	1/2 Flare	1/2 Flare	1/2 Flare	1/2 Flare	1/2 Flare
Condensate Line (in., I.D.)	5/8	5/8	5/8	5/8	5/8

EEV: Electronic Expansion Valve

Power wiring is field supplied and must comply with the applicable local and national codes.

This unit comes with a dry nitrogen charge.

This data is rated 0 ft above sea level, with 25 ft of refrigerant line per indoor unit and a 0 ft level difference between outdoor and indoor units. All capacities are net with a combination ratio between 95-105%.

Cooling capacity rating obtained with air entering the indoor coil at 80°F dry bulb (DB) and 67°F wet bulb (WB) and outdoor ambient conditions of 95°F dry bulb (DB).

Heating capacity rating obtained with air entering the indoor unit at 70°F dry bulb (DB) and outdoor ambient conditions of 47°F dry bulb (DB) and 43°F wet bulb (WB).

<sup>1</sup>Power Input is rated at high speed.

<sup>2</sup>Take appropriate actions at the end of HVAC equipment life to recover, recycle, reclaim or destroy R410A refrigerant according to applicable regulations (40 CFR Part 82, Subpart F) under section 608 of CAA.

<sup>3</sup>Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.

<sup>4</sup>All communication cable to be minimum 18 AWG, 2-conductor, twisted, stranded, shielded and must comply with applicable local and national codes. Ensure the communications cable is properly grounded at the master outdoor unit only. ⚠ Do not ground the ODU-IDU communications cable at any other point.

Multi V Wall-Mounted Indoor Unit

Table 6: Art Cool Mirror (Gen 4) Wall-Mounted Indoor Units Specifications – continued

Type	Art Cool Mirror (Gen 4) Wall-Mounted – SC Chassis	
	ARNU183SCR4	ARNU243SCR4
<b>Cooling Mode Performance</b>		
Capacity (Btu/h)	19,100	24,200
Power Input <sup>1</sup> (W)	39.5	39.5
<b>Heating Mode Performance</b>		
Capacity (Btu/h)	21,500	27,300
Power Input <sup>1</sup> (W)	39.5	39.5
<b>Entering Mixed Air</b>		
Cooling Max (°F WB)	76	76
Heating Min (°F DB)	59	59
<b>Unit Data</b>		
Refrigerant Type <sup>2</sup>	R410A	R410A
Refrigerant Control	EEV	EEV
Sound Pressure <sup>3</sup> dB(A) (H/M/L)	38 / 35 / 33	43 / 39 / 35
Net Unit Weight (lbs.)	34	34
Shipping Weight (lbs.)	40	40
Communication Cable <sup>4</sup> (No. x AWG)	2 x 18	2 x 18
<b>Fan</b>		
Type	Cross Flow	Cross Flow
Quantity	1	1
Motor/Drive	Brushless Digitally Controlled / Direct	
Airflow Rate H/M/L (CFM)	441 / 424 / 399	494 / 449 / 406
<b>Piping</b>		
Liquid Line (in., O.D.)	1/4 Flare	3/8 Flare
Vapor Line (in., O.D.)	1/2 Flare	5/8 Flare
Condensate Line (in., I.D.)	5/8	5/8

EEV: Electronic Expansion Valve

Power wiring is field supplied and must comply with the applicable local and national codes.

This unit comes with a dry nitrogen charge.

This data is rated 0 ft above sea level, with 25 ft of refrigerant line per indoor unit and a 0 ft level difference between outdoor and indoor units. All capacities are net with a combination ratio between 95-105%.

Cooling capacity rating obtained with air entering the indoor coil at 80°F dry bulb (DB) and 67°F wet bulb (WB) and outdoor ambient conditions of 95°F dry bulb (DB).

Heating capacity rating obtained with air entering the indoor unit at 70°F dry bulb (DB) and outdoor ambient conditions of 47°F dry bulb (DB) and 43°F wet bulb (WB).

<sup>1</sup>Power Input is rated at high speed.

<sup>2</sup>Take appropriate actions at the end of HVAC equipment life to recover, recycle, reclaim or destroy R410A refrigerant according to applicable regulations (40 CFR Part 82, Subpart F) under section 608 of CAA.

<sup>3</sup>Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.

<sup>4</sup>All communication cable to be minimum 18 AWG, 2-conductor, twisted, stranded, shielded and must comply with applicable local and national codes. Ensure the communications cable is properly grounded at the master outdoor unit only. Ⓞ Do not ground the ODU-IDU communications cable at any other point.

# GENERAL DATA



## Specifications

Table 7: Art Cool Mirror (Gen 2) Wall-Mounted Indoor Units Specifications

Type	Art Cool Mirror (Gen 2) Wall-Mounted – SE Chassis			
	ARNU073SER2	ARNU093SER2	ARNU123SER2	ARNU153SER2
<b>Cooling Mode Performance</b>				
Capacity (Btu/h)	7,500	9,600	12,300	15,400
Power Input <sup>1</sup> (W)	40	40	40	40
<b>Heating Mode Performance</b>				
Capacity (Btu/h)	8,500	10,900	13,600	17,100
Power Input <sup>1</sup> (W)	40	40	40	40
<b>Entering Mixed Air</b>				
Cooling Max (°F WB)	76	76	76	76
Heating Min (°F DB)	59	59	59	59
<b>Unit Data</b>				
Refrigerant Type <sup>2</sup>	R410A	R410A	R410A	R410A
Refrigerant Control	EEV	EEV	EEV	EEV
Sound Pressure <sup>3</sup> dB(A) (H/M/L)	37 / 33 / 23	39 / 35 / 25	41 / 36 / 27	42 / 36 / 27
Net Unit Weight (lbs.)	25	25	25	25
Shipping Weight (lbs.)	29	29	29	29
Communication Cable <sup>4</sup> (No. x AWG)	2 x 18	2 x 18	2 x 18	2 x 18
<b>Fan</b>				
Type	Cross Flow	Cross Flow	Cross Flow	Cross Flow
Quantity	1	1	1	1
Motor/Drive	Brushless Digitally Controlled / Direct			
Airflow Rate H/M/L (CFM)	247 / 212 / 141	282 / 247 / 177	353 / 283 / 212	371 / 283 / 212
<b>Piping</b>				
Liquid Line (in., O.D.)	1/4 Flare	1/4 Flare	1/4 Flare	1/4 Flare
Vapor Line (in., O.D.)	1/2 Flare	1/2 Flare	1/2 Flare	1/2 Flare
Condensate Line (in., I.D.)	5/8	5/8	5/8	5/8

EEV: Electronic Expansion Valve

Power wiring is field supplied and must comply with the applicable local and national codes.

This unit comes with a dry nitrogen charge.

This data is rated 0 ft above sea level, with 25 ft of refrigerant line per indoor unit and a 0 ft level difference between outdoor and indoor units. All capacities are net with a combination ratio between 95-105%.

Cooling capacity rating obtained with air entering the indoor coil at 80°F dry bulb (DB) and 67°F wet bulb (WB) and outdoor ambient conditions of 95°F dry bulb (DB).

Heating capacity rating obtained with air entering the indoor unit at 70°F dry bulb (DB) and outdoor ambient conditions of 47°F dry bulb (DB) and 43°F wet bulb (WB).

<sup>1</sup>Power Input is rated at high speed.

<sup>2</sup>Take appropriate actions at the end of HVAC equipment life to recover, recycle, reclaim or destroy R410A refrigerant according to applicable regulations (40 CFR Part 82, Subpart F) under section 608 of CAA.

<sup>3</sup>Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.

<sup>4</sup>All communication cable to be minimum 18 AWG, 2-conductor, twisted, stranded, shielded and must comply with applicable local and national codes. Ensure the communications cable is properly grounded at the master outdoor unit only. Ⓞ Do not ground the ODU-IDU communications cable at any other point.

Multi V Wall-Mounted Indoor Unit

Table 8: Art Cool Mirror (Gen 2) Wall-Mounted Indoor Units Specifications – continued

Type	Art Cool Mirror (Gen 2) Wall-Mounted – S8 Chassis	
	ARNU183S8R2	ARNU243S8R2
<b>Cooling Mode Performance</b>		
Capacity (Btu/h)	19,100	24,200
Power Input <sup>1</sup> (W)	35	35
<b>Heating Mode Performance</b>		
Capacity (Btu/h)	21,500	27,300
Power Input <sup>1</sup> (W)	35	35
<b>Entering Mixed Air</b>		
Cooling Max (°F WB)	76	76
Heating Min (°F DB)	59	59
<b>Unit Data</b>		
Refrigerant Type <sup>2</sup>	R410A	R410A
Refrigerant Control	EEV	EEV
Sound Pressure <sup>3</sup> dB(A) (H/M/L)	37 / 34 / 31	43 / 37 / 32
Net Unit Weight (lbs.)	34	34
Shipping Weight (lbs.)	38	38
Communication Cable <sup>4</sup> (No. x AWG)	2 x 18	2 x 18
<b>Fan</b>		
Type	Cross Flow	Cross Flow
Quantity	1	1
Motor/Drive	Brushless Digitally Controlled / Direct	
Airflow Rate H/M/L (CFM)	508 / 459 / 388	632 / 508 / 424
<b>Piping</b>		
Liquid Line (in., O.D.)	1/4 Flare	3/8 Flare
Vapor Line (in., O.D.)	1/2 Flare	5/8 Flare
Condensate Line (in., I.D.)	5/8	5/8

EEV: Electronic Expansion Valve

Power wiring is field supplied and must comply with the applicable local and national codes.

This unit comes with a dry nitrogen charge.

This data is rated 0 ft above sea level, with 25 ft of refrigerant line per indoor unit and a 0 ft level difference between outdoor and indoor units. All capacities are net with a combination ratio between 95-105%.

Cooling capacity rating obtained with air entering the indoor coil at 80°F dry bulb (DB) and 67°F wet bulb (WB) and outdoor ambient conditions of 95°F dry bulb (DB).

Heating capacity rating obtained with air entering the indoor unit at 70°F dry bulb (DB) and outdoor ambient conditions of 47°F dry bulb (DB) and 43°F wet bulb (WB).

<sup>1</sup>Power Input is rated at high speed.

<sup>2</sup>Take appropriate actions at the end of HVAC equipment life to recover, recycle, reclaim or destroy R410A refrigerant according to applicable regulations (40 CFR Part 82, Subpart F) under section 608 of CAA.

<sup>3</sup>Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.

<sup>4</sup>All communication cable to be minimum 18 AWG, 2-conductor, twisted, stranded, shielded and must comply with applicable local and national codes. Ensure the communications cable is properly grounded at the master outdoor unit only. Ⓞ Do not ground the ODU-IDU communications cable at any other point.

# GENERAL DATA



## Electrical Data

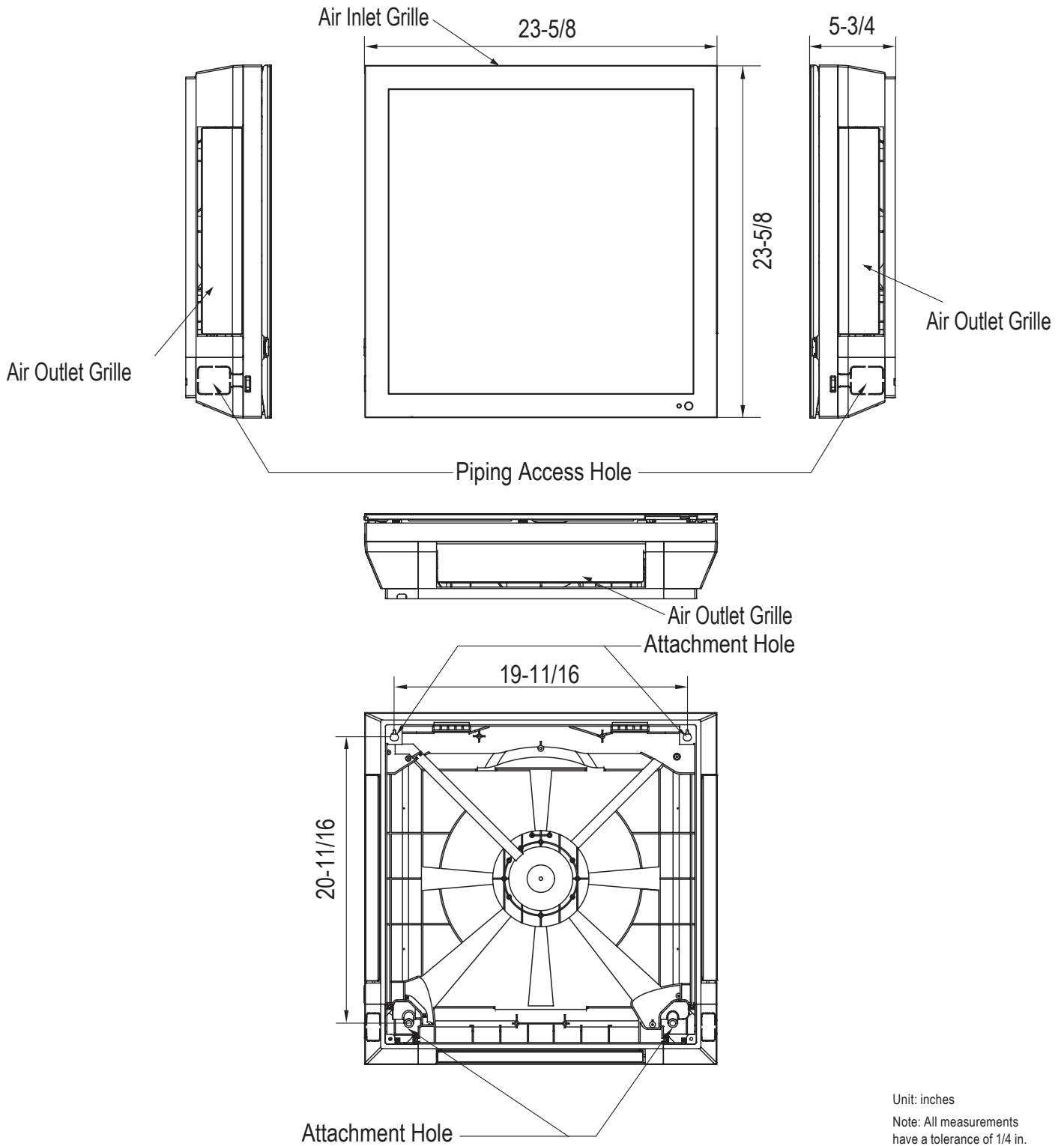
### Electrical Data

Table 9: Wall-Mounted Indoor Units Electrical Data

Model	Voltage Range	MCA (A)	MOP (A)	Rated Amps (A)	Power Supply			Power Input (W)	
					Hz	Volts	Phase	Cooling	Heating
<b>Art Cool Gallery (Gen 4), SF Chassis</b>									
ARNU093SFA4	187-253	0.4	15	0.3	60	208-230	1	35	35
ARNU123SFA4				0.3				35	35
<b>Standard (Gen 4), SB Chassis</b>									
ARNU053SBL4	187-253	0.2	15	0.16	60	208-230	1	21.0	21.0
ARNU073SBL4				0.16				21.0	21.0
ARNU093SBL4				0.16				21.0	21.0
ARNU123SBL4				0.16				21.0	21.0
ARNU153SBL4				0.16				21.0	21.0
<b>Standard (Gen 4), SC Chassis</b>									
ARNU183SCL4	187-253	0.36	15	0.29	60	208-230	1	39.5	39.5
ARNU243SCL4		0.36		0.29				39.5	39.5
<b>Standard (Gen 4), SV Chassis</b>									
ARNU303SVA4	187-253	0.64	15	0.51	60	208-230V	1	67.0	67.0
ARNU363SVA4		1.02		0.81				104.0	104.0
<b>Art Cool Mirror (Gen 4), SB Chassis</b>									
ARNU053SBR4	187-253	0.2	15	0.16	60	208-230V	1	21	21
ARNU073SBR4				0.16				21	21
ARNU093SBR4				0.16				21	21
ARNU123SBR4				0.16				21	21
ARNU153SBR4				0.16				21	21
<b>Art Cool Mirror (Gen 4), SC Chassis</b>									
ARNU183SCR4	187-253	0.36	15	0.29	60	208-230V	1	39.5	39.5
ARNU243SCR4		0.36		0.29				39.5	39.5
<b>Art Cool Mirror (Gen 2), SE Chassis</b>									
ARNU073SER2	187-253	0.29	15	0.3	60	208-230V	1	40	40
ARNU093SER2				0.3				40	40
ARNU123SER2				0.3				40	40
ARNU153SER2				0.3				40	40
<b>Art Cool Mirror (Gen 2), S8 Chassis</b>									
ARNU183S8R2	187-253	0.29	15	0.3	60	208-230V	1	35	35
ARNU243S8R2		0.29		0.3				35	35

- MCA = Minimum circuit ampacity; MOP = Maximum overcurrent protection
- Units must be connected to an electrical power system that supplies voltage within the listed range limits
- Select wire size based on the larger MCA value
- Use circuit breakers instead of fuses

Multi V Wall-Mounted Indoor Unit



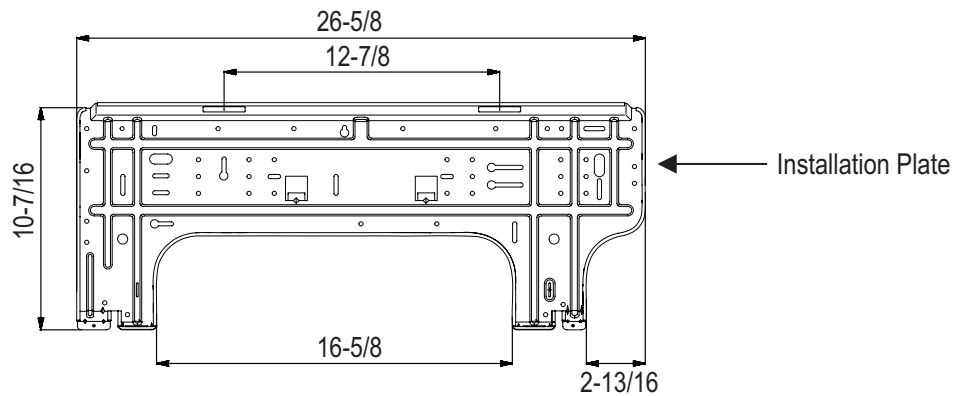
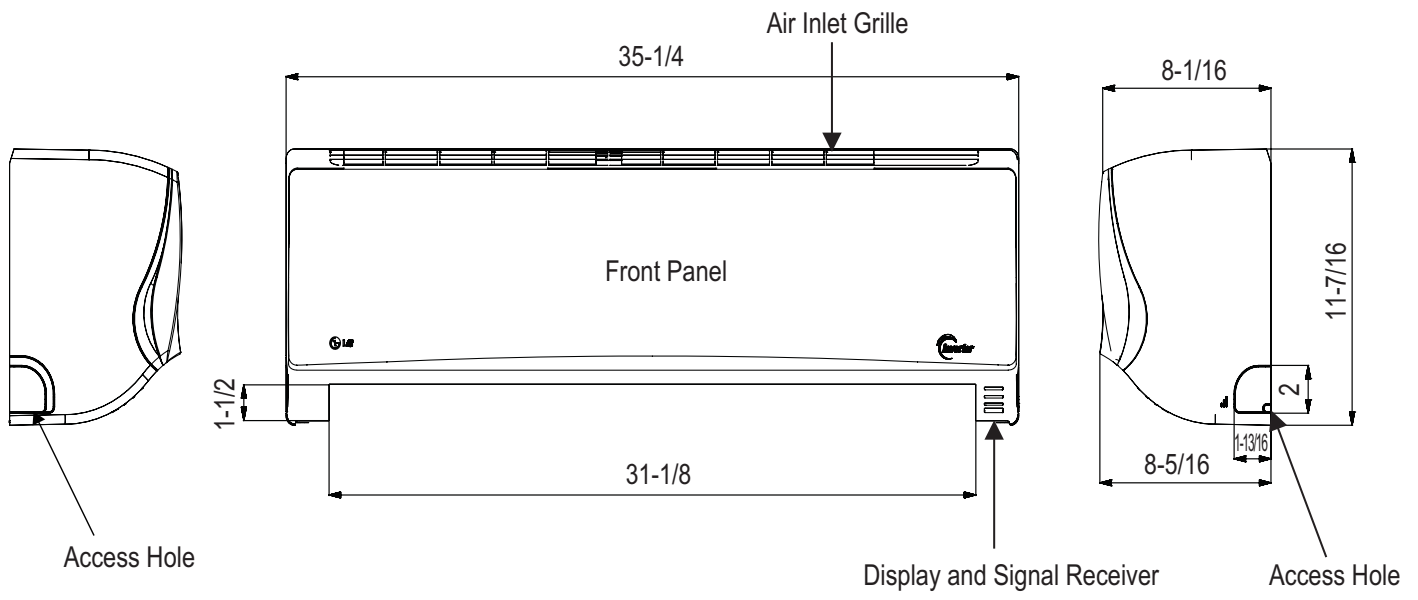
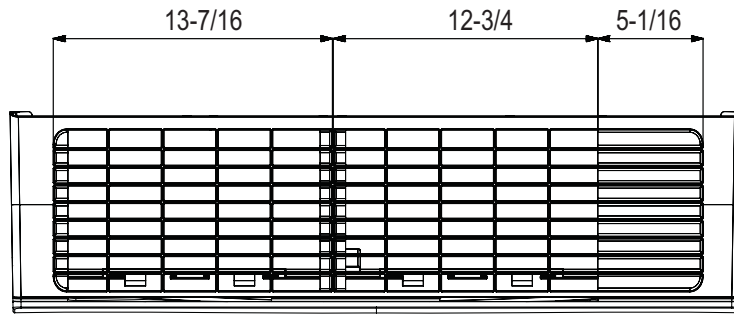
Unit: inches  
 Note: All measurements  
 have a tolerance of 1/4 in.

# GENERAL DATA



## Dimensions – SBL Chassis

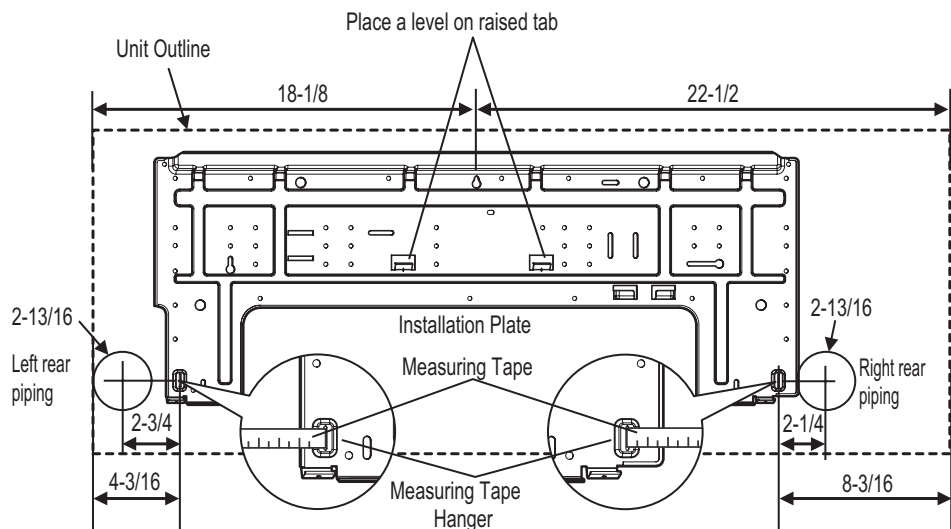
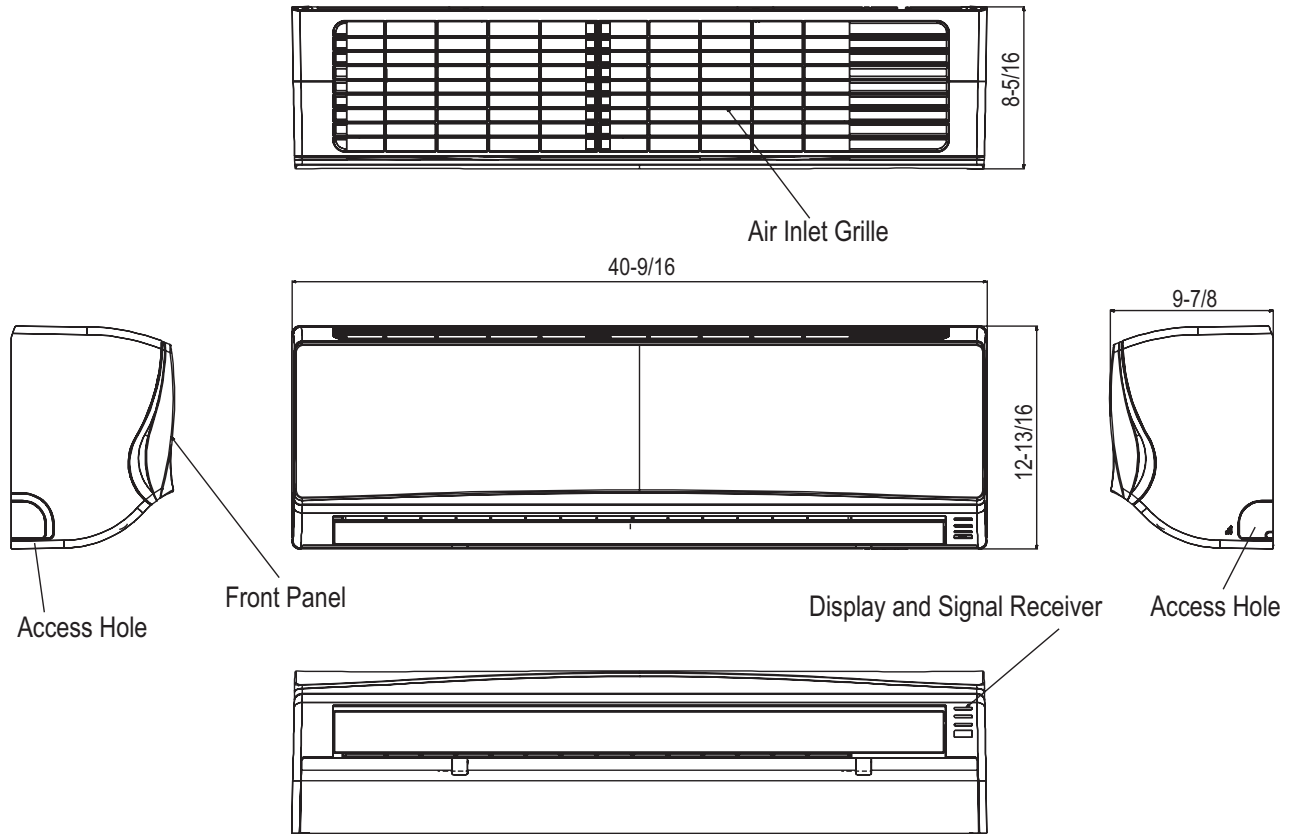
Multi V Wall-Mounted Indoor Unit



Unit: inches

Note: All measurements have a tolerance of 1/4 in.





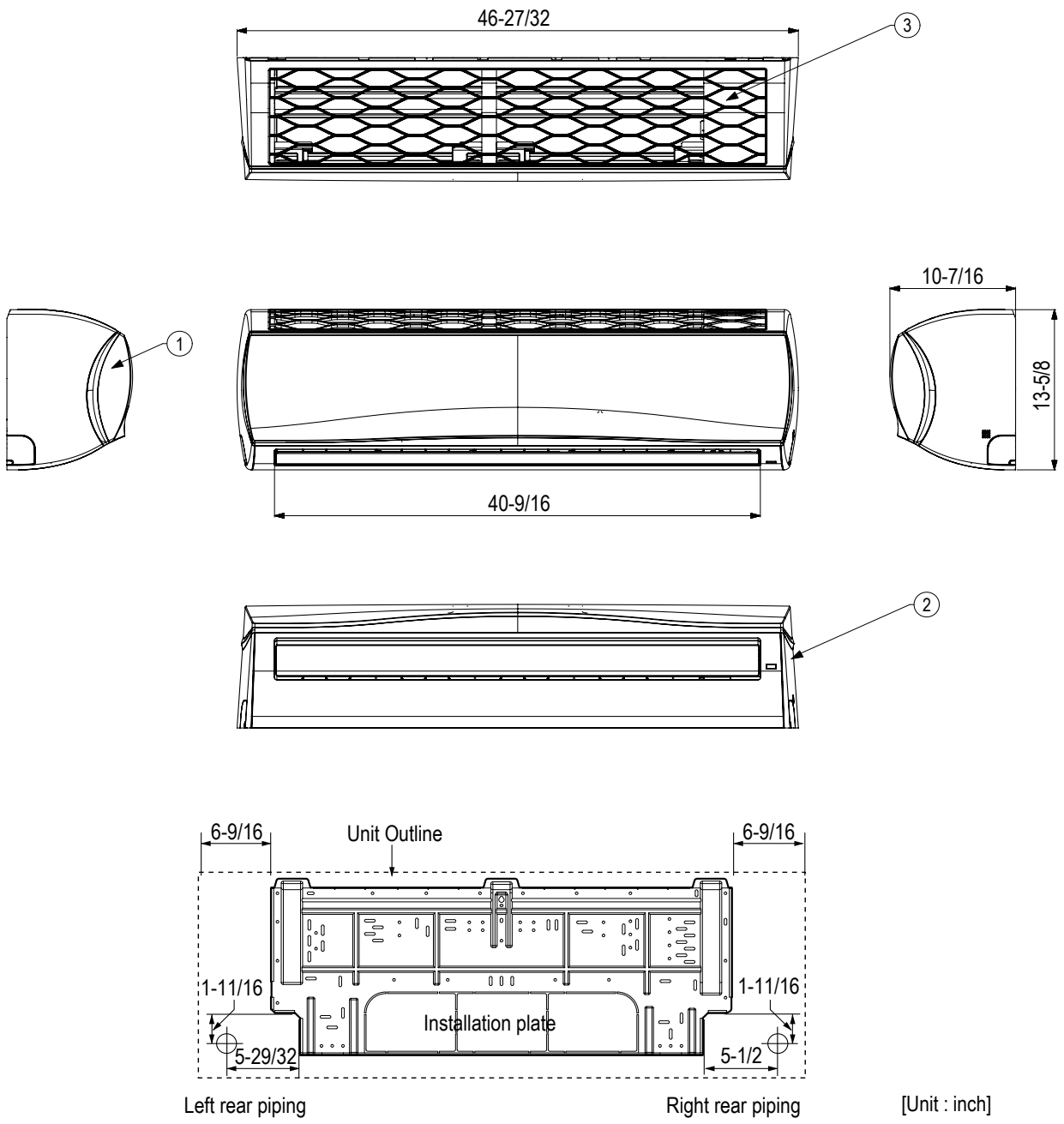
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 Note: All measurements have a tolerance of 1/4 in.

# GENERAL DATA



## Dimensions – SV Chassis

Multi V Wall-Mounted Indoor Unit

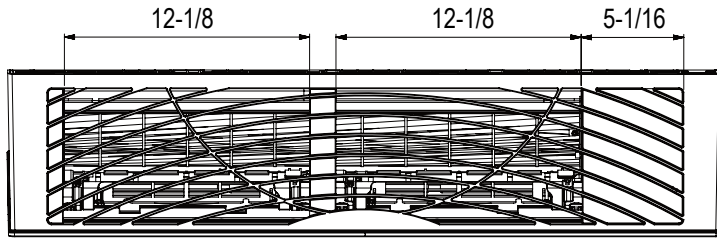


**Note:**

- Unit should be installed in compliance with the installation manual in the product box.
- Unit shall be grounded in accordance with the local regulations or applicable national codes.
- The Unit is powered from the outdoor unit. Therefore power cable should be connected with the outdoor unit.

Item No.	Part Name	Remark
1	Front Panel	
2	Display & Signal Receiver	
3	Air Suction Grille	
4	Installation Plate	





Air Inlet Grille

35-1/4

Front Panel

Display and Signal Receiver

8-1/8

11-7/16

7-1/2

Access Hole

Access Hole

26-5/8

12-7/8

Installation Plate

10-7/16

16-5/8

2-13/16

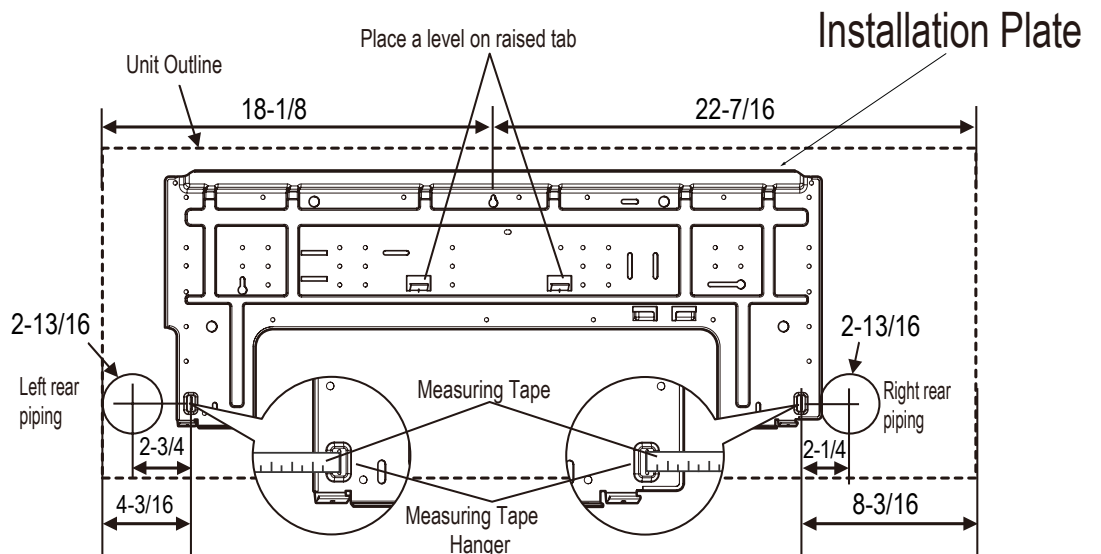
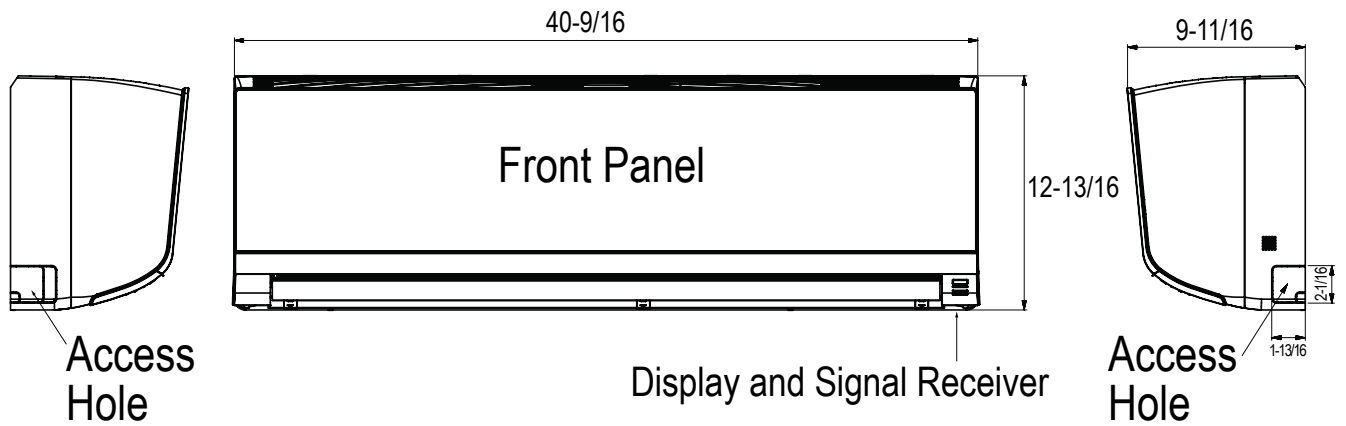
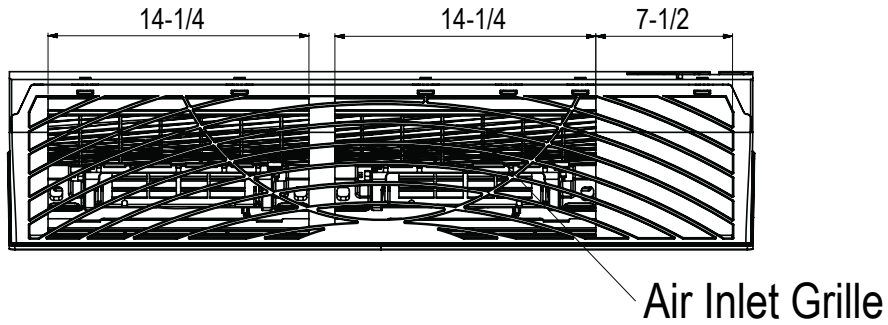
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 Note: All measurements  
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# GENERAL DATA



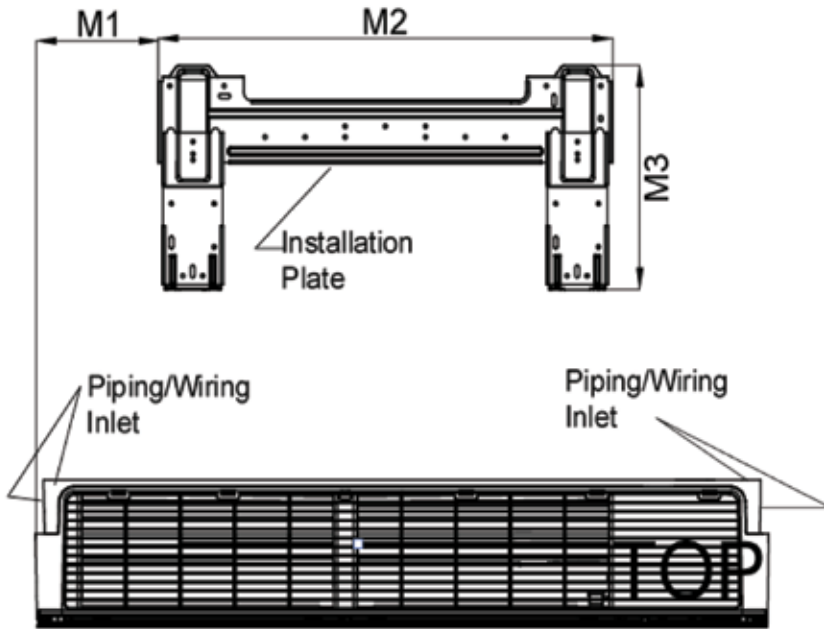
## Dimensions – SCR Chassis

Multi V Wall-Mounted Indoor Unit



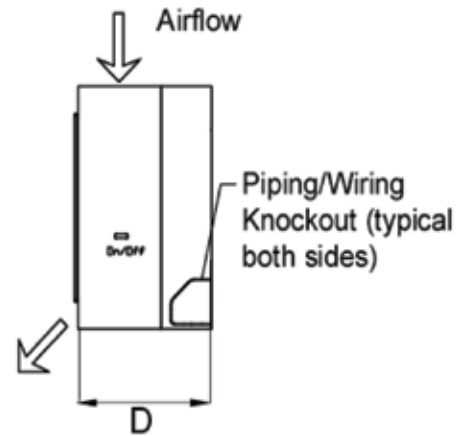
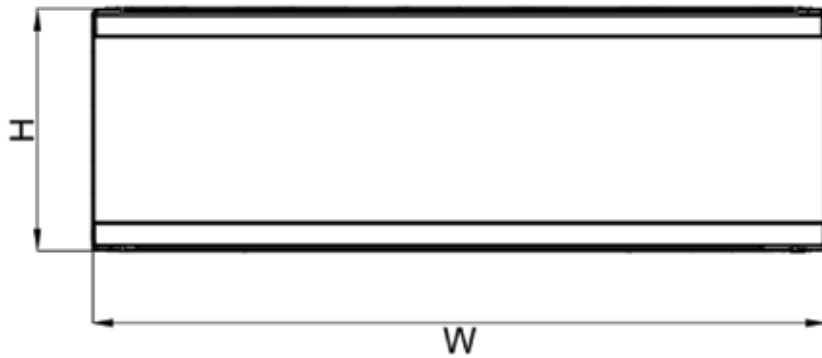
Unit: inches  
 Note: All measurements have a tolerance of 1/4 in.





W	36-1/16"
H	11-1/8"
D	6-1/2"
M1	5-5/8"
M2	22-3/8"
M3	10-1/2"

Note - All dimensions have a tolerance of ± 0.25 in.

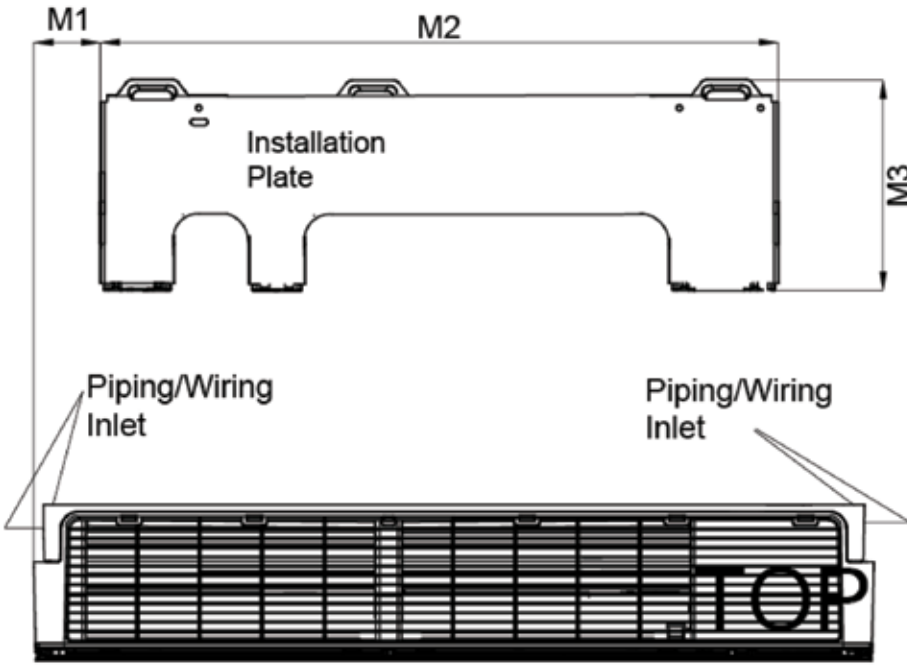


# GENERAL DATA



## Dimensions – S8 Chassis

Multi V Wall-Mounted Indoor Unit



W	43-9/16"
H	11-13/16"
D	7-7/8"
M1	3-5/8"
M2	31-5/8"
M3	11"

Note - All dimensions have a tolerance of ± 0.25 in.

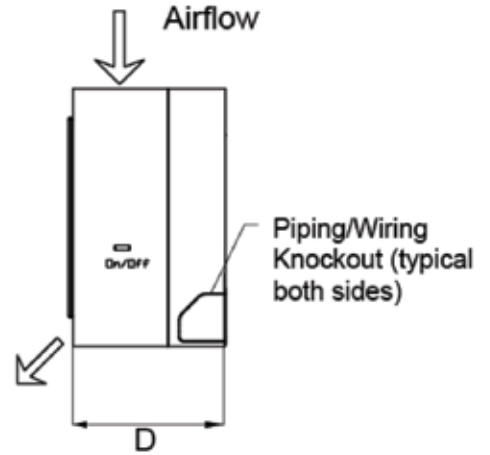


Figure 4: Refrigerant Piping Diagram Art Cool Gallery SF Chassis

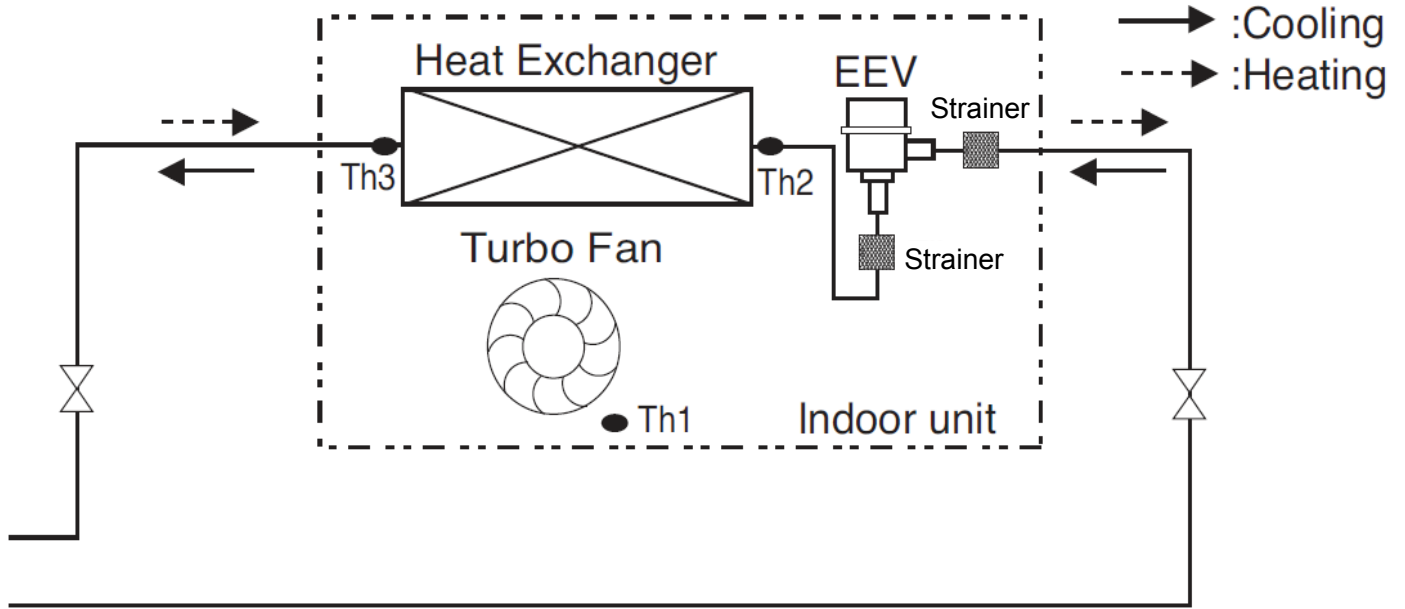
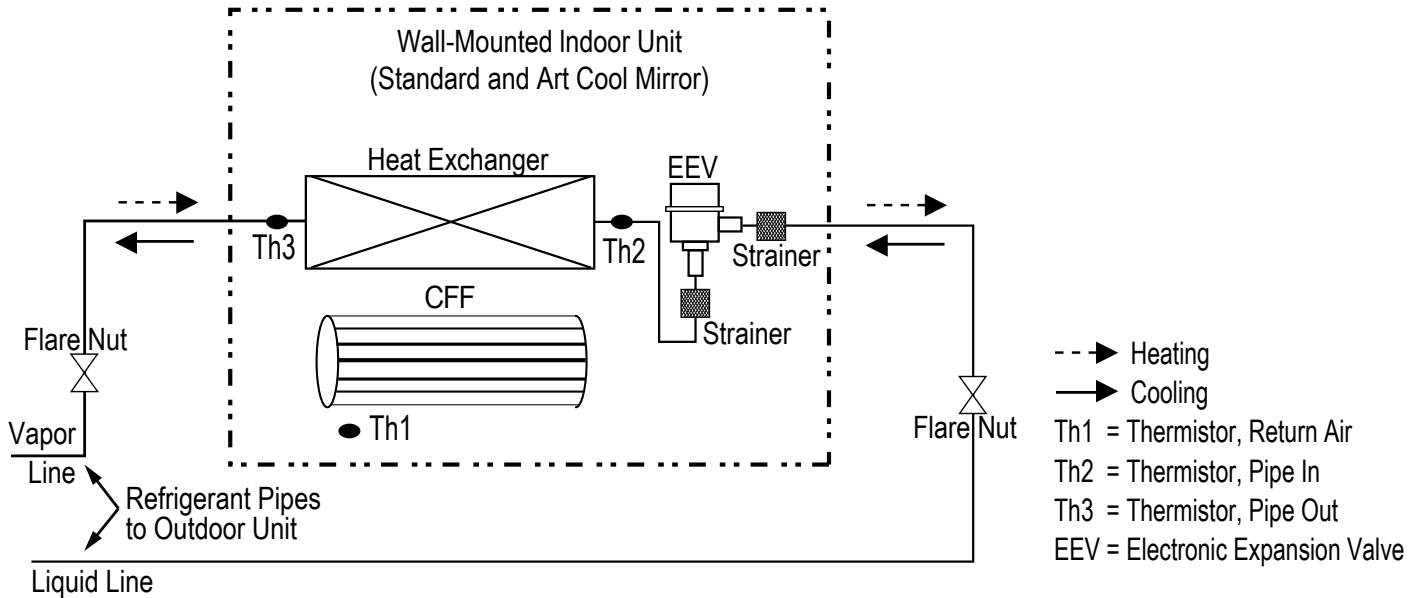


Figure 5: Refrigerant Piping Diagram SB, SC, SV, SE, and S8 Chassis



## Location Selection

### Location Selection

#### **⚠ 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.

Select locations for installing Gallery and Wall-Mounted Indoor Units (IDU) that meet the following conditions:

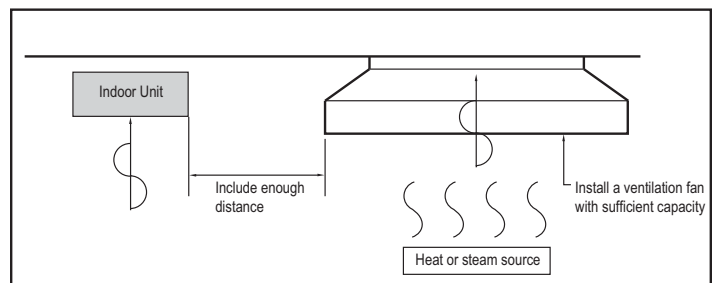
- Where the wall is solid and has enough structural strength to bear the weight of the installation plate (if applicable) and indoor unit.
- Operating sound from the unit will not disturb occupants.
- Include enough space for service access.
- Include space for drainage to ensure condensate flows properly 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.
- Use a stud finder to locate studs easily, preventing unnecessary damage to the wall.
- 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.
- ⊘ 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.

#### **Note:**

The unit should not be installed 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 the drain to malfunction. If this is a potential problem, install a ventilation fan large enough to vent out these materials.)

**The unit may be damaged, may malfunction, and / or will not operate as designed if installed in any of the conditions listed.**

Figure 6: Installing Near a Heat or Steam Source.



#### **Note:**

- Indoor units (IDUs) should not be placed 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 factory-applied epoxy coating to the fan coils for each IDU.
- If the unit is installed near a body of water, the installation parts are at risk of corroding. Appropriate anti-corrosion methods should be taken for the unit and all installation parts.

#### **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).
- Add insulation between the floor joists.
- Install radiant heat or another type of heating system to the floor.

**Required Clearances**

Figure 7 shows required clearance distances around a typical installed Gallery indoor unit. Figure 8 shows required clearance distances around a typical installed wall-mounted indoor unit.

Figure 7: Required Clearances Around Installed Gallery Unit

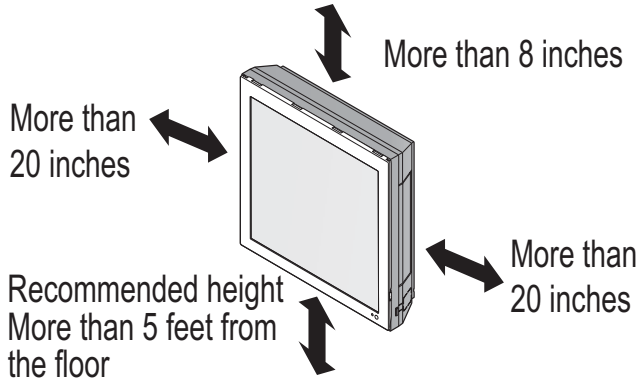
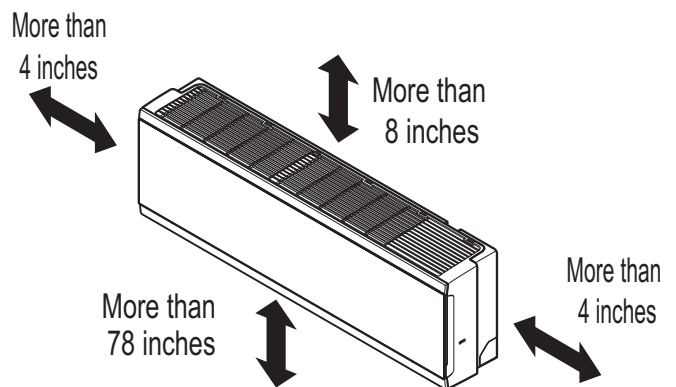


Figure 8: Required Clearances Around Installed Wall-Mounted Unit



**Unpack and Inspect for Freight Damage**

**⚠ CAUTION**

Shipping and net weights of the Gallery and wall-mounted indoor units are listed in Tables 2 through 8. To help avoid injury to personnel and damage to the unit, use at least two people when carrying a unit by hand.

⦿ Do not unpack the unit and remove the protective materials until ready to install. Before unpacking, carefully move the packaged unit to a work area near the installation location.

After opening, if the unit is damaged, repack the unit as it was shipped to you. **RETAIN ALL PACKING MATERIALS.** In general, freight damage claims will be denied if the original packing materials are not retained for the claims adjustor to inspect. Call your supervisor on how to proceed with filing a freight claim and to order a replacement unit.

**Note:**

Before opening the shipping container, check the container labeling to verify the unit received is the correct unit. Verify the unit capacity, type, and voltage. Refer to the Nomenclature chart on "Wall-Mounted Indoor Units Nomenclature" on page 11.

1. Before opening the shipping container, verify you have the correct unit as described in the Note above.
2. Place the box on a solid surface right side up.
3. Cut the white reinforced nylon straps.
4. Open the top of the box and fold back all four flaps.
5. Remove the protective cardboard/Styrofoam® top sheet and place to the side.
6. The walls and top panels are not attached to the bottom of the box. Lift the cardboard carton by the flaps and remove the box walls and top and place it to the side.
7. Remove the moisture barrier plastic bonnet.
8. Check the unit nameplate data and model number. Verify the unit voltage, and capacities are correct before proceeding.
9. Locate and retain the factory-supplied parts, etc.
10. Using two people, carefully lift the unit and inspect for freight damage. ⦿ DO NOT lift by the refrigerant piping or drain pipe stub. Lift by the chassis only. If damage is found, repack the unit as it was received in the original container.
11. If the unit is undamaged, remove and retain the installation manual.

## General Guidelines — Gallery Indoor Units

Gallery indoor units have two options on how the piping and wiring can be routed: rear left or right.

### ⚠ WARNING

- When choosing a location for the Gallery unit, be sure to take into consideration routing of wiring for power outlets within the wall. Contacting wiring can cause serious bodily injury or death.
- Use caution when drilling holes through the walls for the purposes of piping connections. Power wiring can cause serious bodily injury or death.
- Screws and anchors must be securely installed to prevent the chassis falling from its installation location. There is risk of injury from falling equipment.

### Note:

- Select the location carefully. Unit should be anchored to a strong wall to prevent unnecessary vibration.
- Mounting hardware 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 indicator to ensure the Gallery chassis is installed on a level plane.
- If the unit is installed near a body of water, certain components are at risk of being corroded. Appropriate anti-corrosion methods should be taken for the unit and all components.

## General Guidelines — Wall-Mounted Indoor Units

Wall-mounted indoor units have several options on how the piping and wiring can be routed (see figure at right). Whichever way the piping and wiring are routed out of the indoor units, the mounting wall on which the indoor unit is installed should be strong and solid enough to protect it from vibration.

- Mount the installation plate on the wall using the Type “A” screws. If mounting the unit on concrete, consider using anchor bolts.
- Always mount the installation plate horizontally. Measure the wall and mark the center line using thread and a level.

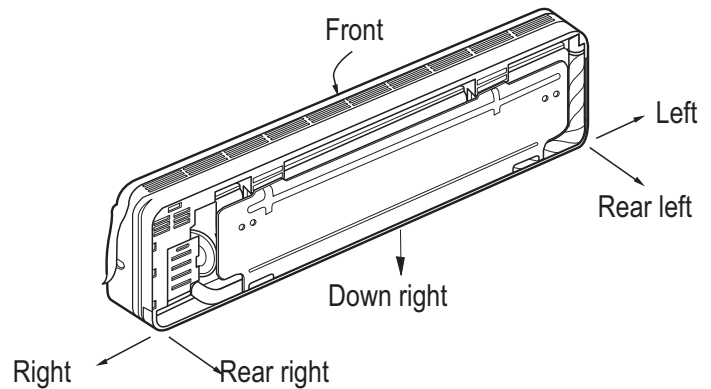
### ⚠ WARNING

- Mounting hardware must be securely installed to prevent the chassis falling from its installation location. There is risk of injury or property damage from falling equipment.
- When choosing a location for the wall mount plate, 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:

- Ensure the unit is properly installed. Incorrectly installed units can result in degraded performance or an inoperative unit / system.
- Mounting hardware must be securely installed to prevent the chassis falling from its installation location. There is risk of property damage from falling equipment.
- Use a level indicator to ensure the installation plate and chassis are installed on a level plane.
- If the unit is installed near a body of water, certain components are at risk of being corroded. Appropriate anti-corrosion methods should be taken for the unit and all components.

Figure 9: Choice of Piping / Wiring Routes.



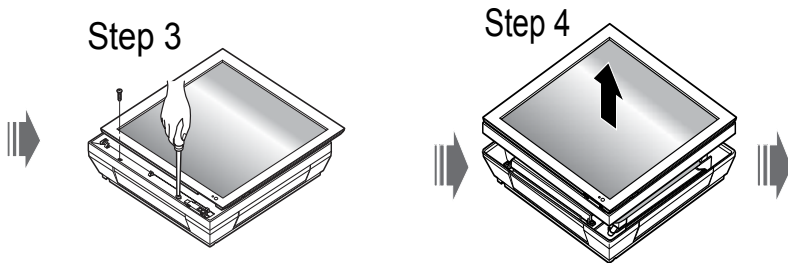
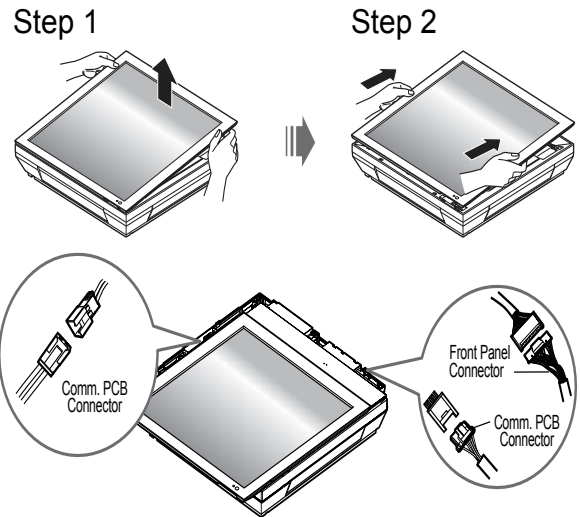
### Preparing for Installation — Gallery Indoor Units

#### Detaching the Picture and Front Metal Panels

Before mounting the indoor unit to the wall, the front cover must be removed. Removal will allow the side holes to be knocked out, as well as mounting the unit without damaging the front cover.

1. Lay the indoor unit on a flat surface, and then pull the upper part of the picture panel away from the chassis (Step 1).
2. Lift up the picture panel so that the bottom part of the unit is visible (Step 2).
3. Detach the front metal cover by removing the two screws located at the bottom (Step 3).
4. Disconnect the front metal panel connector at the top of the unit, then disconnect the Front Panel and Communication PCB connectors (Step 4).

Figure 10: Detaching the Front Panel.

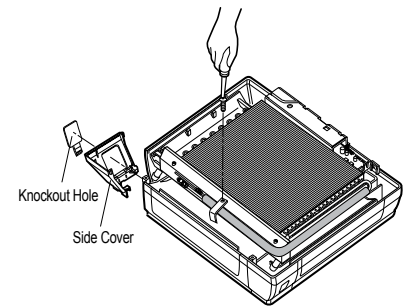


#### Removing Side Bottom Covers and Piping Knockout from the Gallery Indoor Unit

Figure 11: Removing Covers and Knockout Hole.

Before mounting the indoor unit, either the right or left bottom side covers and the piping hole knockout need to be removed to pass the drain hose and piping through. This procedure should be done after removing the indoor unit front metal panel.

1. Using a Phillips head screwdriver, remove the center bottom screw from the L-bracket tube holder.
2. Detach one of the side covers (either right or left depending on how the piping and drain hose need to be routed).
3. Knockout the piping hole from the detached side cover.



#### ⚠ CAUTION

After knocking out the hole from the side cover, be sure to smooth or cut any burrs around the hole. Burrs can lead to physical cuts and scrapes.

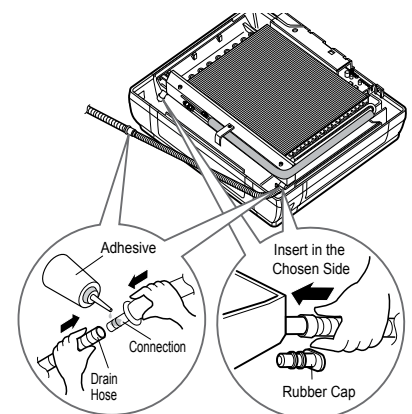
#### Note:

- If the application calls for creating a piping hole directly through the rear wall, the knockout the piping hole from the side cover might not be necessary.
- It is recommended that the picture and front metal panels not be re-attached to the indoor unit until the final test has been run which will ensure that all electrical and piping connections are working properly.

#### Preparing the Drain Hose Connection

1. To prepare indoor unit for the drain hose, remove the rubber plug at the desired direction (left or right at bottom of the unit). Ensure that the drain hose is routed to the closest pipe hole under the unit.
2. Insert the drain hose into the opening / handle of the drain pan, and then attach the drain hose and connecting hose using recommended adhesive. This step can be done once the indoor unit is mounted to the wall if necessary.

Figure 12: Connecting the Drain Hose.

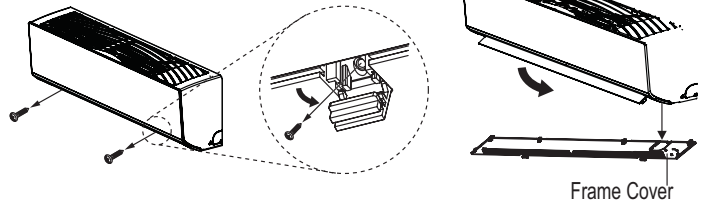


### Preparing for Installation — Wall-Mounted Indoor Units

To avoid piping damage when moving the piping away from the indoor unit chassis, follow instructions below.

1. Remove the screw covers at the bottom of the indoor unit and unscrew the two Type B screws. Remove the chassis cover (may differ depending on indoor unit type).
2. Unlock the tubing clamp (clamps may differ depending on indoor unit type).

Figure 13: Removing the Chassis Cover.



### Mounting — Gallery Indoor Units

**Note:**

Select the location carefully. Unit should be anchored to a strong wall to prevent unnecessary vibration.

**⚠ WARNING**

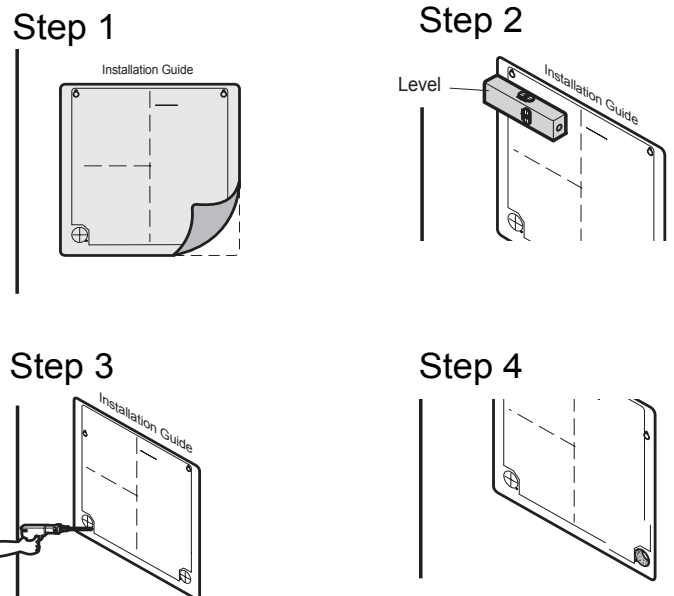
- When choosing a location for the indoor unit, be sure to take into consideration routing of wiring for power outlets within the wall. Contacting wiring can cause serious bodily injury or death.
- Use caution when drilling holes through the walls for the purposes of piping connections. Power wiring can cause serious bodily injury or death.

1. Align and level the factory-supplied installation guide onto the wall. Lightly attach the guide to the wall with tape (Steps 1 and 2).

**Note:**

⊘ Do not discard or accidentally throw out the installation guide that comes with the unit. This template assures accurate measurements when drilling the holes for attaching screws.

Figure 14: Mounting the Gallery Indoor Unit



2. At the cross marks on the installation guide, drill four (4) 1/4 inch holes that are approximately 1-1/8 to 1-7/16 inches deep (Step 3).
3. Choose rear left or right routing for the refrigerant / drain connection piping, and, using the installation guide, drill a two (2) inch diameter hole at the appropriate location (Step 4).
4. Drive the four (4) plastic anchors into each of the drilled holes (Step 5).
5. Insert screws into the top left and right of the installation guide, leaving about 7/16 inches of the screw out of the wall to hang the Gallery indoor unit (Step 6).
6. Hang the Gallery indoor unit on the top left and right screws, using the hanger holes on the back of the unit. Remove the installation guide (Step 7).
7. After the top of the Gallery unit is secure, attach the bottom with the remaining two (2) screws (Step 8). Tighten all screws.

8. After the unit is anchored, test the installation by gently applying downward pressure with both hands and jiggling to be sure it is attached securely (Step 9).
9. If the Gallery indoor unit is loose, repeat the steps above and adjust the screws as necessary. If the Gallery unit is secure, then proceed with connecting the piping and wiring.

**Mounting the Installation Plate — Wall-Mounted Indoor Units**

The mounting wall should be strong and solid enough to protect the unit from vibration. It should securely hold the installation plate and the weight of the chassis.

1. Before installation of the plate, confirm the position the screw types (A or B) between chassis and installation plate. Refer to Figures 16 to 21 for the appropriate mounting diagram.
2. Mount the installation plate horizontally by aligning the center line using a leveling tool, and use the factory-provided screws. If mounting the unit on concrete, consider using anchor bolts. Use a level to ensure the plate is level.
3. Choose what side (left or right) to install the piping, and then observe the left and right rear piping clearances when drilling into the wall.

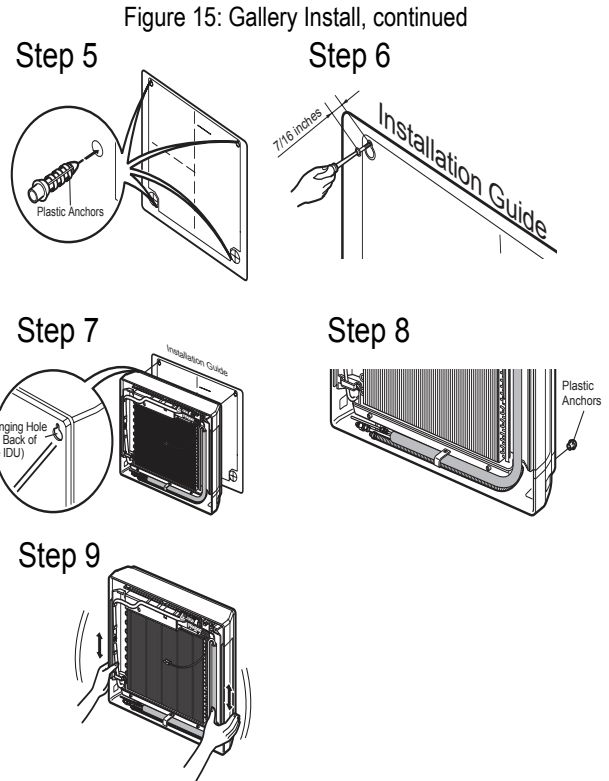
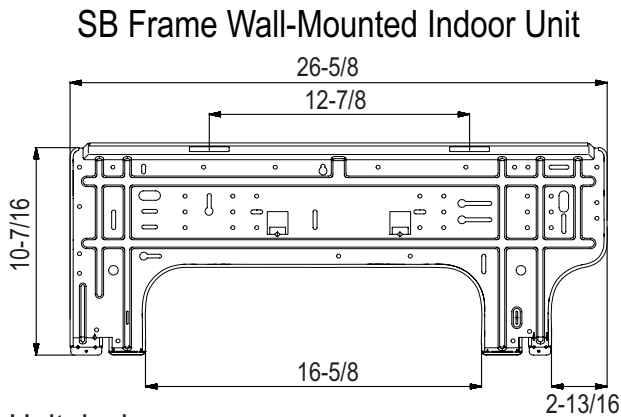
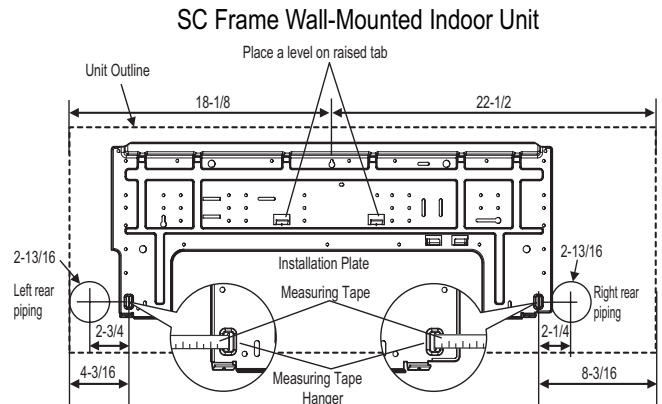


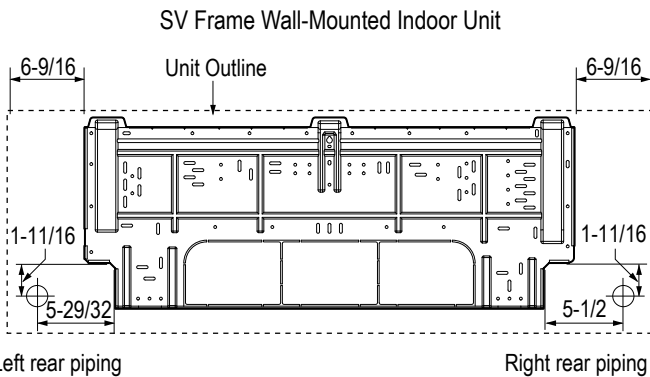
Figure 16: Standard and Art Cool Mirror Wall-Mounted (Gen 4) Installation Plates.



Unit: inches



Unit: inches

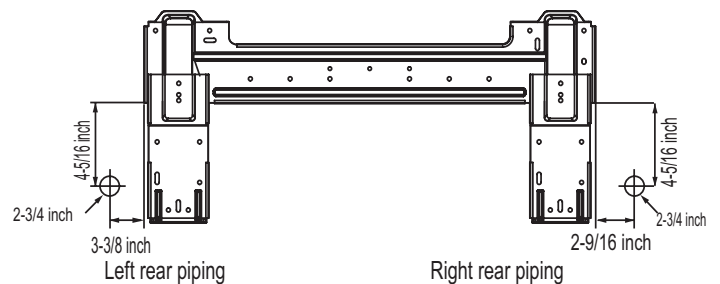


Left rear piping

Right rear piping

Unit: inches

Figure 17: Art Cool Mirror Wall-Mounted (Gen 2) Installation Plate.



Left rear piping

Right rear piping

# INSTALLATION



## Mounting

Figure 18: Art Cool Mirror Wall-Mounted (Gen 2) Installation Plates, continued.

S8 Frame Art Cool Wall-Mounted Indoor Unit

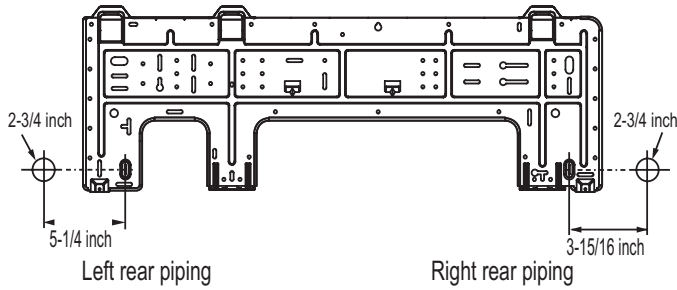


Figure 19: Standard and Art Cool Mirror Wall-Mounted (Gen 4) Installation Plates Attaching Screw Placement.

SB Frame Wall-Mounted Indoor Unit

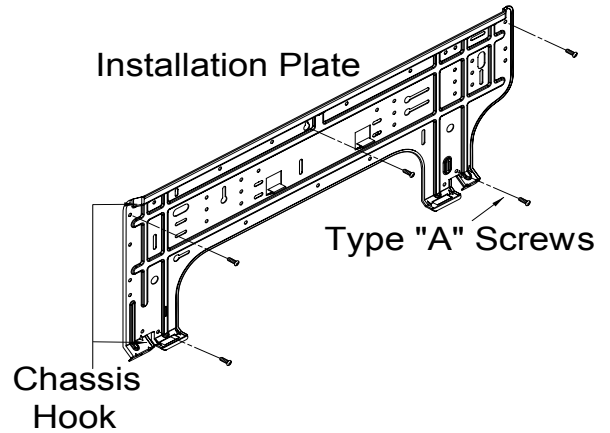


Figure 20: Standard and Art Cool Mirror Wall-Mounted (Gen 4) Installation Plates Attaching Screw Placement, continued.

SC Frame Wall-Mounted Indoor Unit

SV Frame Wall-Mounted Indoor Unit

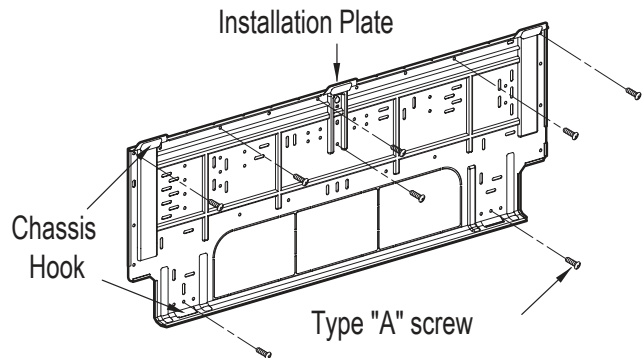
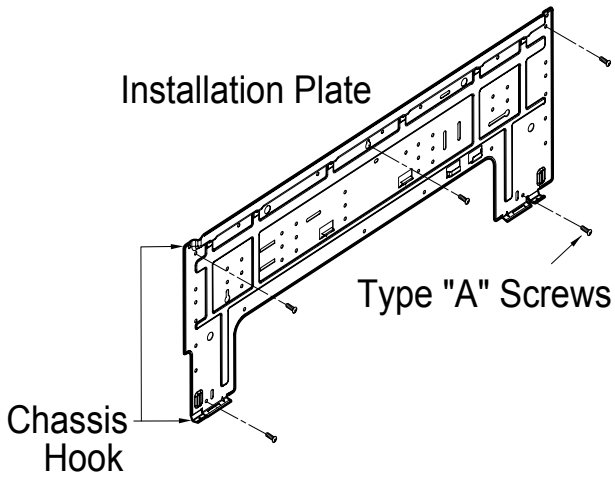
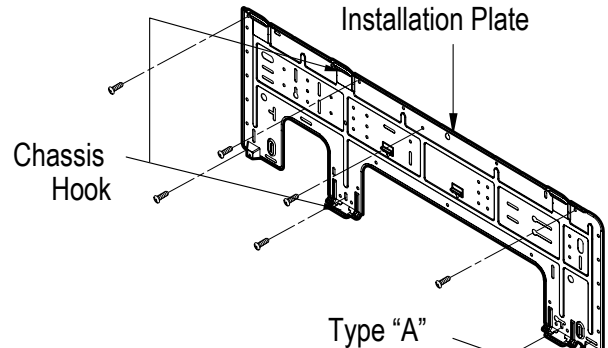
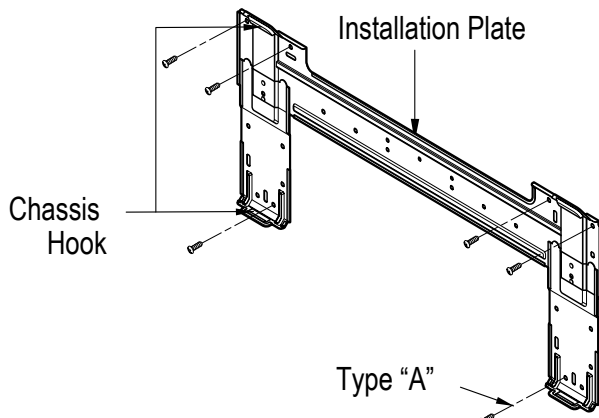


Figure 21: Art Cool Mirror Wall-Mounted (Gen 2) Installation Plates Attaching Screw Placement.

SE Frame Art Cool Wall-Mounted Indoor Unit

S8 Frame Art Cool Wall-Mounted Indoor Unit



Multi V Wall-Mounted Indoor Unit

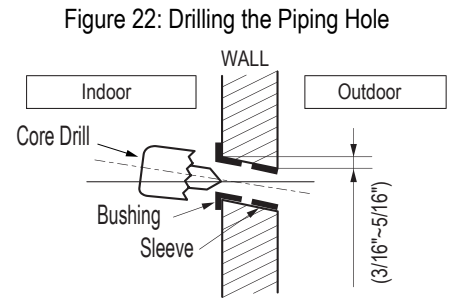
## Drilling the Piping Hole in the Wall

### ⚠ WARNING

Use caution when drilling holes through walls. Drilling into power wiring in the wall can cause serious bodily injury or death.

Follow the left or right piping clearance recommendations.

1. Using a 2-5/8 (ø65mm) inch hole core drill bit, drill a hole at either the right or left side of the wall mounting. The hole should slant 3/16" to 5/16" from level (upward on the indoor unit side and downward on the outdoor unit side).
2. Finish off the newly drilled hole as shown with bushing and sleeve covering. Sleeve and bushing prevents damage to the tubing / bundling of the piping.



## Installing the Piping — Gallery Indoor Units

The indoor unit piping must be prepared for installation through the wall. Gallery indoor units have two options on how the piping and wiring can be routed: rear left or right.

### Installing Piping to the Left Side

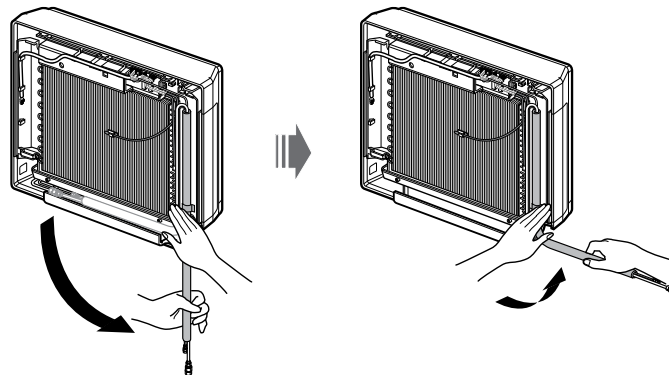
1. From the rear of the indoor unit, unlock the tubing clamp. Carefully bend the piping downward.
2. Pull the field drain and refrigerant piping, and the connecting cable from the access hole in the wall.
3. Connect the indoor unit drain hose and piping to the field drain piping and refrigerant piping. (See the “Connecting the Indoor Unit Piping to Field Piping” section for instructions.)
4. Tape the drain hose, piping, and the connecting cable together, and install insulation. (See the “Piping Bundling” and “Insulating the Piping” sections for instructions.)

### Installing Piping to the Right Side

1. From the rear of the indoor unit, press on the top of the clamp, then carefully bend the piping downward.
2. Slowly bend the piping to the right at a 90° angle.
3. Pull the field drain piping and refrigerant piping, and the connecting cable from the access hole in the wall.

4. Connect the indoor unit drain hose and piping to the field drain piping and refrigerant piping. (See the “Connecting the Indoor Unit Piping to Field Piping” section for instructions.)
5. Tape the drain hose, piping, and the connecting cable together, and install insulation. (See the “Piping Bundling” and “Insulating the Piping” sections for instructions.)

DO



### Note:

- Bending in a violent right-to-left motion could damage the piping.
- Bending the piping directly left or right, without bending it downward first, may cause damage.
- Do not twist the piping.
- Do not bend the piping towards the front of the unit because this may damage the indoor unit.

Figure 23: Piping Installation to the Left Side.

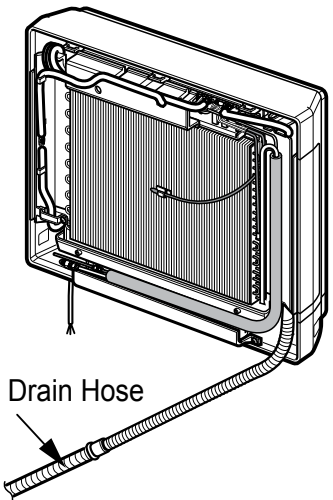
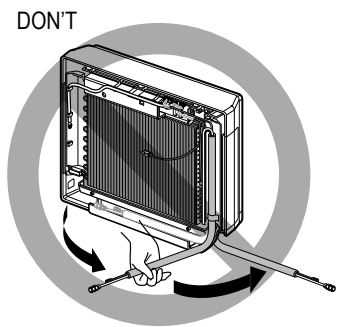


Figure 25: Incorrect Piping Bend



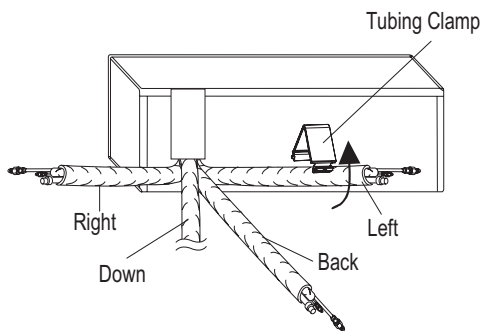
## Installing the Piping — Wall-Mounted Indoor Units

1. Piping can be install straight down, straight back, to the left, or to the right. If installing the piping straight down, through the left, or through the right side of the indoor unit, remove the appropriate piping access hole on the indoor unit chassis.
2. Slowly bend the piping downward (B). Position the piping for installation (straight down, straight back, to the left, or to the right).

**Note:**

*Bending in a violent right-to-left motion could damage the piping.*

Figure 26: Exterior Back View of Indoor Unit.



### Installing Piping to the Left Side

1. Unlock the tubing clamp, and route the indoor unit refrigerant piping and the drain hose to the required chassis access hole on the left side (A). (See “Accessing the Indoor Unit Piping” for instructions.)
2. Pull the field drain piping and refrigerant piping, and the connecting cable from the access hole in the wall.
3. Guide the connection cable into the indoor unit, but don’t attach to the terminals (B). (Make a small loop in the cable for easy connection later.)
4. Connect the indoor unit drain hose and piping to the field drain piping and refrigerant piping (C). (See the “Connecting the Indoor Unit Piping to Field Piping” section for instructions.)
5. Tape the drain hose, piping, and the connecting cable together, and install insulation (C). (See the “Piping Bundling” and “Insulating the Piping” sections for instructions.)
6. Reroute the indoor unit drain hose and refrigerant piping across the back of the indoor unit, and lock in place with the tubing clamp (C).
7. Reroute the field drain and refrigerant piping back into the wall, and, after connecting the power wiring and communication cables to the terminals on the indoor unit, hang the indoor unit (See “Hanging the Indoor Unit” section for instructions.)

Figure 28: Dos and Don'ts of Accessing the Piping

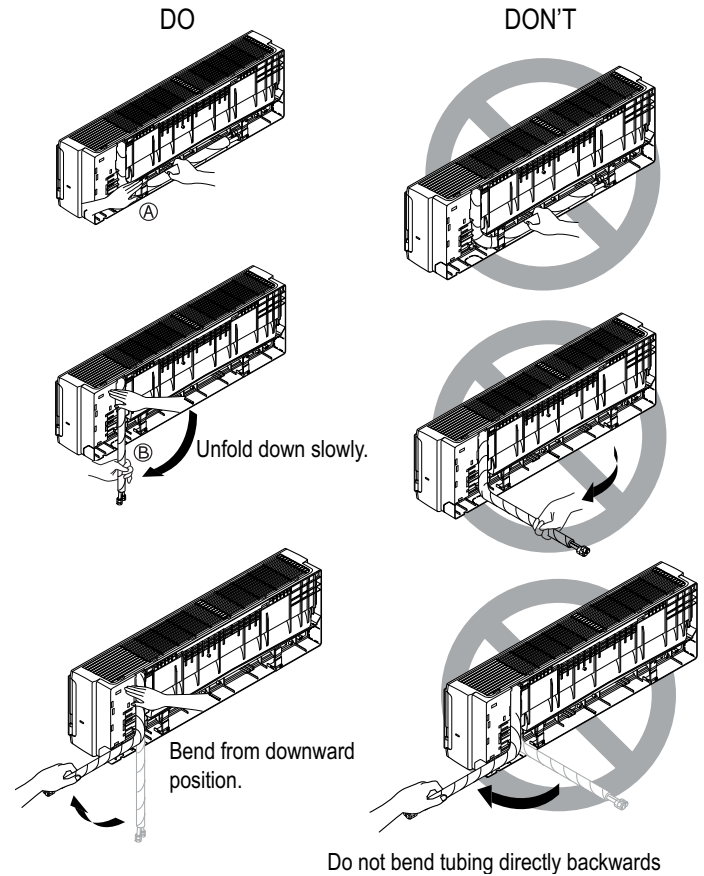
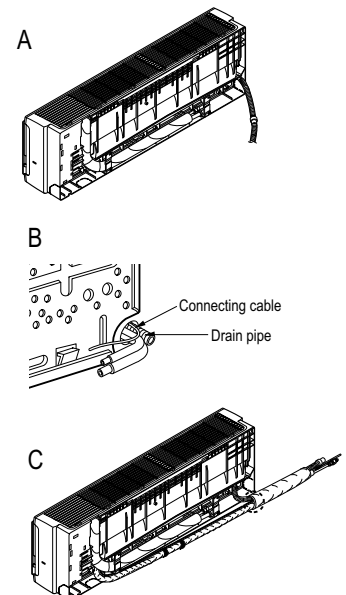


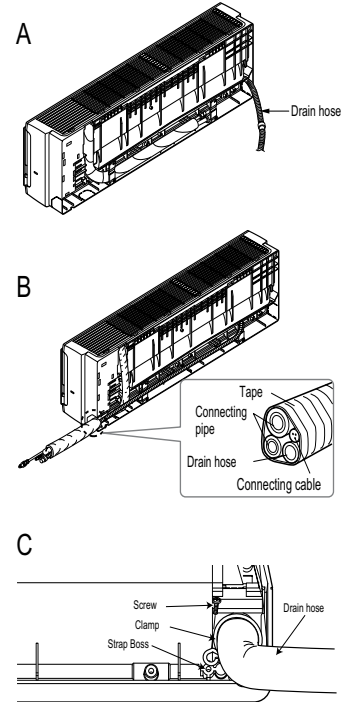
Figure 27: Piping Installation to the Left Side.



### Installing Piping to the Right Side

1. Unlock the tubing clamp, and route the indoor unit refrigerant piping and drain hose to the required chassis access hole on the right side (A). (See “Accessing the Indoor Unit Piping” for instructions.)
2. Pull the field drain and refrigerant piping, and the connecting cable from the access hole in the wall.
3. Guide the connection cable into the indoor unit, but don't attach to the terminals. (Make a small loop in the cable for easy connection later.)
4. Connect the indoor unit drain hose and piping to the field drain piping and refrigerant piping (B). (See the “Connecting the Indoor Unit Piping to Field Piping” section for instructions.)
5. Tape the drain hose, piping, and the connecting cable together, and install insulation (B). (See the “Piping Bundling” and “Insulating the Piping” sections for instructions.)
6. Optional: Secure a clamp to the strap boss with a screw (C).
7. Reroute the field drain and refrigerant piping back into the wall, and, after connecting the power wiring and communication cables to the terminals on the indoor unit, hang the indoor unit (See “Hanging the Indoor Unit” section for instructions.)

Figure 29: Piping Installation to the Right Side.



### Connecting the Indoor Unit Piping to the Field-Installed Piping

1. Center align the indoor unit piping (refrigerant and drain) and the field-installed piping, then hand tighten the flare nut.
2. Tighten the flare nut with a torque wrench.
3. Attach the drain tube piping to the indoor unit drain hose as shown.
4. Wrap insulation material around the connection, overlapping the material and binding securely with vinyl tape so there are not gaps. (See Piping Bundling” section for instructions.)

Figure 30: Indoor Unit to Field-Installed Piping Connection.

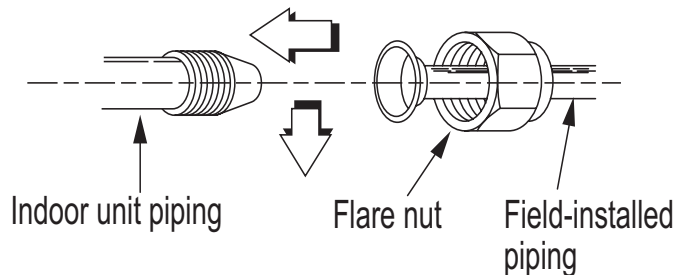
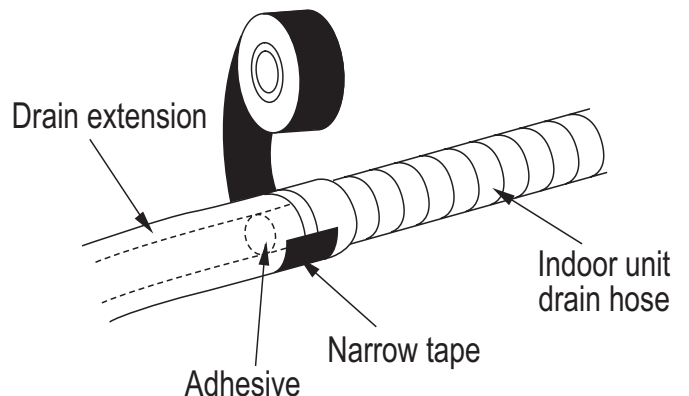


Figure 31: Extending the Drain Hose.



**Note:**

- If the drain hose is routed inside a room, add insulation to prevent condensation from forming.
- Seal up any access holes in walls or ceilings with bushing.

## Piping Preparation

### ⚠ WARNING

- ⊘ Do not braze in an enclosed location. ⊘ Do not allow the refrigerant to leak during brazing. Always test for gas leaks before / after brazing.

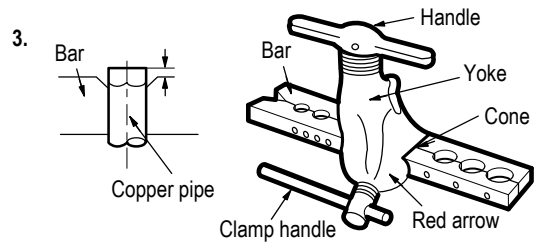
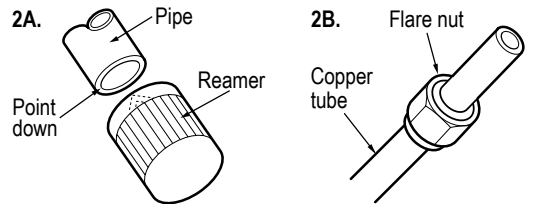
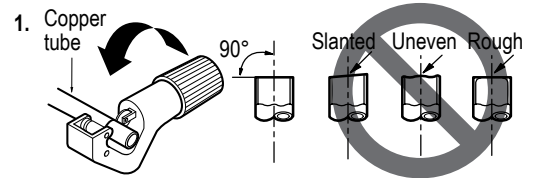
*If the refrigerant combusts, it generates a toxic gas that may cause physical injury or death.*

1. ⊘ Do not use kinked pipe caused by excessive bending in one specific area on its length.
2. Braze the pipes to the service valve pipe stub of the outdoor unit.
3. After brazing, check for refrigerant gas leaks.
4. When selecting flare fittings, always use a 45° fitting rated for use with high pressure refrigerant R410A. Selected fittings must also comply with local, state, or federal standards.

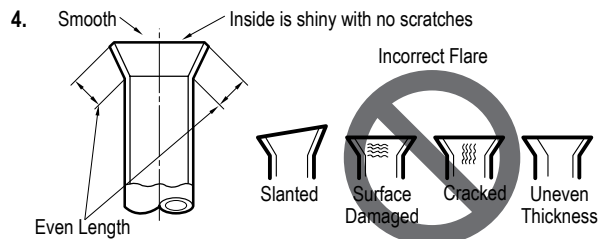
### Creating a Flare Fitting

One of the main causes of refrigerant leaks is defective flared connections. Create flared connections using the procedure below.

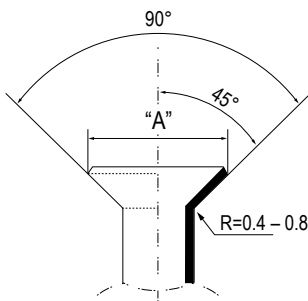
1. Cut the pipe to length.
  - Measure the distance between the indoor unit and the outdoor unit.
  - Cut the pipes a little longer than measured distance.
- 2A. Remove the burrs.
  - Completely remove all burrs from pipe ends.
  - When removing burrs, point the end of the copper pipe down to avoid introducing foreign materials in the pipe.
- 2B. Slide the flare nut onto the copper tube.
3. Flaring the pipe end.
  - Use the proper size flaring tool to finish flared connections as shown.
  - ALWAYS create a 45° flare when working with R410A.



4. Carefully inspect the flared pipe end.
  - Compare the geometry with the figure to the right
  - If the flare is defective, cut it off and re-do procedure.
  - If flare looks good, blow clean the pipe with dry nitrogen.



Dimensions of the Flare.



Flared Connection Dimensions / Tightening Torque.

Pipe Size (in. O.D.)	Outside Diameter (mm)	"A" Dimension (mm [in.])
1/4	6.35	~ 9.1 (11/32 - 23/64)
3/8	9.52	~ 13.2 (1/2 - 33/64)
1/2	12.7	~ 16.6 (41/64 - 21/32)
5/8	15.88	~ 19.7 (49/64 - 25/32)
3/4	19.05	-

**Tightening the Flare Nuts**

Tightening Torque for Flare Nuts.

Pipe Size (in. O.D.)	Outside Diameter (mm)	Tightening Torque (ft-lbs.)
1/4	6.35	13.0 - 18.0
3/8	9.52	24.6 - 30.4
1/2	12.7	39.8 - 47.7
5/8	15.88	45.4 - 59.3
3/4	19.05	71.5 - 87.5

1. When connecting the flare nuts, coat the flare (inside and outside) with polyvinyl ether (PVE) refrigeration oil only.

**Note:**

⊘ Do not use polyolyester (POE) or any other type of mineral oil as a lubricant. These lubricants are not compatible with PVE oil used in this system and create oil sludge leading to equipment damage and system malfunction.

2. Initially hand tighten the flare nuts using three (3) or four (4) turns.
3. To finish tightening the flare nuts, use both a torque wrench and a backup wrench.
4. After all the piping has been connected and the caps have been tightened, check for refrigerant gas leaks.

**Loosening the Flare Nuts**

Always use two (2) wrenches to loosen the flare nuts.

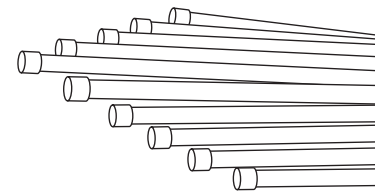
**Piping Materials and Handling**

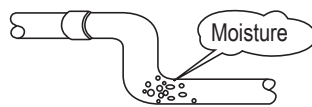
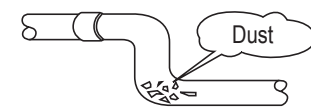
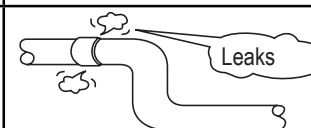
Pipes used for the refrigerant piping system must include the specified thickness, and the interior must be clean.

While handling and storing, ⊘ do not bend or damage the pipes, and take care not to contaminate the interior with dust, moisture, etc.

Keep refrigerant pipe dry, clean, and airtight.

Keep Pipes Capped While Storing.



	Dry	Clean	Airtight
	No moisture should be inside the piping. 	No dust should be inside the piping. 	No leaks should occur. 
<b>Possible Problems</b>	<ul style="list-style-type: none"> <li>- Significant hydrolysis of refrigerant oil.</li> <li>- Refrigerant oil degradation.</li> <li>- Poor insulation of the compressor.</li> <li>- System does not operate properly.</li> <li>- EEVs, capillary tubes are clogged.</li> </ul>	<ul style="list-style-type: none"> <li>- Refrigerant oil degradation.</li> <li>- Poor insulation of the compressor.</li> <li>- System does not operate properly.</li> <li>- EEVs and capillary tubes become clogged.</li> </ul>	<ul style="list-style-type: none"> <li>- Refrigerant gas leaks / shortages.</li> <li>- Refrigerant oil degradation.</li> <li>- Poor insulation of the compressor.</li> <li>- System does not operate properly.</li> </ul>
<b>Solutions</b>	<ul style="list-style-type: none"> <li>- Remove moisture from the piping.</li> <li>- Piping ends should remain capped until connections are complete.</li> <li>- ⊘ Do not install piping on a rainy day.</li> <li>- Connect piping properly at the unit's side.</li> <li>- Remove caps only after the piping is cut, the burrs are removed, and after passing the piping through the walls.</li> <li>- Evacuate system to a minimum of 500 microns and insure the vacuum holds at that level for 24 hours</li> </ul>	<ul style="list-style-type: none"> <li>- Remove dust from the piping.</li> <li>- Piping ends should remain capped until connections are complete.</li> <li>- Connect piping properly at the side of the unit.</li> <li>- Remove caps only after the piping is cut and burrs are removed.</li> <li>- Retain the cap on the piping when passing it through walls, etc.</li> </ul>	<ul style="list-style-type: none"> <li>- Test system for air tightness.</li> <li>- Perform brazing procedures that comply with all applicable standards.</li> <li>- Perform flaring procedures that comply with all applicable standards.</li> <li>- Perform flanging procedures that comply with all applicable standards.</li> <li>- Ensure that refrigerant lines are pressure tested to 550 psig.</li> </ul>

## Refrigerant Safety

### ⚠ WARNING

Verify the maximum refrigerant concentration level in the space where the indoor unit will be mounted meets the concentration limit for the application.

ASHRAE Standards 15-2010 and 34-2010 offer guidelines that address refrigerant safety and the maximum allowable concentration of refrigerant in an occupied space. Refrigerant will dissipate into the atmosphere, but a certain volume of air is required for this to occur safely. For R410A refrigerant, the maximum allowable concentration of refrigerant is twenty-six (26) lbs. per 1,000 cubic feet of an occupied space. Buildings with twenty-four (24) hour occupancy allow half of that concentration.<sup>1</sup>

ASHRAE Standards 15 and 34 assume that if a system develops a leak, its entire refrigerant charge will dump into the area where the leak occurs. To meet ASHRAE Standards 15 and 34, calculate the refrigerant concentration that may occur in the smallest room volume on the system, and compare the results to the maximum allowable concentration number.<sup>1</sup> Also consult state and local codes in regards to refrigerant safety.

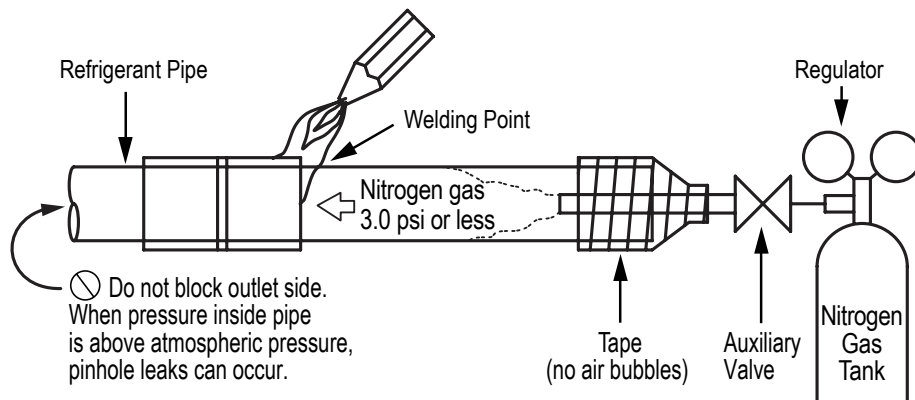
<sup>1</sup>Information about ASHRAE Standard 15-2010/34-2010 and addenda current as of the date of this publication.

## Brazing

### Note:

- It is imperative to keep the piping system free of contaminants and debris such as copper burrs, slag, or carbon dust during installation.
1. All joints are brazed in the field. Multi V IV refrigeration system components contain very small capillary tubes, small orifices, electronic expansion valves, oil separators, and heat exchangers that can easily become blocked. Proper system operation depends on the installer using best practices and utmost care while assembling the piping system.
    - Store pipe stock in a dry place and keep stored pipe capped and clean.
    - Purge all pipe sections clean with dry nitrogen prior to assembly.
  2. Proper system operation depends on the installer using best practices and the utmost care while assembling the piping system.
    - Use adapters to assemble different sizes of pipe.
    - Always use a non-oxidizing material for brazing. ⚠ Do not use flux, soft solder, or anti-oxidant agents. If the proper material is not used, oxidized film may accumulate and clog or damage the compressors. Flux can harm the copper piping or refrigerant oil.
    - Use a tubing cutter; ⚠ do not use a saw to cut pipe. De-bur and clean all cuts before assembly.
  3. Brazing joints:
    - 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 control components from excessive heat with a wet rag or heat barrier spray.

Figure 32: Using Nitrogen Gas During Brazing



**Pipe Supports**

A properly installed pipe system will have sufficient supports to avoid pipes from sagging during the life of the system. As necessary, place supports closer for segments where potential sagging could occur. Maximum spacing of pipe supports shall meet local codes.

Figure 34: Typical Pipe Support Location—  
Change in Pipe Direction.

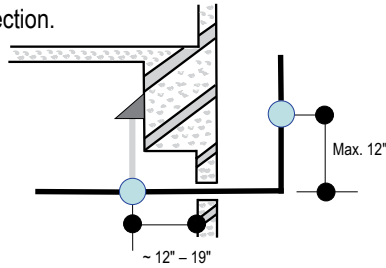
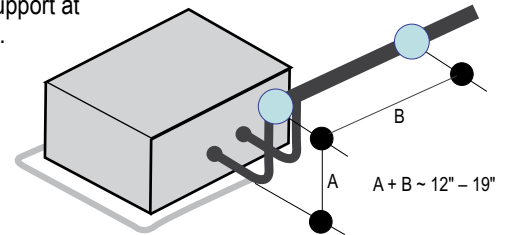


Figure 35: Pipe Support at  
Indoor Unit.



**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.

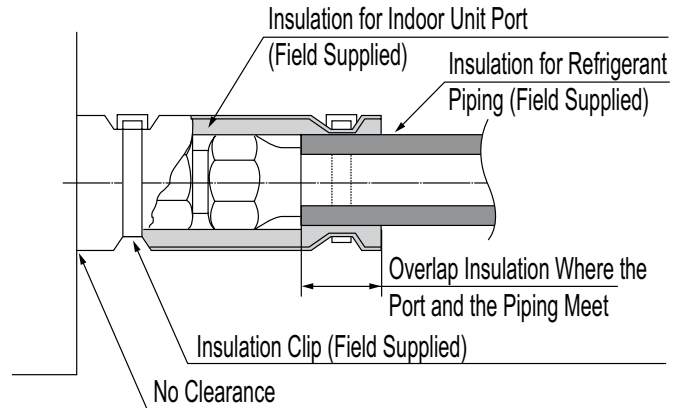
**Flare Fittings:**

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

Figure 33: Typical Refrigerant Line Flare Fitting Insulation Detail



**Insulating the Piping**

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 including field-provided isolation ball valves and flexible pipe connection kits provided by LG. 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.

All Gallery and wall-mounted 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.

Gallery and wall-mounted indoor units have a built-in drain hose that can be extended. The drain hose is routed from the indoor unit through the structure (wall) to the outside or to a drainage system. Any holes through the ceilings, walls, etc., must be large enough to accommodate the drain piping and insulation.

The drain hose should slope at an angle where it is higher at the indoor unit and lower toward the outside or drainage system (about 1/50 to 1/100 down slope), thereby letting gravity push any condensation down and out. See Figures 37 and 38 for proper drainage slope. Avoid piping the drain hose as shown in Figure 39 on next page. These methods are incorrect and can cause leakage at the indoor unit site.

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 should always be to the top half of the pipe and should 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.

**Note:**

- ⊗ When making condensate pipe connections, be careful not to exert lateral force on the drain nipple. Internal damage may occur. Refer to Table 10 for condensate pipe connection sizes.
- ⊗ Do not provide up and down slope to prevent reversal flow.

Figure 36: Diagram of an Indoor Unit with a Gravity Drain.

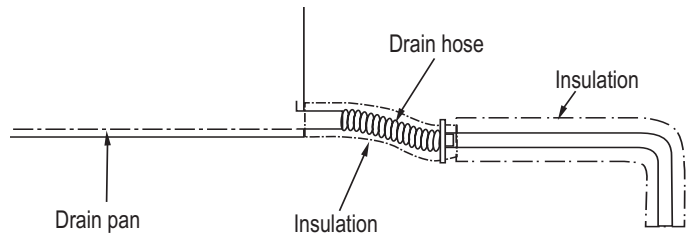


Table 10: Indoor Unit Drain Piping Specifications.

Indoor Unit	Drain Type	Drain Pipe Diameter (ID, in.)
SF Frame Art Cool (Gen 4) Gallery	Gravity	Ø5/8
SB Frame Standard and Art Cool (Gen 4) Wall-Mounted		
SC Frame Standard and Art Cool (Gen 4) Wall-Mounted		
SE Frame Art Cool (Gen 2) Wall-Mounted		
S8 Frame Art Cool (Gen 2) Wall-Mounted		

Figure 37: Correct Slope Angle for Drain Hose

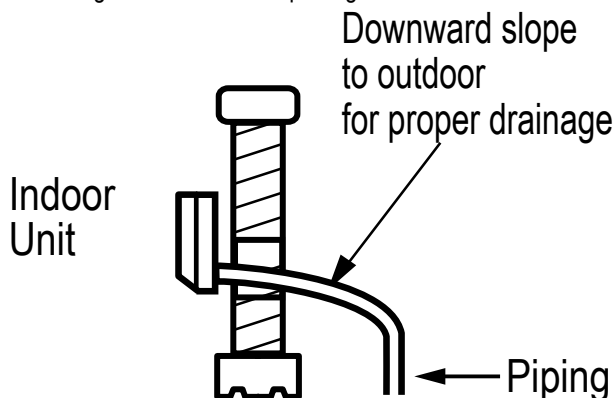


Figure 38: Correct Slope Angle for Drain Hose, Through the Wall View

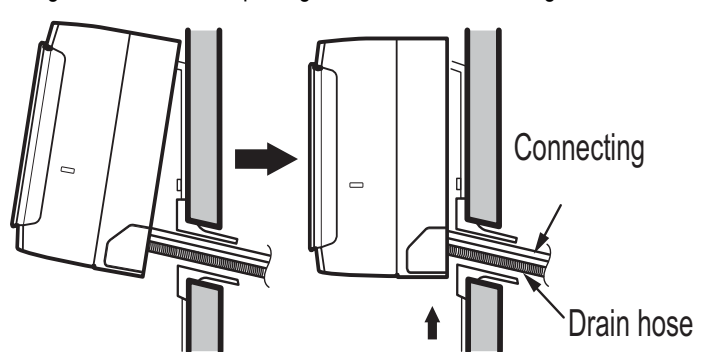
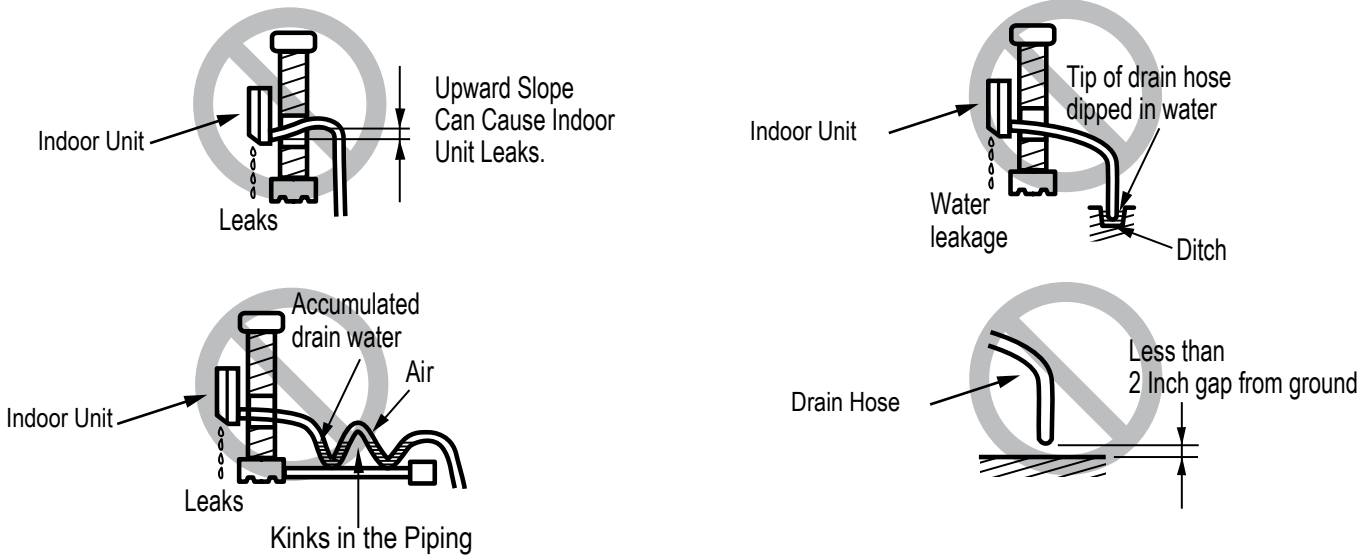


Figure 39: Incorrect Slope Angles for Drain Hose



### Drain Pipe Insulation

To prevent condensate from forming on the drain piping, field-supplied polyethylene insulation thicker than 5/16 inches should be properly installed.

### Piping Bundling

Gallery and wall-mounted indoor units allow for piping bundling. See Figure 41 for proper pipe and cable bundling. Note the placement of the piping along with the necessary insulation material.

1. Wrap each pipe with proper insulation material.
2. Secure the piping by wrapping vinyl tape around the pipe. Use the narrow size tape for wrapping the actual pipe.
3. Drain hose can be included within the bundled piping. Wrap all of them together using the wider vinyl tape as shown. The end of the drain hose outlet must be routed above the ground.

**Note:**

- If the drain hose is routed inside the room, insulate the hose with insulation material so that dripping condensation will not damage walls, floors, or furniture.
- Make sure the drain hose is positioned at the lowest side of the bundle. Positioning the drain hose at the top can cause the drain pan to overflow inside the indoor unit.

Figure 40: Properly Insulating the Drainage Piping.

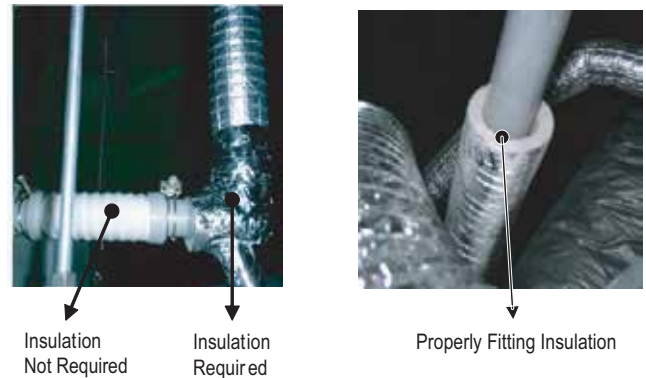


Figure 41: Close Up of Bundling and Taping

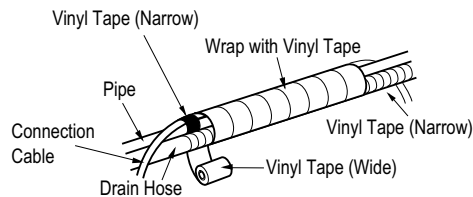
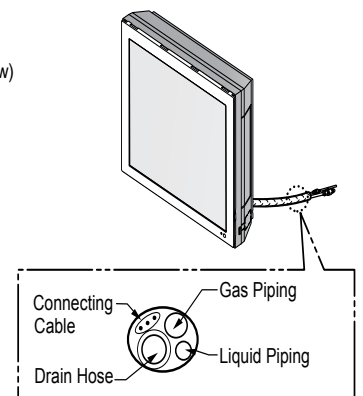


Figure 42: Example of Bundling Gallery Indoor Unit Piping, Drain Hose, and Connecting Cable.



## Drain Leak Test

A leak test should be performed 24 hours after the drainage system has been installed.

1. Lift up (Standard and Art Cool Mirror [Gen 4] Indoor Units) and / or remove (Art Cool Gallery [Gen 4], Art Cool Mirror [Gen 2] Indoor Units) the picture or front panel from the indoor unit chassis (A).
2. Remove any filters.
3. Manually set the up-and-down air direction louvers to the horizontal position (Standard and Art Cool Mirror [Gen 2 and 4] Indoor Units).
4. Remove the screws that secure the front metal panel (Art Cool Gallery [Gen 4]) or front panel to the indoor unit (Standard and Art Cool Mirror [Gen 2 and 4] Indoor Units). Pull the lower left and right sides of the panel toward you and lift the panel off. (Standard and Art Cool Mirror [Gen 2 and 4] Indoor Units).
5. Pour a glass of water on the evaporator (Art Cool Gallery [Gen 4], Standard and Art Cool Mirror [Gen 2 and 4] Indoor Units) (B).
6. Verify the water flows correctly through the indoor unit drain hose to the drainage system without any leaks at the hose connections (B).

Figure 43: Gallery Indoor Unit Drain Leak Test

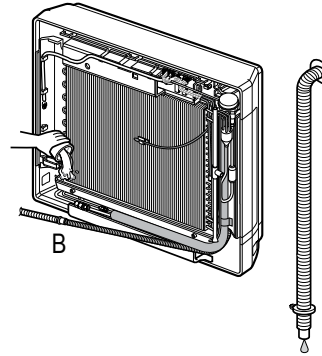
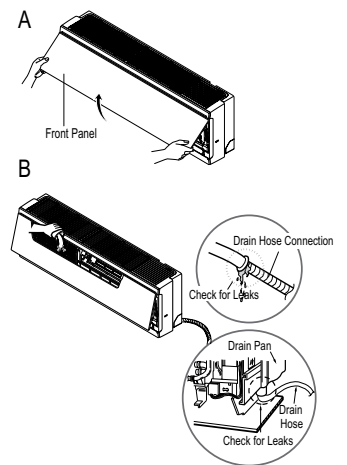


Figure 44: Wall-Mounted Indoor Unit Drain Leak Test

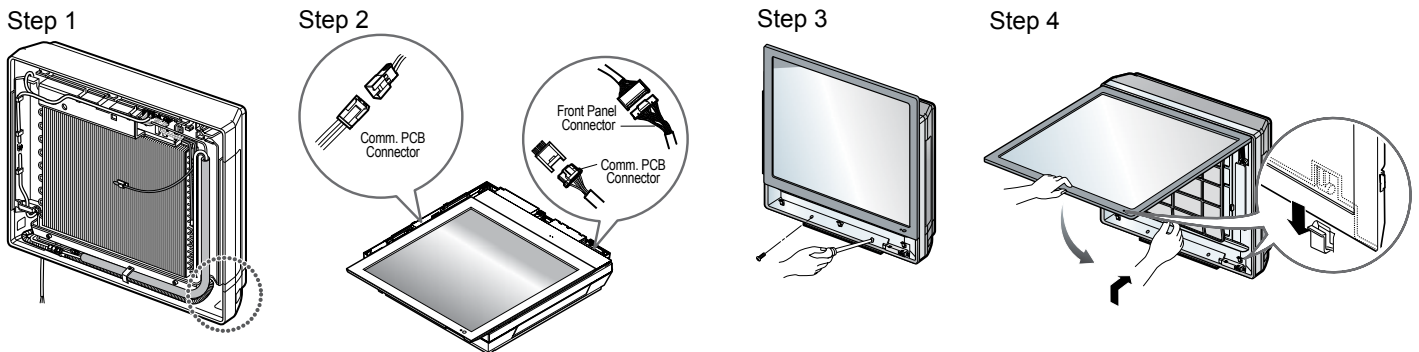


## Finishing Installation — Gallery Indoor Units

Before completing installation, the picture and front metal panels of the Gallery indoor unit must be re-installed. Before re-installing, verify that communications cable and power wiring between the outdoor and indoor units are connected.

1. Check if the side cover is assembled properly, especially if a knockout hole for the piping is used.
2. Verify if the drain hose and refrigerant piping is routed correctly from the side and the rear of unit.
3. Route the power wiring through the indoor unit's bottom left-hand groove (Step 1).
4. Make the connections to the communication PCB connector, and to the front panel connector (Step 2).
5. Attach the top part of the front metal panel, aligning it with the screw holes at the bottom (Step 3), and then secure the front metal panel with the factory-supplied screws.
6. Suspend the hooks of the picture panel in the bottom grooves (Step 4).

Figure 45: Finishing Gallery Indoor Unit Installation

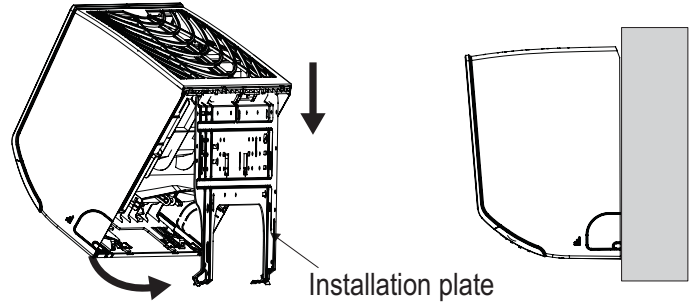


**Finishing Installation — Wall-Mounted Indoor Units**

**Mounting the Indoor Unit to the Installation Plate**

1. Attach the three (3) hooks on the top of the indoor unit to the top edge of the installation plate. Verify the hooks are properly attached to the installation plate by gently shaking the indoor unit from side to side.
2. To fully anchor the indoor unit to the wall, push the bottom of the indoor unit against the installation plate until the bottom hooks snap into their slots (a click will be heard).

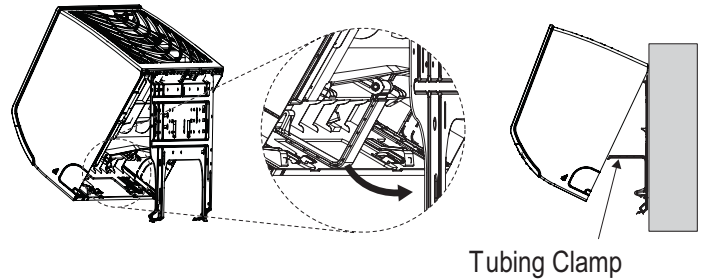
Figure 47: Locking the Indoor Unit onto the Installation Plate.



**Preparing for Piping / Electrical Connections**

1. To prepare indoor unit for refrigerant piping, drain piping, and wiring connections, disengage bottom on indoor unit from installation plate by reversing Step 2 from previous procedure.
2. Unlock the tubing clamp from the indoor unit frame. For easier access between the bottom of the indoor unit and the wall, prop the clamp between the indoor unit frame and installation plate.

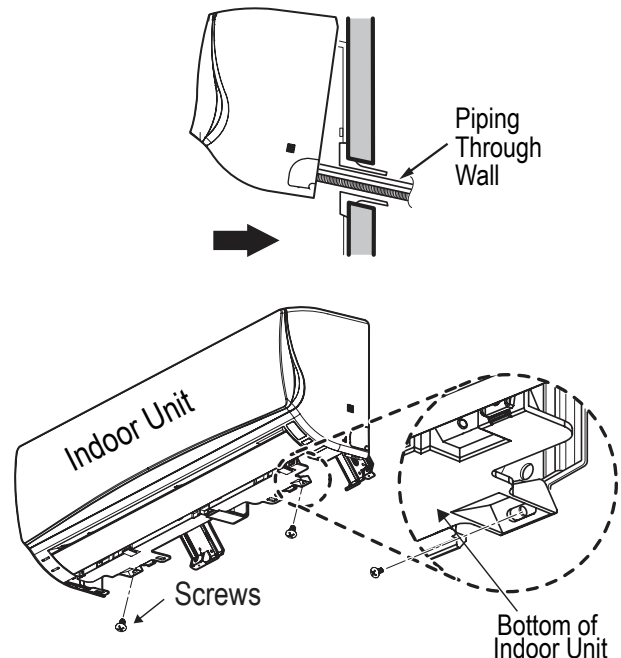
Figure 48: Accessing the Back of the Indoor Unit.



**Final Step**

1. Push the tubing clamp back into its original position.
2. Verify the top hooks are properly attached to the installation plate by gently shaking the indoor unit from side to side.
3. To fully anchor the indoor unit to the wall, push the bottom of the indoor unit against the installation plate until the bottom hooks snap into their slots (a click will be heard).
4. Finish the assembly by securing the indoor unit to the installation plate with two screws, and assembling the cover.

Figure 46: Final Installation Step



## Overview

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### Connecting Power and Control 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 Multi V 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 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.*

**Ensure the unit is connected to a dedicated power source that provides adequate power.**

*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.*

**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.*

**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 tighten all power connections.**

*Loose wiring may overheat at connection points, causing a fire, physical injury or death.*

#### Note:

**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 equipment damage and will void the LG limited liability warranty.*

Ⓞ Do not cut, lengthen or shorten the communications and power cable between a zone controller or dry contact unit and its connected indoor unit. Ⓞ Do not install the zone controller or dry contact unit in a location where the communications and power cable cannot be safely and easily connected between the two units. Ⓞ Do not allow strain on this cable.

*Poor cable connections can cause equipment malfunction.*

**The information contained in this manual is intended for use by an industry-qualified, experienced, 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 equipment malfunction or property damage and will void the LG limited liability warranty.*

*Failure to follow any of these power and communications wiring guidelines or instructions will likely cause communications errors and unit malfunction.*

### Note:

*Polarity matters. 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. Maintain polarity throughout the communications bus. Cross connecting the A/3(A) and B/4(B) terminals will cause communications errors and system malfunction.*

*The minimum distance required between power wires and the communications cable is voltage/ampereage dependent and in cases where either are relatively high the minimum distance may be more than two (2) inches. Refer to the appropriate LG Multi V Outdoor Unit Engineering Manual on [www.lg-vrf.com](http://www.lg-vrf.com) for detailed information.*

- *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. Ground the shield of the communications cable at one end only, at the master outdoor unit.*

### ⊖ 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.*

## Communication Cable Connection

### Note:

*When connecting the communications bus between the outdoor unit, indoor unit(s), and heat recovery unit(s), it does not matter what physical path or route the wire takes. The installer may use discretion when choosing the order the components are connected to the communications bus, but must maintain the daisy chain and polarity configuration.*

1. If not already done so, read Connecting Power and Control Wiring on the previous page. Ensure the input power is disconnected and there is no power on the power input cable.
2. To access the power and communications terminal block on Art Cool Gallery units (SF), remove the control board cover.
3. Access the power and communications terminal blocks on Standard (SB/SC) and Art Cool Mirror (SB/SC/SE/S8) units from the front of the unit behind the chassis and control board covers.
4. Remove a knock-out plug from the control box. Remember the communications cable and the power cable must enter the control box through different knockouts.
5. To prevent wire chafing, install a field-supplied plastic or rubber grommet in the hole just created by removing the knock-out plug.
6. If using a conduit, follow industry best practice procedures to connect the conduit to the control box using field-provided lock nuts and other fittings.
7. Provide enough slack cable at each indoor unit to connect to the terminal block without tension on the wire. Route the wire through the conduit (if used) and into the control box. Be sure to keep a minimum of two (2) inches of spacing between the power wiring and the communications wiring.
8. Secure the ODU to IDU communications cable to the inside surface of the control box using a field provide nylon wire clamp.
9. Strip approximately half (1/2) of an inch of insulation from each communications cable conductor. At each indoor unit, insert the conductors under the terminal screw.
10. Securely tighten the terminal screws with a JIS type screwdriver in appropriate locations outside the indoor unit to prevent the communications conductors from coming loose from the terminal block, and to prevent damage to the cable or injury to maintenance personnel.
11. Gallery and wall-mounted units can be controlled either with a wireless handheld controller or a wired wall controller. If a wired wall controller is included, connect the cable from the wall controller to the indoor unit's remote control connection (CN-REMO). On some units, this cable connects to a pigtail cable from the CN-REMO connector on the control board, and on other units it connects directly to the CN-REMO connector.

## Indoor Unit Communication Cable Connections

Figure 49: Location of Power Wiring and Communications Cable Terminals in the Art Cool Gallery (Gen 4) Indoor Unit

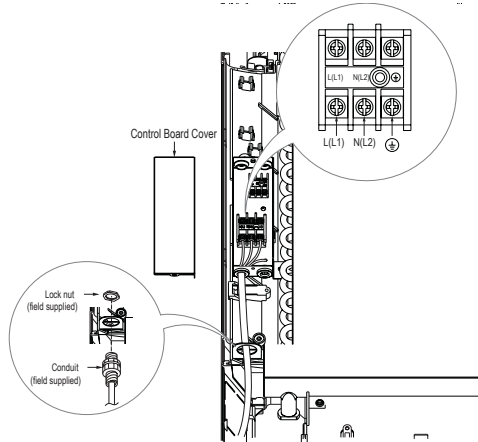


Figure 50: Terminal Block in the Art Cool Gallery (Gen 4) Indoor Unit

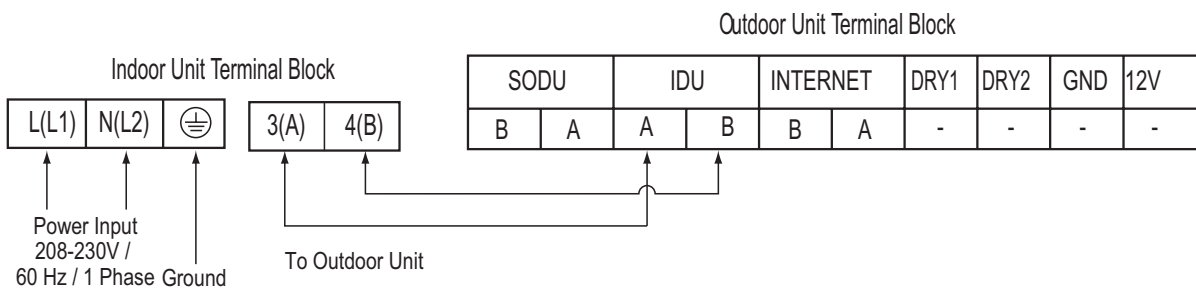


Figure 51: Location of Power Wiring and Communications Cable Terminals in the Standard (SBL, SCL, SV Chassis) and Art Cool Mirror (SBR, SCR Chassis) Wall-Mounted (Gen 4) Indoor Units

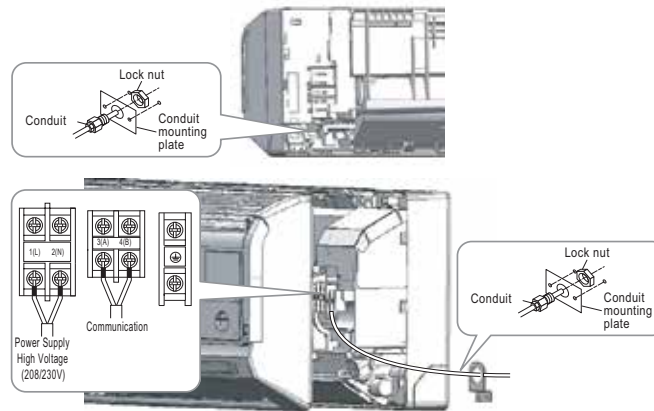
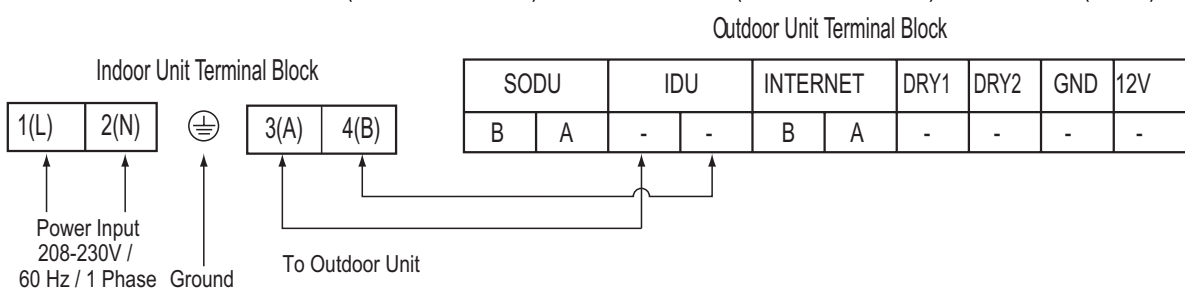


Figure 52: Terminal Block in the Standard (SBL, SCL Chassis) and Art Cool Mirror (SBR, SCR Chassis) Wall-Mounted (Gen 4) Indoor Unit



Indoor Unit Communication Cable / Power Cable Connections

Figure 54: Terminal Block in the Standard (SV Chassis) Wall-Mounted (Gen 4) Indoor Unit

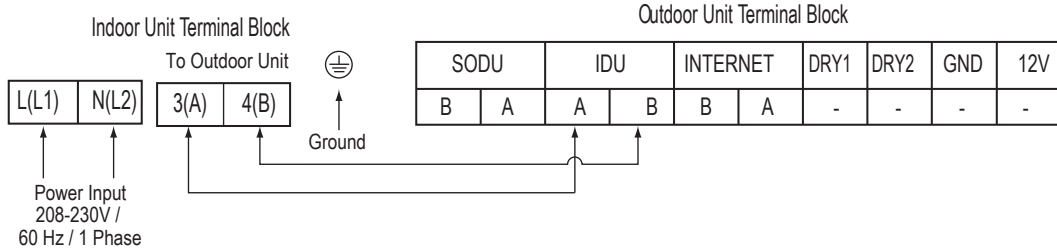


Figure 53: Location of Power Wiring and Communications Cable Terminals in the Art Cool Mirror Wall-Mounted (Gen 2) Indoor Unit

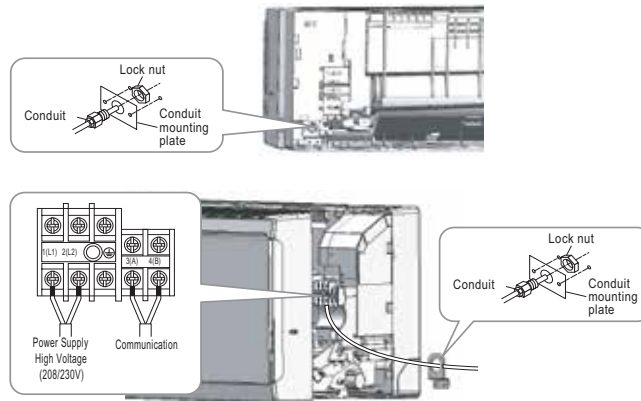
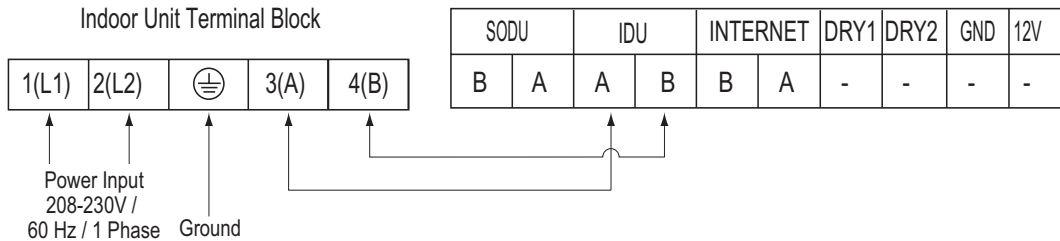


Figure 55: Terminal Block in the Art Cool Mirror Wall-Mounted (Gen 2) Indoor Unit



**Connecting Power and Control 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 Multi V 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 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**

**Read and understand all power-related DANGER and WARNING statements in this manual before working with power cables. Ensure the power source is disconnected from the indoor unit's power input cable before connecting the cable.**

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

**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.*

## Indoor Unit Power Cable Connections

### **⚠ WARNING**

**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.*

**Ensure the unit is connected to a dedicated power source that provides adequate power.**

*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.*

**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.*

**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 tighten all power connections.**

*Loose wiring may overheat at connection points, causing a fire, physical injury or death.*

### **Note:**

**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 equipment damage and will void the LG limited liability warranty.*

**The information contained in this manual is intended for use by an industry-qualified, experienced, 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 equipment malfunction or property damage and will void the LG limited liability warranty.*

*Keep line voltage power away from the communications terminals. Line voltage power applied to the communications terminals will damage the indoor unit control board and it will have to be replaced. Maintain a minimum of two (2) inches between line voltage wires and communications or zone controller cables.*

*Size all field provided electrical components per NEC and local code. Always use copper wire.*

## Power Wiring Instructions

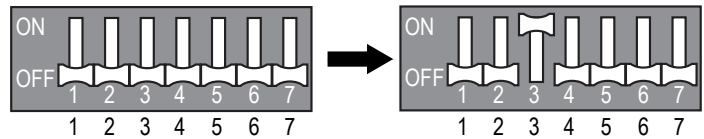
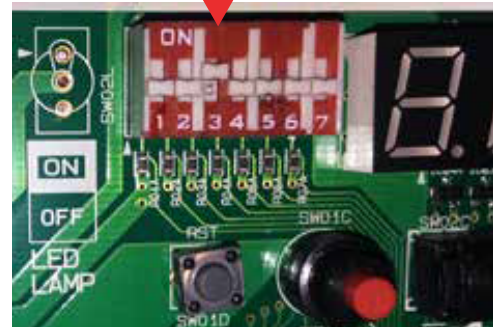
1. If not already done so, read Connecting Power and Control Wiring on page 48. Provide clean 208/60/1 power to the unit. Maximum acceptable power fluctuation range is 188 volts to 253 volts.
2. Ensure the input power is disconnected and there is no power on the power input cable.
3. To access the power and communications terminal block on Art Cool Gallery units (SF), remove the control board cover.
4. Access the power and communications terminal blocks on Standard (SB/SC) and Art Cool Mirror (SB/SC/SE/S8) units from the front of the unit behind the chassis and control board covers.
5. Remove a knock-out plug from the control box. Ⓞ Do not use the same knock-out as the communications and zone controller cables.
6. To prevent wire chafing, install a field-supplied plastic or rubber grommet in the hole just created by removing the knock-out plug.
7. If using a conduit, follow industry best practice procedures to connect the conduit to the control box using field-provided lock nuts and other fittings.
8. Provide enough slack wire at each indoor unit to connect to the terminal block without tension on the wire. Route the wire through the conduit (if used) and into the control box. Be sure to keep a minimum of two (2) inches of spacing between the power wiring and the communications wiring.
9. Strip approximately half (1/2) of an inch of insulation from each of the power wire conductors. Tightly crimp a spade connector to the Hot, Neutral and Ground Wires.
10. Connect the power cable to the 1(L or L1) or L(L1) and 2(N or L2) or N (L2) terminal block connections as shown in Figures 49 through 55. Connect the ground wire. Securely tighten the terminal screws with a JIS type screwdriver to prevent the conductors from coming loose. Secure power wiring to the inside surface of the control box using a field-provided nylon wire clamp. If needed, secure the power wiring in appropriate locations outside the indoor unit to prevent damage to the wire or injury to maintenance personnel.

### Generation 4 Equipment

The latest versions of LG's indoor and outdoor (air/water source) units are designated Generation 4 (Gen 4). For Gen 4 units to operate with Gen 4 features, the air conditioning system must meet the following requirements:

- All indoor units, heat recovery units, and air/water source units must be Gen 4.
- All air/water source units must have Gen 4 software installed.
- Air/water source units DIP switch 3 must be set to ON (factory default setting is OFF).
- All controllers must support Gen 4 features.

Figure 56: Location and Setting of ODU DIP Switch 3  
Air/Water Source Unit DIP Switch No. 3



The figure at right shows the ODU DIP switch. The "System Component Combinations and Operation Status" table lists how combining different components will affect system operation. The "Serial Numbers or Air/Water Source Units with Gen 4 Software" table lists the serial numbers of air and water source units that have Gen 4 software. All air and water source units, indoor units, heat recovery units, and controllers in a system must be Gen 4 compatible or the system will not operate with Gen 4 features.

Table 11: System Component Combinations and Operation Status

Air / Water Source Units*	Indoor Unit(s)**	Heat Recovery Unit(s)	Outdoor Unit DIP Switch No. 3	Operation Status
Gen 4	Gen 4 ONLY	Model 2A ONLY	Must be ON	System will operate WITH Gen. 4 features.
Gen 4	Gen 4 ONLY	Model 2A ONLY	OFF	System will operate but WITHOUT Gen. 4 features.
Gen 4	Gen 4 ONLY	Any combination of Models 1A, 2A	Must be OFF (factory default)	Does NOT include Gen. 4 features. System will not operate if DIP Switch No. 3 is ON, and an error code will be generated.
Gen 4	Any combination of Gen 2 and Gen 4	Model 2A ONLY	Must be OFF (factory default)	
Gen 4	Any combination of Gen 2 and Gen 4	Any combination of Models 1A, 2A	Must be OFF (factory default)	
Gen 2	Any combination of Gen 2 and Gen 4	Any combination of Models 0A****, 1A, 2A	N/A***	Does not include Gen. 4 features.

\*Gen 4 Air / Water Source Units = Multi V IV or Multi V Water IV with Gen 4 software (see table below for Gen 4 serial numbers) or Multi V S. Gen 2 Air / Water Source Units = Multi V II, Multi V III, Multi V IV without Gen. 4 software, Multi V Water II, Multi V Water IV without Gen. 4 software, Multi V Mini, Multi V Water Mini, or Multi V Space II.

\*\*Gen 4 Indoor Units model numbers end in "4"; Gen 2 Indoor Units model numbers end in "2" or an "A", including Hydro Kit.

\*\*\*DIP Switch No. 3 on Gen 2 air/water source units is not related to Gen 4 features as it is with Gen 4 air/water source units.

\*\*\*\*0A Model Heat Recovery units are not for use with Multi V IV, Multi V Water IV, or Multi V III heat recovery systems.

Table 12: Serial Numbers of Air / Water Source Units with Gen 4 Software

Air / Water Source Unit Model Type	Multi V IV Air Source Heat Pump	Multi V Air Source Heat Recovery	Multi V IV Water Source Heat Pump	Multi V IV Water Source Heat Recovery
Serial Number of Air / Water Source Units with Gen 4 Software	502***** and Higher	503***** and Higher	504***** and Higher	

## Art Cool Gallery SF Chassis

Figure 57: Art Cool Gallery (Gen 4) SF Chassis Wiring Diagram

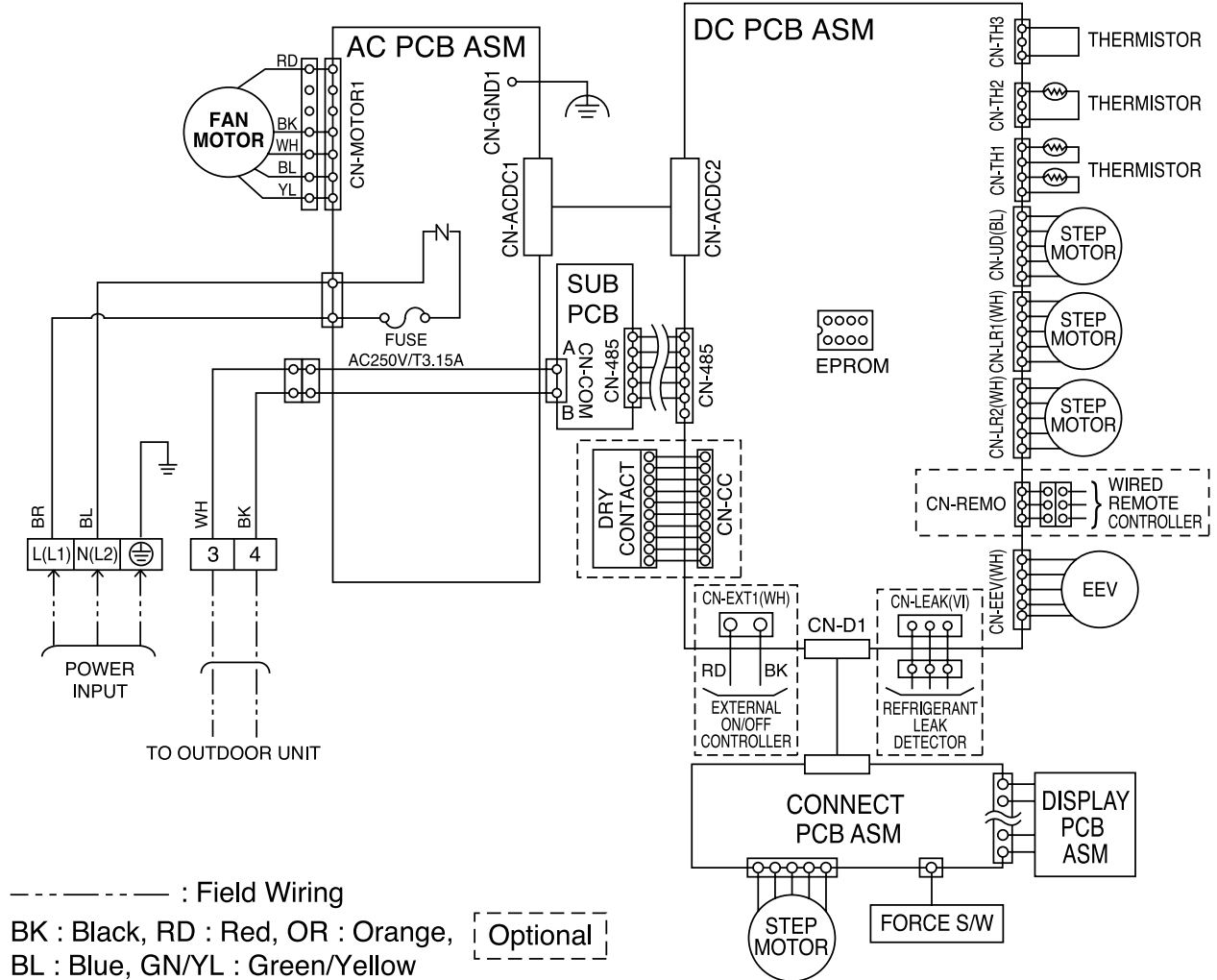


Table 13: Art Cool Gallery (Gen 4) SF Chassis Wiring Diagram Legend.

PCB Connection	Purpose	Function
CN-TH3	Pipe out thermistor	Pipe out thermistor connection
CN-TH2	Pipe in thermistor	Pipe in thermistor connection
CN-TH1	Return air thermistor	Return air thermistor connection
CN-UD	Step motor	Step motor output
CN-LR1	Step motor	Step motor output
CN-LR2	Step motor	Step motor output
CN-REMO	Wired remote controller	Wired remote controller connection
CN-EEV	EEV output	EEV control output
CN-EXT1	External on/off controller	External on/off controller connection
CN-CC	Dry contact	Dry contact connection
CN-485	Communication	Connection between indoor and outdoor units

\*To enable Generation 4 features, outdoor unit DIP switch no. 3 must be set to ON. Please refer to the Multi V IV, Multi V Water IV, Multi V S Engineering Manual for additional information.

Multi V Wall-Mounted Indoor Unit

Figure 58: Standard (Gen 4) Wall-Mounted SBL, SCL Chassis Wiring Diagram

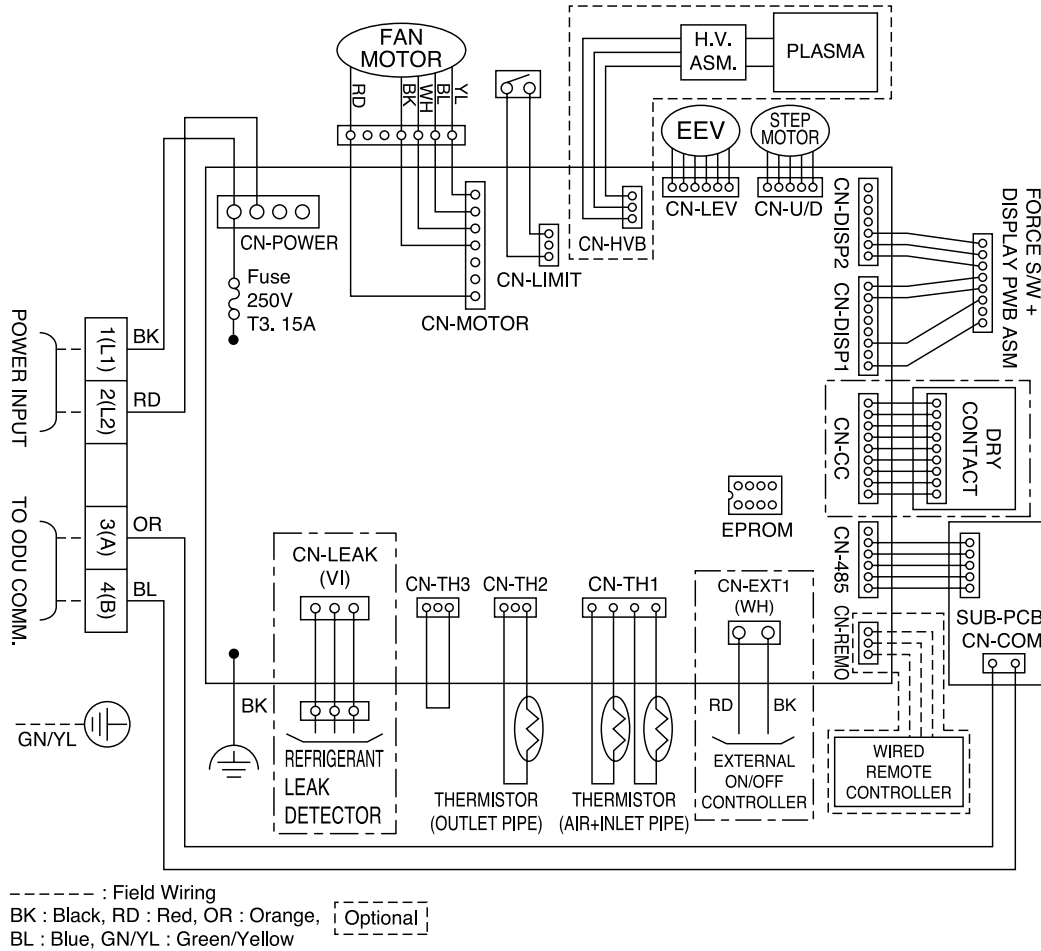


Table 14: Standard (Gen 4) Wall-Mounted SBL, SCL Chassis Wiring Diagram Legend

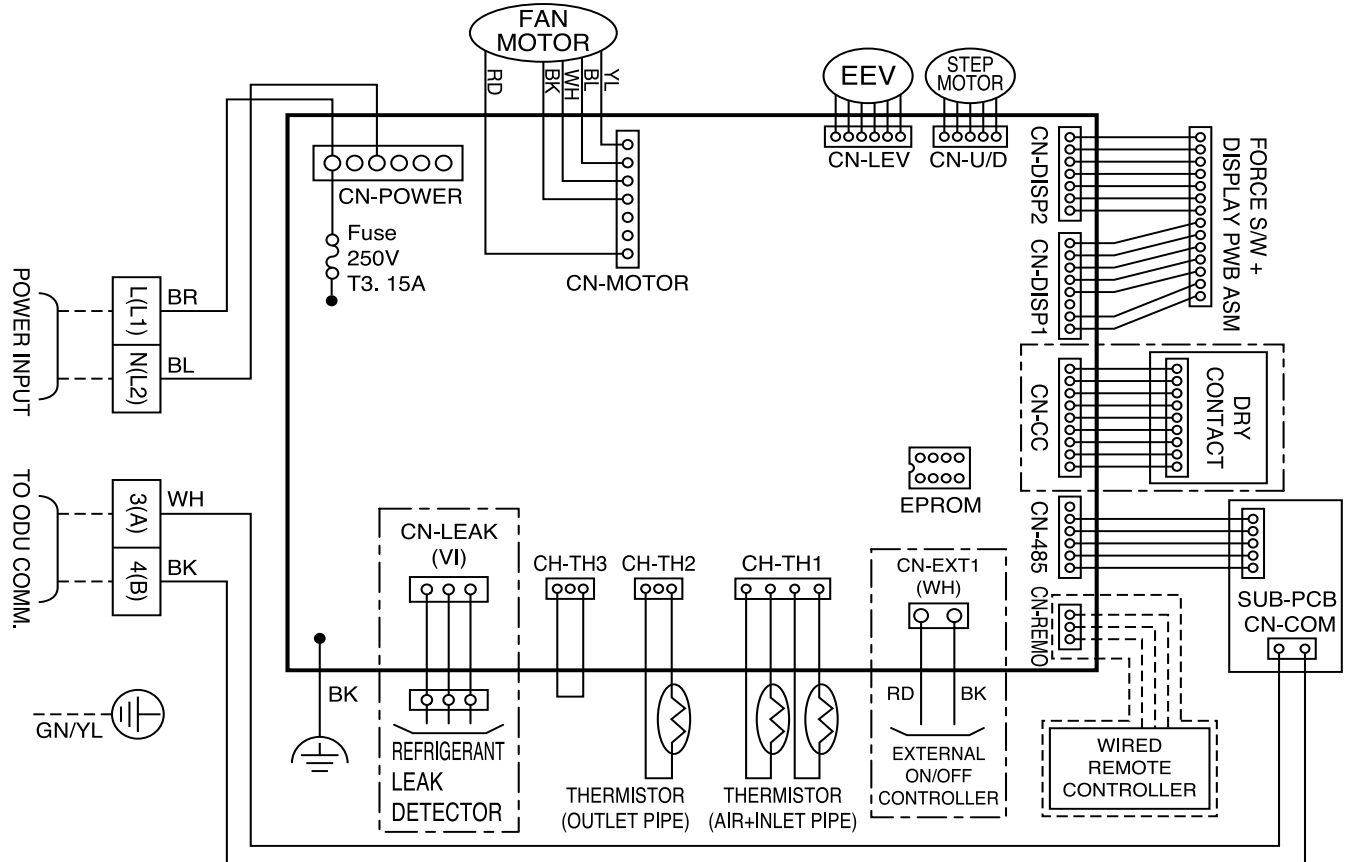
PCB Connection	Purpose	Function
CN-POWER	AC Power supply	AC Power line input for indoor controller
CN-MOTOR	Fan motor output	Motor output of BLDC
CN-HVB*	Air cleaner*	Air cleaner control*
CN-LEV	EEV output	EEV control output
CN-U/D	Step motor	Step motor output
CN-DISP2	Display	Display of indoor status
CN-DISP1	Display	Display of indoor status
CN-CC	Dry contact	Dry contact line
CN-485	Communication	Connection between indoor and outdoor units
CN-REMO	Remote controller	Remote control line
CN-EXT1	External ON / OFF controller	External ON / OFF controller connection
CN-TH1	Return air and inlet pipe thermistor	Return air and inlet pipe thermistor connection
CN-TH2	Outlet pipe thermistor	Outlet pipe thermistor connection
CN-TH3	Float switch	Float switch connection

\*Filter accessories are available separately. Always follow all local, state, and national building codes with the use of any product.

\*\*To enable Generation 4 features, outdoor unit DIP switch no. 3 must be set to ON. Please refer to the Multi V IV, Multi V Water IV, Multi V S Engineering Manual for additional information.

## Standard Wall-Mounted SV Chassis

Figure 59: Standard (Gen 4) Wall-Mounted SV Chassis Wiring Diagram



BK : Black    RD : Red    OR : Orange    WH : White    [Optional]    - - - - - : Field Wiring  
 BL : Blue    BR : Brown    GN/YL : Green/Yellow

Table 15: Standard (Gen 4) Wall-Mounted SV Chassis Wiring Diagram Legend

PCB Connection	Purpose	Function
CN-POWER	AC Power supply	AC Power line input for indoor controller
CN-MOTOR	Fan motor output	Motor output of BLDC
CN-LEV	EEV output	EEV control output
CN-U/D	Step motor	Step motor output
CN-DISP2	Display	Display of indoor status
CN-DISP1	Display	Display of indoor status
CN-CC	Dry contact	Dry contact line
CN-485	Communication	Connection between indoor and outdoor units
CN-REMO	Remote controller	Remote control line
CN-EXT1	External ON / OFF controller	External ON / OFF controller connection
CN-TH1	Return air and inlet pipe thermistor	Return air and inlet pipe thermistor connection
CN-TH2	Outlet pipe thermistor	Outlet pipe thermistor connection
CN-TH3	Float switch	Float switch connection

\*To enable Generation 4 features, outdoor unit DIP switch no. 3 must be set to ON. Please refer to the Multi V IV, Multi V Water IV, Multi V S Engineering Manual for additional information.



## Art Cool Mirror Wall-Mounted SE, S8 Chassis

Figure 61: Art Cool Mirror (Gen 2) Wall-Mounted SE, S8 Chassis Wiring Diagram

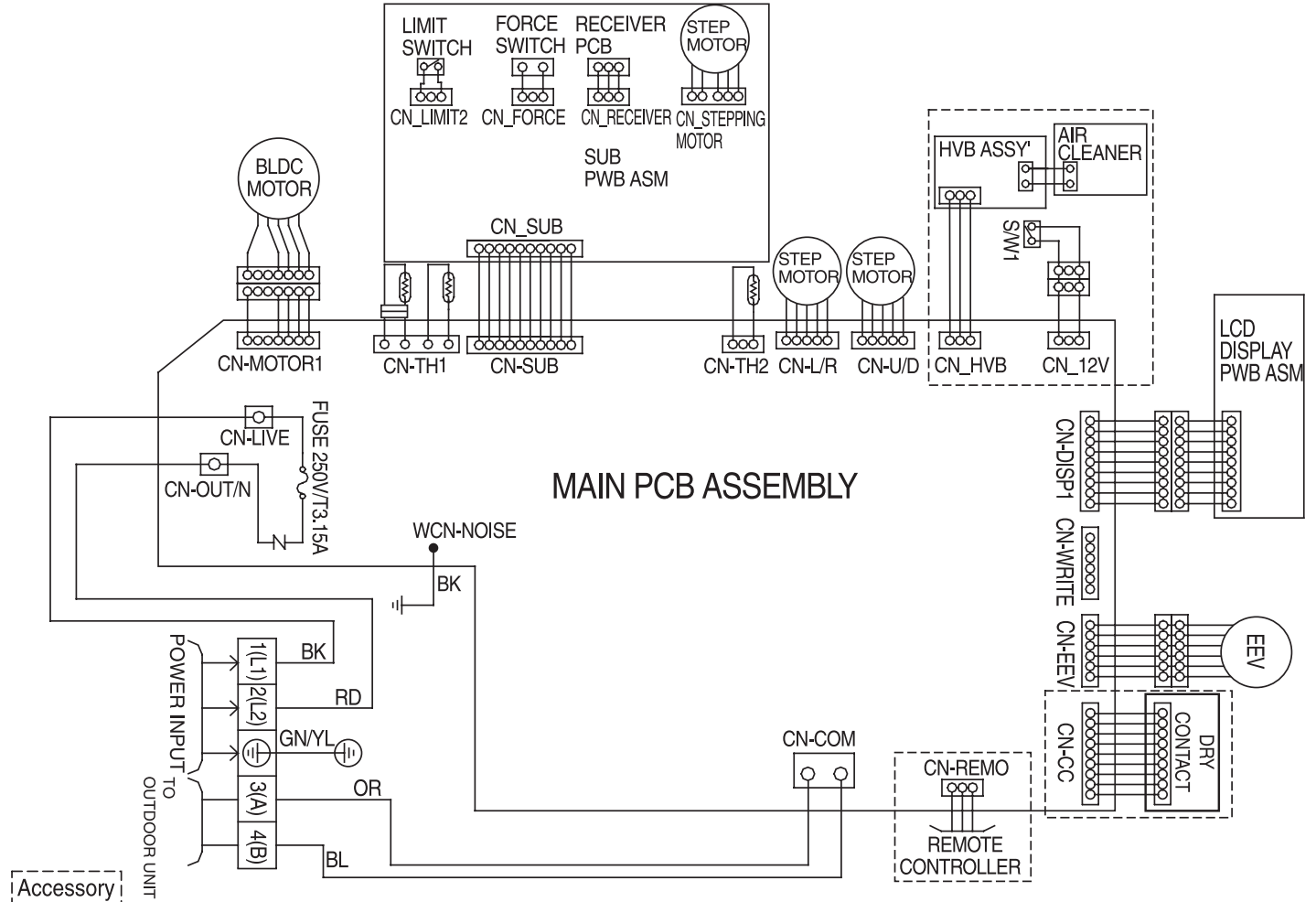


Table 17: Art Cool Mirror (Gen 2) Wall-Mounted SE, S8 Chassis Wiring Diagram Legend

PCB Connection	Purpose	Function
CN-MOTOR1	Fan motor output	Motor output of BLDC
CN-COM	Communication	Connection between indoor and outdoor
CN-EEV	EEV output	EEV control output
CN-L/R	Step motor	Step motor output for left/right
CN-U/D	Step motor	Step motor output
CN-TH1	Room/pipe sensor	Room & pipe thermistor
CN-TH2	Discharge pipe sensor	Discharge pipe thermistor
CN-SUC	Step motor (front)	Front panel step motor
CN-HVB	Air cleaner	Air cleaner control
CN-VFD	Display	Display of indoor status
CN-12V	Safety connection	Safety of indoor status
CN-REMO	Remote controller	Remote control line
CN-CC	Dry contact	Dry contact line

### Wall-Mounted Sensor Installation

Proper indoor unit operation depends on the location of the room sensor. A good location will protect the zone controller from direct sunlight and external local sources of water vapor, and heated or cooled air. If no mounting height was specified by the building designer, place the handy box approximately fifty-five (55) inches above the finished floor.

- It may be necessary to use a handy box that is sized in metric units, depending on the controller model. Check with your LG representative to verify which size of handy box is needed for the zone controller in question.
  - Use only LG-supplied communications cable. Using field-supplied cable may result in communications problems between the zone controller and the indoor unit.
  - Maintain the minimum distance required between the communications cable and power wiring. The minimum required space between the two is dependent on the voltage of the power wiring. Refer to the appropriate Multi V Outdoor Unit Engineering Manual for minimum distance specifications.
- ⊘ Do not route power wiring and communications cables in the same conduit.
  - ⊘ Do not cut the quick-connect plugs off or adjust the length of the cable. Keep the communications cable away from high voltage wires and electromagnetic field (EMF) producing equipment.

### Wall-Mounted Controller Installation

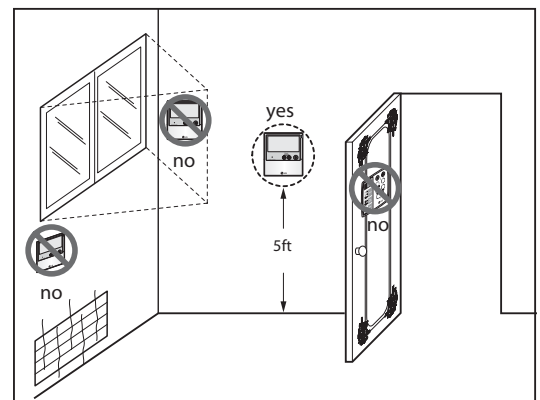
Since the room temperature sensor is inside the wired wall controller, the wired wall controller should be installed in a place away from direct sunlight, high humidity and direct supply of hot or cold air to maintain proper space temperature. Install the remote controller about five (5) feet above the 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

This remote controller is equipped with a seven segment LED display. For proper display of the remote controller LED's, the remote controller should be installed properly as shown below. The standard height is four (4) to five (5) feet from floor level.

1. Pull communications cable between the zone controller handy box (if used) and the indoor unit. The wall-mounted zone controller comes with a thirty-three (33) foot length of 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 additional cable length is needed, order a thirty-three- (33) foot LG Wired Remote Group Control Extension cable (Model No. [PZC-WRC1](#)).
4. If 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.

Figure 62: Wired Remote Controller Installation



## Controlling the Indoor Unit

The method and configuration of controlling the indoor unit will vary according to system requirements.

- Gallery and wall-mounted units can be controlled using a wireless handheld controller (sold separately). The wireless handheld controller also can be used to set Master/Slave and other functions for wall-mounted indoor units.
- It is possible to use a wireless remote controller at the same time as the wall controller.
- It is possible to control up to 16 indoor units with one wired remote controller (Group Control). Master indoor unit determines how Slave units operate.
- Set only one indoor unit to Master, set the others to Slave. After setting Group Control, turn off the power, and then turn it back on after one (1) minute. To verify indoor units have been set to Group Control, Master indoor unit will beep once, each Slave indoor unit will beep five (5) times.
- Gallery and wall-mounted indoor units can be connected in a control group with any other types of LG indoor units.
- It is possible to connect a Dry Contact and Central controller at the same time (Master indoor unit only). Some Wired Remote Controllers, however, can't operate when both Dry Contact and Central controller are connected.
- A Central controller can control all indoor units in a group by controlling the master unit of the group. (Set the address of the master indoor unit first.)
- Slave indoor units cannot be individually controlled by the Central controller. The Wired Remote Controller will display indoor unit(s) error(s).

## Group Control

Figures 63 to 66 show examples of typical control configurations. Figure 63 shows one wired remote controller configured as a Master to control a group of indoor units. Figure 64 shows two wired remote controllers, one configured as a Master and the other as a Slave. Figure 66 shows a system with indoor units and fresh air units configured as two groups, each with a Master wired controller. Configure the fresh air units as one group and the standard indoor units as another group. Figure 66 shows both a correct and an incorrect control configuration for this type of mixed unit system.

Figure 63: Group Control - Method 1

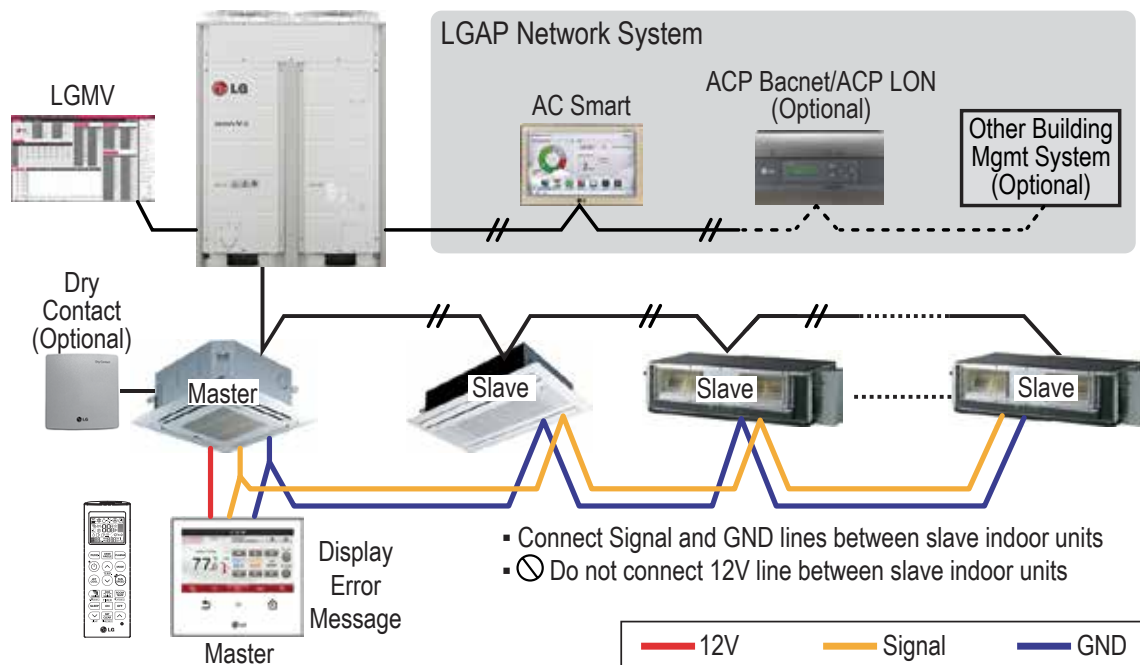


Figure 64: Group Control - Method 2

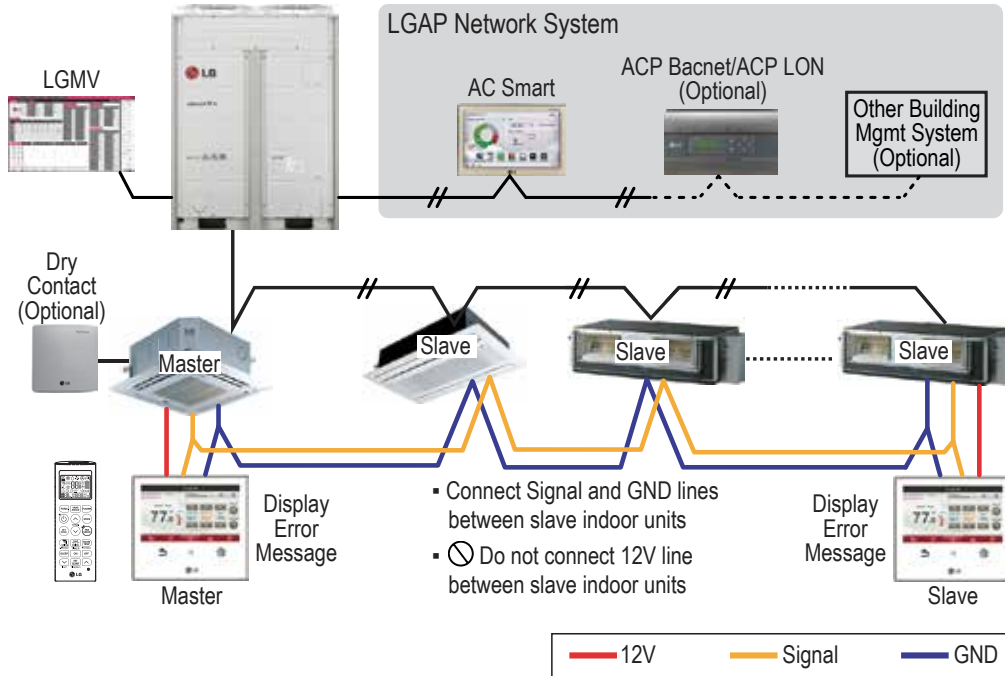


Figure 65: Group Control - Method 3

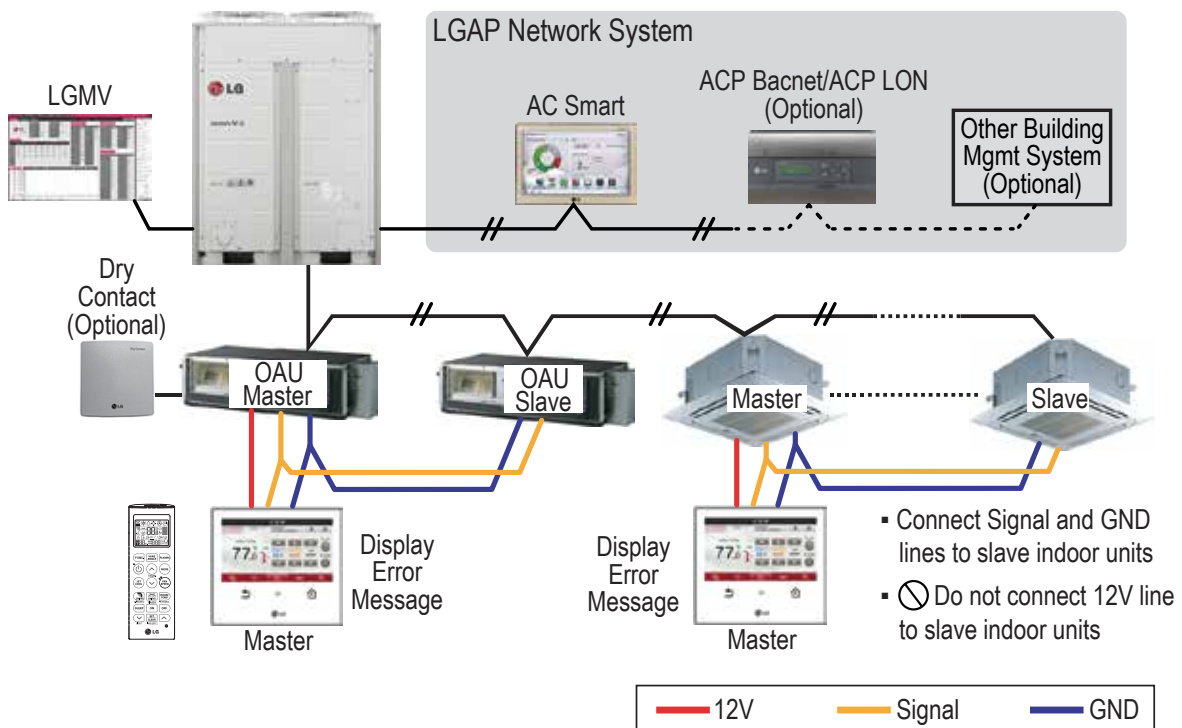
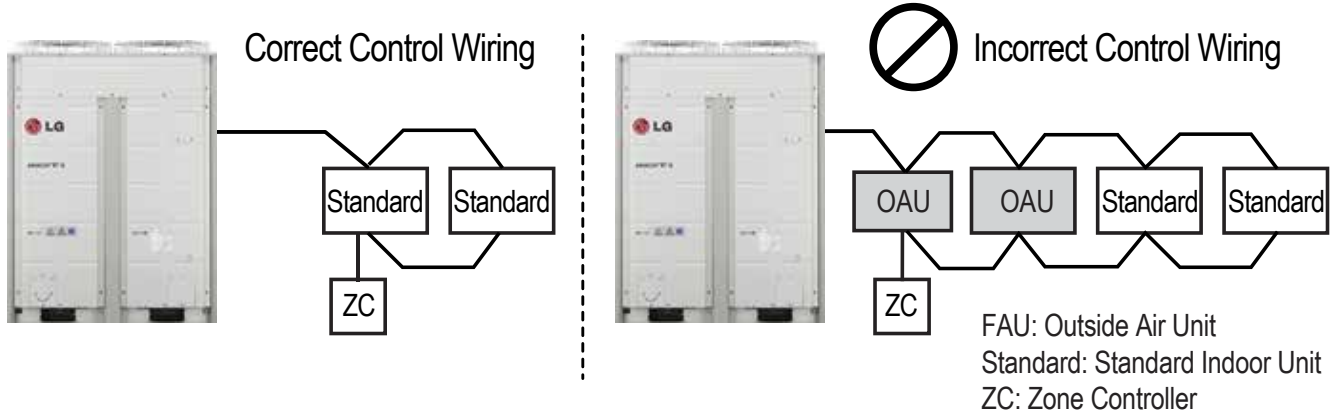


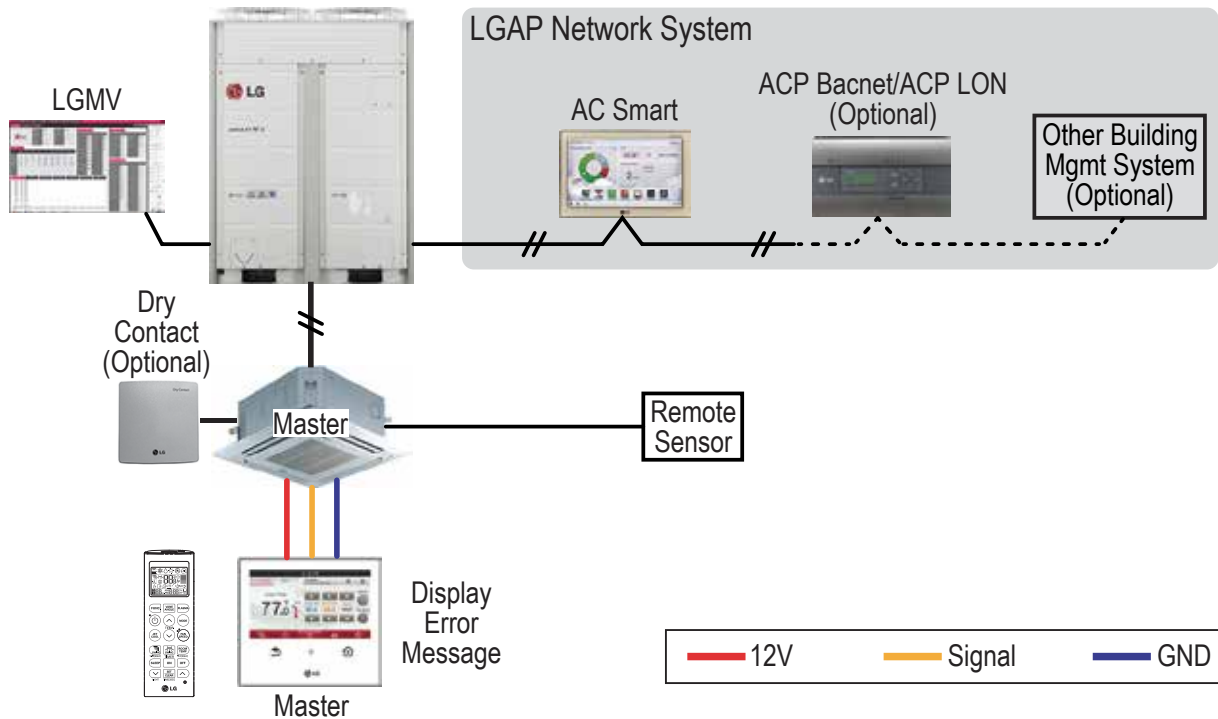
Figure 66: Control Wiring with Standard IDU and Fresh Air Unit



## Remote Control

Figure 67 shows an example of a control configuration with a remote sensor.

Figure 67: Remote Control



# INSTALLATION CHECKLIST



PAGE 1 of 2

System ID No.: \_\_\_\_\_ Indoor Unit ID.: \_\_\_\_\_

Checked by: \_\_\_\_\_ Date: \_\_\_\_\_ Signature: \_\_\_\_\_

4-Way Cassette Indoor Unit

	N/A	Not Complete	Complete
<b>Rough-In</b>			
Packing materials and literature removed from fan discharge.			
Airflow direction correct.			
Fan wheels spin without obstruction.			
Unit is properly supported – installation plate securely installed (Wall-mounted units) and bolts tight.			
Unit is level (condensate pump installations).			
Unit is canted toward gravity drain pan nipple (gravity drain installations only).			
Recommended minimum service clearances followed.			
Air filter is clean and properly installed.			
Does local code require a secondary drain pan under the indoor unit? Is a secondary drain line connected to the pan?			
<b>Ductwork (Ducted and Cassette Units Only)</b>	N/A	Not Complete	Complete
All seams sealed – no air leaks.			
High-static models only – minimum external static pressure requirements met.			
Ductwork is properly sized considering the available external static pressure rating of the indoor unit fan.			
No kinks present in the flexible ductwork. Ductwork is properly supported.			
Ductwork balancing dampers have been installed and are correctly adjusted or open.			
Grilles and registers are properly sized and installed (Applicable Models).			
<b>Refrigerant Piping</b>	N/A	Not Complete	Complete
A dry nitrogen purge rate of three (3) psig was maintained during all brazing activity.			
PVE refrigerant oil was used as a lubricant on flare fittings (POE type was NOT used).			
Field formed pipe flares are 45°.			
Flare fittings were properly tightened with a torque wrench.			
Refrigerant pipe is properly supported to keep lateral pressure off unit connections.			
Refrigerant shutoff valves are full port design with integral Schrader port rated for R410A (option).			
Shutoff valves have the same internal pipe diameter as the connected pipe (option).			
Two shutoff valves were installed; one (1) high pressure liquid, one (1) low pressure vapor (option).			
Shutoff valves installed with Schrader port between the indoor unit and the ball of the valve (option).			
<b>Condensate System</b>	N/A	Not Complete	Complete
Condensate pipe is properly sized and supported to keep lateral pressure off unit connections.			
Condensate pipe horizontal segments are sloped a minimum of 1/4"/100' of pipe away from the indoor unit.			
Condensate pipe and drain traps were sized using LG recommendations.			
Field-provided condensate line check valve was installed in the condensate pipe riser (option).			
Condensate traps were installed on gravity drain pipes (Applicable models only).			
Condensate line vertical rise between indoor unit bottom and high point of the line does not exceed 27'-1/2" (Ducted and Cassette Models).			
Condensate pump power has been disconnected (Ducted and Cassette indoor unit gravity-drain installations only).			
Condensate pump riser intersects the building main drain using an inverted trap with connection to the top half of the drain line with no more of a ±45° of vertical.			
If required by local code, is a secondary high level condensate shutoff switch present/wired properly (factory provided internal high level float switch will shut down cooling operation if high water level in the pan is detected. Applicable models only)?			
<b>Insulation</b>	N/A	Not Complete	Complete
Additional housing, refrigerant and condensate pipe insulation has been supplemented to prevent sweating while operating if indoor unit installed in abnormal environmental conditions. (Optional - job condition specific.)			
All pipes are independently insulated. All insulation seams and joints are airtight. Insulation is not compressed. Double layer insulation is provided at pipe supports and wall penetrations.			



System ID No.: \_\_\_\_\_ Indoor Unit ID.: \_\_\_\_\_

Checked by: \_\_\_\_\_ Date: \_\_\_\_\_ Signature: \_\_\_\_\_

<b>Electrical</b>	<b>N/A</b>	<b>Not Complete</b>	<b>Complete</b>
Power provided is single phase, ±10% of indoor unit nameplate specifications.			
Power wires properly sized and protected per NEC and local codes. Indoor unit is properly grounded.			
Power and communications conductors are separated by the recommended minimum distance.			
Terminal block screws are tight. Power wires are not in contact with terminals 3(A) and/or 4(B). Line voltage wires have fork terminals installed.			
Power wires are properly secured to the control box case to prevent wire tension at the terminal block.			
Wires are protected from chaffing at control box and conduit pipe penetrations.			
(Optional) Smoke detector is properly installed and wired. New batteries are installed (if applicable).			
Low voltage control cables are properly secured to the control panel case. Terminal block screws are tight and the cable is protected from sharp edges at control box case and conduit openings.			
Cables are installed at recommended distances from high voltage and EMF generating equipment.			
Outdoor unit / Indoor unit communications cable (terminals 3[A] and 4[B] or terminals 5[A] and 5[B] depending on model).			
Field provided communications cable is 18-2 twisted, stranded and shielded. Shield must be grounded to chassis at outdoor unit only. All terminations are made at the terminal block using ring terminals. No inline splices or wire nuts are present.			
Communications cable is plenum rated.			
Communications cable shield is tied back and is grounded at master only ONE end (at the master ODU).			
<b>Wall Mounted Zone Controller Communications</b>	<b>N/A</b>	<b>Not Complete</b>	<b>Complete</b>
LG factory provided zone controller stranded, shielded (white jacket) cable was used between the zone controller(s) and indoor unit(s).			
Zone controller cable has not been cut, spliced, or tied together with wire nuts. Factory plugs are present.			
Cable is securely plugged into the socket on the zone controller or the three screw terminals (controller model specific); Yellow to "Y", Red to "R", and Black to "B".			
Zone controller field settings have been adjusted for the application's space temperature sensing strategy.			
<b>Indoor Unit Control Panel</b>	<b>N/A</b>	<b>Not Complete</b>	<b>Complete</b>
Zone controller cable is securely plugged into the CN-REMO socket on the indoor unit circuit board.			
If an optional remote temperature sensor was installed, the associated cable is plugged into socket CN-ROOM (the factory return air thermistor has been unplugged).			
Indoor unit DIP switches have been adjusted for application (group control-master/slave; continuous fan operation; dry contact).			
If a gravity drain primary condensate system is used (condensate pipe ONLY connected to the lowest nipple) the CN-D/Pump plugged has been removed from the socket on the control board (Applicable models only).			
All plugs are properly seated in the sockets on the control board.			
Power and communications cables are properly restrained and separated.			

**Who to call for assistance**

Freight Damage and Unit Replacements	Your LG Manufacturer Representative
Missing Parts	Your LG Manufacturer Representative
Freight Damage and Unit Replacements	Your LG Manufacturer Representative
Received Wrong Indoor Unit Model	Your LG Manufacturer Representative
Installation, Startup, and Commissioning Technical Assistance	1-888-865-3026

**For warranty information, visit [www.lghvac.com](http://www.lghvac.com).**

*Inverter*



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