

# **MULTI V™**

## **OUTSIDE AIR UNIT ENGINEERING MANUAL**



48,100, 76,400, and 95,900 Btu/h

## **PROPRIETARY DATA NOTICE**

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A summary list of safety precautions is on page 3.

**For more technical materials such as submittals, catalogs, installation, owner's, and service manuals, visit [www.lghvac.com](http://www.lghvac.com).**





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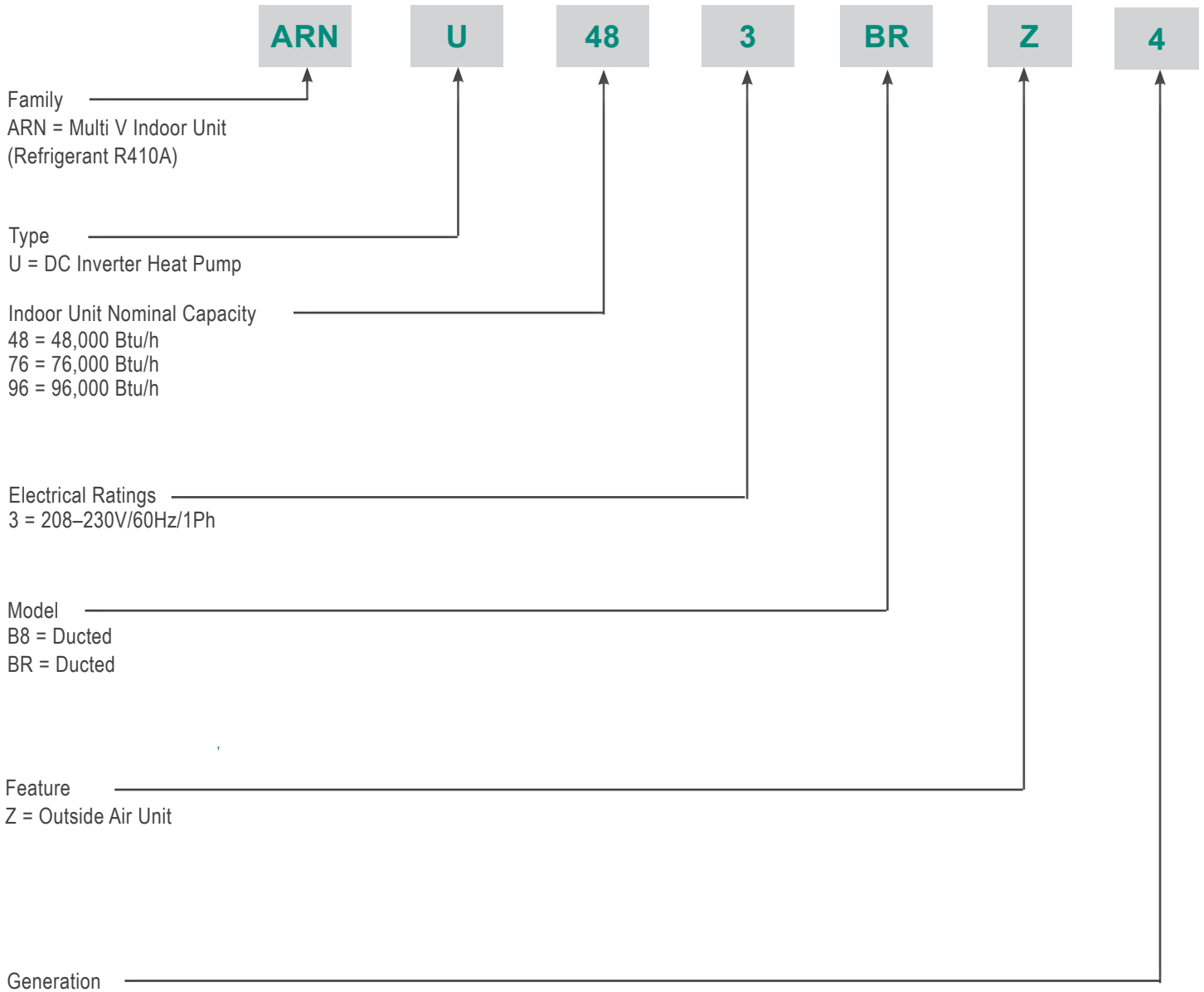
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**TABLE OF SYMBOLS**

 <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 should not be completed.</i>

# UNIT NOMENCLATURE



The proper design and installation of the refrigerant piping system is a critical element of a Multi V system. Multi V Heat Pump systems require two pipes between components – a liquid line and a vapor line. Multi V Heat Recovery systems require three pipes between the outdoor unit and the heat recovery unit – a liquid line, a low-pressure vapor line, and a high-pressure vapor line. A properly designed refrigerant piping system ensures that refrigerant is delivered to the indoor unit coils for optimal system performance and capacity.

LG Air Conditioner Technical Solution (LATS) software is a total design solution for LG Multi V air conditioning systems. This Windows®-based application assists the design engineer with specifying and sizing outdoor and indoor units (by calculating component capacity based on design conditions), laying out the refrigeration distribution pipe system, checking piping limitations, calculating refrigerant charge, and generating equipment schedules and piping diagrams in (.dxf) format for use on CAD building design drawings.\*

\* Windows® is a registered mark of Microsoft® Corporation.



To ensure that the refrigerant piping design meets LG's quality standards, a LATS refrigerant piping design must be provided with every Multi V order. Following the installation, if any changes or variations to the design are necessary, a new LATS file must be created and provided to LG prior to system commissioning to ensure the proper pipe size has not changed.

## Design Choices

LATS Multi V software is flexible, offering the HVAC system engineer an easy to use Tree mode.

### Tree Mode

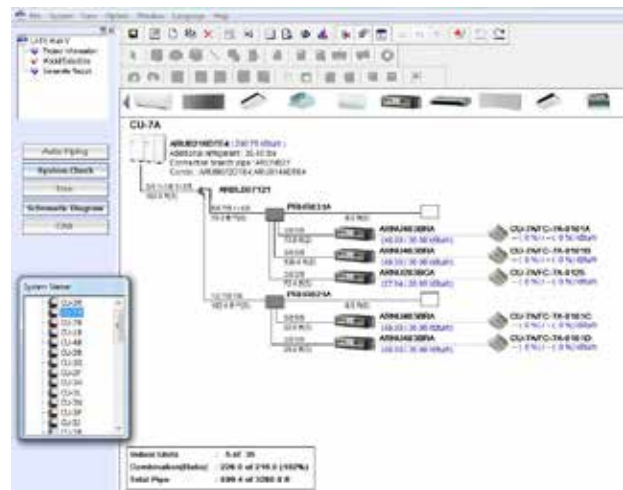
Using the Tree mode, the engineer can quickly create a one-line schematic drawing of a Multi V system. Integration of the engineered pipe system into the building drawings is done at a later date by the draftsman using standard drafting software tools.

- Import building loads from an external file (.xls format).
- System components selected using an easy drag and drop process.
- Automatically analyzes and checks the design complies with most piping design limitations.
- Sizes refrigerant piping.
- Generates a system engineering report (.xls format).
- Generates an equipment schedule (.xls or .dxf format).
- Generates a system piping diagram (.dxf format).

## LATS Report

LATS Multi V software generates a report file (.xls format) containing project design parameters, cooling and heating design day system component performance, and capacity data. The report calculates the system combination ratio, calculates the system refrigerant charge, and provides detailed bill of material information including a list of Multi V outdoor units, air handlers, control devices, accessories, refrigerant pipe sizes segregated by building, by system, by pipe size, and by pipe segments.

Figure 1: Screenshot of LATS Pipe System Design Tool in Tree Mode.





# OUTSIDE AIR UNIT



- Mechanical Specifications on page 8**
- General Data on page 9**
- Electrical Data on page 10**
- External Dimensions on page 11**
- Electrical Wiring Diagram on page 13**
- Refrigerant Flow Diagram on page 17**
- External Static Pressure and Air Flow Charts on page 18**
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## Casing

The case is designed to mount concealed above a finished ceiling. Fan supply air is front horizontal with a dedicated rear horizontal return. The unit is manufactured with coated metal. Cold surfaces are covered with a coated polystyrene insulating material. The cold surface areas of the case are covered externally with sheet insulation made of Ethylene Propylene Diene Monomer (M-Class) (EPDM) conforming to ASTM Standard D-1418. The case is provided with hanger brackets designed to support the unit weight on four corners. Hanger brackets have pre-punched holes designed to accept field supplied, all-thread rod hangers.

## Fan Assembly and Control

The unit has Sirocco fans made of high strength ABS GP-2200 polymeric resin. Fans are directly driven and mounted on a common shaft. The fan motor is a Brushless Digitally Controlled (BLDC) design with permanently lubricated and sealed ball bearings. The fan motor includes thermal, overcurrent and low RPM protection. The fan / motor assembly is mounted on vibration attenuating rubber grommets. The fan impeller is statically and dynamically balanced. The fan speed is controlled using a microprocessor based, direct digital control algorithm that provides a high fan speed in cooling thermal ON and low fan speed in cooling thermal OFF, high fan speed in heating thermal ON and fan off in heating thermal OFF. The fan speeds can be field adjusted between low, medium, and high speeds and DIP switch settings will allow the fan to run constantly during defrost or oil return modes. Each setting can be field adjusted from the factory setting (RPM / ESP) to compensate for additional resistance to airflow caused by field connected ductwork or other airflow restricting devices.

## Air Filter

Return air is filtered with a removable, washable filter with antifungal treatment. MERV 13 filter modules with plenums available.

## Microprocessor Controls

The unit is provided with an integrated microprocessor-based controller. Two temperature thermistors are factory-mounted in the entering and discharge air streams. All unit operation parameters, excluding the unit operating schedule, are stored in non-volatile memory resident on the unit microprocessor. Operating schedules are stored in select models of the optional, wall-mounted, local, or central controller. The field supplied communication cable between the outside air unit(s) and outdoor unit is to be a minimum of 18 AWG, 2-conductor, stranded, and shielded cable (RS-485), terminated via screw terminals on the control boards. The microprocessor control provides the following functions: auto addressing, self-diagnostics, auto restart following power restoration, test run, and will operate the indoor unit using one of four operating modes:

1. Auto Changeover (Heat Recovery only)
2. Heating
3. Cooling
4. Fan Only

For Heat Recovery systems the Auto Changeover setting automatically switches control of the outside air unit between cooling and heating modes based on space temperature conditions.

For Heat Pump systems, heated or cooled air delivery is dependent upon outdoor unit operating mode.

In Heating mode, the microprocessor control will activate the outside air unit when indoor room temperature falls below setpoint temperature and signals the outdoor unit to begin heating cycle. The



Figure 2: B8 Frame Outside Air Unit and Included Controller.

outside air unit fan operation is delayed until coil pipe temperature reaches 76°F. Significant airflow is generated when pipe temperature reaches 80°F. In lieu of factory return air thermistor, screw terminals on the microprocessor circuit board accommodate various models of wall-mounted local controllers and/or a wall-mounted remote temperature sensor. The unit microprocessor is capable of accepting discharge air temperature readings concurrently from either:

1. Factory mounted return air thermistor or the optional wall-mounted wired remote temperature sensor
2. Factory mounted discharge air thermistor

A single indoor unit has the capability of being controlled by up to two local wired controllers. The microprocessor controls space temperature using the value provided by the temperature sensor sensing a space temperature that is farthest away from the temperature set-point. The microprocessor control provides a cooling or heating mode test cycle that operates the unit for 18 minutes without regard to the space temperature. If the system is provided with an optional wall-mounted local or central controller, displayed diagnostic codes are specific, alpha numeric, and provide the service technician with a reason for the code displayed.

## Condensate Lift/Pump

The outside air unit is provided with a factory installed and wired condensate lift/pump capable of providing a maximum 27.5 inch lift from the bottom exterior surface of the unit casing. The unit drain pan is provided with a secondary drain port/plug allowing the pan to be drained for service. The lift pump comes with a safety switch that will shut off indoor unit if condensate rises too high in the drain pan.

## Condensate Drain Pan

The condensate drain pan is constructed of high impact polystyrene resin (HIPS).

## Coil

The outside air unit coil is constructed with grooved design copper tubes with slit coil fins, two (2) to three (3) rows, nineteen (19) to twenty-one (21) fins per inch.

## Controls Features

- Auto changeover (Heat Recovery only)
- Auto operation
- Auto restart
- External on/off control
- Dual setpoint control\*
- Filter life and power consumption display\*
- Multiple auxiliary heater applications\*
- Group control
- External static pressure control
- Hot start
- Self diagnostics
- Timer (on / off)
- Weekly schedule
- Fan speed control

*\*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.*



Table 1: Outside Air Unit (BR and B8 Frame) General Data.

Model No.	ARNU483BRZ4	ARNU763B8Z4	ARNU963B8Z4
<i>Cooling Mode Performance</i>			
Capacity (Btu/h)	48,100	76,400	95,900
Power Input <sup>1</sup> (W)	169	230	360
<i>Heating Mode Performance</i>			
Capacity (Btu/h)	46,115	73,080	91,360
Power Input <sup>1</sup> (W)	169	230	360
<i>Entering Air</i>			
Cooling Max. (°F WB)	90	90	90
Heating Min. (°F DB)	23	23	23
<i>Unit Data</i>			
Refrigerant Type <sup>2</sup>	R410A		
Refrigerant Control	EEV		
Sound Pressure <sup>3</sup> dB(A) (H/M/L)	41 / 40 / 38	45 / 43 / 43	47 / 45 / 45
Dimensions (in.)	48-7/16 x 15 x 23-1/4	61-1/2 x 18-1/8 x 27-1/8	
Net Unit Weight (lbs.)	99	161	
Shipping Weight (lbs.)	119	191	191
Communication Cable <sup>4</sup> (No. x AWG)	2 x 18	2 x 18	2 x 18
<i>Coil</i>			
Rows x Columns x FPI	3 x 13 x 19	3 x 20 x 19	3 x 20 x 19
Area (ft. <sup>2</sup> )	4.09	6.35	6.35
<i>Fan</i>			
Type	Sirocco	Sirocco	Sirocco
Motor	1	1	1
Motor/Drive	Brushless Digitally Controlled / Direct		
Airflow Rate H/M/L (CFM) High Mode (Factory Set)	664 / 519 / 519	837 / 446 / 446	1,261 / 837 / 837
External Static Pressure (in. wg) High Mode (Factory Set)	0.7	0.87	0.87
<i>Piping</i>			
Liquid Line (in., O.D.)	3/8 Flare	3/8 Flare	3/8 Flare
Vapor Line (in., O.D.)	5/8 Flare	3/4 Brazed	7/8 Brazed
Condensate Line (in., I.D.)	1	1	1

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 feet of refrigerant line per outside air unit and a 0 feet level difference between outdoor unit and outside air units.

Cooling capacity rating based on outdoor temperature conditions at 91.4°F dry bulb (DB) and 82.4°F wet bulb (WB).

Heating capacity rating based on outdoor temperature conditions at 32°F dry bulb (DB) and 26.78°F wet bulb (WB).

Minimum discharge air setpoint in cooling mode is 64°F.

<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, stranded, shielded and must comply with applicable and national code. 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 2: Outside Air Unit (BR and B8 Frame) Electrical Data.

Model	Voltage Range	MCA	MOP	Rated Amps (A)	Power Supply			Power Input (W)	
					Hz	Volts	Phase	Cooling	Heating
ARNU483BRZ4	208-230	1.5	15	0.78	60	208-230	1	169	169
ARNU763B8Z4		2.7		1.36				230	230
ARNU963B8Z4		3.7		2.15				360	360

MCA: Minimum Circuit Ampacity.

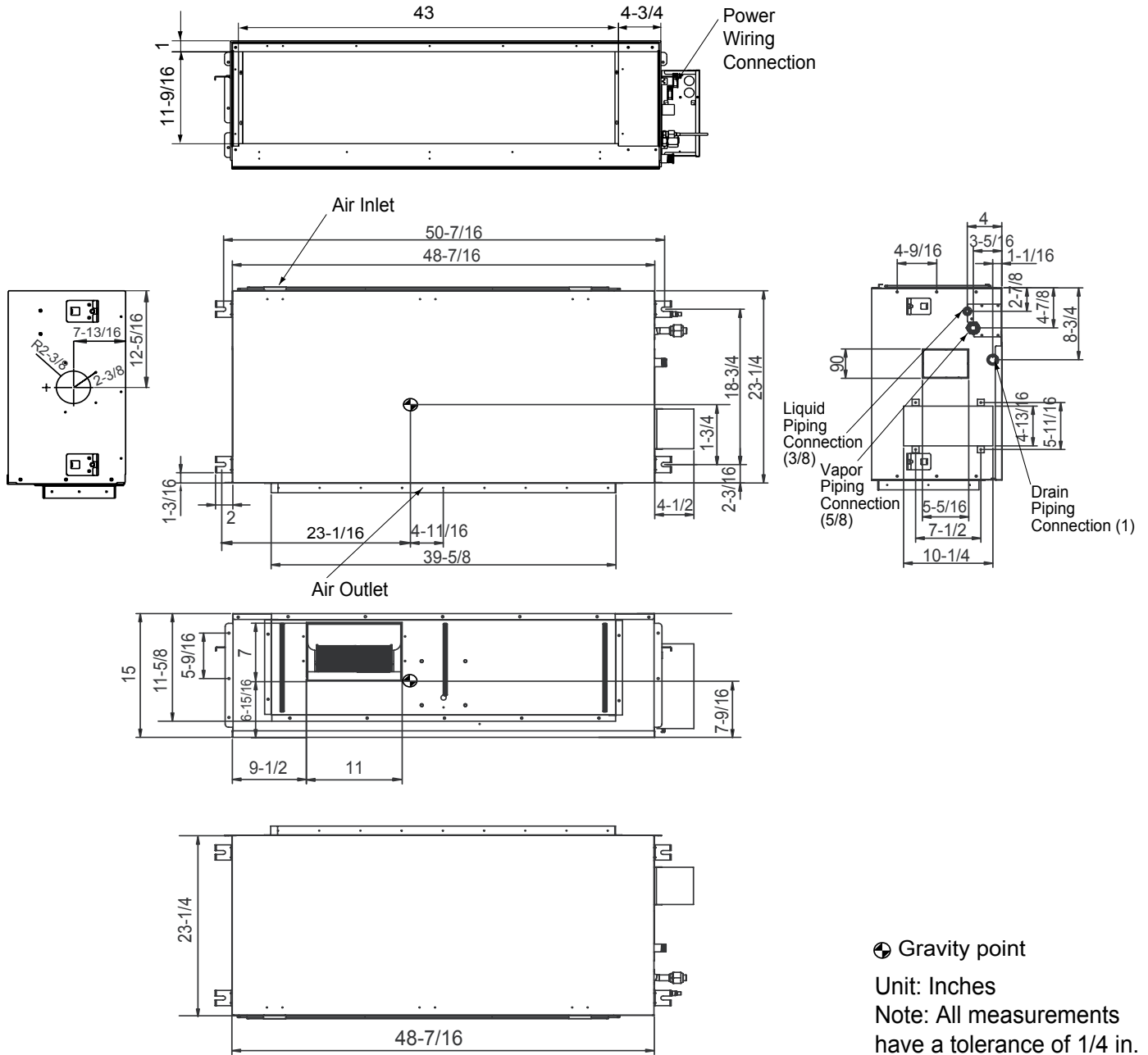
MOP: Maximum Overcurrent Protection.

Units are suitable for use on an electrical system where voltage supplied to unit terminals is within the listed range limits.

Select wire size based on the larger MCA value.

Instead of fuse, use the circuit breaker.

Figure 3: ARNU483BRZ4 Dimensions.



# EXTERNAL DIMENSIONS



## B8 Units

Figure 4: ARNU763B8Z4 and ARNU963B8Z4 Dimensions.

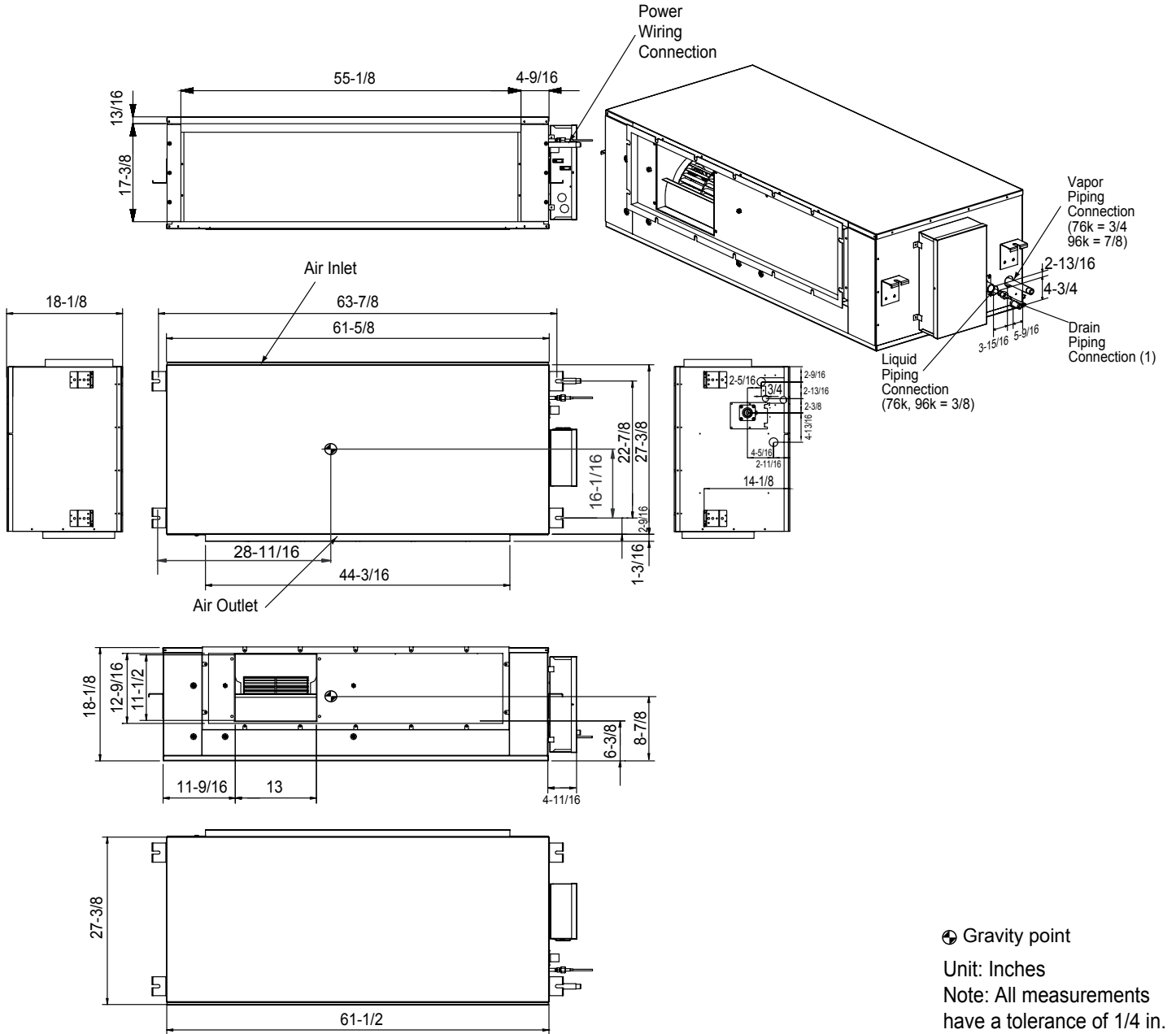
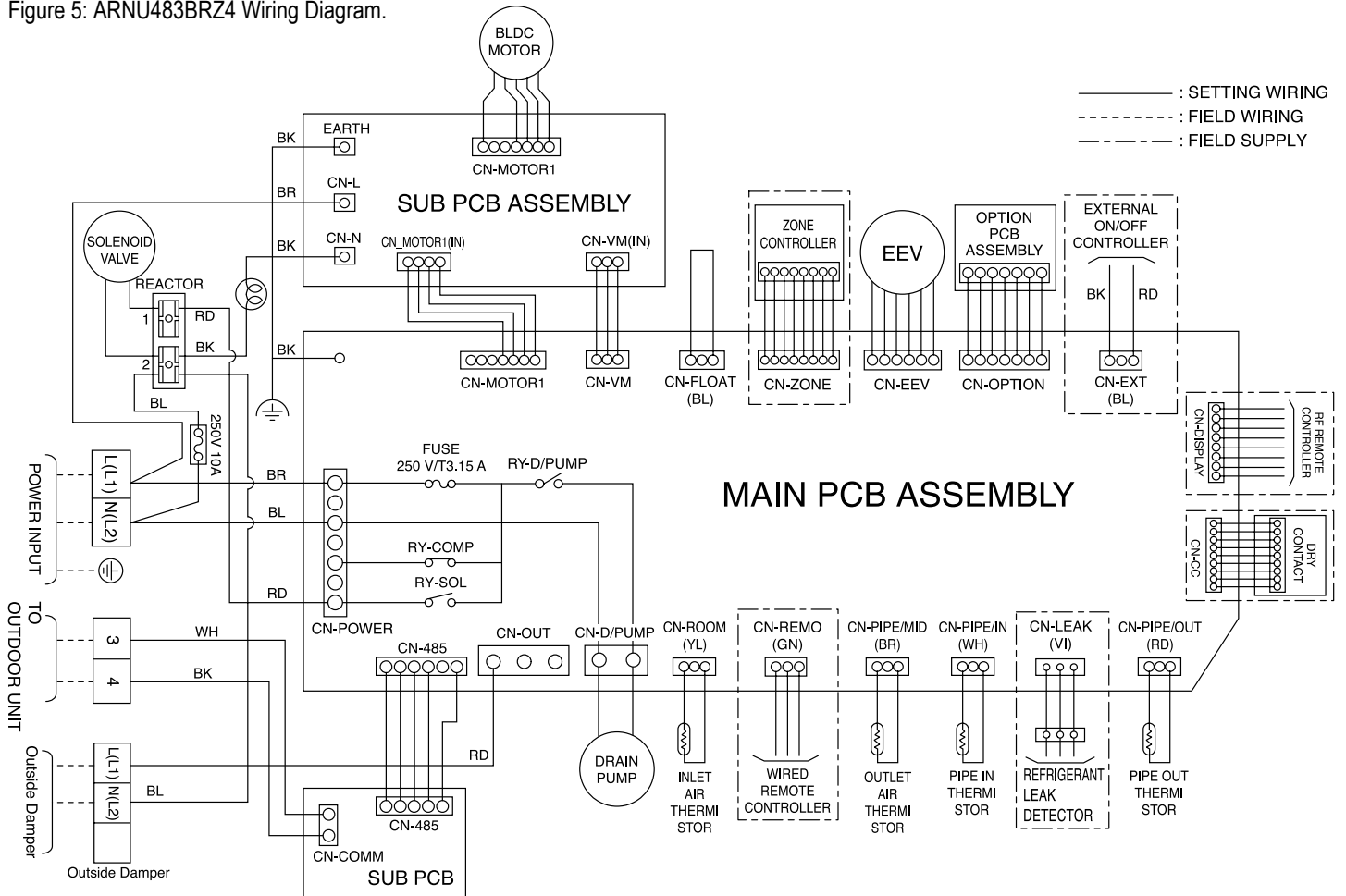


Figure 5: ARNU483BRZ4 Wiring Diagram.



# ELECTRICAL WIRING DIAGRAM



## BR Units

Table 3: ARNU483BRZ4 Wiring Diagram Legend.

Terminal	Purpose	Function
CN-POWER	AC Power supply	AC Power line
CN-MOTOR1	Fan motor output	Motor output of BLDC
CN-FLOAT	Float switch input	Float switch sensing
CN-ZONE	Zone controller	Zone controller connection
CN-EEV	EEV Output	EEV control output
CN-OPTION	Optional PCB EPROM	Option PCB connection
CN-EXT	External on / off controller	External on / off Controller connection
CN-DISPLAY	Display	Display of indoor status
CN-CC	Dry contact	Dry Contact connection
CN-PIPE/OUT	Discharge pipe sensor	Pipe out thermistor
CN-LEAK	Leak detector	Leak detector connection
CN-PIPE/IN	Suction pipe sensor	Pipe in thermistor
CN-PIPE/MID	Outlet air thermistor	Outlet air thermistor connection
CN-REMO	Wired remote controller	Wired remote control connection
CN-ROOM	Room sensor	Room air thermistor
CN-D/PUMP	Drain pump output	AC output for drain pump
CN-OUT	Outdoor air damper output	Output to open motorized outdoor air damper
CN-485	Communication	Connection between indoor and outdoor units

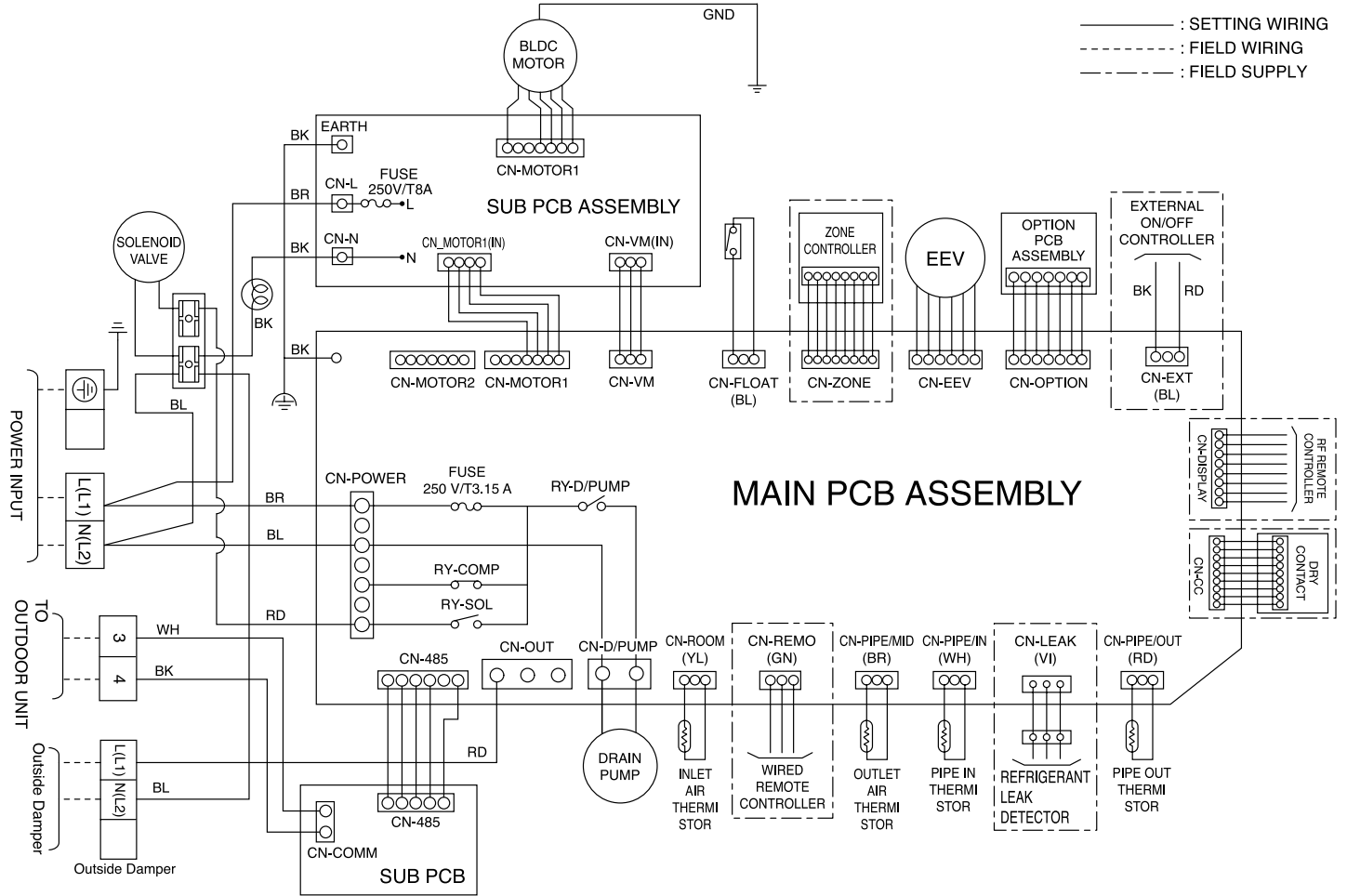
Table 4: ARNU483BRZ4 DIP Switch Settings.

DIP Switch Setting		Off	On	Remarks
SW3	GROUP CONTROL	Master	Slave	Group control setting using 7-Day Programmable Controller; selects Master / Slave on each indoor unit
SW4	DRY CONTACT MODE	Variable	Auto	Sets operation mode for optional Dry Contact accessory 1. Variable: Auto or Manual Mode can be set through 7-Day Programmable Controller or Wireless Remote Controller (factory default setting is Auto if there is no setting) 2. Auto: For Dry Contact, it is always Auto mode
SW5	CONTINUOUS FAN	Off	On	Selects continuous fan for ducted indoor units. 1. On: Indoor unit fan will always operate at a set fan speed, except when the system is off, or the outdoor unit is in defrost mode (when the outdoor unit is in defrost mode, the fan will operate at super low fan speed) 2. Off: Indoor unit fan speed can be changed by on / off
SW7	OPERATION RANGE	Off	On	1. On: Extends maximum entering air operating temperature range to 118°F. 2. Off: Default value. Maximum entering air operating temperature range is 109°F

\*For Gen 4 Multi V ducted units, DIP Switches 1, 2, 6 through 8 must be set to OFF. These DIP switches are used for other models.

\*\*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.

Figure 6: ARNU763B8Z4 and ARNU963B8Z4 Wiring Diagram.



# ELECTRICAL WIRING DIAGRAM



## B8 Units

Table 5: ARNU763B8Z4 and ARNU963B8Z4 Wiring Diagram Legend.

Terminal	Purpose	Function
CN-POWER	AC Power supply	AC Power line
CN-MOTOR2	Fan motor output	Motor output of BLDC
CN-MOTOR1	Fan motor output	Motor output of BLDC
CN-FLOAT	Float switch input	Float switch sensing
CN-ZONE	Zone controller	Zone controller connection
CN-EEV	EEV Output	EEV control output
CN-OPTION	Optional PCB EPROM	Option PCB connection
CN-EXT	External on / off controller	External on / off Controller connection
CN-DISPLAY	Display	Display of indoor status
CN-CC	Dry contact	Dry Contact connection
CN-PIPE/OUT	Discharge pipe sensor	Pipe out thermistor
CN-LEAK	Leak detector	Leak detector connection
CN-PIPE/IN	Suction pipe sensor	Pipe in thermistor
CN-PIPE/MID	Outlet air thermistor	Outlet air thermistor connection
CN-REMO	Wired remote controller	Wired remote control connection
CN-ROOM	Room sensor	Room air thermistor
CN-D/PUMP	Drain pump output	AC output for drain pump
CN-OUT	Outdoor air damper output	Output to open motorized outdoor air damper
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SW5	CONTINUOUS FAN	Off	On	Selects continuous fan for ducted indoor units. 1. On: Indoor unit fan will always operate at a set fan speed, except when the system is off, or the outdoor unit is in defrost mode (when the outdoor unit is in defrost mode, the fan will operate at super low fan speed) 2. Off: Indoor unit fan speed can be changed by on / off
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Figure 7: BR and B8 Unit Refrigerant Flow Diagram.

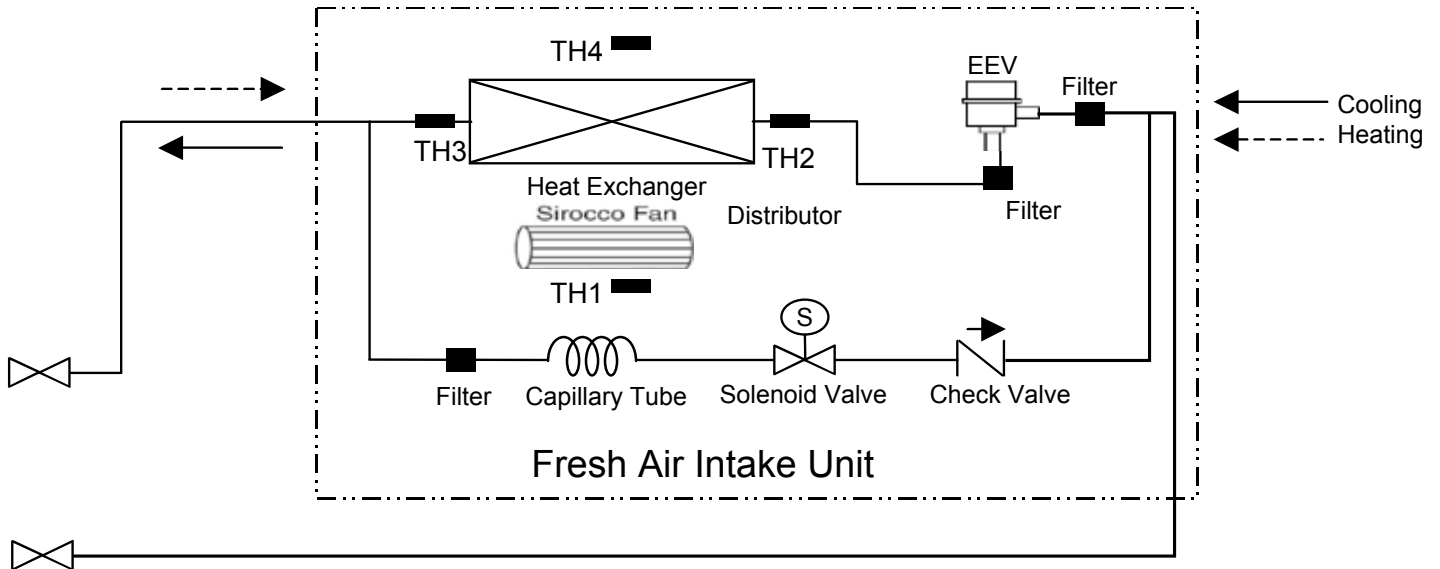


Table 7: BR and B8 Unit Refrigerant Pipe Connection Port Diameters.

Model	Liquid (inch)	Vapor (inch)
ARNU483BRZ4	3/8 Flare	5/8 Flare
ARNU763B8Z4		3/4 Brazed
ARNU963B8Z4		7/8 Brazed

Table 8: BR and B8 Unit Thermistors.

Thermistor	Description
TH1	Inlet air thermistor
TH2	Pipe in thermistor
TH3	Pipe out thermistor
TH4	Outlet air thermistor

**Note:**

- The solenoid valve will open in heating mode thermal ON, defrost, and oil return modes.
- The solenoid valve will close when the outside air unit is OFF, in cooling mode, or heating mode thermal OFF.

# EXTERNAL STATIC PRESSURE AND AIR FLOW CHARTS



## BR and B8 Units

Table 9: ARNU483BRZ4 External Static Pressure and Air Flow Table.

Setting Value	Static Pressure (in. wg)										
	0.19	0.23	0.31	0.39	0.47	0.55	0.59	0.62	0.67	0.71	0.79
70	558	-	-	-	-	-	-	-	-	-	-
75	660	565	-	-	-	-	-	-	-	-	-
80	784	702	480	-	-	-	-	-	-	-	-
85	854	826	628	-	-	-	-	-	-	-	-
87	890	851	692	-	-	-	-	-	-	-	-
90	946	900	773	561	-	-	-	-	-	-	-
92	992	953	805	642	374	-	-	-	-	-	-
94	1,024	953	847	699	487	-	-	-	-	-	-
96	1,070	1,006	883	794	558	-	-	-	-	-	-
98	-	1,052	935	805	614	378	-	-	-	-	-
101	-	1,123	988	854	724	565	-	-	-	-	-
103	-	1,154	1,031	914	777	582	417	-	-	-	-
106	-	-	1,091	995	868	702	537	420	-	-	-
111	-	-	-	1,087	999	854	731	625	558	519	-
116	-	-	-	-	1,084	974	890	854	791	664	473
121	-	-	-	-	-	1,073	1,048	960	928	904	660
126	-	-	-	-	-	-	-	1,010	974	967	914
130	-	-	-	-	-	-	-	-	-	-	935

Table 10: ARNU763B8Z4 and ARNU963B8Z4 External Static Pressure and Air Flow Table.

Setting Value	Static Pressure (in. wg)									
	0.23	0.35	0.47	0.59	0.71	0.80	0.86	0.90	0.98	
55	896	-	-	-	-	-	-	-	-	
60	1,188	-	-	-	-	-	-	-	-	
65	1,412	1,069	-	-	-	-	-	-	-	
70	1,639	1,264	611	-	-	-	-	-	-	
75	1,798	1,601	1,256	-	-	-	-	-	-	
80	1,969	1,832	1,513	938	-	-	-	-	-	
85	-	1,914	1,756	1,506	738	-	-	-	-	
88	-	-	1,861	1,639	1,190	-	-	-	-	
90	-	-	1,855	1,723	1,415	814	-	-	-	
92	-	-	-	1,797	1,564	828	-	-	-	
94	-	-	-	1,797	1,650	1,400	490	-	-	
96	-	-	-	-	1,759	1,555	853	834	-	
98	-	-	-	-	1,753	1,698	1,402	892	511	
100	-	-	-	-	-	1,703	1,502	1,424	546	
102	-	-	-	-	-	-	1,638	1,621	1,363	
105	-	-	-	-	-	-	-	1,642	1,604	

1. All static pressure air flow rates are listed in CFM.
2. The tables above show the correlation between air flow rates and external static pressure.
3. The tables above show the available external static pressure range.

**Note:**

If the external static pressure of the installed Outside Air unit is less than the lowest value (as mentioned in the table), the outside air unit components can fail.



# EXTERNAL STATIC PRESSURE AND AIR FLOW CHARTS

BR and B8 Units

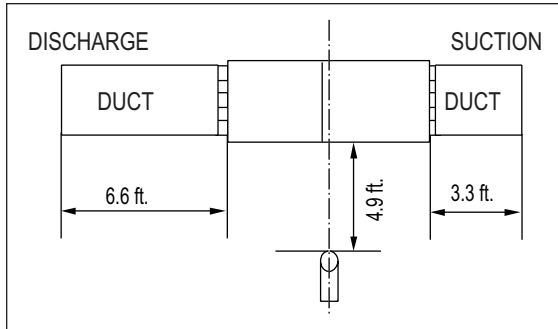
Table 11: BR and B8 Unit External Static Pressure Ranges.

Model	Capacity (MBh)	Mode		Setting Value	Standard ESP (in. wg)	CFM	Min. ESP (in. wg)	Max. ESP (in. wg)
ARNU48GBRZ4	48	High (Factory Set)	HI	116	0.7	664	0.39	0.79
			Mid	110	0.7	519	0.39	0.79
ARNU76GB8Z4	76	High (Factory Set)	HI	95	0.86	837	0.47	0.98
			Mid	93	0.86	466	0.47	0.98
ARNU96GB8Z4	96	High (Factory Set)	HI	97	0.86	1,260	0.47	0.98
			Mid	95	0.86	837	0.47	0.98

The table above shows the available E.S.P. range.

## Sound Pressure Levels

Figure 8: Sound Pressure Measurement Location.



- Measurements are taken 4.9 ft away from the front of the unit.
- Sound pressure levels are measured in dB(A) with a tolerance of  $\pm 3$ .
- Sound pressure levels are tested in an anechoic chamber under ISO Standard 3745.

Operating Conditions:

- Power source: 220V/60 Hz
- Sound level will vary depending on a range of factors including the construction (acoustic absorption coefficient) of a particular room in which the unit was installed.

Table 12: BR and B8 Unit Sound Pressure Levels.

Model	Sound Pressure Levels dB(A)		
	High Fan Speed	Medium Fan Speed	Low Fan Speed
ARNU483BRZ4	41	40	38
ARNU763B8Z4	45	43	43
ARNU963B8Z4	47	45	45

Figure 9: ARNU483BRZ4, ARNU763B8Z4, and ARNU963B8Z4 Sound Pressure Level Diagrams.

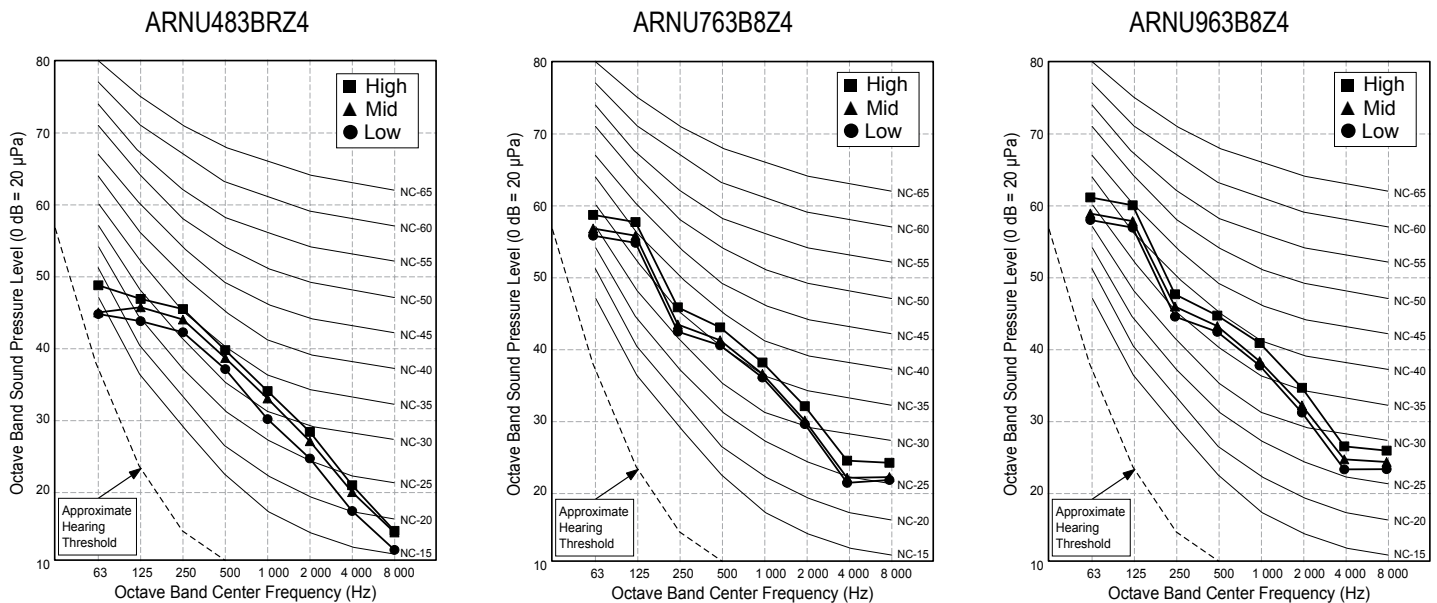
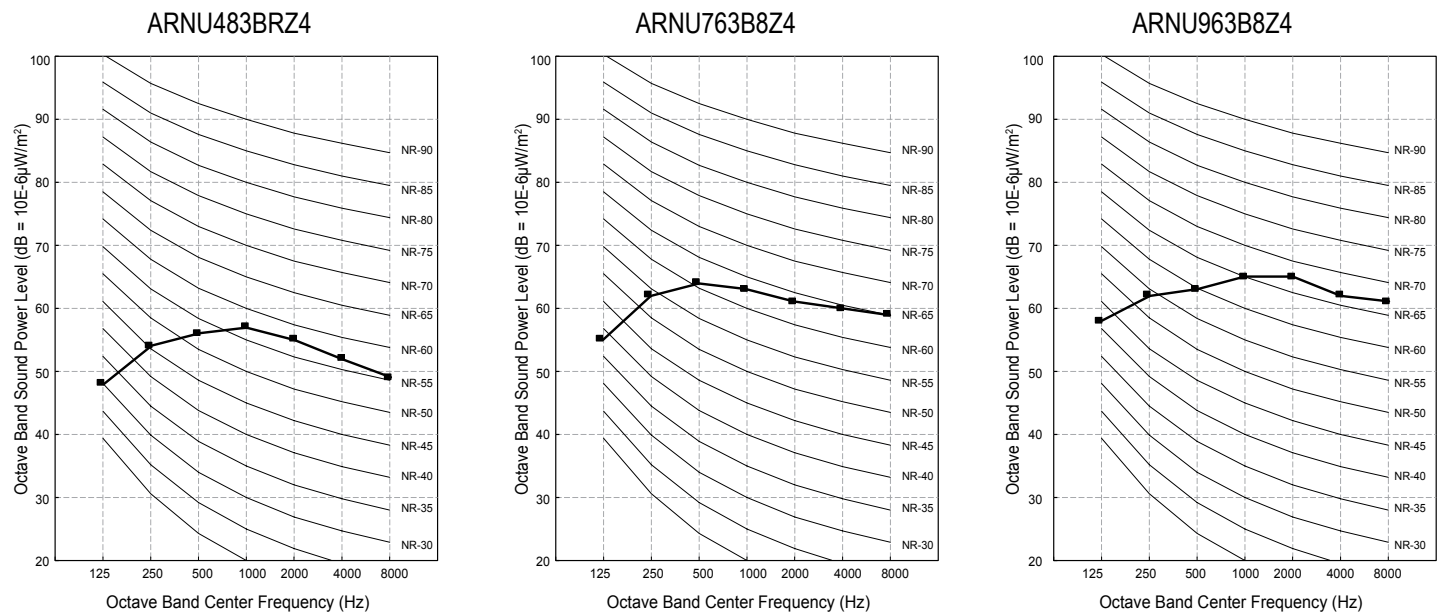


Table 13: BR and B8 Unit Sound Power Levels.

Model	Sound Power Levels dB(A)
	High Fan Speed
ARNU483BRZ4	62
ARNU763B8Z4	70
ARNU963B8Z4	72

- Data is valid under diffuse field conditions.
- Data is valid under nominal operating conditions.
- Sound power level is measured using rated conditions, and tested in a reverberation room per ISO 3741 standards.
- Sound level will vary depending on a range of factors such as construction (acoustic absorption coefficient) of particular area in which the equipment is installed.
- Reference acoustic intensity: 0dB = 10E-6μW/m<sup>2</sup>

Figure 10: ARNU483BRZ4, ARNU763B8Z4, and ARNU963B8Z4 Sound Power Level Diagrams.



# COOLING CAPACITY TABLES



## ARNU483BRZ4, ARNU763B8Z4, ARNU963B8Z4

Table 14: ARNU483BRZ4, ARNU763B8Z4, and ARNU963B8Z4 Cooling Capacity Table.

Model No./ Capacity Index	Outdoor Air Temp. °F DB	Outdoor Air Temp. °F WB																							
		59			63			69			73			79			82			86			90		
		TC	SHC	Leaving Air Temp. °F	TC	SHC	Leaving Air Temp. °F	TC	SHC	Leaving Air Temp. °F	TC	SHC	Leaving Air Temp. °F	TC	SHC	Leaving Air Temp. °F	TC	SHC	Leaving Air Temp. °F	TC	SHC	Leaving Air Temp. °F	TC	SHC	Leaving Air Temp. °F
ARNU483BRZ4/ 48.0	70.0	17.4	12.3	52.9	18.4	10.9	54.8	29.0	10.9	54.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	73.0	17.4	14.7	52.5	17.7	13.3	54.4	28.0	12.6	55.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	77.0	17.4	17.1	53.2	17.7	15.7	55.1	27.3	15.0	56.1	37.5	15.7	55.1	-	-	-	-	-	-	-	-	-	-	-	
	81.0	17.1	17.1	57.2	17.4	17.4	56.7	24.9	17.4	56.7	37.2	16.4	58.2	47.8	15.4	59.6	-	-	-	-	-	-	-	-	-
	84.0	16.7	16.7	60.7	17.1	17.1	60.2	23.9	19.8	56.4	35.8	22.2	53.1	46.7	16.4	61.2	52.9	17.1	60.2	-	-	-	-	-	-
	88.0	16.7	16.7	64.7	17.1	17.1	64.2	22.9	22.2	57.1	32.4	20.5	59.5	45.4	18.8	61.8	51.5	18.1	62.8	55.6	15.7	66.1	-	-	-
	91.0	16.4	16.4	68.2	16.7	16.7	67.7	22.2	21.5	61.0	32.1	22.9	59.1	44.4	20.8	62.0	48.1	19.1	64.4	54.9	16.4	68.2	60.4	17.1	67.2
	96.0	16.0	16.0	73.6	16.7	16.7	72.7	21.8	21.8	65.5	31.4	25.2	60.8	43.3	23.2	63.6	47.8	21.2	66.5	54.3	18.8	69.8	59.7	17.7	71.3
	99.0	16.0	16.0	76.6	16.4	16.4	76.2	21.5	21.5	69.0	31.0	29.0	58.6	40.3	25.2	63.8	46.7	23.5	66.2	52.2	21.2	69.5	59.0	19.1	72.4
	104.0	-	-	-	16.4	16.4	81.2	21.2	21.2	74.5	30.7	30.0	62.1	38.9	29.0	63.6	45.7	23.9	70.7	51.2	24.6	69.7	58.3	22.9	72.1
	109.0	-	-	-	16.0	16.0	86.6	20.8	20.8	80.0	30.4	30.4	66.7	37.5	30.7	66.2	44.4	25.6	73.3	49.5	29.0	68.6	56.3	26.3	72.4
	113.0	-	-	-	14.0	14.0	93.5	19.4	19.4	85.9	28.7	28.7	73.0	34.8	32.4	67.8	41.6	28.0	74.0	47.4	31.4	69.2	54.6	28.0	74.0
118.0	-	-	-	-	-	-	17.7	17.7	93.3	27.6	27.6	79.5	35.8	33.4	71.4	38.6	31.4	74.2	44.4	33.8	70.9	51.9	31.7	73.8	
ARNU763B8Z4/ 76.0	70.0	27.3	17.7	50.4	32.4	17.7	50.4	43.0	18.1	50.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	73.0	27.0	20.8	50.0	30.7	20.8	50.0	42.3	19.4	51.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	77.0	26.6	23.9	50.6	29.7	23.9	50.6	40.9	22.9	51.7	54.6	21.8	52.8	-	-	-	-	-	-	-	-	-	-	-	
	81.0	26.3	24.6	53.8	30.0	27.0	51.2	40.3	25.6	52.7	53.6	23.5	55.0	66.9	23.5	55.0	-	-	-	-	-	-	-	-	
	84.0	25.9	25.2	56.1	29.3	27.3	53.8	39.2	28.7	52.3	52.2	26.3	54.9	66.2	24.9	56.4	80.2	24.6	56.8	-	-	-	-	-	
	88.0	25.6	25.6	59.7	29.0	27.6	57.4	38.9	32.1	52.5	51.2	29.3	55.5	65.5	28.0	57.0	78.5	26.3	58.9	82.6	24.6	60.8	-	-	-
	91.0	25.6	25.6	62.7	28.7	28.3	59.7	37.9	33.1	54.4	50.2	32.4	55.1	64.5	31.0	56.7	76.4	29.0	58.9	81.2	25.9	62.3	92.1	25.6	62.7
	96.0	25.2	25.2	68.1	28.7	28.7	64.3	37.2	34.5	57.9	49.1	35.5	56.7	63.8	33.8	58.6	73.4	31.7	60.9	78.8	28.3	64.7	91.1	27.6	65.4
	99.0	25.2	25.2	71.1	28.3	28.3	67.7	35.8	35.5	59.7	47.8	37.5	57.5	62.8	36.8	58.2	71.3	34.5	60.9	78.1	31.4	64.3	90.1	29.7	66.2
	104.0	24.9	24.9	76.4	28.3	28.3	72.7	35.8	35.8	64.4	46.1	41.3	58.3	60.1	40.9	58.7	71.0	39.2	60.6	76.8	35.8	64.4	89.4	34.5	65.9
	109.0	-	-	-	27.6	27.6	78.4	35.5	35.5	69.7	44.0	43.7	60.7	58.0	44.0	60.3	68.6	40.6	64.1	76.4	39.2	65.6	86.0	37.5	67.5
	113.0	-	-	-	26.3	26.3	83.9	34.5	34.5	74.9	42.7	42.7	65.8	55.3	46.7	61.3	66.5	43.7	64.7	73.7	41.3	67.3	82.9	40.6	68.1
118.0	-	-	-	-	-	-	32.4	32.4	82.1	41.3	41.3	72.3	53.6	48.5	64.4	63.8	45.7	67.4	71.3	44.0	69.3	80.5	42.7	70.8	
ARNU963B8Z4/ 96.0	70.0	34.8	23.5	52.7	45.0	23.5	52.7	58.3	24.6	52.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	73.0	34.1	28.3	52.2	43.7	27.3	53.0	57.0	26.6	53.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	77.0	33.4	30.7	54.5	41.3	30.7	54.5	54.9	31.4	54.0	76.1	30.7	54.5	-	-	-	-	-	-	-	-	-	-	-	
	81.0	33.1	31.4	58.0	38.9	35.1	55.2	53.2	35.8	54.7	73.4	32.4	57.2	93.5	33.1	56.7	-	-	-	-	-	-	-	-	
	84.0	32.4	31.7	60.7	38.2	36.2	57.4	51.9	40.3	54.4	71.3	36.8	56.9	91.8	34.5	58.7	103.0	31.7	60.7	-	-	-	-	-	
	88.0	32.1	32.1	64.4	37.9	36.5	61.2	51.9	45.4	54.7	69.6	41.3	57.7	90.8	39.2	59.2	101.7	34.1	62.9	115.3	34.5	62.7	-	-	-
	91.0	32.1	32.1	67.4	37.5	36.8	63.9	50.5	46.7	56.7	68.2	46.1	57.2	89.1	43.7	58.9	95.9	36.2	64.4	113.3	36.2	64.4	129.7	38.2	62.9
	96.0	31.7	31.7	72.7	37.5	37.5	68.4	49.8	48.1	60.7	66.5	50.5	58.9	88.0	48.1	60.7	94.2	40.6	66.2	109.5	39.9	66.7	128.3	39.9	66.7
	99.0	31.7	31.7	75.7	37.2	37.2	71.7	49.5	48.8	63.2	64.8	53.6	59.7	86.7	52.5	60.4	90.8	44.7	66.2	108.5	44.4	66.4	126.2	41.6	68.4
	104.0	31.4	31.4	81.0	37.2	37.2	76.7	49.1	49.1	67.9	63.8	58.7	60.9	82.6	57.3	61.9	88.0	51.9	65.9	106.5	51.2	66.4	124.9	48.8	68.2
	109.0	-	-	-	36.8	36.8	81.9	48.8	48.8	73.2	63.1	61.4	63.9	81.2	59.4	65.4	85.3	56.0	67.9	101.3	54.6	68.9	117.4	53.2	69.9
	113.0	-	-	-	35.1	35.1	87.2	47.4	47.4	78.2	61.4	61.4	67.9	78.1	62.1	67.4	82.6	58.7	69.9	98.3	57.0	71.2	114.0	55.3	72.4
118.0	-	-	-	-	-	-	45.7	45.7	84.4	58.7	58.7	74.9	75.1	64.8	70.4	79.5	61.4	72.9	95.2	60.7	73.4	111.6	58.7	74.9	

TC: Total Capacity (MBh); SHC: Sensible Heat Capacity (MBh).

This data is rated 0 ft above sea level, with 25 feet of refrigerant line per Outside Air unit and a 0 feet level difference between outdoor and Outside Air units.

Shaded areas indicate conditions where leaving air temperature is lower than the minimum 64°F.

Table 15: ARNU483BRZ4, ARNU763B8Z4, and ARNU963B8Z4 Heating Capacity Table.

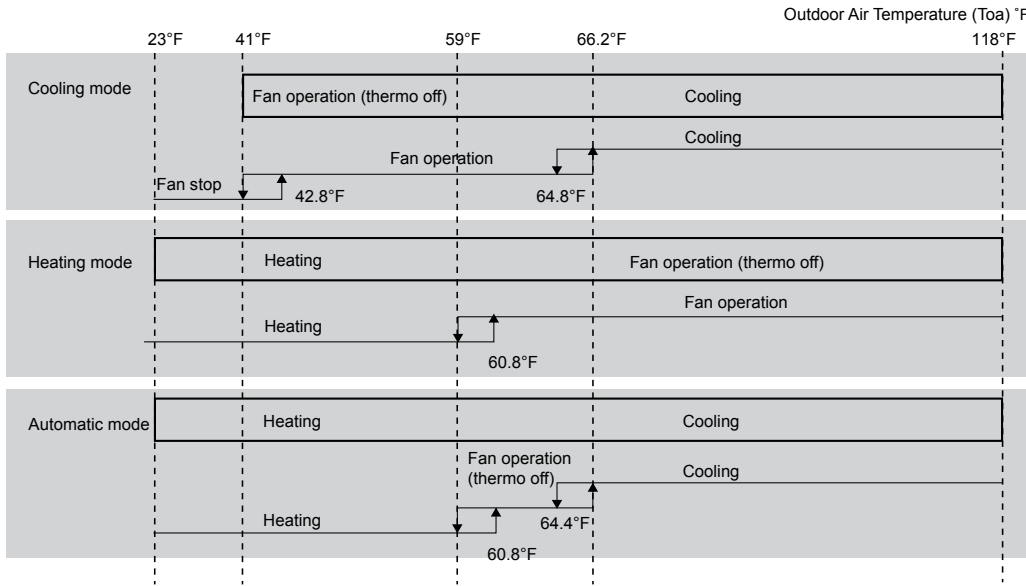
Model No. / Capacity Index	Outdoor Air Temp. °F DB	Outdoor Air Temp. °F WB								
		19	23	27	32	36	39	43	50	57
		TC	TC	TC	TC	TC	TC	TC	TC	TC
		MBh	MBh	MBh	MBh	MBh	MBh	MBh	MBh	MBh
ARNU483BRZ4 / 48.0	23.0	64.9	-	-	-	-	-	-	-	-
	27.0	62.7	49.1	-	-	-	-	-	-	-
	32.0	-	47.8	<b>48.5</b>	-	-	-	-	-	-
	37.0	-	-	46.4	47.1	47.8	-	-	-	-
	45.0	-	-	-	42.0	42.7	43.3	43.0	-	-
	52.0	-	-	-	-	36.8	37.5	38.2	38.6	-
	59.0	-	-	-	-	-	32.4	33.1	33.8	34.5
	64.0	-	-	-	-	-	-	29.7	30.4	30.7
68.0	-	-	-	-	-	-	26.6	27.3	27.6	
ARNU763B8Z4 / 76.0	23.0	81.2	-	-	-	-	-	-	-	-
	27.0	76.4	77.1	-	-	-	-	-	-	-
	32.0	-	72.3	<b>73.0</b>	-	-	-	-	-	-
	37.0	-	-	61.1	61.8	62.1	-	-	-	-
	45.0	-	-	-	54.9	55.6	56.3	57.0	-	-
	52.0	-	-	-	-	48.8	49.5	50.2	50.8	-
	59.0	-	-	-	-	-	43.0	43.7	44.4	45.0
	64.0	-	-	-	-	-	-	38.9	39.6	40.3
68.0	-	-	-	-	-	-	36.5	37.2	37.9	
ARNU963B8Z4 / 96.0	23.0	97.6	-	-	-	-	-	-	-	-
	27.0	96.2	96.9	-	-	-	-	-	-	-
	32.0	-	90.4	<b>91.1</b>	-	-	-	-	-	-
	37.0	-	-	88.0	88.7	94.5	-	-	-	-
	45.0	-	-	-	85.6	86.3	85.3	83.3	-	-
	52.0	-	-	-	-	74.0	74.7	75.4	76.8	-
	59.0	-	-	-	-	-	66.2	66.9	67.6	66.9
	64.0	-	-	-	-	-	-	59.4	60.1	61.1
68.0	-	-	-	-	-	-	54.6	55.3	56.0	

TC: Total Capacity (MBh).

This data is rated 0 ft above sea level, with 25 feet of refrigerant line per Outside Air unit and a 0 feet level difference between outdoor units and outside air units.

## Operation Range

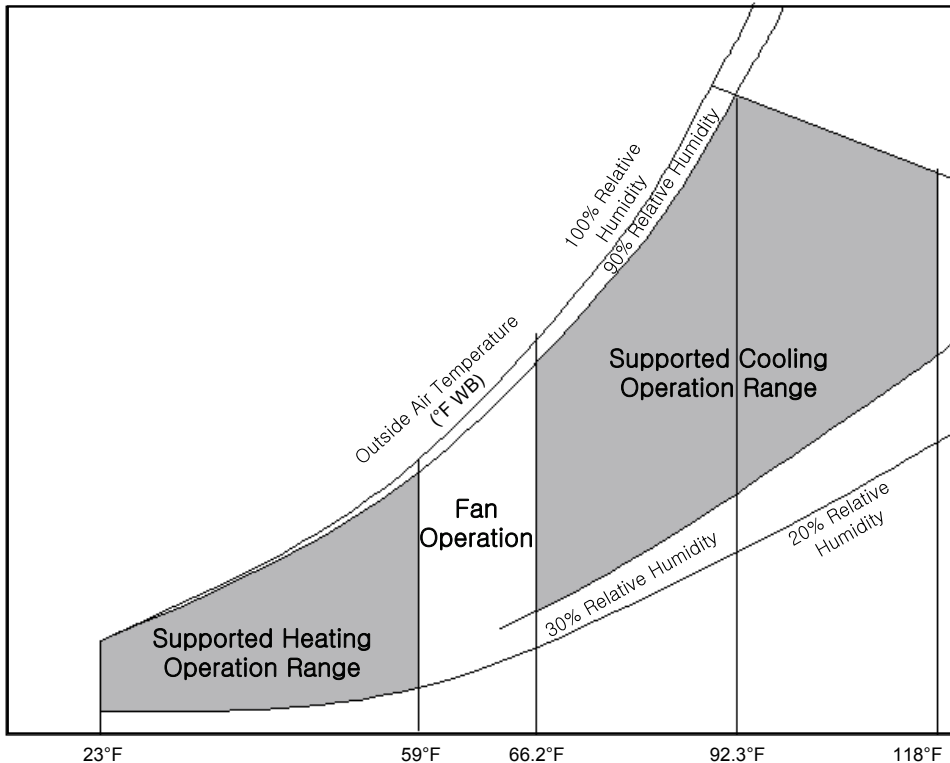
Outside Air units operate in the temperature range shown in the diagram below. Outdoor temperatures hotter than 118°F or colder than 23°F are not recommended and capacity cannot be guaranteed.



**Note:**

Default maximum entering air temperature is 109°F. DIP Switch 7 must be turned On to extend the range to 118°F.

## Usage Limitations



**Note:**

- Fan only operation when entering air temperature is between 59°F and 66°F.
- When entering air temperature is <23°F in heating mode, fan will turn off.
- Default maximum entering air temperature is 109°F. DIP Switch 7 must be turned On to extend the range to 118°F.



Table 16: Included Accessories for Outside Air Units.

Controller	Model Number
Wired Remote Wall-Mounted Controller for Outside Air Units	PREMTB001 (aka Part Number AKB73355722); Standard Accessory is Shipped with the Outside Air Unit

Table 17: Optional Accessories for Outside Air Units.

Accessory	Model Number
High Efficiency Filter Box (Optional)*	ZFBXBR01A (For 48MBh BR Frame Outside Air Units) ZFBXB801A (For 76 and 96MBh B8 Frame Outside Air Units)
Dynamic V8 Low Profile Air Cleaner (Optional)*	ZPLMV201A (2VL) ZPLMV402A (4VL)
Dynamic V8 VL Replacement Filter Pads (Optional)*	ZFLT1301A (4-Pack) ZFLT1302A (24-Pack)
Auxiliary Heater Kit (Optional)*	PRARH1

\*Accessories are sold separately.



# APPLICATION GUIDELINES

**Installation Guidelines on page 28**

**Selecting the Best Location on page 28**

**General Mounting on page 29**

**Duct Installation on page 30**

**General Drain Piping Information on page 31**

**Refrigerant Piping Insulation on page 32**

**Wiring Guidelines on page 33**

**Control System on page 35**

# INSTALLATION GUIDELINES / SELECTING THE BEST LOCATION

## Installation Guidelines

### Note:

Failure to comply with the installation guidelines will cause a reduction in system cooling and heating capacity.

### System Only Includes Outside Air Units

1. The total capacity of all outside air units should be 50 to 100% of the outdoor unit capacity.
2. The maximum quantity of outside air units connected to one system is four (4).

### System Includes a Combination of Standard Indoor Units and Outside Air Units

1. The total capacity of all standard indoor units and outside air units should be 50 to 100% of the outdoor unit capacity.
2. The total capacity of the outside air units should be less than 30% of the total standard indoor unit capacity.

## Selecting the Best Location

### Do's

- Place the unit where air circulation will not be blocked.
- Place the unit where drainage can be obtained easily and to minimize the length of the condensate drain piping. "H" dimension in the figure at right is necessary for enough slope for drainage.
- Place the unit where noise prevention is taken into consideration.
- Place the unit in a location that can support a load four times the weight of the outside air unit, and where the unit can be level.
- Ensure there is sufficient maintenance space.
- Install the outside air unit in a location where it can be easily connected to the outdoor unit.

### Don'ts

- Avoid installing the unit near high-frequency generators.
- Do not install the unit near a doorway.
- 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 pump to malfunction. If this is a potential problem, install a ventilation fan large enough to vent out these materials.)

Figure 11: System with Only Outside Air Units.

### Outdoor Unit Capacity: 8 Ton

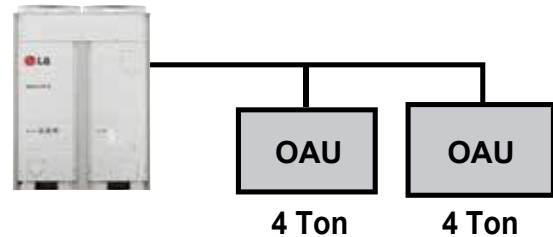


Figure 12: System with A Combination of Standard Indoor Units and Outside Air Units.

### Outdoor Unit Capacity: 16 Ton

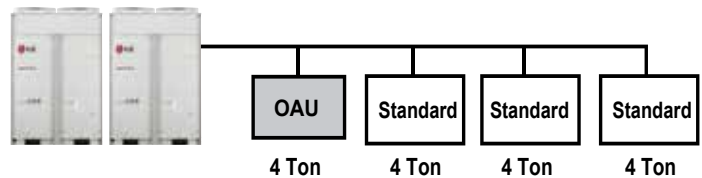
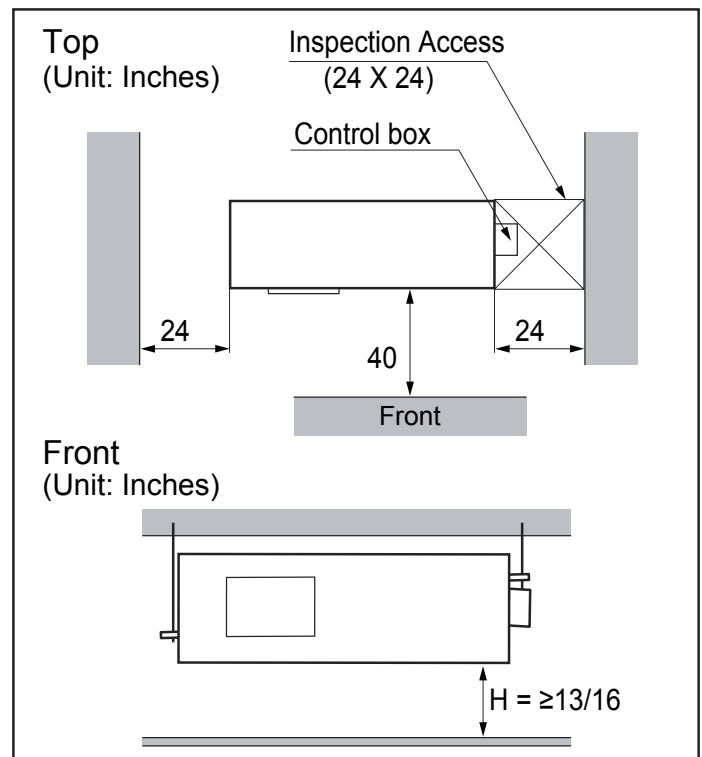


Figure 13: Recommended Service Clearances.



## ⚠ WARNING

The unit should not be installed where sulfuric acid and flammable or corrosive gases are generated, vented into, or stored. There is risk of fire, explosion, and physical injury or death.

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

### Note:

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.

### General Mounting

- The ceiling should be strong and solid enough to protect the outside air unit from vibration.
- Refer to dimensions table below for each outside air unit frame size.
- Install a joint-canvas between the unit and duct to absorb unnecessary vibration.

Figure 15: Outside Air Unit BR Frame Bolt Locations.

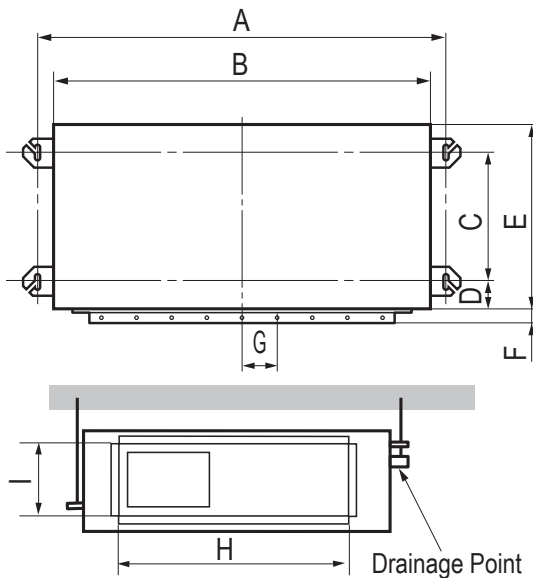
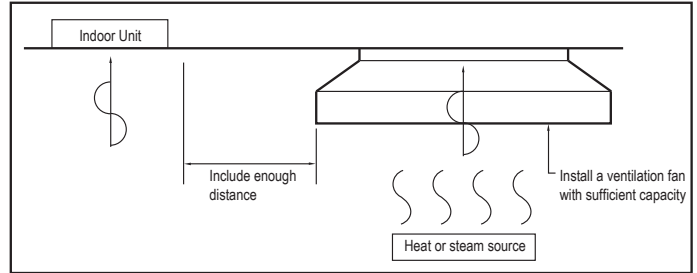


Table 18: Outside Air Unit BR and B8 Frame Suspension Bolt Positions.

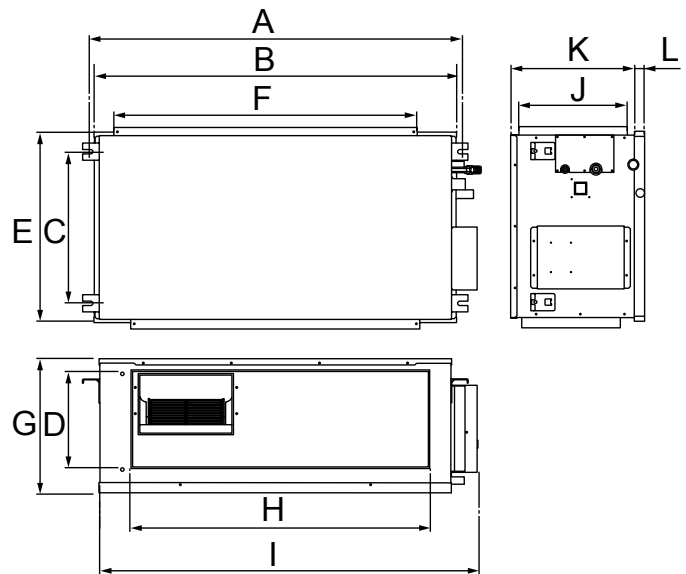
Frame	Dimensions (inches)											
	A	B	C	D	E	F	G	H	I	J	K	L
BR	50-7/16	48-7/16	18-3/4	2-3/16	23-1/4	1-3/16	4-11/16	39-5/8	11-9/16	-	-	-
B8	63-7/8	61-5/8	22-7/8	11-1/2	27-3/8	55-1/8	18-1/8	44-3/16	66-3/16	15-3/8	17-9/16	5/8

Figure 14: Installing Near a Heat or Steam Source.



- Install a filter accessory at the air intake opening.
- Install the unit with a slope towards the drainage point to ensure condensate drains easily.

Figure 16: Outside Air Unit B8 Frame Bolt Locations.



# GENERAL MOUNTING / DUCT INSTALLATION

## General Mounting Procedure

1. Select and mark the areas where the hanging bolts should be placed.
2. Drill the holes.
3. Install the unit horizontally using a level gauge.

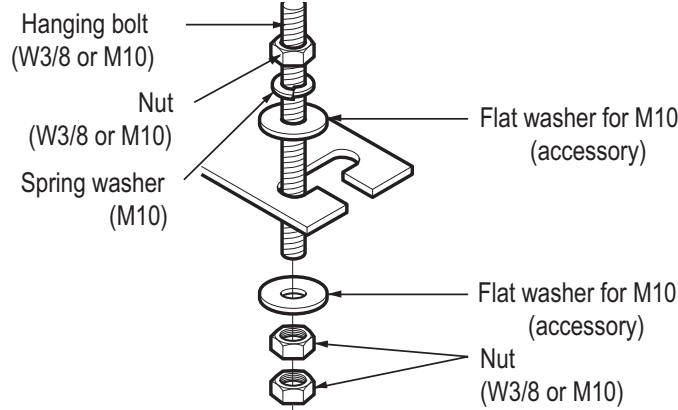
### ⚠ WARNING

⊘ Do not damage power wiring during installation. There is risk of electric shock, which may result in physical injury or death.

### Note:

⊘ Do not damage power wiring during installation. There is a risk of equipment malfunction, which may result in property damage.

Figure 18: Hanging Bolt Installation.



The following parts are field supplied:

- Hanging bolt - W-3/8" or 1/2"
- Nut - W-3/8" or M10
- Spring washer - M10

Included with the indoor unit:

- Flat washer - M10

Figure 17: Drilling Holes for the Hanging Bolts.

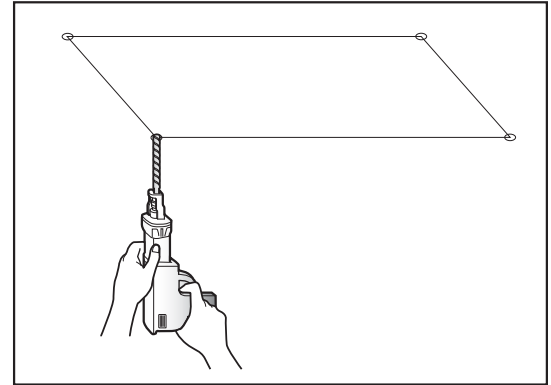
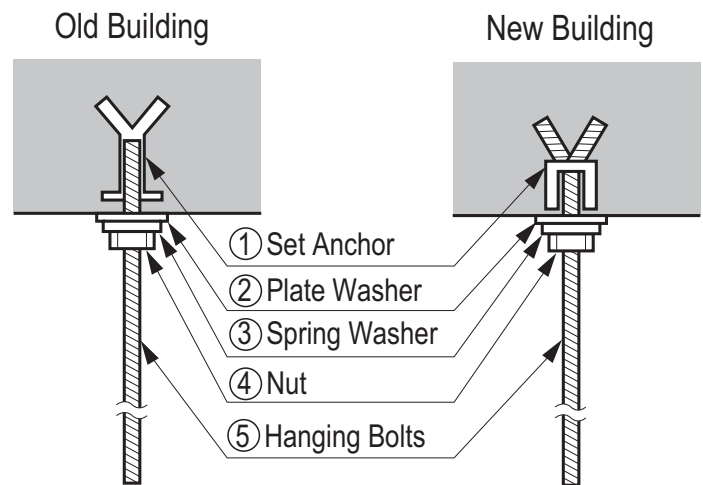


Figure 19: Old Versus New Building Hanging Bolt Installation.



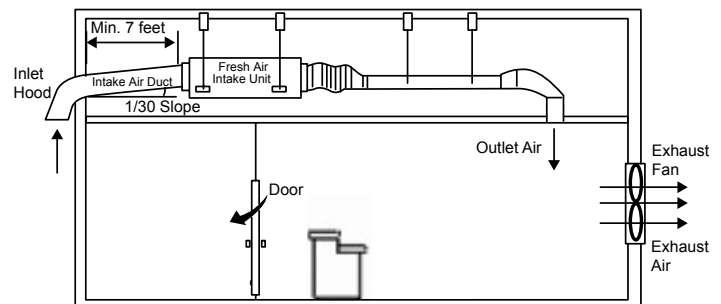
### ⚠ WARNING

The threaded rod hangers (bolts) and hardware must be securely tightened to prevent the unit from falling from its installation location. There is a risk of personal injury from falling equipment.

## Duct Installation

- Inlet Hood—Install so that water will not enter inside the outside air unit.
- Intake Air Duct
  - Must slope downward 1/30.
  - Should be a minimum of 7 feet.
- Outside Air Unit—Connection of wired remote controller (included) is required.
- Exhaust Fans—Should be installed to maintain room pressure (outside air unit may introduce positive pressure into the room).
- Door—Exhaust fans or relief dampers should be added to room to avoid over-pressurization of the space, and to avoid doors from slamming.

Figure 20: Outside Air Unit Duct Diagram.



## General Drain Piping Information

Outside air units generate condensate water during cooling operation, therefore, how to properly handle this condensation must be considered. Depending on the location of the outside air unit, condensation can be drained directly to the outside of the building, or a common indoor unit drainage piping system can be installed.

Outside air units include factory-installed drain pumps. When the bottom surface of the 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 outside air unit 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 outside air unit condensate pump discharge riser before connection to the Y-45 fitting.

### Flexible Drain Hose

Outside air units include a factory-provided flexible drain hose (with two clamps) to connect the unit to the drain piping / drain piping system.

### Drain Piping

- Drain piping must have down slope (1/50 to 1/100).
- Any holes through the ceilings, walls, etc., must be large enough to accommodate the drain piping and insulation.
- To prevent reversal flow, do not provide up and down slope.
- The outside diameter of the drain connection on outside air units is 1-1/4 inches.
- The drain piping material is polyvinyl chloride pipe (1 inch).

### Drain Leak Test

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

### Drain Pipe Insulation

To prevent condensate from forming on the drain piping, field-supplied 5/16 inch thick polyethylene foam insulation should be properly installed.

### Note:

Ensure the refrigerant piping, drain piping, and power wiring / communication cables are properly supported with anchor bolts and clamp hangers positioned at 3.3 to 4.9 foot intervals.

Figure 21: Outside Air Unit Drain Pump to Drain Piping System.

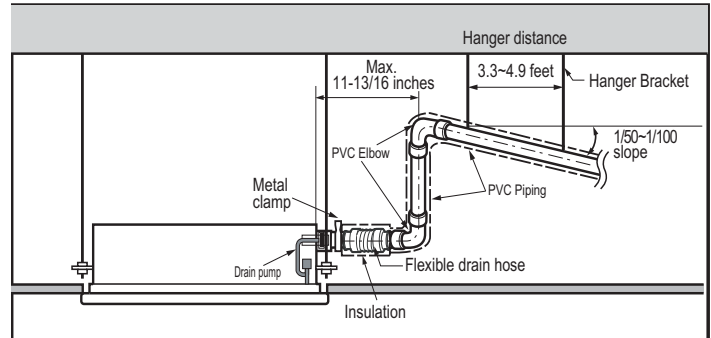


Table 19: Outside Air Unit Drainage Specifications.

Indoor Unit	Drain Type	Drain Pipe Dia. (ID, in.)
BR, B8 Frames	27-1/2 in. Lift Drain Pump, Factory Installed	Ø1

Figure 22: Flexible Drain Hose Connection.



Figure 23: Drain Piping Slope.

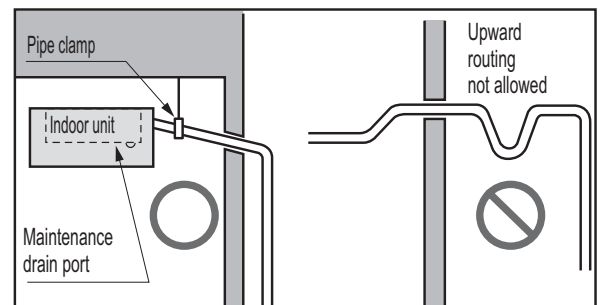
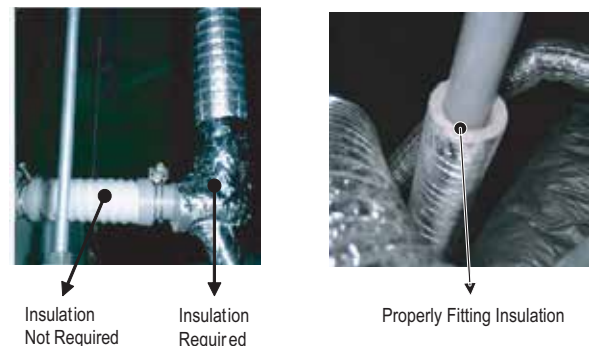


Figure 24: Properly Insulating the Drainage Piping.



# GENERAL DRAIN PIPING / PIPING INSULATION

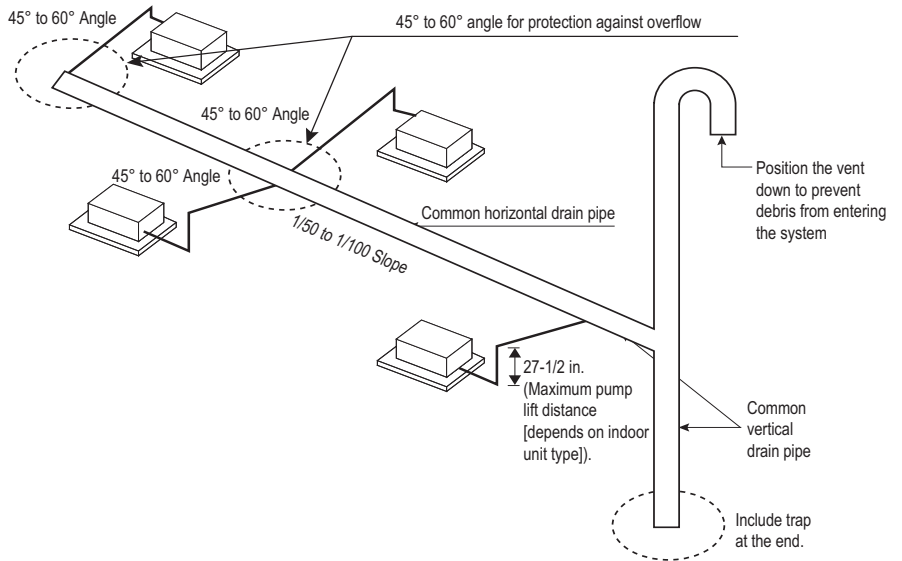
## Common Indoor Unit Drainage System

It is usual work practice to connect individual unit drain pipes to one common indoor unit drainage system.

The diameter of the common vertical drain pipe should be as large as necessary. The diameter of the horizontal pipe should be the same or larger than the vertical drain pipe. To avoid property damage in the event of the primary drain becoming clogged, and to optimize drain system performance, it may be prudent to install a secondary drain line.

Design the drain system to plan for winter operation (condensate line may freeze up if condensate does not properly drain away). Drain all generated condensate from the external condensate pan to an appropriate area. Install a trap in the condensate lines as near to the indoor unit coil as possible. To prevent overflow, the outlet of each trap should be positioned below its connection to the condensate pan. All traps should be primed, insulated, and leak tested.

Figure 25: Example of a Common Indoor Unit Drainage System.



**Note:**

- It is recommended that a dedicated drain pipe be installed for the air conditioning system. If the drainage system is shared with a rainwater drain, waste water, or any other type of building drain system, back flow, leaks, ice may form, or noxious odors may infiltrate the air conditioning system.
- Install a trap if the drain access to the outside faces an undesirable location (i.e., sewer), otherwise, noxious odors may infiltrate the air conditioning system.

## Refrigerant Piping Insulation

Sufficiently insulate all cold surfaces to prevent moisture forming. All pipes must be fully 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.

**Note:**

All insulation must comply with all applicable code requirements.

Figure 26: Outside Air Unit Piping Connections.

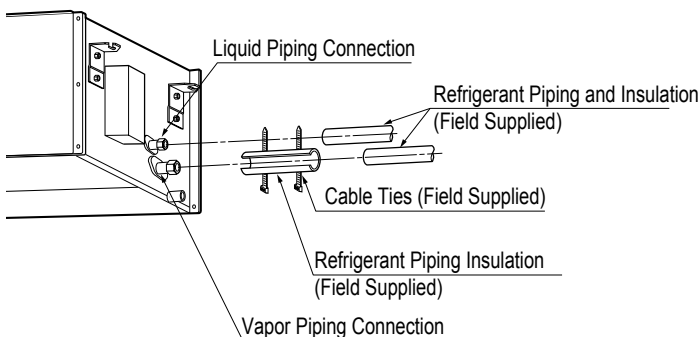
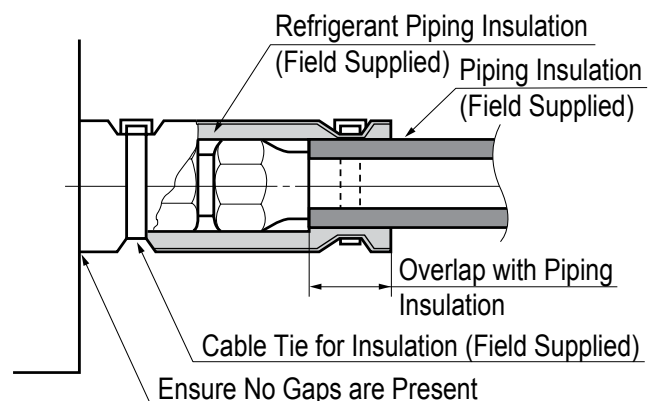


Figure 27: Typical Refrigerant Line Flare Fitting Insulation Detail.





## General Power Wiring / Communications Cable Guidelines

- Follow manufacturer's circuit diagrams displayed on the inside of the control box cover.
- Have a separate power supply for the outside air units.
- Provide a circuit breaker switch between the power source and the outside air unit(s).
- Confirm power source specifications.
- Confirm that the electrical capacity is sufficient.
- Starting current must be maintained  $\pm 10$  percent of the rated current marked on the name plate.
- Confirm wiring / cable thickness specifications:
  - Power wiring is field supplied. Wire size is selected based on the larger MCA value, and must comply with the applicable local and national codes.
  - Communication cable must be a minimum of 18 AWG, two-conductor, stranded, shielded, and must comply with the applicable local and national codes. Ensure the communication cable is properly grounded at the master outdoor unit only. ⓧ Do not ground the ODU-OAU communication cable at any other point.
- It is recommended that a circuit breaker is installed, especially if conditions could become wet or moist.
- Include a disconnect in the power wiring system. Add an air gap contact separation of at least 1/8 inch in each active (phase) conductor.
- Any openings where the field wiring enters the cabinet must be completely sealed.

### ⚠ WARNING

- Terminal screws may loosen during transport. Properly tighten the terminal connections during installation or risk electric shock, physical injury or death.
- Loose wiring may cause the wires to burnout or the terminal to overheat and catch fire. There is a risk of electric shock, physical injury or death.

### Note:

- Terminal screws may loosen during transport. Properly tighten the terminal connections during installation or risk equipment malfunction or property damage.
  - Loose wiring may cause unit malfunction, the wires to burnout or the terminal to overheat and catch fire. There is a risk of equipment malfunction or property damage.
- A voltage drop may cause the following problems:
- Magnetic switch vibration, fuse breaks, or disturbance to the normal function of an overload protection device.
  - Compressor will not receive the proper starting current.

## Power Wiring and Communications Cable Connections

1. Insert the power wiring / communications cable from the outdoor unit using the designated path in the outside air unit.
2. Connect each wire to its appropriate terminal on the outside air unit control board. Verify that the color and terminal numbers from the outdoor unit wiring match the color and terminal numbers on the outside air unit.
3. Secure the power wiring / communications cable.

Figure 28: Location of Power Wiring / Communications Cable Terminals in the Outside Air Unit.

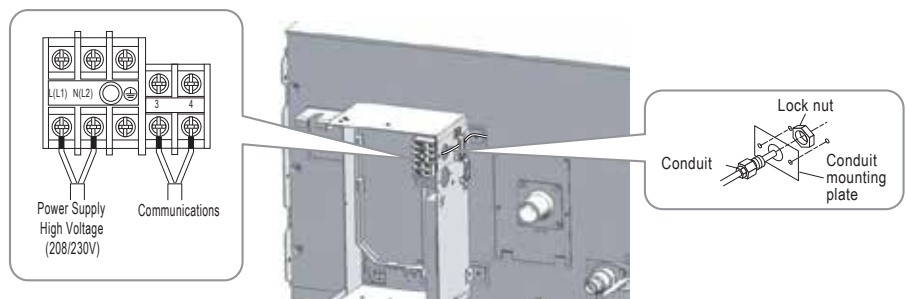
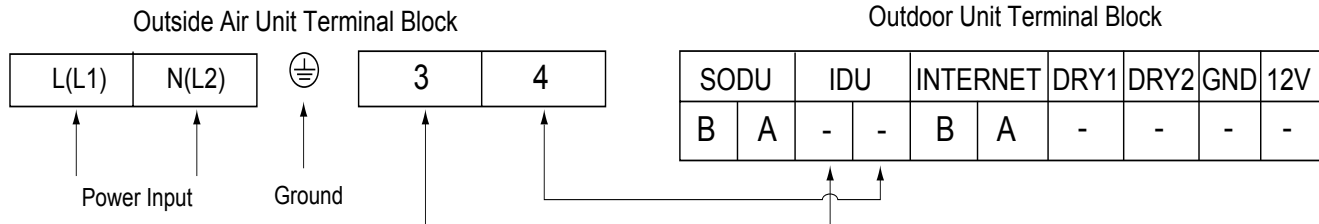
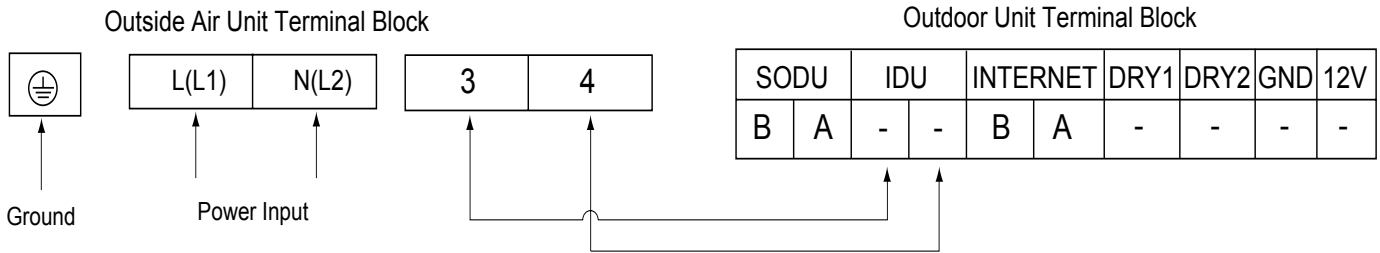


Figure 29: Terminal Block in the Outside Air Unit (BR, B8 Frames).

## BR Frame (ARNU483BRZ4)



## B8 Frame (ARNU763B8Z4, ARNU963B8Z4)



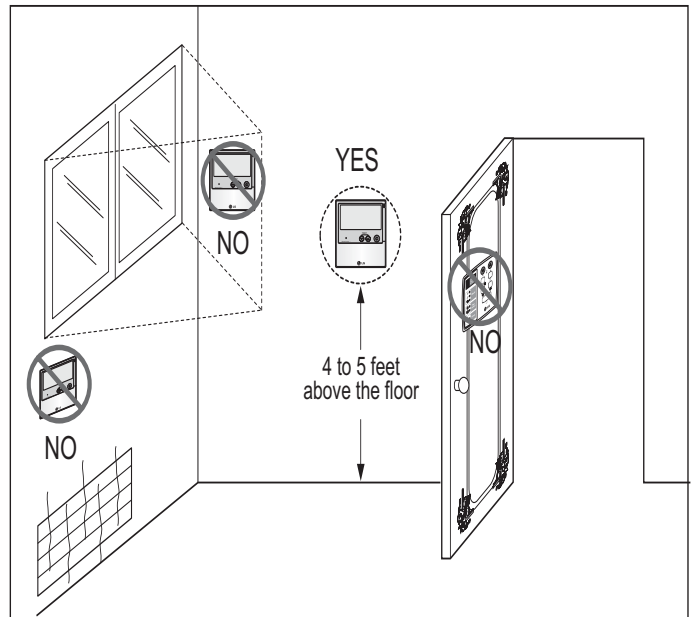
## Wired Remote Controller Placement

**Note:**  
The outside air units ship with a special wall controller for use with the outside air unit only.

Outside air units must be controlled by a wired remote controller (included). Wired controllers include a sensor to detect room temperature. To maintain comfort levels in the conditioned space, the wired controller must be installed in a location away from direct sunlight, high humidity, and where it could be directly exposed to cold air. Controller must be installed four (4) to five (5) feet above the floor where its LED display can be read easily, in an area with good air circulation, and where it can detect an average room temperature.

- Do not install the wired controller near or in:
- Drafts or dead spots behind doors and in corners
  - Hot or cold air from ducts
  - Radiant heat from the sun or appliances
  - Concealed pipes and chimneys
  - An area where temperatures are uncontrolled, such as an outside wall

Figure 30: Proper Location for the Wired Controller.

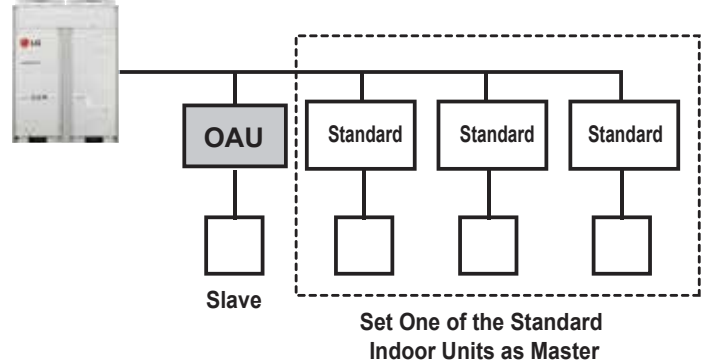


**Control System**

**System Includes a Combination of Standard Indoor Units and Outside Air Units**

When combining outside air units with standard indoor units in heat pump applications, a standard indoor unit should be selected as the Master, and the outside air unit should be selected as the Slave.

Figure 31: System Control with a Combination of Standard Indoor Units and Outside Air Units.



**System Includes a Combination of Standard Indoor Units and Outside Air Units, and a Central Controller is Used**

A system cannot include a combination of standard indoor units and outside air units in the same zone if a central controller is used. Place all outside air units in one zone, and place all standard indoor units in a separate, second zone.

Figure 32: System Control with a Central Controller.

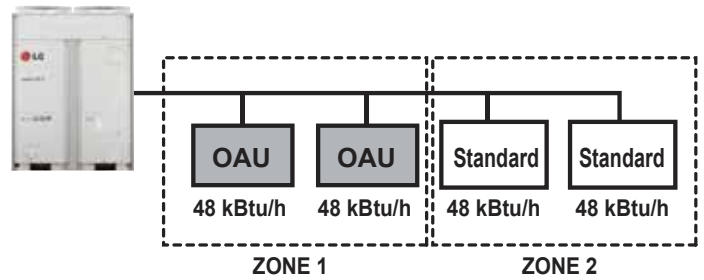


Table 20: Acronym Table.

ABS	Acrylonitrile Butadiene Styrene	IDU	Indoor Unit
AC	Air Conditioner/Alternate Current	kW	Kilowatts
ACP	Advanced Control Platform	in Aq	inches water
AHU	Air Handling Unit	ISO	International Standards Organization
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning	LATS	LG Air Conditioning Technical Solution software
ASTM	American Society for Testing and Materials	LED	Light Emitting Diode
AWG	American Wire Gauge	LEED	Leadership in Energy and Environmental Design
AWHP	Air-to-Air Water Heat Pump	MBh	Thousands BTUs per hour
BLDC	Brushless Digitally-Controlled	MCA	Minimum Circuit Ampacity
BTL	BACnet® Testing Laboratories	mm	Millimeter
Btu/h	British Thermal Unit per Hour	MOP	Maximum Overcurrent Protection
CAA	Clean Air Act	OD	Outside Diameter
CFM	Cubic Feet per Minute	ODU	Outdoor Unit
CFR	Code of Federal Regulations	PI	Power Input
DB	Dry Bulb	PTAC	Packaged Terminal Air Conditioner
dB(A)	Decibels with "A" frequency weighting	SHC	Sensible Heat Capacity
DPST	Double-Pole Single Throw	SMACNA	Sheet Metal & Air Conditioning Contractors' National Association
DX	Direct expansion	RPM	Revolutions per Minute
EEV	Electric Expansion valve	TC	Total Capacity
EPDM	Ethylene Propylene Diene M-Class Rubber	USD	United States Dollar
EMF	Electromagnetic Field	UL	Underwriters Laboratories
ESP	External Static Pressure	V	Voltage
ETL	Electric Testing Laboratories	VAV	Variable Air Volume
GND	Ground	VRF	Variable Refrigerant Flow
H/M/L	High/Medium/Low	W	Watts
HVAC	Heating, Ventilating and Air Conditioning	WB	Wet Bulb
Hz	Hertz	wg	Water Gauge
ID	Inside Diameter		

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