



MULTI V™

R32 CEILING SUSPENDED INDOOR UNIT ENGINEERING MANUAL



19,100 to 48,100 Btu/h

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A summary list of safety precautions is on page 6.

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LG Air Conditioner Technical Solution (LATS) Software

A properly designed and installed refrigerant piping system is critical to the optimal performance of LG air-conditioning systems. To assist engineers, LG offers, free of charge, LG Air Conditioner Technical Solution (LATS) software—a total design solution for LG air conditioning systems. Contact your LG Rep for the best software program for your application.

NOTICE

To reduce the risk of designing an improper applied system or one that will not operate correctly, LG requires that LATS software be used on all projects.

Formats

LATS is available to LG customers in two user interfaces: LATS HVAC and LATS Revit. Both LATS formats are available through www.myLGHVAC.com, or contact an LG Sales Representative.

LATS HVAC is a Windows®-based application that aids engineers in designing LG Variable Refrigerant Flow (VRF), Multi F / Multi F MAX, Single-Zone, DOAS, and Energy Recovery Ventilator (ERV) systems.

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

LATS Revit integrates the LG LATS program with Revit® software**. It permits engineers to layout and validate LG VRF, Multi F / Multi F MAX, Single-Zone, and DOAS directly into Revit drawings.

**Revit® is a registered mark of Autodesk, Inc.

Features

All LG product design criteria have been loaded into the program, making LATS simple to use: double click or drag and drop the component choices. Build systems in Tree Mode where the refrigerant system can be viewed. Switch to a Schematic diagram to see the electrical and communications wiring.

LATS software permits the user to input region data, indoor and outdoor design temperatures, modify humidity default values, zoning, specify type and size of outdoor units and indoor units, and input air flow and external static pressure (ESP) for ducted indoor units.

The program can also:

- Import building loads from a separate Excel file.
- Present options for outdoor unit auto selection.
- Automatically calculate component capacity based on design conditions for the chosen region.
- Verify if the height differences between the various system components are within system limits.
- Provide the correct size of each refrigerant piping segment and LG Y-Branches and Headers.
- Adjust overall piping system length when elbows are added.
- Check for component piping limitations and flag if any parameters are broken.
- Factor operation and capacity for defrost operation.
- Calculate refrigerant charge, noting any additional trim charge.
- Suggest accessories for indoor units and outdoor units.
- Run system simulation.

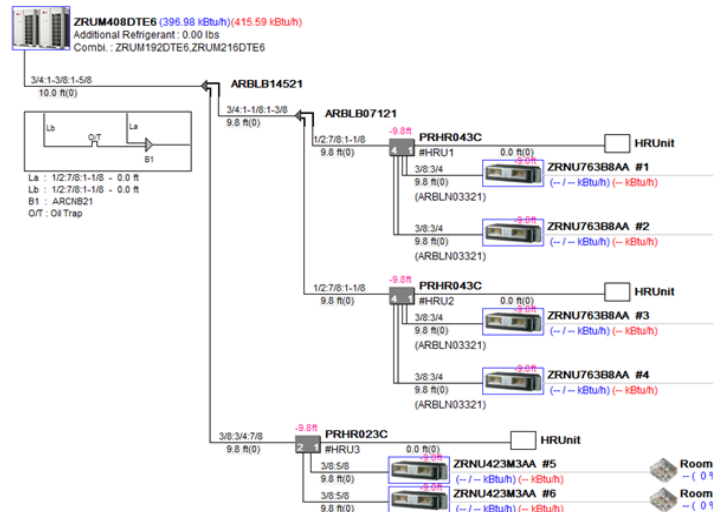
NOTICE

Features depend on which LATS program is being used, and the type of system being designed. Contact your LG representative for the best software program for your application.

NOTICE

Any field changes, such as re-routing, shortening or lengthening a pipe segment, adding or eliminating elbows and/or fittings, re-sizing, adding, or eliminating indoor units, changing the mounting height, or moving the location of a device or fitting during installation must be done with caution and **ALWAYS VERIFIED** in LATS SOFTWARE BEFORE supplies are purchased or installed. Doing so will lead to a more profitable installation, reduce the potential for rework, and will reduce the potential for multiple visits to the job site to complete the system set up.

Figure 1: LATS Example (Tree Diagram; Illustrative Purposes Only. System will Vary Depending On Model).



LG AIR CONDITIONER TECHNICAL SOLUTION (LATS)



LATS Generates a Complete Project Report

LATS software also generates a report containing project design parameters, cooling and heating design data, system component performance, and capacity data. The report includes system combination ratio and refrigerant charge calculations; and provides detailed bill of material, including outdoor units, indoor units, control devices, accessories, refrigerant pipe sizes segregated by building, by system, by pipe size, and by pipe segments. LATS can generate an Excel GERP report that can be imported into the LG SOPS pricing and ordering system.

Proper Design to Install Procedure

LG encourages a two report design-to-install-procedure. After the design engineer determines building / zone loads and other details, the engineer opens the LATS program and inputs the project's information. When the design is complete, the "Auto Piping" and "System Check" functions must be used to verify piping sizes, limitations, and if any design errors are present. If errors are found, engineers must adjust the design, and run Auto Piping and System Check again. When the design passes the checks, then the engineer prints out a project "Shop Drawing" (LATS Tree Diagram) and provides it to the installing contractor. The contractor must follow the LATS Tree Diagram when building the piping system, but oftentimes the design changes on the building site:

- Architect has changed location and/or purpose of room(s).
- Outdoor unit cannot be placed where originally intended.
- Structural elements prevent routing the piping as planned.
- Air conditioning system conflicts with other building systems (plumbing, gas lines, etc.).

The contractor must mark any deviation from the design on the Shop Drawing, including as-built straight lines and elbows. This "Mark Up" drawing must be returned to the design engineer or Rep, who must input contractor changes into the LATS file. (Copy the original LATS software file, save and rename as a separate file, and modify all piping lengths by double-clicking on each length and editing information.) Like the shop drawing, the Auto Piping and System Check must also be run on this new "As Built" drawing. The design engineer or Rep must then provide the final As Built file to the contractor. The Mark Up version must be compared to the As Built version for:

- Differences in pipe diameter(s). If incorrect diameters have been installed, the piping must be changed out. If pipe diameters have changed, check if Y-Branches will also need to be changed.
- Changes to outdoor unit and indoor unit capacities. Capacities changes will impact line length changes.
- Additional refrigerant charge quantity ("Trim Charge"). Trim charge will change if piping lengths and diameters change. The As Built version must reflect installed piping lengths to ensure correct trim charge.

All documents submitted by the contractor, as well as the Shop Drawing and the As Built Drawing files must be provided for commissioning purposes. Model and serial numbers for all system components must also be submitted. If the steps previously detailed are not followed, and all documents are not provided to the commissioning agent, the project runs the risk of not being commissioned and voiding any limited warranty LG offers on the equipment.

NOTICE

Features depend on which LATS program is being used, and the type of system being designed. Contact your LG representative for the best software program for your application.

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TABLE OF SYMBOLS



 A2L	Indicates that this appliance uses a flammable refrigerant. If the refrigerant leaks and is exposed to an external ignition source, there is a risk of fire.
DANGER	Indicates a hazardous situation that, if not avoided, WILL RESULT IN DEATH OR SERIOUS INJURY . ¹
WARNING	Indicates a hazardous situation that, if not avoided, COULD RESULT IN DEATH OR SERIOUS INJURY . ¹
CAUTION	Indicates a hazardous situation that, if not avoided, COULD RESULT IN MINOR OR MODERATE INJURY . ¹
NOTICE	Indicates information considered important, but not hazard-related; indicates situations that may result in equipment or property damage accidents. ¹
	This symbol indicates an action that should not be performed.

¹Signal words, symbols, and definitions taken from American National Standards Institute (ANSI) Z535.6. See <https://www.ansi.org/> for more information.



R32 Refrigerant

LG Electronic split system heating and air conditioning (HVAC) products now contain R32 refrigerant. While R32 refrigerant is slightly flammable, it has a higher efficiency, a lower Global Warming Potential (GWP) value, and is more environmentally friendly than R410A.
R32 Ozone Depletion Potential (ODP) Value: 0.
R32 Global Warming Potential (GWP) Value: 675.

The amount of refrigerant depends on outdoor unit to indoor unit configuration. All refrigerant piping system components (copper piping, joints, and other fittings) must be selected and installed to conform with Refrigeration Safety Regulation standards. Use LG Air Conditioner Technical Solution (LATS) Software to verify the refrigerant amount needed for each installation.

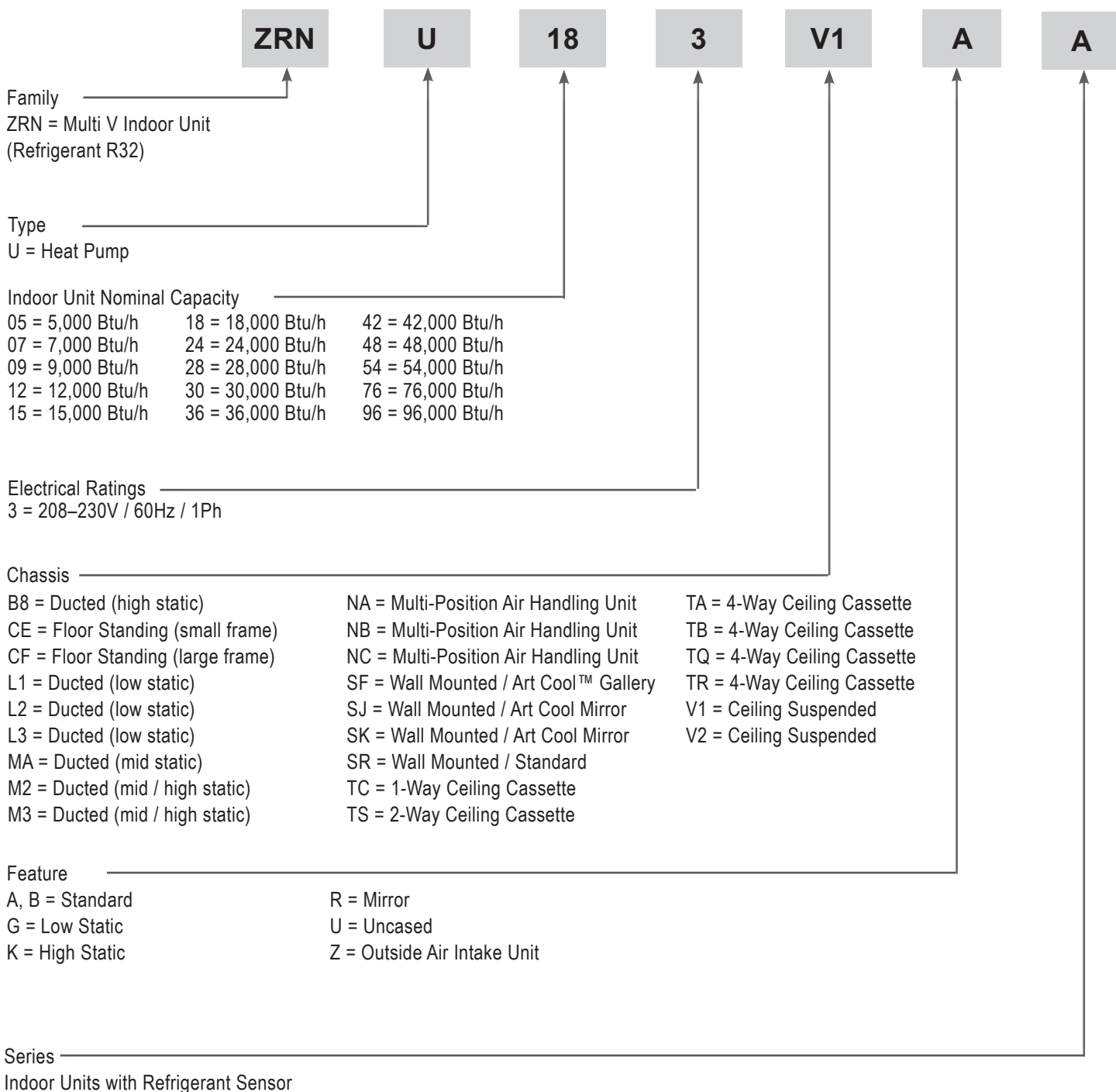
WARNING

- This HVAC system contains fluorinated greenhouse gases in the form of R32 refrigerant. Do not leak refrigerant gas into the atmosphere.
- Only use R32 as the refrigerant in these HVAC systems. If other substances are added, it may cause an explosion.
- R32 refrigerant is slightly flammable. When handled properly, it does not leak. If the refrigerant leaks in the installation area and comes in contact with a flame, it may generate a fire and / or harmful gas.
- If a leak occurs, immediately turn off any combustion devices, ventilate the installation area, and contact the dealer / contractor where the HVAC unit was purchased. Do not operate the unit until the refrigerant leaked is repaired.

CAUTION

- Piping wall thickness must comply with all applicable local, state, and federal regulations for the design pressures listed by the manufacturer. Unapproved piping must not be used.
- To prevent piping from softening, do not heat the piping more than necessary.





REFRIGERANT CHARGE WORKSHEET



R32 Multi V i System R32 Refrigerant Charge Calculator (lbs.)

Table 1: Multi V i System R32 Refrigerant Charge Calculator (lbs. per feet).

System Tag or ID:		Job Name: _____		Date: _____		
		Project Manager: _____				
Line #	Description	Chassis I.D.	Size	Quantity	CF (Ref.) ¹	Total (lbs.)
1	Linear feet of 1/4" liquid line tubing ²	—	—		0.013	
2	Linear feet of 3/8" liquid line tubing ²	—	—		0.036	
3	Linear feet of 1/2" liquid line tubing ²	—	—		0.069	
4	Linear feet of 5/8" liquid line tubing ²	—	—		0.103	
5	Linear feet of 3/4" liquid line tubing ²	—	—		0.158	
6	Linear feet of 7/8" liquid line tubing ²	—	—		0.210	
7	Linear feet of 1" liquid line tubing ²	—	—		0.284	
8	Standard + Art Cool Mirror	SJ, SK	5k to 15k		0.44	
9	Standard + Art Cool Mirror	SJ, SK	18k to 24k		0.51	
10	Standard	SR	30k to 36k		1.08	
11	1-Way Cassette	TC	7k to 18k		0.42	
12	2-Way Cassette	TS	18k to 24k		0.62	
13	4-Way 2' x 2' Cassette	TR	5k to 7k		0.33	
14	4-Way 2' x 2' Cassette	TR	9k to 12k		0.46	
15	4-Way 2' x 2' Cassette	TQ	15k to 18k		0.57	
16	4-Way 3' x 3' Cassette	TA	7k to 48k		1.23	
17	4-Way 3' x 3' Cassette	TB	7k to 15k		0.26	
18	High Static Ducted	M2	7k to 24k		0.64	
19	High Static Ducted	M3	28k		1.10	
20	High Static Ducted	B8	36k to 96k		1.83	
21	Mid Static Ducted	M2	36k to 42k		0.95	
22	Mid Static Ducted	M3	48k		1.10	
22	Low Static Ducted	L1	7k to 9k		0.26	
24	Low Static Ducted	L2	12k to 18k		0.37	
25	Low Static Ducted	L3	24k		0.49	
26	Multi-Position Air Handling Unit	NA	12k to 24k		0.86	
27	Multi-Position Air Handling Unit	NB	30k to 48k		1.68	
28	Multi-Position Air Handling Unit	NC	54k to 60k		1.68	
29	Floor Standing	CE (U)	7k to 15k		0.31	
30	Floor Standing	CF (U)	18k to 24k		0.68	
31	Ceiling Suspended	VM1	18k to 24k		0.44	
32	Ceiling Suspended	VM2	36k to 48k		0.66	
33	Heat Recovery Units (HRU): PRHR024C, 034C, 044C	—	—		1.0	
34	Heat Recovery Units (HRU): PRHR065C, 085C	—	—		2.0	
35	ADDITIONAL Refrigerant Charge Required (Sum of lines 1 – 34)					
36	Outdoor Unit Factory Refrigerant Charge (lbs.)	36A	ZRUM072*TE6	72k	16.53	
		36B	ZRUM096*TE6	96k	20.94	
		36C	ZRUM121*TE6	121k	20.94	
		36D	ZRUM144*TE6	144k	26.46	
		36E	ZRUM168*TE6	168k	26.46	
		36F	ZRUM192*TE6	192k	30.86	
		36G	ZRUM216*TE6	216k	37.48	
		36H	ZRUM241*TE6	241k	37.48	
		36I	ZRUM264*TE6	264K	37.48	
37	Total FACTORY Outdoor Unit (ODU) Refrigerant Charge (Sum of factory refrigerant charges for all ODUs in the system)					
38	TOTAL SYSTEM CHARGE Sum of ADDITIONAL Refrigerant Charge Required (line 35) and Total FACTORY ODU Refrigerant Charge (line 37)					

¹CF (Ref.) = Correction Factor for Refrigerant Charge. ²For refrigerant charge purposes, consider only the liquid line; ignore the vapor line(s).



REFRIGERANT CHARGE WORKSHEET

R32 Multi V S System Refrigerant Charge Calculator (lbs.)

Table 2: Multi V S System R32 Refrigerant Charge Calculator (lbs. per feet).

System Tag or ID:		Job Name: _____		Date: _____		
		Project Manager: _____				
Line #	Description	Chassis I.D.	Size	Quantity	CF (Ref.) ¹	Total (lbs.)
1	Linear feet of 1/4" liquid line tubing ²	—	—		0.013	
2	Linear feet of 3/8" liquid line tubing ²	—	—		0.036	
3	Linear feet of 1/2" liquid line tubing ²	—	—		0.069	
4	Linear feet of 5/8" liquid line tubing ²	—	—		0.103	
5	Linear feet of 3/4" liquid line tubing ²	—	—		0.158	
6	Linear feet of 7/8" liquid line tubing ²	—	—		0.210	
7	Linear feet of 1" liquid line tubing ²	—	—		0.284	
8	Standard + Art Cool Mirror	SJ, SK	5k to 15k		0.44	
9	Standard + Art Cool Mirror	SJ, SK	18k to 24k		0.51	
10	Standard	SR	30k to 36k		1.08	
11	1-Way Cassette	TC	7k to 18k		0.42	
12	2-Way Cassette	TS	18k to 24k		0.62	
13	4-Way 2' x 2' Cassette	TR	5k to 7k		0.33	
14	4-Way 2' x 2' Cassette	TR	9k to 12k		0.46	
15	4-Way 2' x 2' Cassette	TQ	15k to 18k		0.57	
16	4-Way 3' x 3' Cassette	TA	7k to 48k		1.23	
17	4-Way 3' x 3' Cassette	TB	7k to 15k		0.26	
18	High Static Ducted	M2	7k to 24k		0.64	
19	High Static Ducted	M3	28k		1.10	
20	High Static Ducted	B8	36k to 96k		1.83	
21	Mid Static Ducted	M2	36k to 42k		0.95	
22	Mid Static Ducted	M3	48k		1.10	
22	Low Static Ducted	L1	7k to 9k		0.26	
24	Low Static Ducted	L2	12k to 18k		0.37	
25	Low Static Ducted	L3	24k		0.49	
26	Multi-Position Air Handling Unit	NA	12k to 24k		0.86	
27	Multi-Position Air Handling Unit	NB	30k to 48k		1.68	
28	Multi-Position Air Handling Unit	NC	54k to 60k		1.68	
29	Floor Standing	CE (U)	7k to 15k		0.31	
30	Floor Standing	CF (U)	18k to 24k		0.68	
31	Ceiling Suspended	VM1	18k to 24k		0.44	
32	Ceiling Suspended	VM2	36k to 48k		0.66	
33	Heat Recovery Units (HRU): PRHR024C, 034C, 044C	—	—		1.0	
34	Heat Recovery Units (HRU): PRHR065C, 085C	—	—		2.0	
35	ADDITIONAL Refrigerant Charge Required (Sum of lines 1 – 34)					
36	Outdoor Unit Factory Refrigerant Charge (lbs.)	36A	ZRUN024GSS0	24,000		3.3
		36B	ZRUM036GSS0	36,000		6
		36C	ZRUM048GSS0	48,000		6
		36D	ZRUM060GSS0	60,000		6.9
37	Total FACTORY Outdoor Unit (ODU) Refrigerant Charge (Sum of factory refrigerant charges for all ODUs in the system)					
38	TOTAL SYSTEM CHARGE Sum of ADDITIONAL Refrigerant Charge Required (line 35) and Total FACTORY ODU Refrigerant Charge (line 37)					

¹CF (Ref.) = Correction Factor for Refrigerant Charge. ²For refrigerant charge purposes, consider only the liquid line; ignore the vapor line(s).

REFRIGERANT CHARGE WORKSHEET



R32 Multi V Water 5 Refrigerant Charge Calculator (lbs.)

Table 3: Multi V Water 5 System R32 Refrigerant Charge Calculator (lbs. per feet).

System Tag or ID:		Job Name: _____		Project Manager: _____ Date: _____					
Line #	Description	Chassis I.D.	Size	Quantity	CF (Ref.) ¹	Total (lbs.)			
1	Linear feet of 1/4" liquid line tubing ²	—	—		0.013				
2	Linear feet of 3/8" liquid line tubing ²	—	—		0.036				
3	Linear feet of 1/2" liquid line tubing ²	—	—		0.069				
4	Linear feet of 5/8" liquid line tubing ²	—	—		0.103				
5	Linear feet of 3/4" liquid line tubing ²	—	—		0.158				
6	Linear feet of 7/8" liquid line tubing ²	—	—		0.210				
7	Linear feet of 1" liquid line tubing ²	—	—		0.284				
8	Standard + Art Cool Mirror	SJ, SK	5k to 15k		0.44				
9	Standard + Art Cool Mirror	SJ, SK	18k to 24k		0.51				
10	Standard	SR	30k to 36k		1.08				
11	1-Way Cassette	TC	7k to 18k		0.42				
12	2-Way Cassette	TS	18k to 24k		0.62				
13	4-Way 2' x 2' Cassette	TR	5k to 7k		0.33				
14	4-Way 2' x 2' Cassette	TR	9k to 12k		0.46				
15	4-Way 2' x 2' Cassette	TQ	15k to 18k		0.57				
16	4-Way 3' x 3' Cassette	TA	7k to 48k		1.23				
17	4-Way 3' x 3' Cassette	TB	7k to 15k		0.26				
18	High Static Ducted	M2	7k to 24k		0.64				
19	High Static Ducted	M3	28k		1.10				
20	High Static Ducted	B8	36k to 96k		1.83				
21	Mid Static Ducted	M2	36k to 42k		0.95				
22	Mid Static Ducted	M3	48k		1.10				
23	Low Static Ducted, Low Static Ducted Bottom Return	L1	7k to 9k		0.26				
24	Low Static Ducted, Low Static Ducted Bottom Return	L2	12k to 18k		0.37				
25	Low Static Ducted, Low Static Ducted Bottom Return	L3	24k		0.49				
26	Multi-Position Air Handling Unit	NA	12k to 24k		0.86				
27	Multi-Position Air Handling Unit	NB	30k to 48k		1.68				
28	Multi-Position Air Handling Unit	NC	54k to 60k		1.68				
29	Floor Standing	CE (U)	7k to 15k		0.31				
30	Floor Standing	CF (U)	18k to 24k		0.68				
31	Ceiling Suspended	VM1	18k to 24k		0.44				
32	Ceiling Suspended	VM2	36k to 48k		0.66				
33	Heat Recovery Units (HRU): PRHR024C, 034C, 044C	—	—		1.0				
34	Heat Recovery Units (HRU): PRHR065C, 085C	—	—		2.0				
35	ADDITIONAL Refrigerant Charge Required (Sum of lines 1 – 34)								
36	R32 Multi V Water 5 Unit Factory Refrigerant Charge	ZRWM072BAS5, ZRWM096BAS5, ZRWM121BAS5, ZRWM144BAS5			7.7				
		ZRWM072DAS5, ZRWM096DAS5, ZRWM121DAS5, ZRWM144DAS5			7.7				
		ZRWM168DAS5, ZRWM192DAS5			9.9				
37	Total WSU FACTORY Refrigerant Charge (Sum of factory refrigerant charges for all WSUs in the system)								
38	TOTAL SYSTEM CHARGE								
	Sum of Additional Refrigerant Charge Required (line 35) and Total WSU Factory Refrigerant Charge (line 37)								

¹CF (Ref.) = Correction Factor for Refrigerant Charge. ²For refrigerant charge purposes, consider only the liquid line; ignore the vapor line(s).

CEILING SUSPENDED PRODUCT DATA

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CEILING SUSPENDED



Mechanical Specifications

Casing

The case is designed to mount against the ceiling surface in a horizontal supply air configuration. The return air is from the bottom and supply air is from a single slot on the front of the unit. The unit is manufactured using a coated metal frame covered with an off-white ABS architectural polymeric resin exterior case. Cold surfaces are covered with a coated polystyrene insulating material.

Fan Assembly and Control

The unit has a single, direct driven, Sirocco fan made of high strength ABS HR-2407 polymeric resin. The fan motor is a Brushless Digitally-Controlled (BLDC) design with permanently lubricated and sealed ball bearings. The fan/motor assembly is mounted on vibration attenuating rubber grommets. The fan speed is controlled using a microprocessor-based direct digital control algorithm that provides a minimum of three pre-programmed fan speeds in the Heating and Fan Only modes and four speeds in the Cooling mode. Fan settings are high, medium, and low. The fourth speed in the Cooling mode is a super high setting that runs for 30 minutes at high fan speed. The fan speed algorithm provides field-selectable fixed or multiple auto fan settings.

Ventilation Air

The case has a factory designated knockout location for the connection of a field-supplied outside air duct. An optional flange kit is available from LG.

Air Filter

Return air is filtered with a removable, washable filter. Access to the filter media is through a hinged, spring clip (screwless) return air grille located on the bottom of the unit.

Airflow Guide Vanes

The supply air opening has a single directional slot diffuser with an oscillating motorized guide vane designed to change the angle airflow is supplied. The supply air range of motion is 40° in an up / down direction with the capability of locking the vane in a fixed position. Manually adjustable guide vanes are provided to set the airflow supply air direction from side-to-side.

Microprocessor Controls

The unit is provided with an integrated microprocessor-based controller. The controller is capable of performing functions necessary to operate the system without the use of a wall-mounted controller. A temperature thermistor is factory-mounted in the return air stream. All unit operation parameters, excluding the 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 indoor 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: self-diagnostics, auto restart following power restoration, test run, and will operate the indoor unit using one of five operating modes:

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

For Heat Recovery systems the Auto Changeover setting automatically switches between cooling and heating modes based on room 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 indoor unit when indoor room temperature falls below set-point temperature and signals the outdoor unit to begin the heating cycle. The indoor unit fan operation is delayed until coil pipe temperature reaches 76°F. Significant airflow is generated when pipe temperature reaches 80°F. The unit is equipped with an infrared receiver designed to communicate with an LG hand-held remote controller. Pluggable connection sockets 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 space temperature readings concurrently or individually from either:

1. Wall-mounted wired controller(s).
2. Factory mounted return air thermistor or the optional wall-mounted wired remote temperature sensor.

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 mode test cycle that operates the unit in full Cooling mode for 18 minutes without regard to space temperature. If the system is provided with an optional wall-mounted or central controller, displayed diagnostic codes are specific, alpha numeric, and provide the service technician with a reason for the code displayed.

Handling Condensate

The unit is designed for gravity draining of condensate. LG provides a factory insulated flexible drain hose. If condensate lift/pumps are needed for the application, they are to be field-provided.



Refrigerant Leak Detection

The indoor unit contains an R32 refrigerant leak sensor. The sensor is designed to control optional refrigerant piping shut-off valves if a leak is detected. Shut-off valve units are available as separate LG accessories or included as components in LG Heat Recovery Unit accessories. The sensor can enable four individual controller displayed error codes for leak detection (CH230), sensor fault (CH228), 6 months life remaining (CH236) and end of life (CH229).

Table 4: Refrigerant Leak Sensor Specifications.

Item	Specification
Refrigerant	R32
Detection Concentration	5,000 ppm
Power Supply	DC 5V
Operating Temperature	-25°F to +140°F
Lifetime	10 years

Controls Features

- Auto changeover (Heat Recovery only)
- Auto operation
- Auto restart
- External on/off control
- Dual thermistor control
- Dual set-point control
- Filter life display
- Multiple auxiliary heater applications
- Group control
- External static pressure control
- Hot start
- Self diagnostics
- Timer (on / off)
- Weekly schedule
- Fan speed control
- Wi-Fi compatible
- Auto fan
- R32 leak detection sensor

CEILING SUSPENDED



General Data

Table 5: R32 Ceiling Suspended Indoor Unit General Data.

Model No.	ZRNU183V1AA	ZRNU243V1AA	ZRNU363V2AA	ZRNU483V2AA
Cooling Mode Performance				
Capacity (Btu/h)	19,100	24,200	36,200	48,100
Max. Power Input ¹ (W)	130	130	184	184
H / M / L Power at Factory Default (W)	23 / 20 / 17	25 / 21 / 17	84 / 77 / 66	91 / 79 / 66
Heating Mode Performance				
Capacity (Btu/h)	21,500	27,300	40,600	54,200
Max Power Input ¹ (W)	130	130	184	184
H / M / L Power at Factory Default (W)	23 / 20 / 17	25 / 21 / 17	84 / 77 / 66	91 / 79 / 66
Unit Data				
Refrigerant Type ²	R32			
Refrigerant Control	EEV			
Sound Pressure ³ dB(A) (H/M/L)	36 / 34 / 33	37 / 35 / 33	45 / 44 / 41	47 / 44 / 41
Sound Power ⁴ dB(A) (H/M/L)	61 / 59 / 56	62 / 59 / 56	68 / 66 / 64	68 / 67 / 66
Net Unit Weight (lbs.)	63.9	63.9	81.6	81.6
Shipping Weight (lbs.)	76.1	76.1	95.9	95.9
Communication Cable ⁵ (No. x AWG)	2 x 18			
Fan				
Type	Sirocco	Sirocco	Sirocco	Sirocco
Quantity	1	1	1	1
Motor/Drive	Brushless Digitally Controlled / Direct			
Factory Set Airflow Rate H/M/L (CFM)	477 / 441 / 424	495 / 459 / 424	954 / 848 / 706	1,024 / 848 / 706
Piping				
Liquid Line (in., O.D.)	1/4 Flare	1/4 Flare	3/8 Flare	3/8 Flare
Vapor Line (in., O.D.)	1/2 Flare	1/2 Flare	5/8 Flare	5/8 Flare
Condensate Line (in., I.D.)	1	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.

All capacities are net with a combination ratio between 95-105%.

Rated capacity is certified under AHRI Standard 1230. Ratings are subject to change without notice.

Current certified ratings are available at <https://www.ahridirectory.org/>

¹ Max. power input is rated at maximum setting value.

² Take appropriate actions at the end of HVAC equipment life to recover, recycle, reclaim or destroy R32 refrigerant according to applicable regulations (40 CFR Part 82, Subpart F) under section 608 of CAA.

³ Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.

⁴ Sound Power level is measured using rated conditions, and tested in a reverberation room per ISO 3741.

⁵ 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 main outdoor unit only. ⚠ Do not ground the ODU-IDU communication cable at any other point.

Table 6: R32 Ceiling Suspended Indoor Unit Electrical Data.

Model	Voltage Range	MCA	MOP	Rated Amps (A)	Power Supply			Power Input ¹ (W)		
					Hz	Volts	Phase	Max. Cooling	Max. Heating	H / M / L at Factory Default
ZRNU183V1AA	187-253	1.21	15	0.96	60	208-230	1	130	130	23 / 20 / 17
ZRNU243V1AA		1.21		0.96				130	130	25 / 21 / 17
ZRNU363V2AA		1.21		0.96				184	184	84 / 77 / 66
ZRNU483V2AA		1.21		0.96				184	184	91 / 79 / 66

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.
¹Max. power input is rated at maximum setting value.

CEILING SUSPENDED

V1 Frame External Dimensions

Figure 2: ZRNU183V1AA and ZRNU243V1AA External Dimensions.

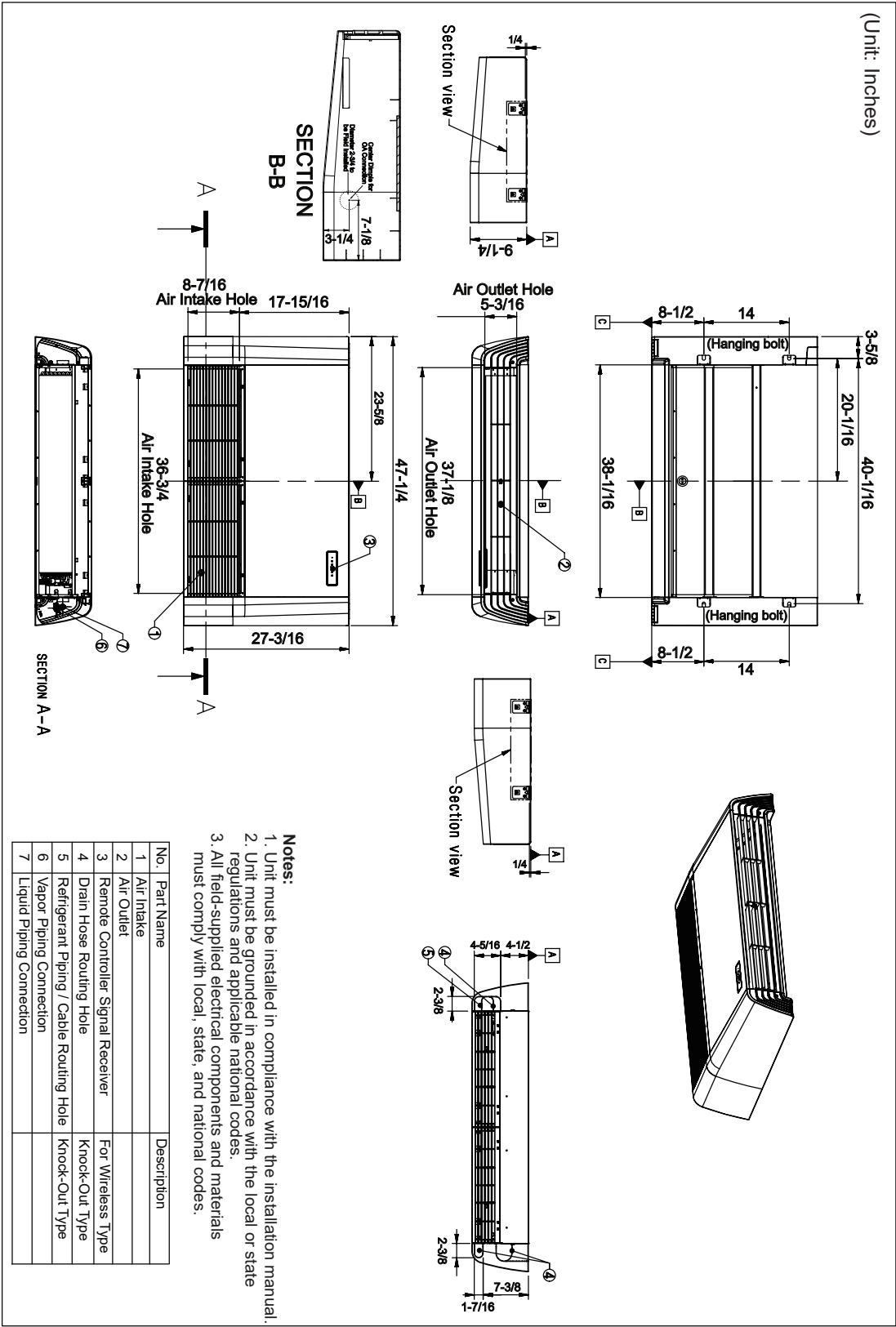
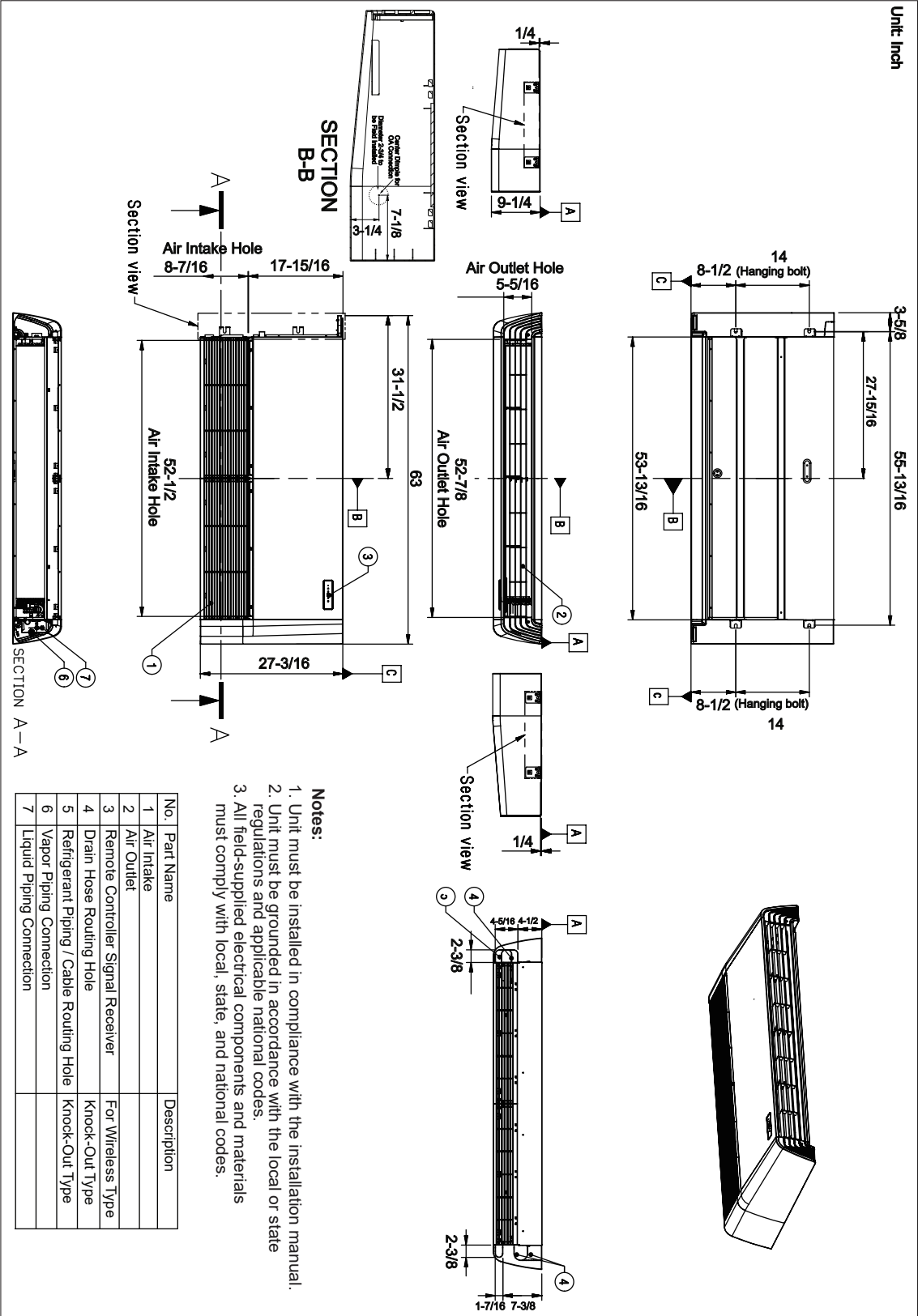


Figure 3: ZRNU363V2AA and ZRNU483V2AA External Dimensions.



CEILING SUSPENDED



Electrical Wiring Diagram

Figure 4: R32 Ceiling Suspended Indoor Unit Wiring Diagram.

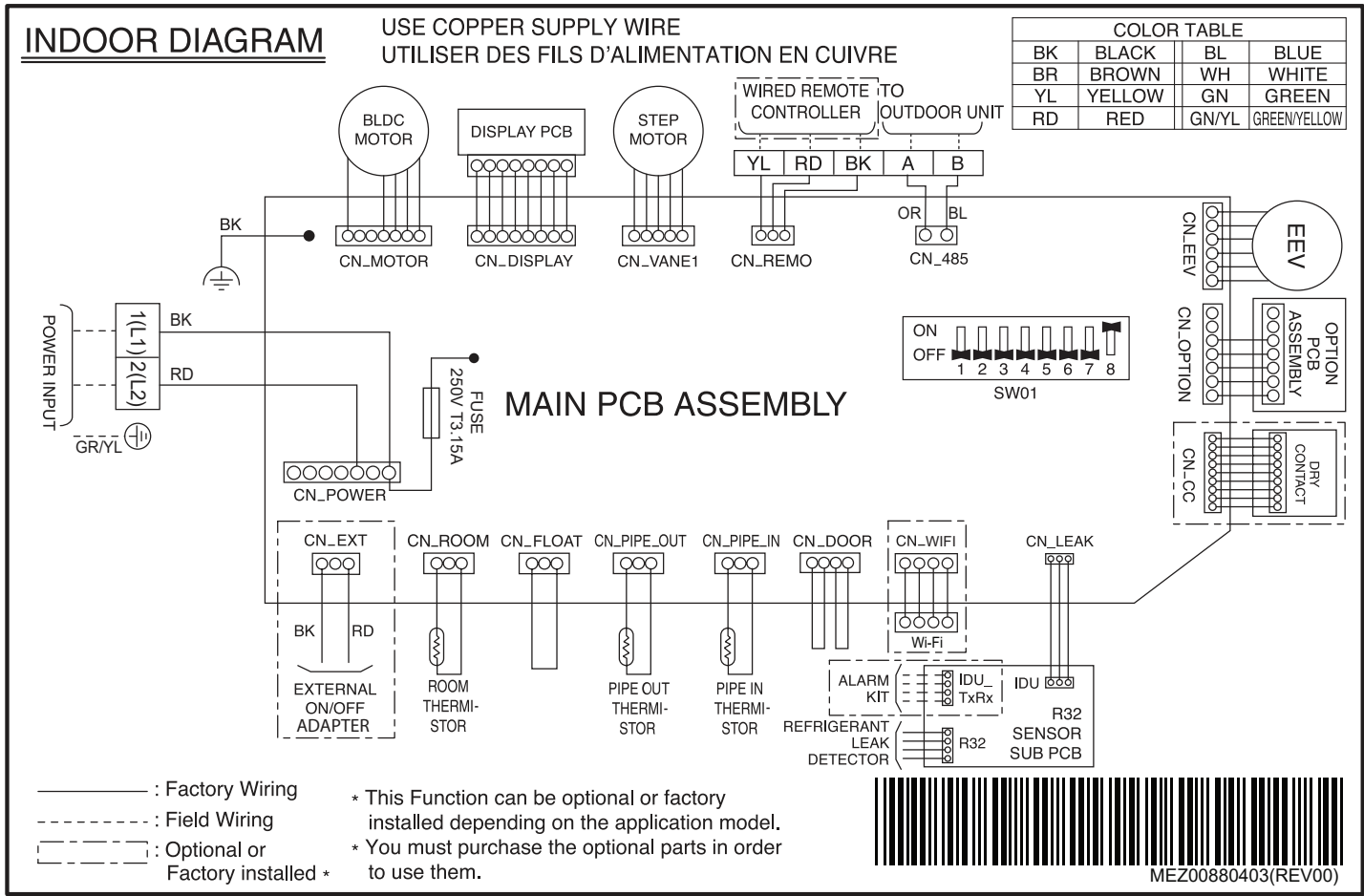


Table 7: R32 Ceiling Suspended Indoor Unit Wiring Diagram Legend.

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-VANE1	Step motor	Step motor output
CN-EEV	EEV output	EEV control output
CN-DOOR	Door lock switch	Door lock switch line
CN-EXT	External on / off controller	External on / off controller connection
CN-OPTION	Optional PCB EEPROM	Option PCB connection
CN-DISPLAY	Display	Display of indoor status
CN-CC	Dry contact	Dry Contact connection
CN-REMO	Wired remote controller	Wired remote control connection
CN-WF	Wi-Fi	Wi-Fi module connection
CN-PIPE/OUT	Discharge pipe sensor	Pipe out thermistor
CN-LEAK	Leak sensor	Leak sensor connection
CN-PIPE/IN	Suction pipe sensor	Pipe in thermistor
CN-ROOM	Room sensor	Room air thermistor
CN-485	Communication	Connection between indoor and outdoor units

Table 8: Ceiling Suspended Indoor Unit DIP Switch Settings.

DIP Switch Setting		Off	On	Remarks
SW3	GROUP CONTROL	Main	Sub	Group control setting using Programmable Controller; selects Main / Sub 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.

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Refrigerant Flow Diagram

Figure 5: R32 Ceiling Suspended Indoor Unit Refrigerant Flow Diagram.

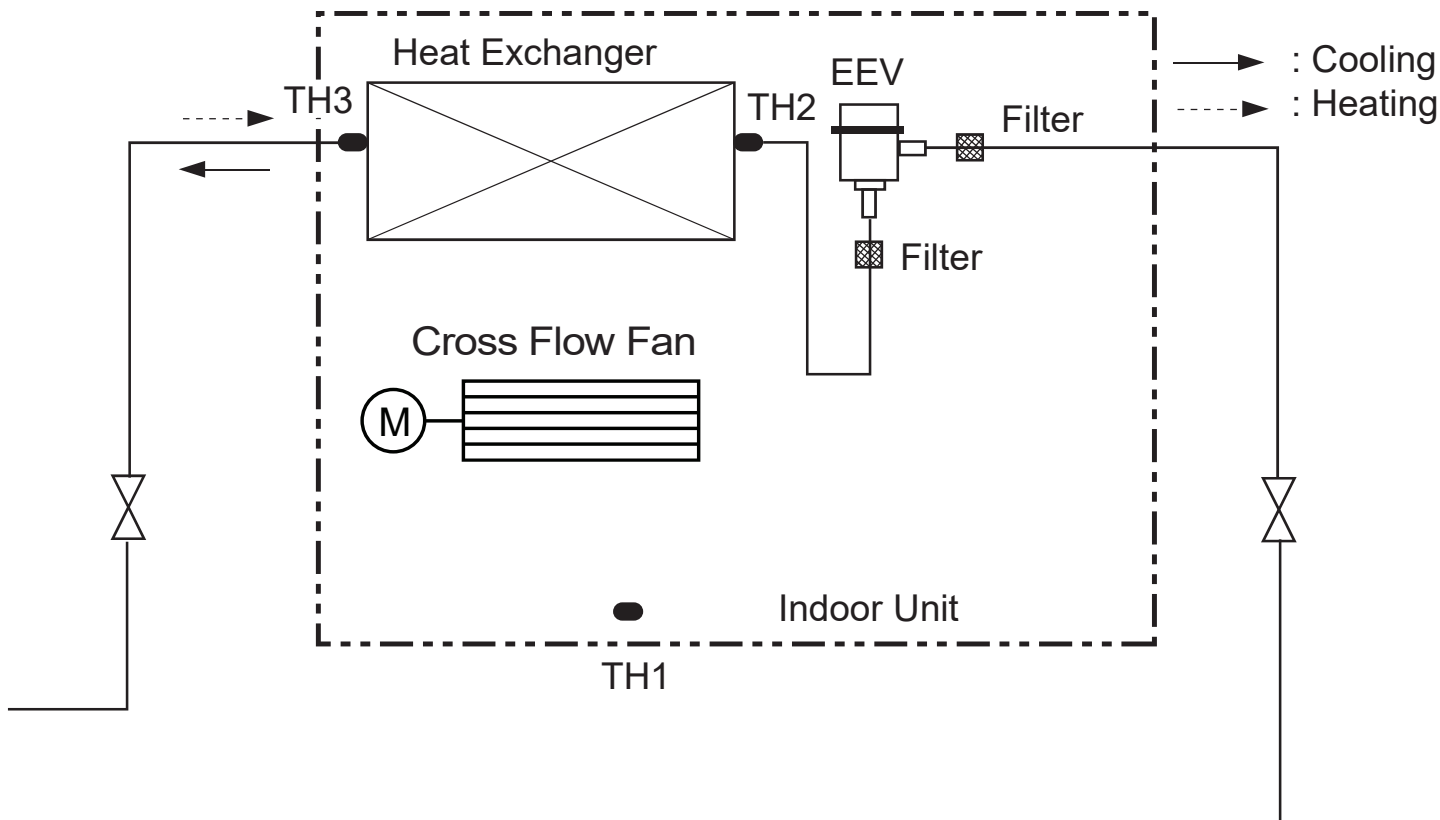


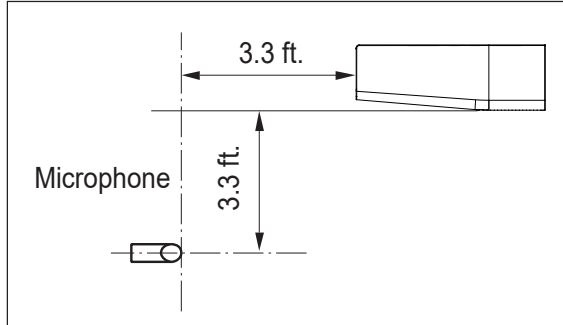
Table 9: R32 Ceiling Suspended Indoor Unit Refrigerant Pipe Connection Port Diameters.

Model	Liquid (in., O.D.)	Vapor (in., O.D.)
ZRNU183V1AA	1/4 Flare	1/2 Flare
ZRNU243V1AA	1/4 Flare	1/2 Flare
ZRNU363V2AA	3/8 Flare	5/8 Flare
ZRNU483V2AA	3/8 Flare	5/8 Flare

Table 10: R32 Ceiling Suspended Indoor Unit Thermistors.

Thermistor	Description	PCB Connector
TH1	Inlet air temperature thermistor	CN_ROOM
TH2	Evaporator in temperature thermistor	CN_PIPE IN
TH3	Evaporator out temperature thermistor	CN_PIPE OUT

Figure 6: Sound Pressure Measurement Location.



- Measurements are taken 3.3 ft. away from the front of the unit.
- Sound pressure levels are measured in dB(A) with a tolerance of ± 3 .
- Sound pressure levels are tested in an anechoic chamber under ISO Standard 3745.

Operating Conditions: Power source: 220V/60 Hz

- Sound pressure 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 11: R32 Ceiling Suspended Indoor Unit Sound Pressure Levels

Model	Sound Pressure Levels dB(A)		
	High Fan Speed	Medium Fan Speed	Low Fan Speed
ZRNU183V1AA	36	34	33
ZRNU243V1AA	37	35	33
ZRNU363V2AA	45	44	41
ZRNU483V2AA	47	44	41

Figure 7: ZRNU183V1AA and ZRNU243V1AA Sound Pressure Level Diagrams.

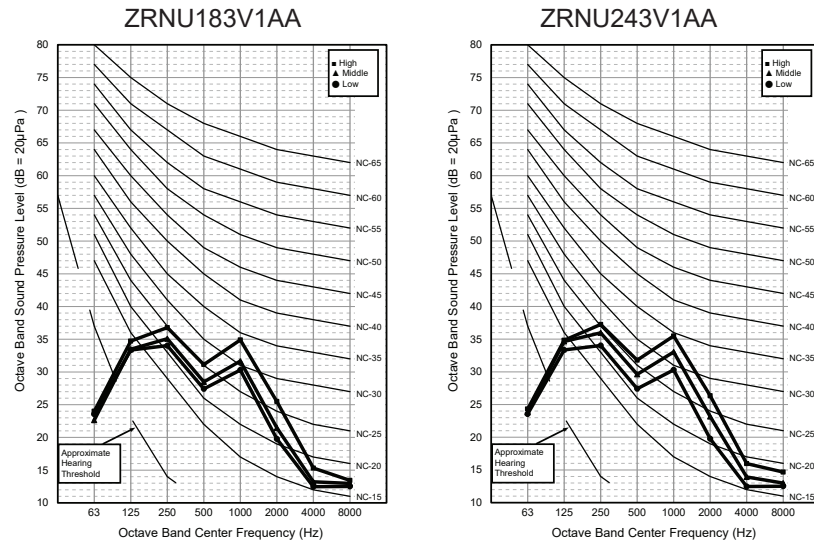
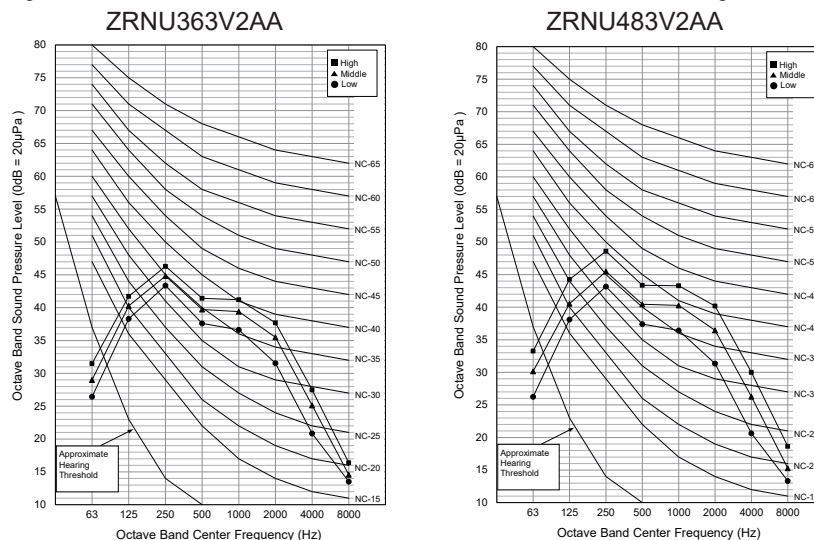


Figure 8: ZRNU363V2AA and ZRNU483V2AA Sound Pressure Level Diagrams.



CEILING SUSPENDED

Acoustic Data

Sound Power Levels



- 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 power 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 $0\text{dB} = 10\text{E-}6\mu\text{W/m}^2$

Table 12: Ceiling Suspended Indoor Unit Sound Power Levels.

Model	Sound Power Levels dB(A)		
	High Fan Speed	Medium Fan Speed	Low Fan Speed
ZRNU183V1AA	61	59	56
ZRNU243V1AA	62	59	56
ZRNU363V2AA	68	66	64
ZRNU483V2AA	68	67	66

Figure 9: ZRNU183V1AA and ZRNU243V1AA Sound Power Level Diagrams.

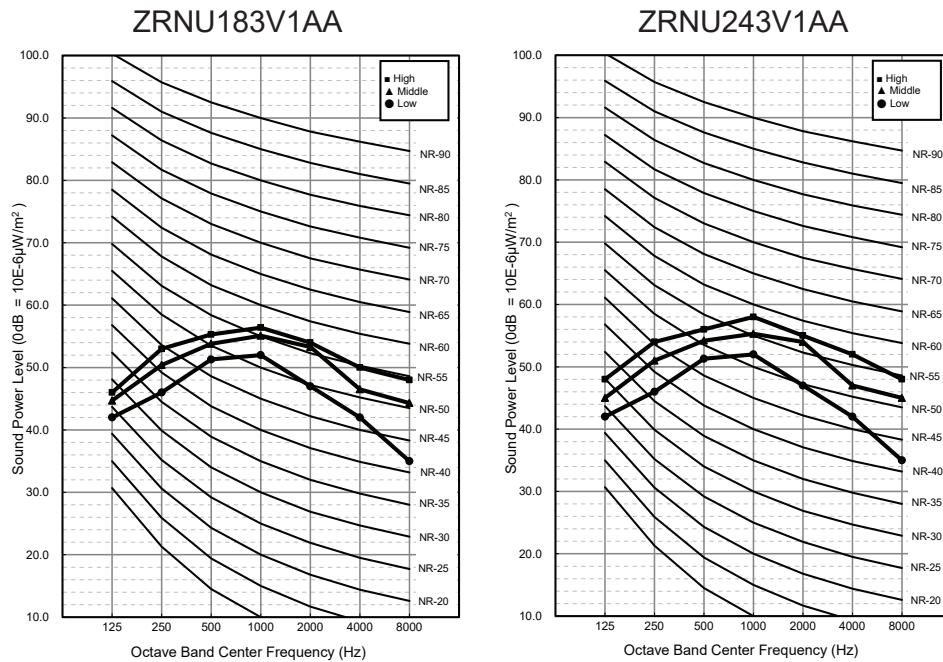


Figure 10: ZRNU363V2AA and ZRNU483V2AA Sound Power Level Diagrams.

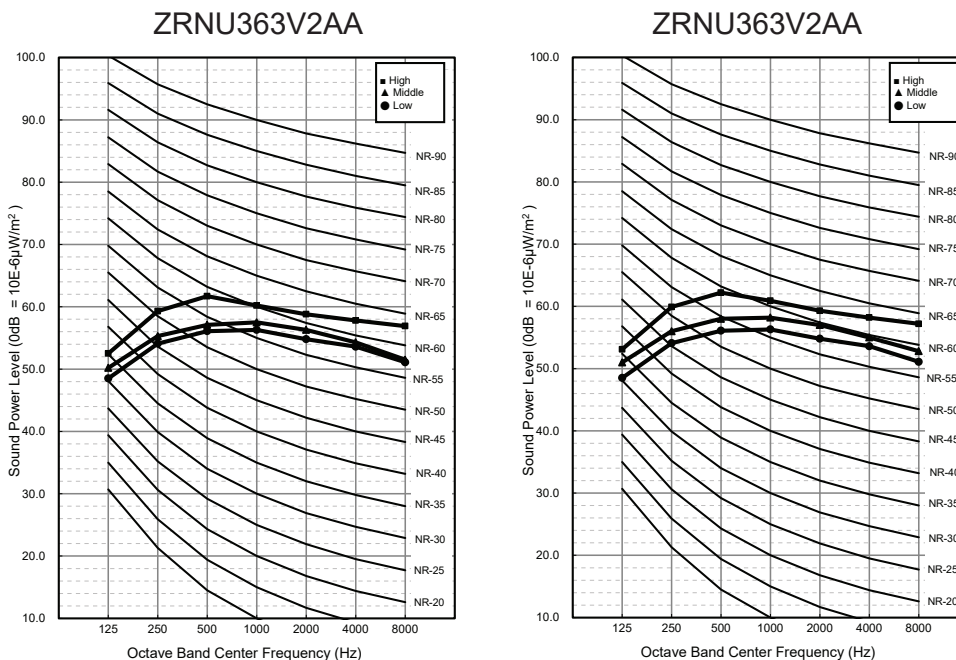
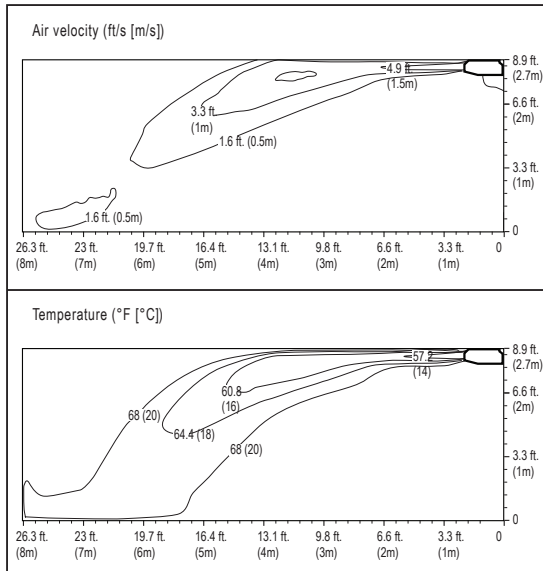


Figure 11: ZRNU183V1AA / ZRNU243V1AA
ZRNU183V1AA / ZRNU243V1AA

Cooling

Discharge angle: 0°



Heating

Discharge angle: 0°

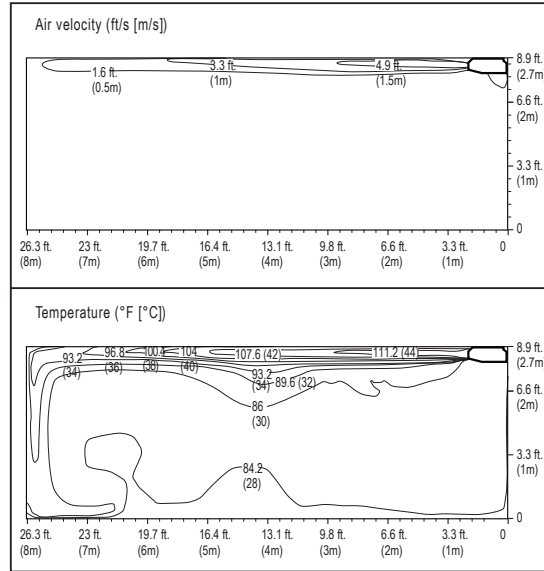
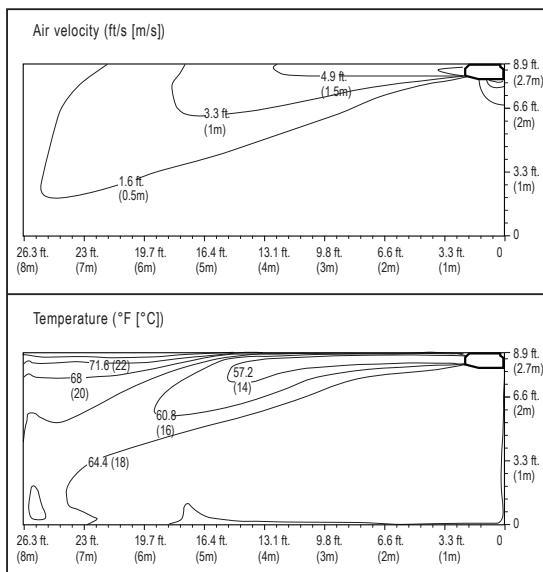


Figure 12: ZRNU363V2AA
ZRNU363V2AA

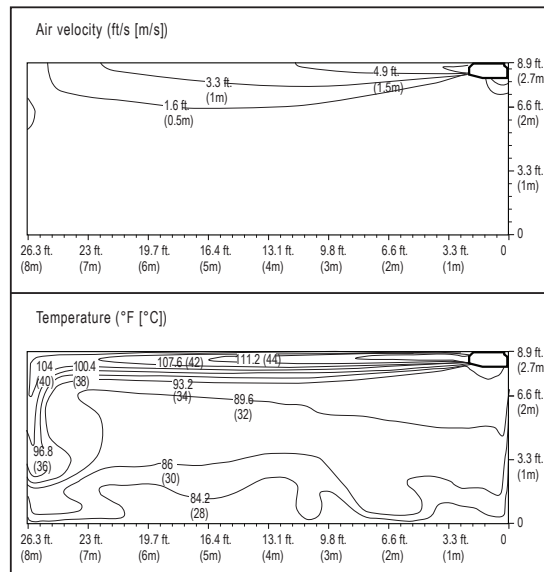
Cooling

Discharge angle: 0°



Heating

Discharge angle: 0°



CEILING SUSPENDED

Air Velocity / Temperature Distribution



Figure 13: ZRNU483V2AA

ZRNU483V2AA

Cooling

Heating

Discharge angle: 0°

Discharge angle: 0°

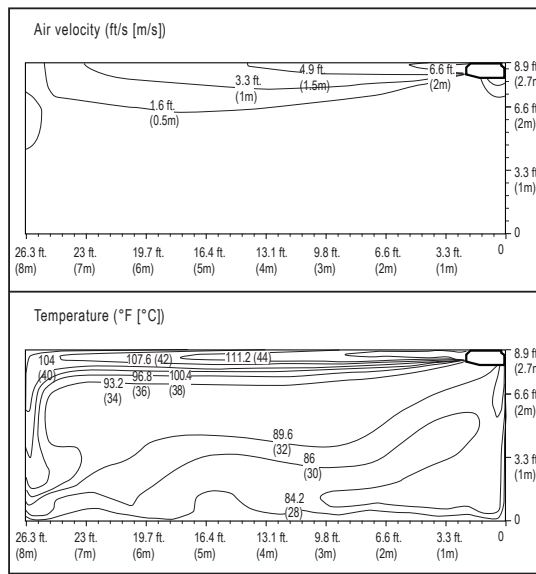
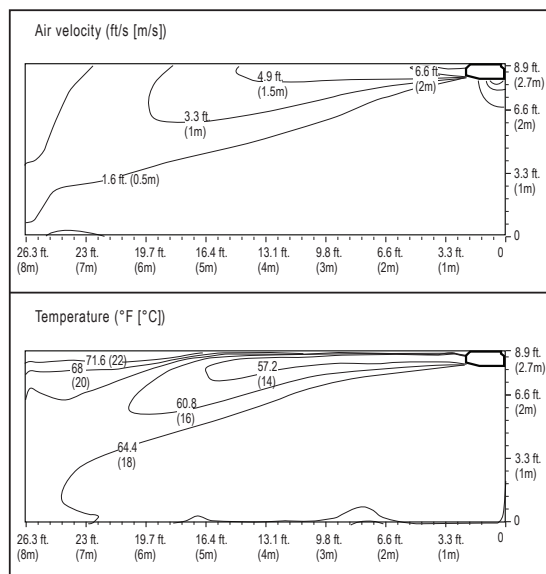


Figure 14: V1 Frame Outside Air Ventilation Diagram.

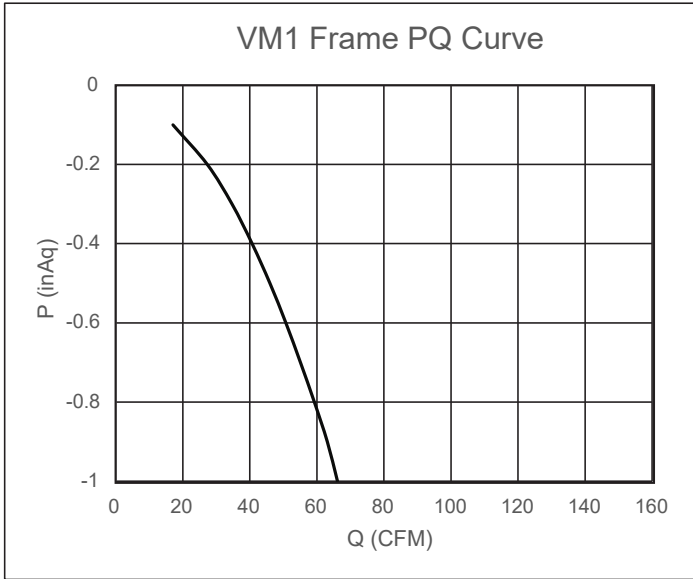


Table 13: V1 Frame Outside Air Ventilation PQ Curve Table.

Static Pressure (P [inAq])	Airflow (Q [CFM])
-0.1	17.1
-0.2	27.3
-0.3	34.7
-0.4	40.7
-0.5	46.0
-0.6	50.7
-0.7	55.1
-0.8	59.2
-0.9	63.1
-1	66.1

Figure 15: V2 Frame Outside Air Ventilation Diagram.

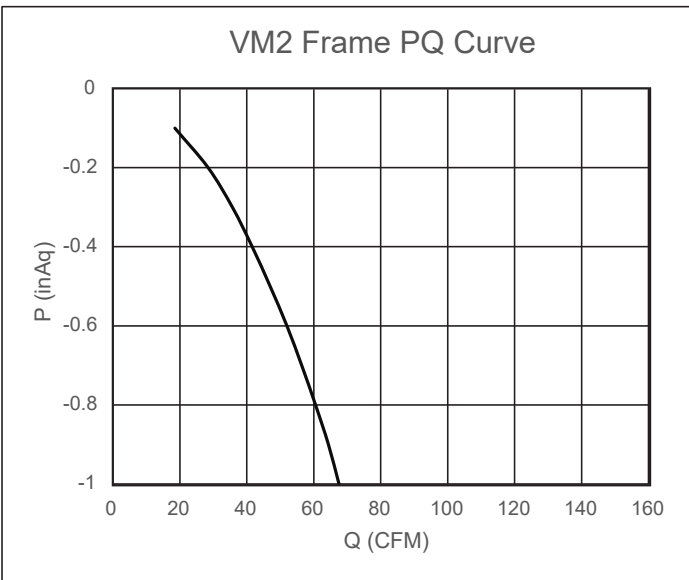


Table 14: V2 Frame Outside Air Ventilation PQ Curve Table.

Static Pressure (P [inAq])	Airflow (Q [CFM])
-0.1	18.5
-0.2	28.4
-0.3	35.7
-0.4	41.6
-0.5	47.0
-0.6	52.0
-0.7	56.4
-0.8	60.5
-0.9	64.4
-1	67.5

CEILING SUSPENDED



Capacity Tables

Cooling Capacity Table

Table 15: R32 Ceiling Suspended Indoor Unit Cooling Capacity Table.

Model No. / Capacity Index	Outdoor Air Temp. (°F DB)	Indoor Air Temperature (°F DB / WB)													
		68 / 57		73 / 61		79 / 64		80 / 67		85 / 70		88 / 73		91 / 76	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
ZRNU183V1AA / 19.1	95	12.6	11.7	15.3	13.5	17.2	14.4	19.1	15.3	20.5	16.0	20.9	15.2	21.2	14.3
ZRNU243V1AA / 24.2	95	15.9	13.8	19.4	15.9	21.8	16.9	24.2	18.1	25.9	18.8	26.4	17.9	26.8	16.8
ZRNU363V2AA / 36.2	95	23.8	23.0	29.0	26.5	32.6	28.2	36.2	30.1	38.8	31.2	39.5	29.7	40.1	28.0
ZRNU483V2AA / 48.1	95	31.7	28.4	38.5	32.8	43.3	34.9	48.1	37.2	51.5	38.6	52.5	36.8	53.3	34.7

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

Cooling range with the Low Ambient Baffle Kit (sold separately) installed on the outdoor unit(s) is -9.9°F to +122°F, and is achieved only when all indoor units are operating in cooling mode. Does not impact heat recovery system synchronous operating range.

The System Combination Ratio must be between 50–130%.

Rated capacity is certified under AHRI Standard 1230. Ratings are subject to change without notice.

Current certified ratings are available at <https://www.ahridirectory.org/>

For outdoor unit performance data, see the respective outdoor unit performance data manuals on <https://ghvac.com/commercial>.

Heating Capacity Table

Table 16: R32 Ceiling Suspended Indoor Unit Heating Capacity Table.

Model No. / Capacity Index	Outdoor Air Temp.		Indoor Air Temperature (°F DB)							
			59	61	64	67	70	73	76	80
	°F DB	°F WB	TC	TC	TC	TC	TC	TC	TC	TC
			MBh	MBh	MBh	MBh	MBh	MBh	MBh	MBh
ZRNU183V1AA / 19.1	47	43	24.1	23.9	23.7	22.6	21.5	20.9	19.8	18.8
ZRNU243V1AA / 24.2	47	43	30.6	30.3	30.0	28.7	27.3	26.5	25.1	23.9
ZRNU363V2AA / 36.2	47	43	45.5	45.1	44.7	42.6	40.6	39.4	37.4	35.5
ZRNU483V2AA / 48.1	47	43	60.7	60.2	59.6	56.9	54.2	52.6	49.9	47.4

TC: Total Capacity (MBh).

The System Combination Ratio must be between 50–130%.

Rated capacity is certified under AHRI Standard 1230. Ratings are subject to change without notice.

Current certified ratings are available at <https://www.ahridirectory.org/>

For outdoor unit performance data, see the respective outdoor unit performance data manuals on

<https://ghvac.com/commercial>.

APPLICATION GUIDELINES

Selecting the Best Location on page 28

General Ceiling Mounting on page 29

General Drain Piping Information on page 31

Wiring Guidelines on page 33

Controllers on page 35

APPLICATION GUIDELINES



Selecting the Best Location

Selecting the Best Location

Do's

- Place the unit where air circulation will not be blocked.
- Place the unit in an areas where it can be level.
- Place in a location where the mounting ceiling can bear a load exceeding four times the indoor unit weight, and is solid enough to protect the indoor unit from vibration.
- Place the unit where drainage can be obtained easily and to minimize the length of the condensate drain piping.
- Place the unit where noise prevention is taken into consideration.
- Ensure there is sufficient space from the floor, walls, and ceiling (Clearance between the wall[s] and the ceiling suspended indoor unit is more than 27-9/16 inches).
- Ensure there is sufficient space.
- Locate the indoor unit in a location where it can be easily connected to the outdoor unit / heat recovery unit.

⊗ Do Not's

- Avoid installing the unit near high-frequency generators.
- Do not install the unit near a doorway.
- The unit must not be installed near a heat or steam source, or where considerable amounts of oil, iron powder, or flour are used. (These materials will 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.)

⚠ WARNING

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

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

NOTICE

- 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.
- If the unit is installed near a body of water, the installation parts are at risk of corroding. Appropriate anti-corrosion methods must 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 will be exposed to unconditioned air (room will be above or next to an unheated garage or storeroom). Proper isolation from outside air ambient temperatures is required.

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

Figure 16: Selecting the Best Location / Minimum Clearance Requirements.

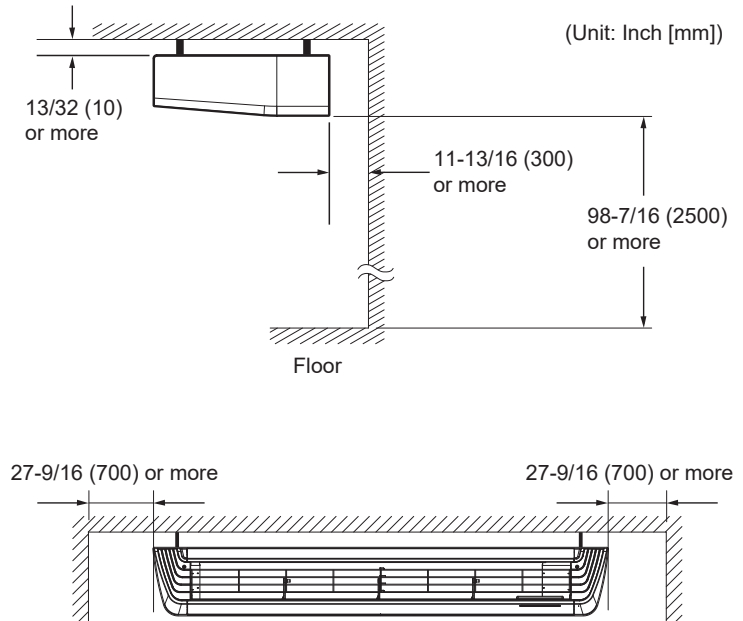
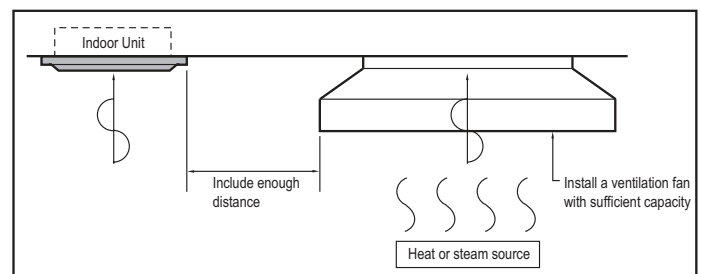


Figure 17: Installing Near a Heat or Steam Source.



Mounting for Ceiling Suspended Indoor Units

1. Prepare four (4) hanging bolts (each bolt length must be the same length).
2. Select the area for the ceiling suspended unit. Using the factory-provided paper template, mark where the hanging bolts are to place placed on the ceiling. Mark the locations where the piping access holes should be.
3. Drill the holes. Add the washers and regular nuts to the hanging bolts. Insert the anchor nuts into the ceiling, then firmly mount the suspension bolts to the anchor nuts.
4. Tighten the washers and regular nuts to lock the hanging bolts to the ceiling.
5. Secure the hangers on the indoor units to the hanging bolts using nuts, washers, and spring washers.
6. Measure for level. Adjust the angle as necessary by tightening and / or loosening the hanging bolts.
7. Adjust the slope by tightening and / or loosening the hanging bolts. The indoor unit must include a slight incline so it will drain easily. The incline must be less than or equal to 1°, or between 3/8 - 13/16 inches in drain direction (see next page).

⚠ WARNING

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

NOTICE

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

Figure 18: Mounting for Ceiling Suspended Indoor Units.

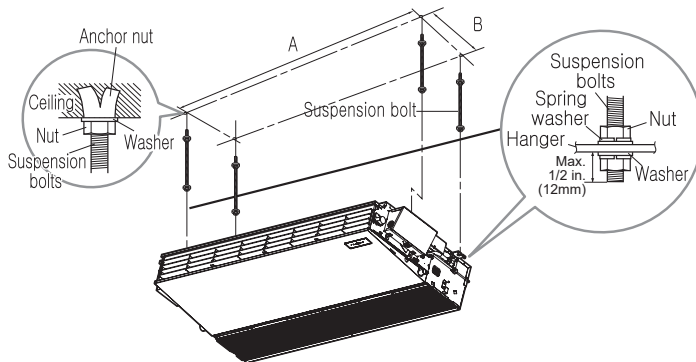


Figure 19: Close Up of Hanging Bolt Installation.

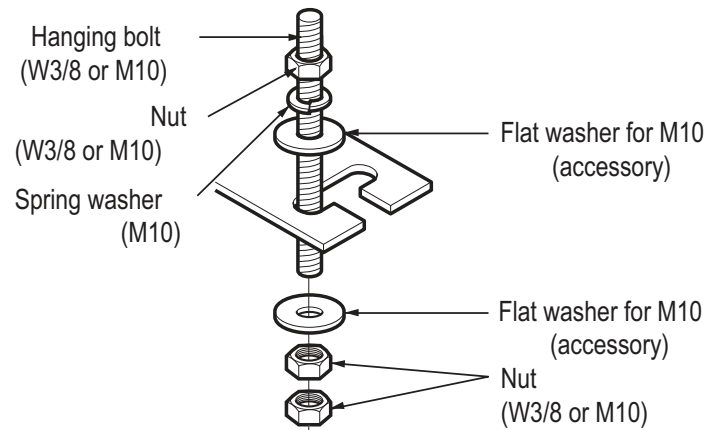


Table 17: Ceiling Suspended Bolt Locations.

Indoor Unit Model	Bolt Locations (in., [mm])	
	A	B
ZRNU183V1AA, ZRNU243V1AA	40-1/16 (1,018)	14 (355)
ZRNU363V2AA, ZRNU483V2AA	55-13/16 (1,418)	14 (355)

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

⚠ 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.

NOTICE

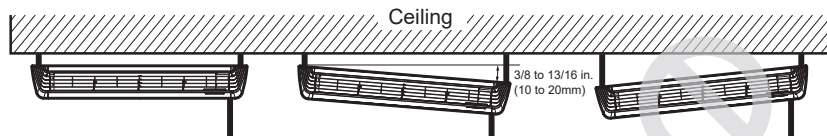
The threaded rod hangers (bolts) and hardware must be securely tightened to prevent the unit from falling from its installation location. There is a risk of property damage from falling equipment.

General Ceiling Mounting

Figure 20: Sloping the Ceiling Suspended Indoor Unit for Drainage.

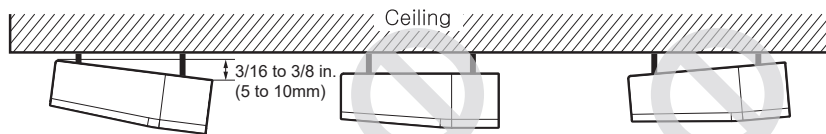
Front View

- The unit must be horizontal or slope at angle.
- The slope should be less than or equal to 1° or between 3/8 to 13/16 inches (10 to 20mm) to the drain direction as shown.



Side View

The unit must slope down when installation is finished.



Drain Piping for Ceiling Suspended Indoor Units

Indoor units generate water during cooling operation, therefore, how to properly handle this condensation must be considered.

Ceiling suspended 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.

When the bottom surface of the indoor unit is at an elevation below the receiving building drain line connection, install an inverted trap at the top of the condensate pump discharge riser before connection to the building drain pipe.

When the receiving drain line is mounted horizontal, connect the inverted trap to the top half of the pipe. The connection point of the inverted trap to the building drain pipe must always be to the top half of the pipe and must  never be over 45° either side of the upper most point of the horizontal building drain line.

If connecting to a vertical drain line or plumbing system vent line, connect the IDU condensate pump discharge line using a Y-45 fitting with the double end of the Y-45 fitting facing up. When connecting to a vertical drain line include an inverted trap at the top of the IDU condensate pump discharge riser before connection to the Y-45 fitting.

Drain Hose

Ceiling suspended units have a built in drain hose. If necessary, the drain hose can be extended.

Drain Piping

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

NOTICE

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

Drain Leak Test

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

Drain Pipe Insulation

Install field supplied polyethylene foam insulation 5/16 inch thick or greater on the flexible drain pipe and position snugly against indoor unit.

NOTICE

Ensure the indoor unit, 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. If not, the equipment and piping will sag, resulting in system malfunction and / or unit damage.

Figure 22: Ceiling Suspended Indoor Unit with Gravity Drain.

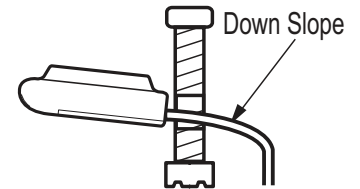
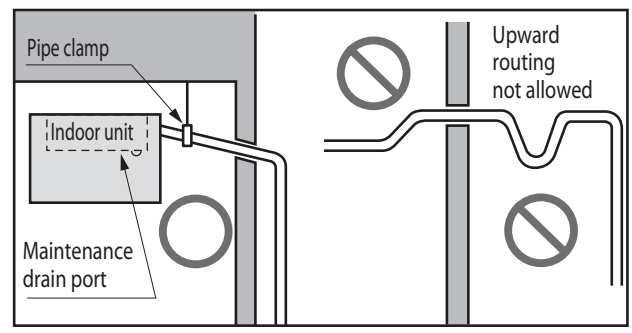


Table 18: Indoor Unit Drain Piping Specifications.

Indoor Unit	Drain Type	Drain Pipe Diameter (ID, in.)
Ceiling Suspended	Gravity	Ø5/8

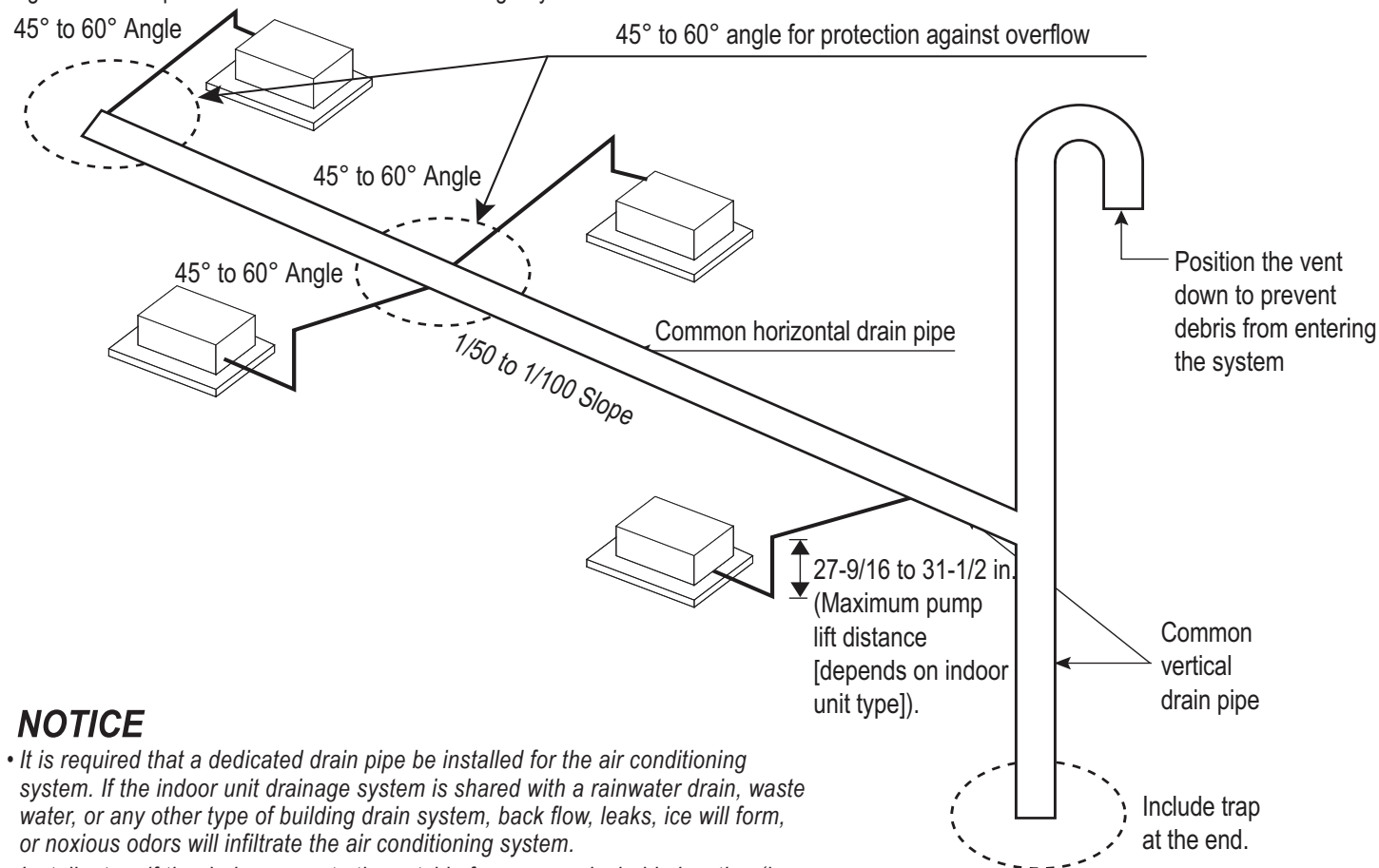
Figure 21: Drain Piping Slope.



Common Indoor Unit Drainage System

It is usual work practice to connect individual indoor unit drain pipes to one common indoor unit drainage system. The diameter of the common vertical drain pipe must be as large as necessary. The diameter of the horizontal pipe must 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 will be prudent to install a secondary drain line. Design the drain system to plan for winter operation (condensate line will 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 must be positioned below its connection to the condensate pan. All traps must be primed, insulated, and leak tested.

Figure 23: Example of a Common Indoor Unit Drainage System.



NOTICE

- It is required that a dedicated drain pipe be installed for the air conditioning system. If the indoor unit drainage system is shared with a rainwater drain, waste water, or any other type of building drain system, back flow, leaks, ice will form, or noxious odors will 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 will infiltrate the air conditioning system.

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 indoor units.
- Provide a circuit breaker switch between the power source and the indoor unit.
- Confirm power source specifications.
- Confirm that the electrical capacity is sufficient.
- Starting current must be maintained ± 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, twisted, 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-IDU communications cable at any other point.
- It is required 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.

DANGER

High voltage electricity is required to operate this system. Adhere to the National Electrical Codes and these instructions when wiring. Always ground the unit following local, state, and National Electrical Codes. Read the safety summary at the beginning of this manual.

- *Secure all field wiring connections with appropriate wire strain relief. Improperly securing wires will create undue stress on equipment power lugs. Inadequate connections will generate heat, cause a fire and physical injury or death.*
- *Properly tighten all power connections. Loose wiring will overheat at connection points, causing a fire, physical injury or death.*

WARNING

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

NOTICE

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.

NOTICE

- *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 can use discretion when choosing the order the components are connected to the communications bus, but must maintain the daisy chain and polarity configuration.*
- *Failure to follow any of these power and communications wiring guidelines or instructions will cause communications errors and unit malfunction.*

Do Not's

- *Never use wire caps and never splice communications cables.*
- *Never connect zone controllers or other central controllers or LG building management system gateways to the indoor unit / outdoor unit communications cable.*

NOTICE

- *Field-provided communication cable between Main ODU to IDUs / HRUs to be 18 AWG, 2-conductor, twisted, stranded, shielded. Ensure the communication cable shield is properly grounded to the Main outdoor unit chassis only.  Do not ground the outdoor unit to indoor units / heat recovery units communication cable at any other point. Wiring must comply with all applicable local and national codes.*
- *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.*

APPLICATION GUIDELINES



Wiring Guidelines

Connection Procedure

1. Insert the power wiring / communications cable from the outdoor unit or heat recovery unit (Heat Recovery systems only) using the designated path in the indoor unit.
2. Connect each wire to its appropriate terminal on the indoor unit control board. Verify that the color and terminal numbers from the outdoor unit or heat recovery unit (Heat Recovery systems only) wiring match the color and terminal numbers on the indoor unit.
3. Secure the power wiring / communications cable.

NOTICE

- Terminal screws will loosen during transport. Properly tighten the terminal connections during installation or risk equipment malfunction or property damage.
 - Loose wiring will 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 will 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.

Figure 24: Location of Power Wiring / Communications Cable Terminals in Ceiling Suspended Indoor Units.

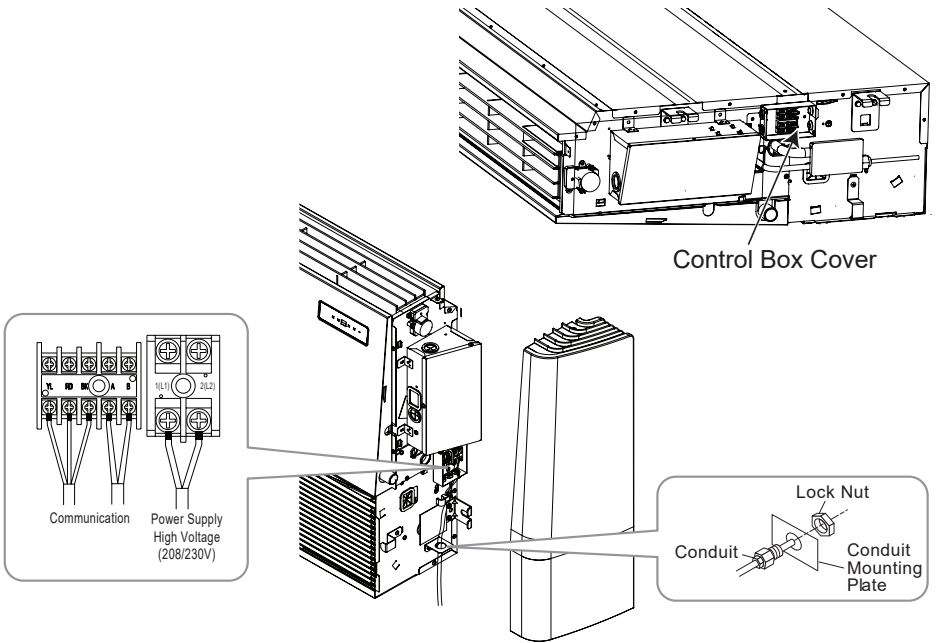
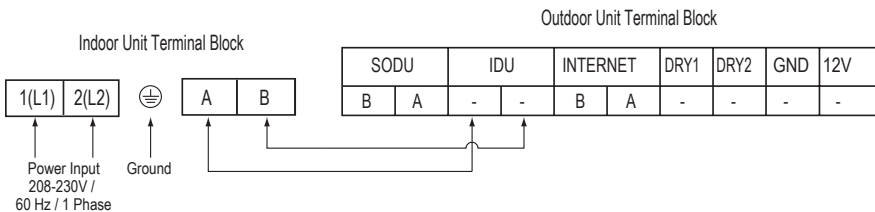


Figure 25: Simplified View of Indoor Unit Terminal Connections--Ceiling Suspended.



Wired Controller Placement

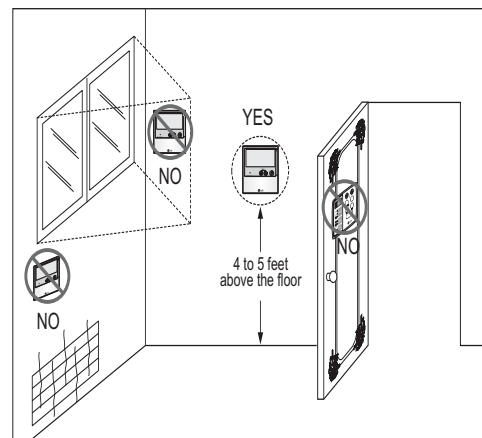
R32 Ceiling Suspended indoor units can be used with various wired controllers (optional; sold separately). Wired controllers include a sensor to detect room temperature. To maintain comfort levels in the conditioned space, the wired controller must be installed in a location away from direct sunlight, 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 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 26: Proper Location for the Wired Controller.



Assigning the Thermistor for Temperature Detection

Each indoor unit includes a return air thermistor assigned to sense the temperature. If a wired controller is installed, there is a choice of sensing temperature with either the indoor unit return air thermistor or the thermistor in the wired controller. It is also an option to set both thermistors to sense temperature so that indoor unit bases its operation on the first thermistor to reach the designated temperature differential. For applicable indoor units, an optional Remote Temperature Sensor can be used in lieu of the return air thermistor — either alone or in conjunction with a wired controller thermistor as previously described.

Optional WiFi Control

Wifi control is an option for R32 Ceiling Suspended indoor units. Wifi control requires the optional wifi module PWFMD200 and the ThinQ app on a compatible device such as a smartphone. Install the wifi module by connecting it to the CN_WF connector on the IDU motherboard. Refer to the ThinQ manual for operation details.

LIMITED WARRANTY (USA)



"The product's full Limited Warranty terms and conditions and arbitration requirements are available at <https://www.lghvac.com>."

Inverter



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New issue: EM_MultiV_CeilingSuspended_IDU_R32_08_26