



R32 **MULTI V**TM
**CEILING CASSETTE
INDOOR UNIT
ENGINEERING MANUAL**



One-Way Ceiling Cassettes
7,500 to 19,100 Btu/h



Two-Way Ceiling Cassettes
19,100 and 24,200 Btu/h



Four-Way 2' x 2' Ceiling Cassettes
5,500 to 19,100 Btu/h



Four-Way 3' x 3' Ceiling Cassettes
7,500 to 48,100 Btu/h

PROPRIETARY DATA NOTICE

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This document is for design purposes only.**

A summary list of safety precautions is on page 6.

For more technical materials such as submittals, outdoor unit engineering manuals, installation, service, product data performance, owner's, service manuals, and catalogs, visit www.lghvac.com.

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-Branched 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.

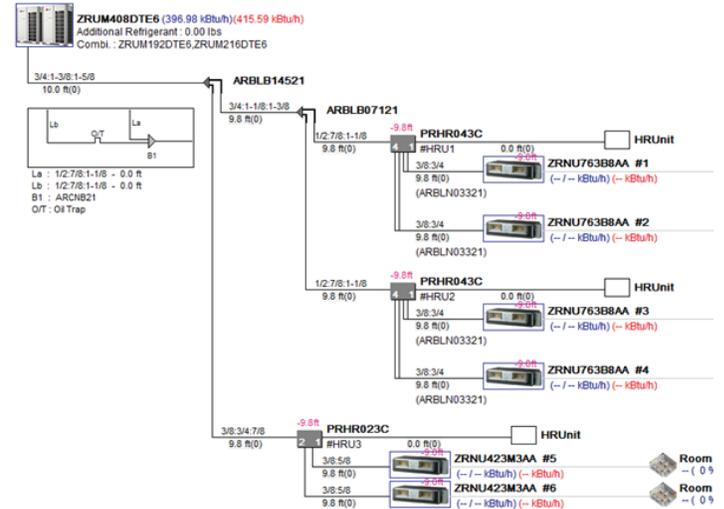
NOTICE

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)

MULTI V™

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-Branched 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

	Indicates that this appliance uses a flammable refrigerant. If the refrigerant leaks and 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.

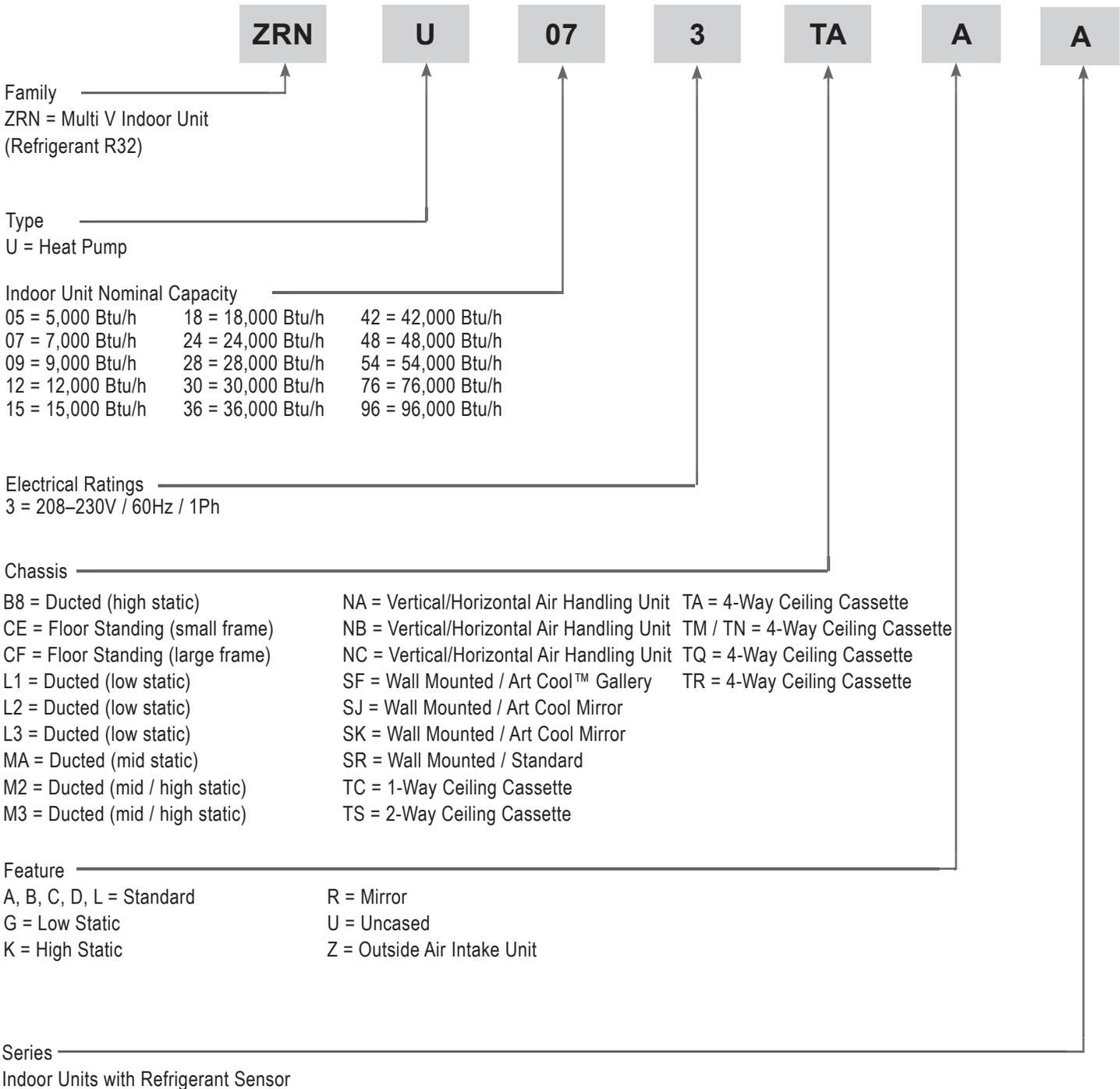
The amount of refrigerant depends on outdoor unit to indoor unit configuration. All refrigerant piping system components (copper piping, joints, and other fittings) must be selected and installed to conform with Refrigeration Safety Regulation standards. Use LG Air Conditioner Technical Solution (LATS)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



ADDITIONAL REFRIGERANT CHARGE



Table 1: Additional Refrigerant Charge (lbs. per feet).

Model Name	Capacity (kBtu/h) ^{1,2}																
	5	7	9	12	15	18	21	24	28	30	36	42	48	54	60	76	96
ZRNU**3TC*A		0.42	0.42	0.42		0.42											
ZRNU**3TS*A						0.62		0.62									
ZRNU**3TR(TQ)*A	0.33	0.33	0.46	0.46	0.57	0.57											
ZRNU**3TA*A		1.23	1.23	1.23	1.23	1.23		1.23	1.23		1.23	1.23	1.23				
ZRNU**3L*GA		0.26	0.26	0.37	0.37	0.37		0.49									
ZRNU**3MA*A		0.40	0.40	0.40	0.40	0.40		0.60									
ZRNU**3M2*A		0.64	0.64	0.64	0.64	0.64		0.64	0.95		0.95	0.95					
ZRNU**3M3*A									1.10				1.10	1.10			
ZRNU**3B8*A											1.83	1.83	1.83	1.83		1.83	1.83
ZRNU**3NA(NB,NC)*A				0.86		0.86		0.86		0.86	1.68	1.68	1.68	1.68	1.68		
ZRNU**3SJ(SK,SR)*A	0.44	0.44	0.44	0.44	0.44	0.51		0.51		1.08	1.08						
ZRNU**3V1(V2)*A						0.97		0.97			1.46		1.46				
ZRNU**3CE(CF)*A		0.31	0.31	0.31	0.31	0.68		0.68									
ZRNH**3K2(K3)*A												1.46				1.83	2.91

¹CF (Ref.) = Correction Factor for Refrigerant Charge.

²For refrigerant charge purposes, consider only the liquid line; ignore the vapor line(s).

ONE-WAY CEILING CASSETTE



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ONE-WAY CEILING CASSETTE

MULTI V™

Mechanical Specifications

Casing

The case is designed to mount recessed in the ceiling and has a surface-mounted concentric panel on the bottom of the unit. The unit case is manufactured with coated metal. Cold surfaces are covered with a coated polystyrene insulating material. The case is provided with metal ears designed to support the unit weight on four corners. Ears have pre-punched holes designed to accept field-supplied all-thread rod hangers.

Architectural Filter/Panel

The ceiling cassette assembly is provided with an off-white ABS polymeric resin architectural panel with a tapered trim edge and a hinged, spring clip (screw-less) return air filter-panel door.

Fan Assembly and Control

The indoor unit has a single, direct-drive, cross-flow tangential Sirocco fan made of high strength ABS GP-2305 polymeric resin. 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 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. The fan speed algorithm provides a field-selectable fixed-speed or auto-speed setting that adjusts the fan speed to simulate natural airflow.

Air Filter

Return air is filtered with a removable, washable filter.

Airflow Guide Vanes

The architectural panel has a single directional slot diffuser with an oscillating motorized guide vane designed to change the angle airflow is discharged. The discharge range of motion is 40° in an up/down direction with the capability of locking the vanes in a field adjusted fixed position.

Microprocessor Controls

The unit is provided with an integrated microprocessor controller 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 operation 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, twisted, 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 five operating modes:

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

Figure 1: One-Way Ceiling Cassette.



For Heat Recovery systems the Auto Changeover setting automatically switches control of the indoor 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 indoor unit operation when the indoor room temperature falls below set-point temperature. At which point, a signal is sent to 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 wireless remote controller. In lieu of wireless remote or 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 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 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.

Indoor units are Wi-Fi compatible with the addition of an LG Wi-Fi module accessory, and can be controlled by LG's ThinQ™ app on a

smart device. A field-supplied Wi-Fi network and smart device are required. The ThinQ app is free, and is available for Android™ and iOS. (Android is a trademark of Google LLC.)

Condensate Lift/Pump

The indoor unit comes with a factory installed and wired condensate lift/pump capable of providing a maximum 27-1/2 inch lift from the bottom surface of the unit. The lift pump comes with a safety switch that shuts off the indoor unit if condensate rises too high in the drain pan.

Condensate Drain Pan

The condensate drain pan is constructed of EPS (expandable polystyrene resin).

Coil

The indoor unit coil is constructed with grooved design copper tubes with slit coil fins, two (2) rows, twenty-one (21) fins per inch.

Refrigerant Leak Detection

The indoor unit contains an R32 refrigerant leak sensor. The sensor is designed to control optional refrigerant piping shutoff valves if a leak is detected. Shutoff valve units are available as a separate LG accessory 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 (CH227) and end of life (CH229).

Table 1: Refrigerant Leak Sensor Specifications.

Item	Specification
Refrigerant	R32
Detection Concentration	5,000 ppm
Power Supply	DC 5V
Operating Temperature	-25 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 setpoint control
- Filter life display
- Multiple auxiliary heater applications
- Group control
- High ceiling
- Hot start
- Self diagnostics
- Timer (on / off)
- Weekly schedule
- Auto direction/swing (up/down)
- Fan speed control
- Jet cool (fast cooling)
- Wi-Fi compatible
- Auto fan
- R32 leak detection sensor

ONE-WAY CEILING CASSETTE



General Data

Table 2: One-Way Ceiling-Cassette Indoor Unit General Data.

Model No.	ZRNU073TCAA	ZRNU093TCAA	ZRNU123TCAA	ZRNU183TCAA
Panel Model No.	PT-UCA	PT-UCA	PT-UCA	PT-UCA
<i>Cooling Mode Performance</i>				
Capacity (Btu/h)	7,500	9,600	12,300	19,100
Max. Power Input ¹ (W)	134	134	134	134
L/M/H Power at Factory Default (W)	13 / 15 / 17	17 / 18 / 20	17 / 20 / 23	21 / 28 / 41
<i>Heating Mode Performance</i>				
Capacity (Btu/h)	8,500	10,900	13,600	21,500
Max Power Input ¹ (W)	134	134	134	134
L/M/H Power at Factory Default (W)	13 / 15 / 17	17 / 18 / 20	17 / 20 / 23	21 / 28 / 41
<i>Entering Mixed Air</i>				
Cooling Max. (°F WB)	76	76	76	76
Heating Min. (°F DB)	59	59	59	59
<i>Unit Data</i>				
Refrigerant Type ²	R32	R32	R32	R32
Refrigerant Control	EEV	EEV	EEV	EEV
Sound Pressure ³ dB(A) (H/M/L)	29 / 28 / 25	32 / 31 / 29	35 / 32 / 29	44 / 38 / 33
Sound Power ⁴ dB(A) (H)	50	53	57	59
Net Unit Weight (lbs.)	30.4	30.4	30.4	30.4
Shipping Weight (lbs.)	37.0	37.0	37.0	37.0
Panel Weight (lbs)	10.8	10.8	10.8	10.8
Panel Shipping Weight (lbs)	13.9	13.9	13.9	13.9
Communication Cable ⁵ (No. x AWG)	2 x 18	2 x 18	2 x 18	2 x 18
<i>Fan</i>				
Type	Cross Flow	Cross Flow	Cross Flow	Cross Flow
Quantity	1	1	1	1
Motor/Drive	Brushless Digitally Controlled / Direct			
Airflow Rate H/M/L (CFM)	283 / 259 / 227	323 / 303 / 283	351 / 323 / 283	480 / 396 / 335
<i>Piping</i>				
Liquid Line (in., O.D.)	1/4 Flare	1/4 Flare	1/4 Flare	1/4 Flare
Vapor Line (in., O.D.)	3/8 Flare	3/8 Flare	3/8 Flare	1/2 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. See page 13 for detailed electrical data.

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 www.ahridirectory.org.

¹Maximum power Input is rated at maximum setting value.

²Take 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.

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

⁴Sound Power levels are tested in a reverberation room under ISO Standard 3741.

⁵Communication 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 ODU chassis only. Ⓞ Do not ground the ODU to IDUs / HRUs communication cable at any other point. Wiring must comply with all applicable local and national codes.

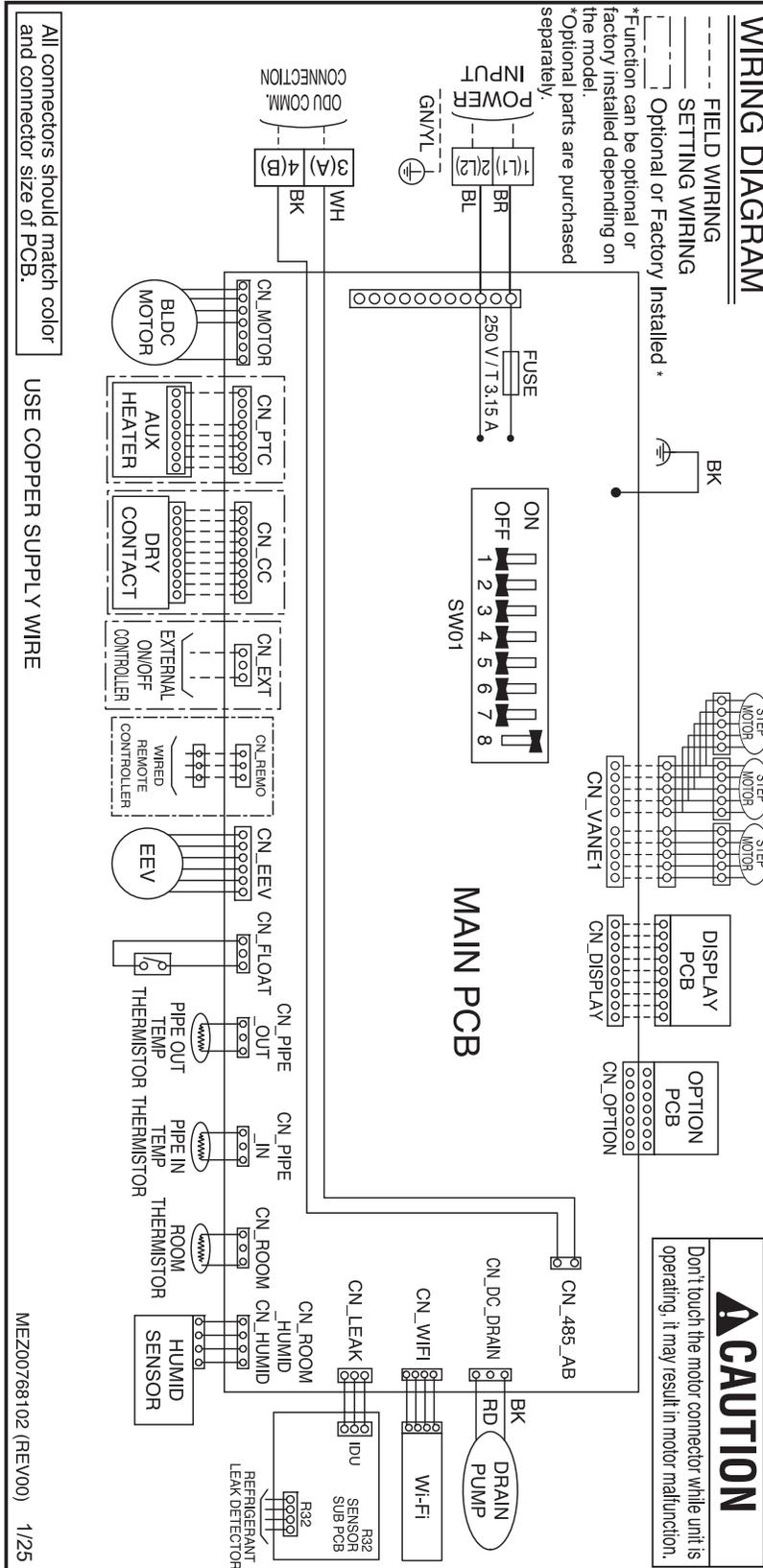
Table 3: One-Way Ceiling Cassette Indoor Unit Electrical Data.

Model	Voltage Range	MCA	MOP	Rated Amps (A)	Power Supply			Power Input (W)		
					Hz	Volts	Phase	Max. Cooling	Max. Heating	L / M / H at Factory Default
ZRNU073TCAA	187-253	0.73	15	0.58	60	208-230	1	134	134	13 / 15 / 17
ZRNU093TCAA		0.73	15	0.58				134	134	17 / 18 / 20
ZRNU123TCAA		0.73	15	0.58				134	134	17 / 20 / 23
ZRNU183TCAA		0.73	15	0.58				134	134	21 / 28 / 41

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 a fuse, use the circuit breaker.
Maximum power input is rated at maximum setting valve.

Figure 3: One-Way Ceiling Cassette Wiring Diagram.



ONE-WAY CEILING CASSETTE



Electrical Wiring Diagram

Table 4: One-Way Ceiling-Cassette Wiring Diagram Legend.

Terminal	Purpose	Function
CN_VANE1	Step Motor	Step motor output
CN_DISPLAY	Display	Display of indoor status
CN_OPTION	Option PCB (EEPROM)	Option PCB connection
CN_485_AB	Communication	Connection between indoor and outdoor units
CN_DC_DRAIN	Drain pump output	AC output for drain pump
CN_WIFI	Wi-Fi module	Wi-Fi module connection
CN_LEAK	Leak sensor	Leak sensor connection
CN_ROOM_HUMID / CN_HUMID	Indoor air humidity sensor	Indoor air humidity sensor connection
CN_ROOM	Room sensor	Room air thermistor
CN_PIPE_IN	Suction pipe sensor	Pipe in thermistor
CN_PIPE_OUT	Discharge pipe sensor	Pipe out thermistor
CN_FLOAT	Float switch input	Float switch sensing
CN_EEV	EEV output	EEV control output
CN_REMO	Remote controller	Remote control connection
CN_EXT	External on/off controller	External on/off controller connection
CN_CC	Dry Contact	Connection to Dry Contact (Optional)
CN_PTC	Auxiliary heater	Auxiliary heater connection
CN_MOTOR	Fan motor output	Motor output of BLDC

*If a Third-Party Dry Contact and an LG internal heater or an LG Auxiliary Heater Kit is installed, supplemental heat capability cannot be controlled by the Third-Party Thermostat.

Table 5: One-Way Ceiling-Cassette DIP Switch Settings.

DIP Switch Setting		Off	On	Remarks
SW3	GROUP CONTROL	Main	Sub	Group control setting using 7-Day 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.
SW8	REFRIGERANT LEAK DETECTOR	Off	On	Selection of Installed or Not Installed. By default, SW8 is set to ON. Keep this setting.

***For Multi V one-way ceiling cassette indoor units, DIP switches 1, 2, 5, 6, 7 must be OFF and 8 must be ON.**

Figure 4: One-Way Ceiling Cassette Piping Diagram.

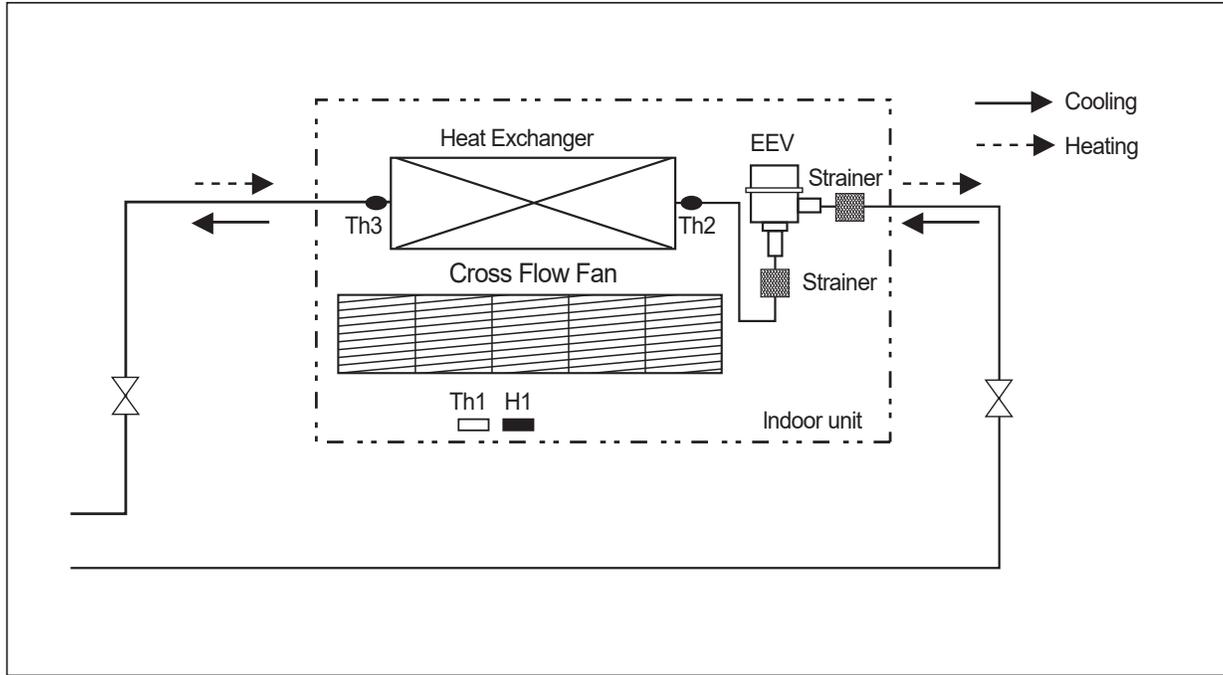


Table 6: One-Way Ceiling Cassette Refrigerant Pipe Connection Port Diameters.

Model	Liquid (inch)	Vapor (inch)
ZRNU073TCAA	1/4 Flare	3/8 Flare
ZRNU093TCAA		
ZRNU123TCAA		
ZRNU183TCAA		1/2 Flare

Table 7: One-Way Ceiling Cassette Thermistors.

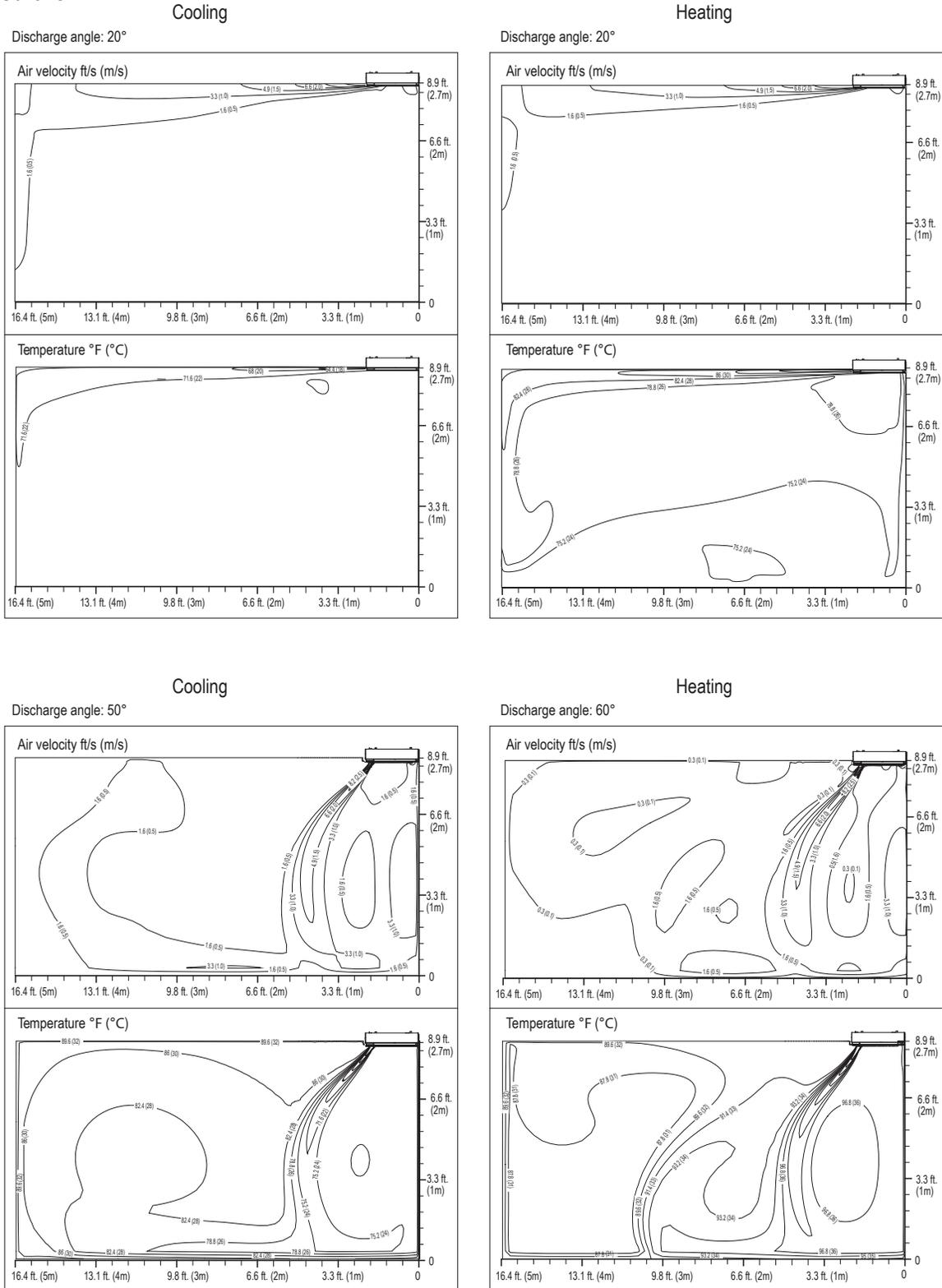
Thermistor	Description	PCB Connector
TH1	Return (Room) Air Temperature Thermistor	CN-ROOM
TH2	Pipe In Temperature Thermistor	CN-PIPE_IN
TH3	Pipe Out Temperature Thermistor	CN-PIPE_OUT
H1	Indoor Air Humidity Sensor	CN_ROOM_HUMID / CN_HUMID

ONE-WAY CEILING CASSETTE



Air Velocity / Temperature Distribution

Figure 5: ZRNU073TCAA.



The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

Figure 6: ZRNU073TCAA, continued.

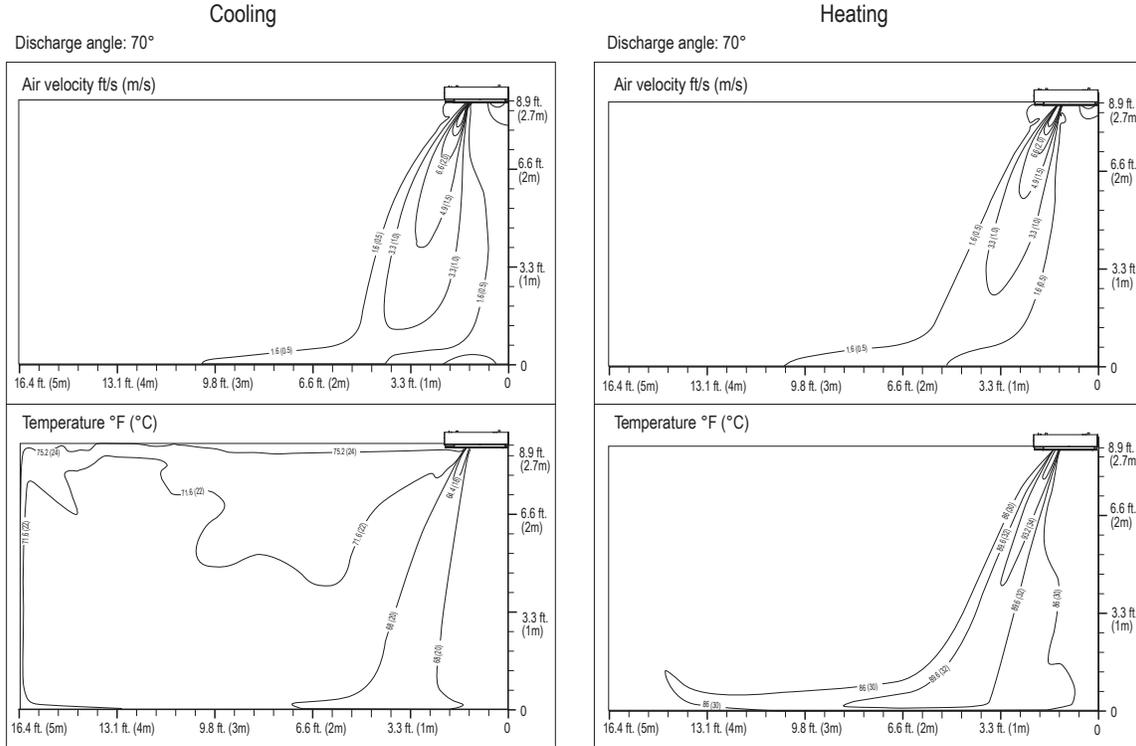
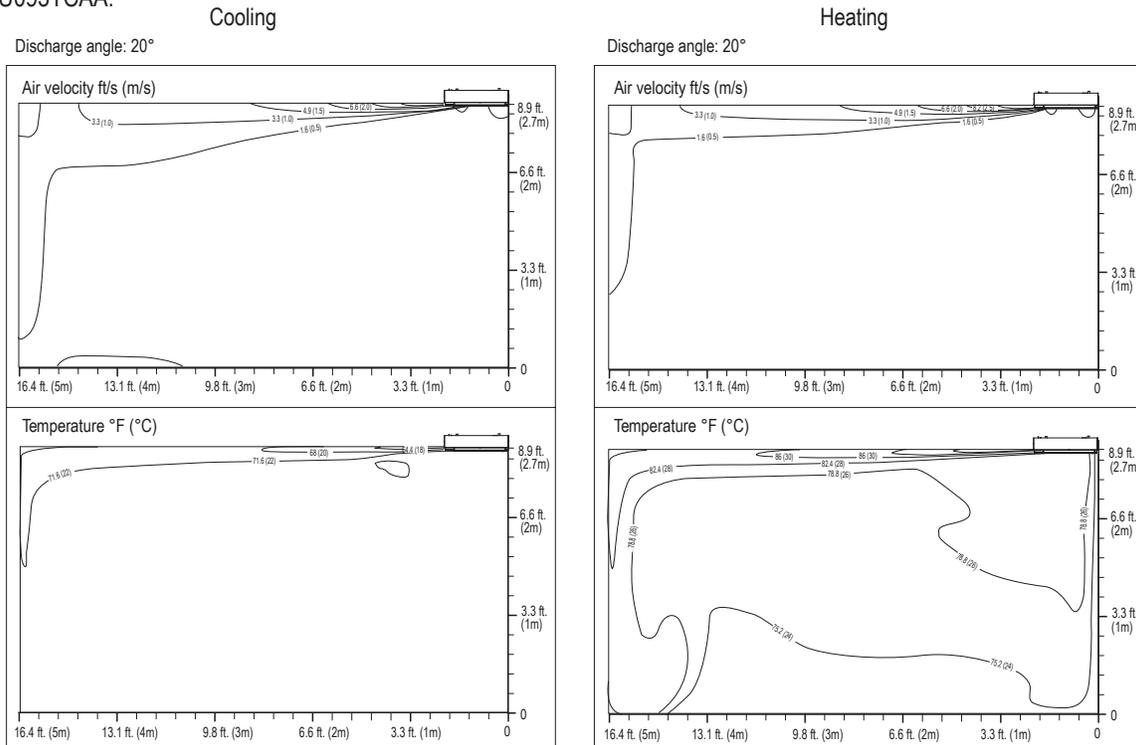


Figure 7: ZRNU093TCAA.



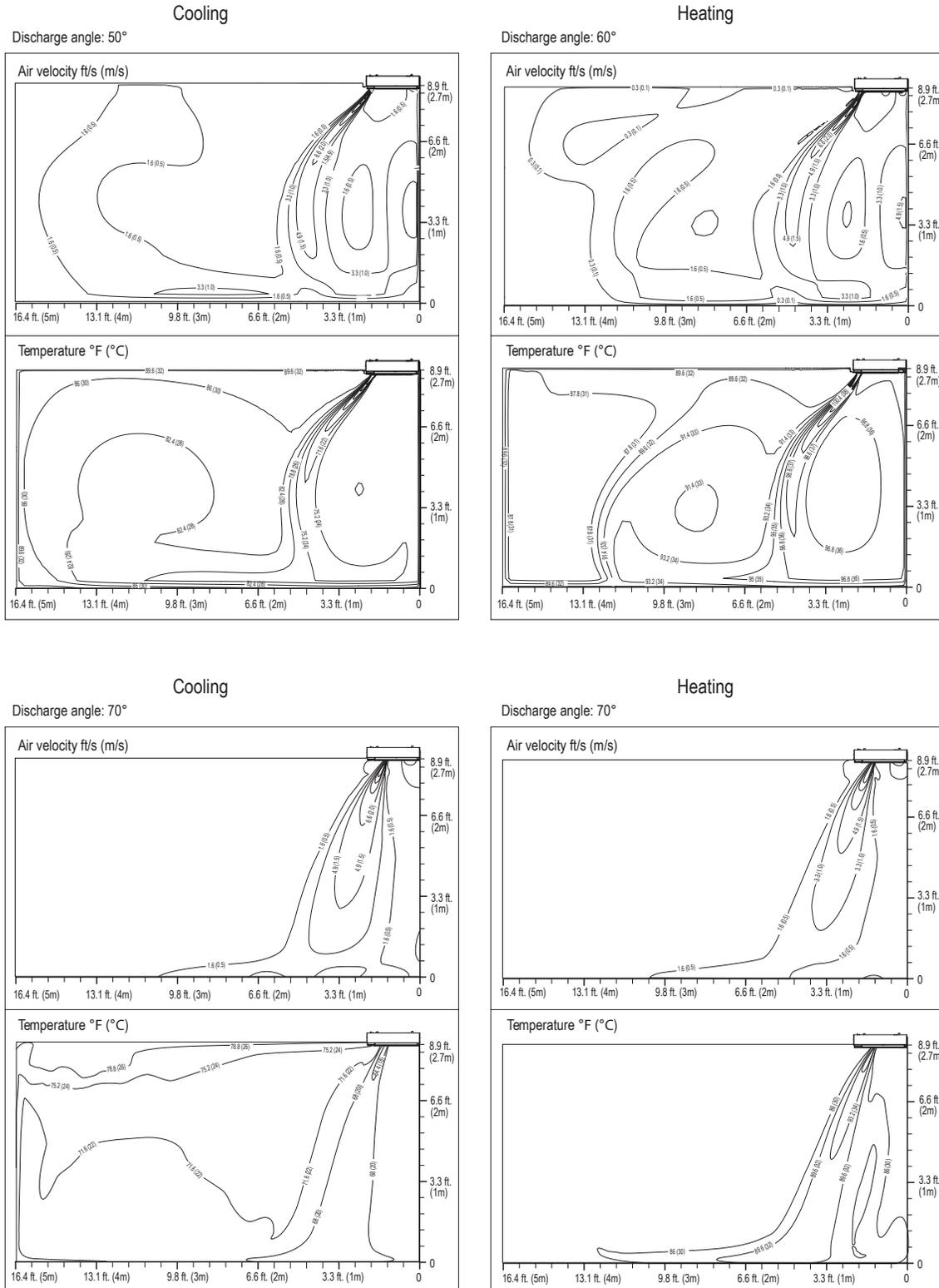
The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

ONE-WAY CEILING CASSETTE



Air Velocity / Temperature Distribution

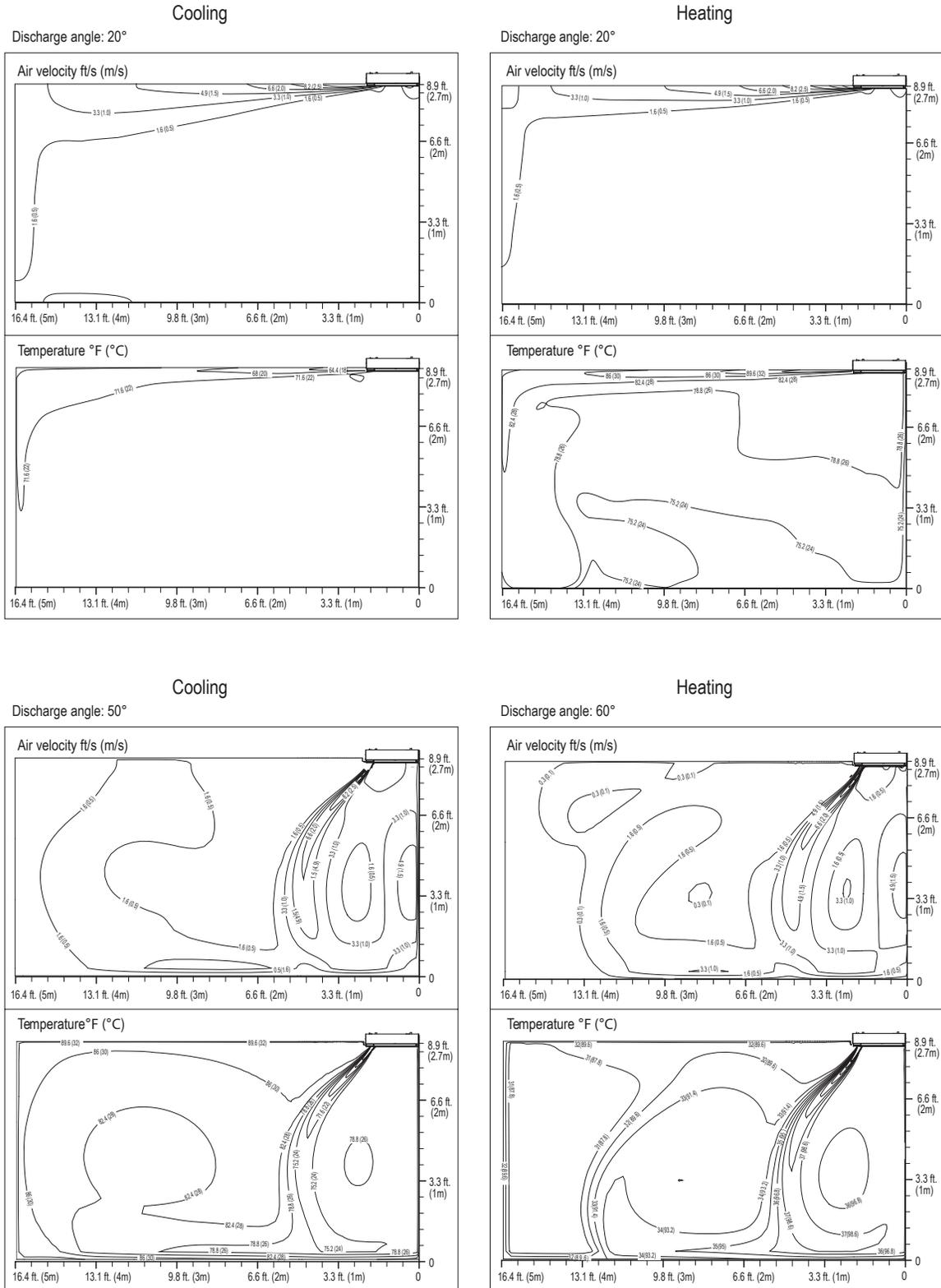
Figure 8: ZRNU093TCAA, continued.



The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.



Figure 9: ZRNU123TCCA.



The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

ONE-WAY CEILING CASSETTE



Air Velocity / Temperature Distribution

Figure 10: ZRNU123TCAA, continued.

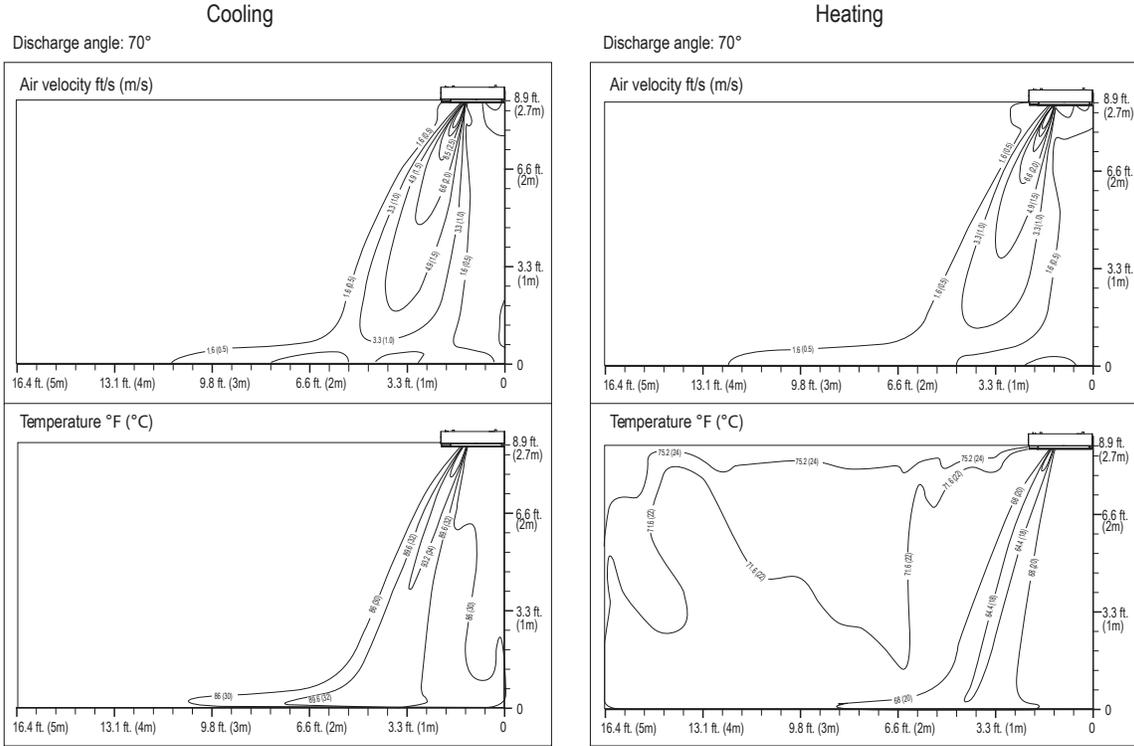
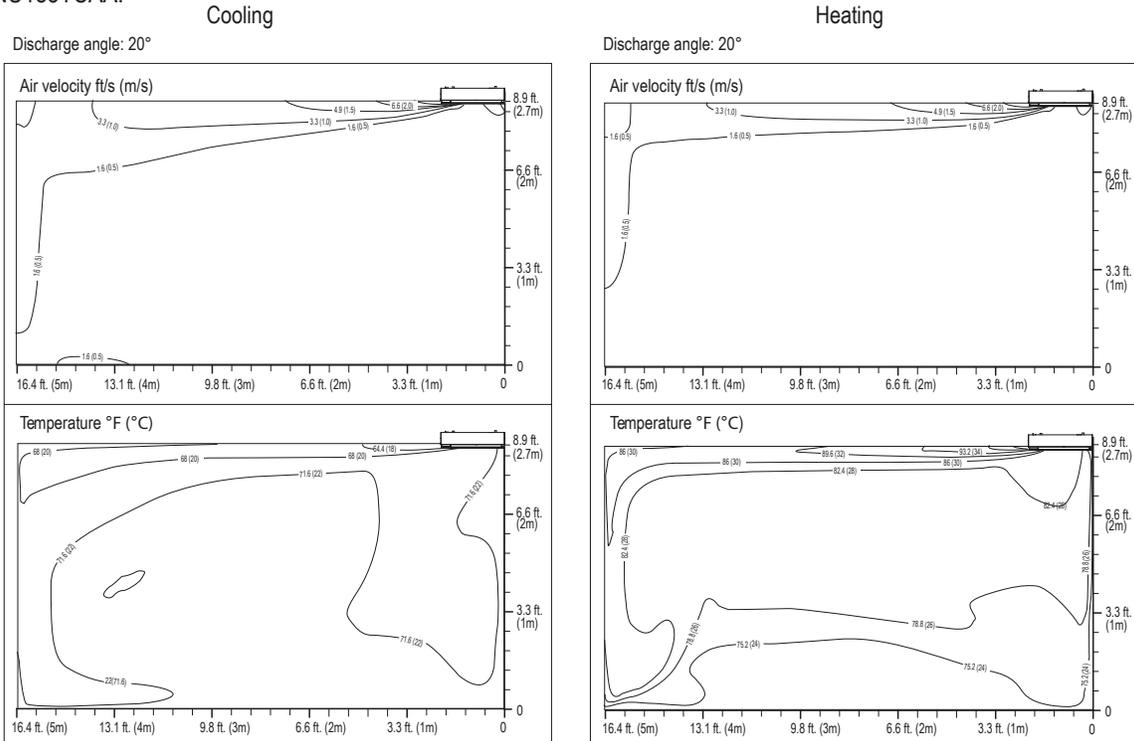


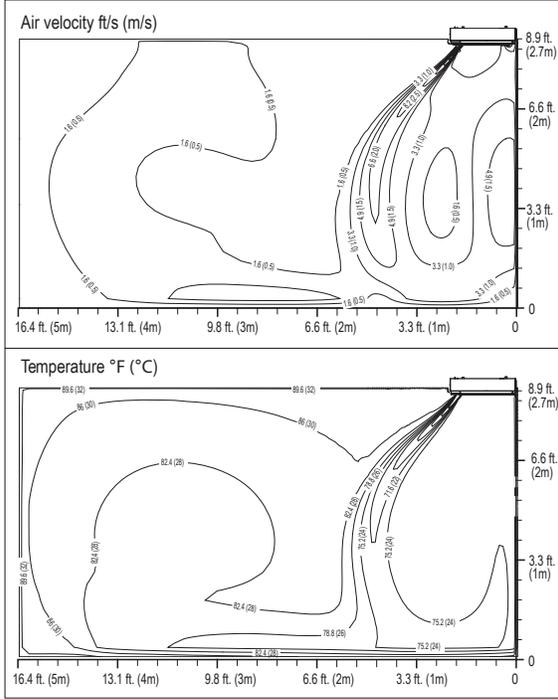
Figure 11: ZRNU183TCAA.



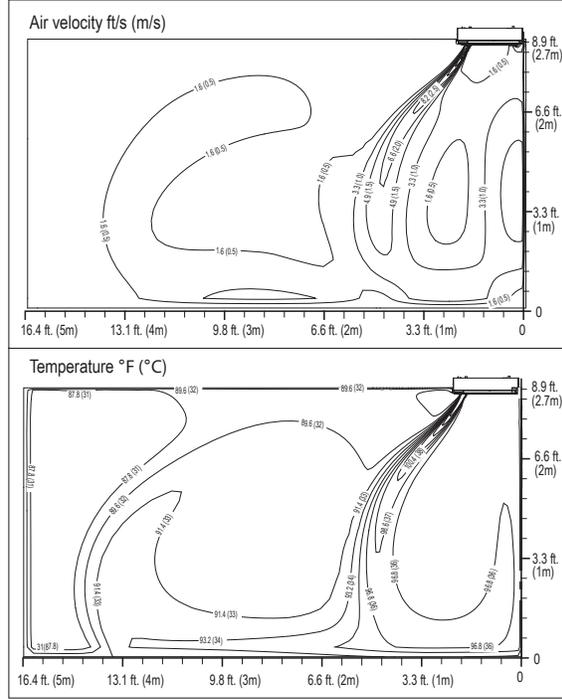
The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

Figure 12: ZRNU183TCAA, continued.

Discharge angle: 50°

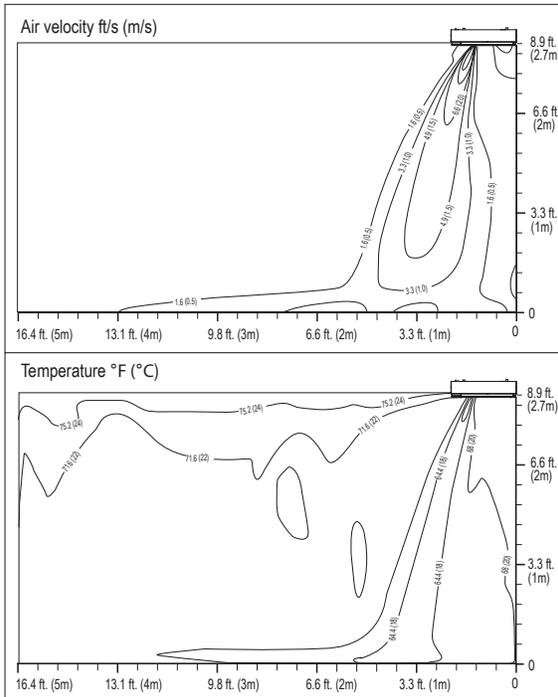


Discharge angle: 60°



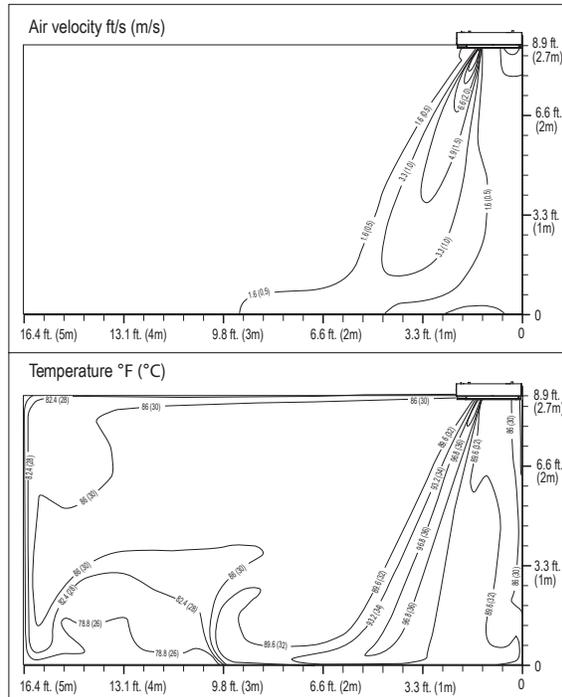
Cooling

Discharge angle: 70°



Heating

Discharge angle: 70°



The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

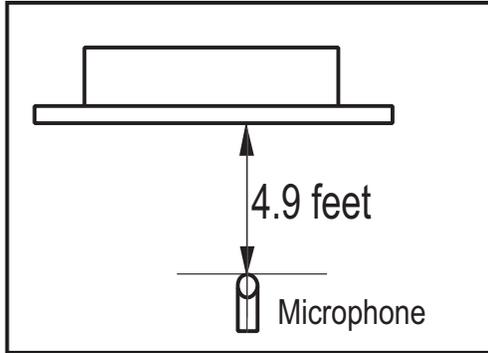
ONE-WAY CEILING CASSETTE



Acoustic Data

Sound Pressure Levels

Table 8: One-Way Ceiling Cassette Indoor Unit Sound Pressure Levels.



- 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 ± 3 .
- Data is valid under nominal operating conditions.
- Sound pressure levels are tested in an anechoic chamber under ISO Standard 3745.
- Reference acoustic pressure: 0dB = 20 μ Pa.

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 9: One-Way Ceiling Cassette Indoor Unit Sound Pressure Levels.

Model	Sound Pressure Levels dB(A)		
	High Fan Speed	Medium Fan Speed	Low Fan Speed
ZRNU073TCAA	29	28	25
ZRNU093TCAA	32	31	29
ZRNU123TCAA	35	32	29
ZRNU183TCAA	44	38	33

Figure 13: ZRNU073TCAA, ZRNU093TCAA, ZRNU123TCAA, and ZRNU183TCAA Sound Pressure Level Diagrams.

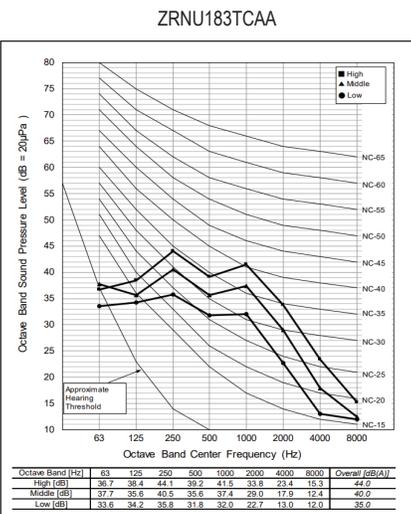
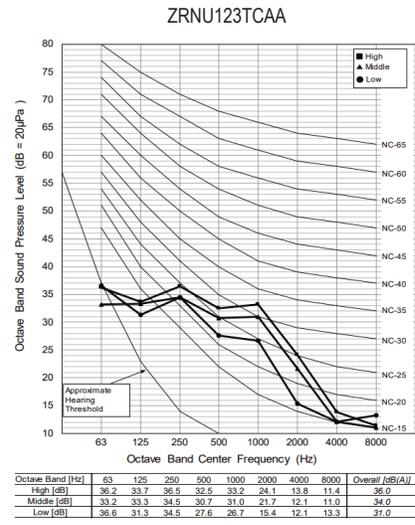
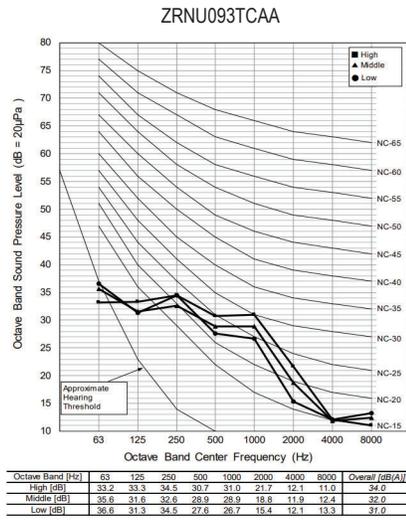
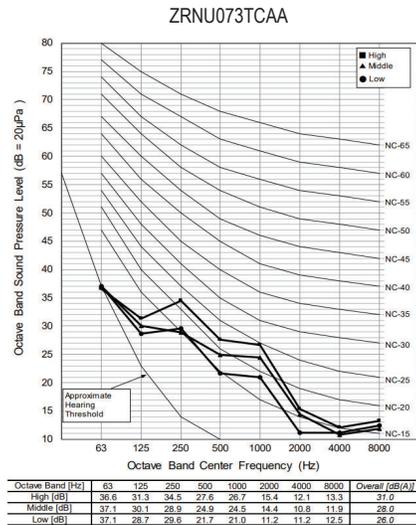
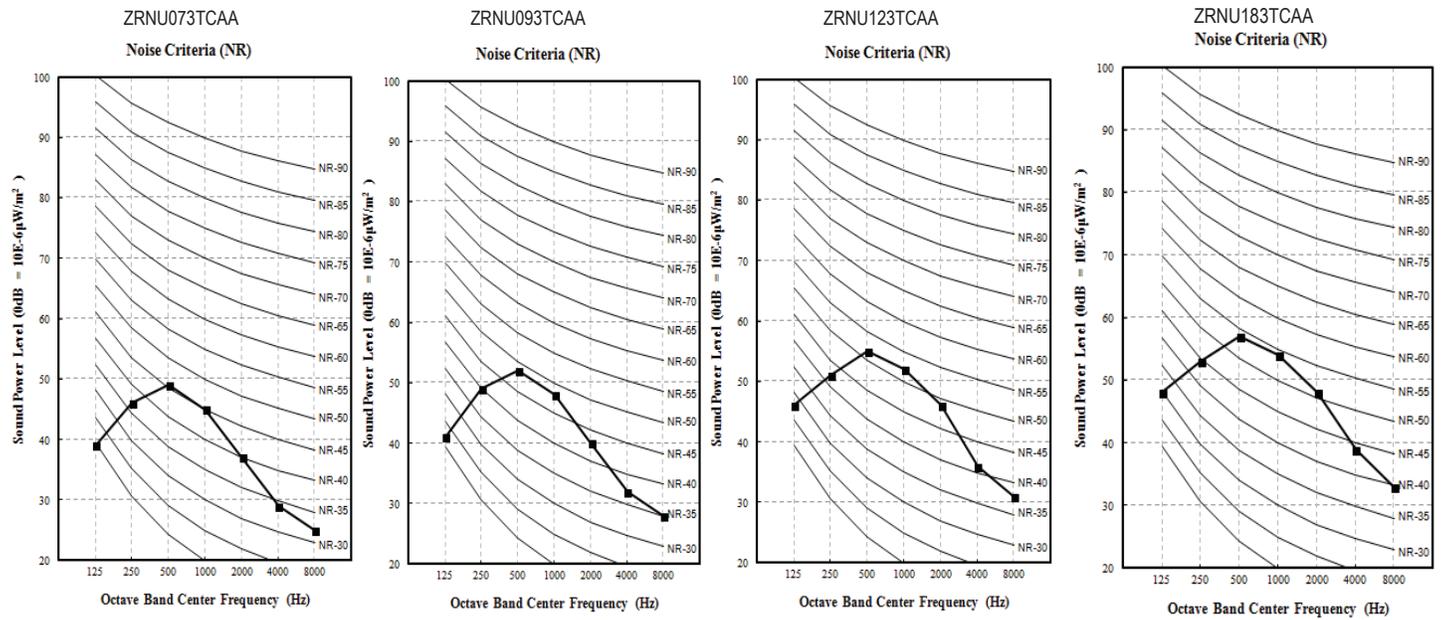


Table 10: One-Way Ceiling Cassette Indoor Unit Sound Power Levels.

Model	Sound Power Levels dB(A)
	High Fan Speed
ZRNU073TCAA	50.0
ZRNU093TCAA	53.0
ZRNU123TCAA	57.0
ZRNU183TCAA	59.0

- 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 chamber under ISO Standard 3741.
- 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/m².

Figure 14: ZRNU073TCAA, ZRNU093TCAA, and ZRNU123TCAA Sound Power Level Diagrams.



ONE-WAY CEILING CASSETTE



Cooling and Heating Capacity Tables

Table 11: One-Way Ceiling-Cassette 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
ZRNU073TCAA / 7.5	95	4.9	4.2	6	4.8	6.8	5.2	7.5	5.5	8	5.7	8.2	5.4	8.3	5.1
ZRNU093TCAA / 9.6	95	6.3	5.3	7.7	6.1	8.6	6.5	9.6	6.9	10.3	7.2	10.5	6.8	10.6	6.4
ZRNU123TCAA / 12.3	95	8.1	6.8	9.8	7.9	11.1	8.4	12.3	8.9	13.2	9.3	13.4	8.8	13.6	8.3
ZRNU183TCAA / 19.1	95	12.6	10.2	15.3	11.7	17.2	12.5	19.1	13.3	20.5	13.8	20.9	13.1	21.2	12.4

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 www.ahridirectory.org.

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

Table 12: One-Way Ceiling-Cassette 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
ZRNU073TCAA / 7.5	47	43	9.5	9.4	9.4	8.9	8.5	8.3	7.8	7.4
ZRNU093TCAA / 9.6	47	43	12.2	12.1	12.0	11.5	10.9	10.6	10.0	9.5
ZRNU123TCAA / 12.3	47	43	15.2	15.1	15.0	14.3	13.6	13.2	12.5	11.9
ZRNU183TCAA / 19.1	47	43	24.1	23.9	23.7	22.6	21.5	20.9	19.8	18.8

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

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

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

Table 13: Accessories for One-Way Ceiling-Cassette Indoor Units.

Accessory	Model Number
One-Way Ceiling Cassette Panel (One Required) For Use With All One-Way Ceiling Cassette Indoor Units	PT-UCA
Auxiliary Heater Kit ¹ For Use With All One-Way Ceiling Cassette Indoor Units	PRARH1
Wi-Fi Module For Use With All One-Way Ceiling Cassette Indoor Units	PWFMD200

¹If a Third-Party Dry Contact and an LG internal heater or an LG Auxiliary Heater Kit is installed, supplemental heat capability cannot be controlled by the Third-Party Thermostat.

All accessories are sold separately.

TWO-WAY CEILING CASSETTE



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General Data on page 31

Electrical Data on page 32

Dimensions on page 33

Electrical Wiring Diagram on page 34

Refrigerant Flow Diagram on page 36

Air Velocity / Temperature Distribution on page 37

Acoustic Data on page 41

Capacity Tables on page 43

Accessories on page 44

Casing

The case is designed to mount recessed in the ceiling and has a surface-mounted concentric panel on the bottom of the unit. The unit case is manufactured with coated metal, and cold surfaces are covered with a coated polystyrene insulating material. The case is provided with metal ears designed to support the unit weight on four corners. Ears have pre-punched holes designed to accept field-supplied, all-thread rod hangers.

Ventilation Air

The case has a factory designated cutout for the connection of a field supplied outside air duct.

Architectural Filter/Panel

The ceiling cassette assembly is provided with an off-white ABS polymeric resin architectural panel with a tapered trim edge and a hinged, spring clip (screw-less) return air filter-panel door.

Fan Assembly and Control

The indoor unit has a single, direct-drive, turbo fan. The fan wheel is made of high strength ABS HT-700 polymeric resin. 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. The fan speed algorithm provides a field selectable, fixed-speed or auto-speed setting that adjusts the fan speed to simulate natural airflow.

Air Filter

Return air is filtered with a removable, washable filter.

Airflow Guide Vanes

The architectural panel has two parallel directional slot diffusers each equipped with oscillating motorized guide vanes designed to change the angle airflow is discharged. Discharge range of motion is 40° in an up/down direction. The control algorithm provides the capability of locking guide vanes in a field adjusted fixed position.

Microprocessor Controls

The unit is provided with an integrated microprocessor controller 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 units 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, twisted, 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 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 control of the indoor 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 indoor unit operation when the indoor room temperature falls below set-point temperature. At which point, a signal is sent to 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 wireless remote controller. In lieu of wireless remote or factory return air thermistor, screw terminals on the microprocessor circuit board accommodate various models of wall-mounted local controllers and or wall-mounted temperature sensors. 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.

Figure 1: Two-Way Ceiling Cassette.



TWO-WAY CEILING CASSETTE



Mechanical Specifications

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 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 the reason for the code displayed.

Indoor units are Wi-Fi compatible with the addition of an LG Wi-Fi module accessory, and can be controlled by LG's ThinQ™ app on a smart device. A field-supplied Wi-Fi network and smart device are required. The ThinQ app is free, and is available for Android™ and iOS. (Android is a trademark of Google LLC.)

Condensate Lift/Pump

The indoor unit is provided with a factory installed and wired condensate lift/pump capable of providing a maximum 27-9/16 inch lift from the bottom surface of the unit. The lift pump comes with a safety switch that will shut off the indoor unit if condensate rises too high in the drain pan.

Condensate Drain Pan

The condensate drain pan is constructed of EPS (expandable polystyrene resin).

Coil

The indoor unit coil is constructed with grooved design copper tubes with slit coil fins, two (2) rows, twenty (20) fins per inch.

Refrigerant Leak Detection

The indoor unit contains an R32 refrigerant leak sensor. The sensor is designed to control optional refrigerant piping shutoff valves if a leak is detected. Shutoff valve units are available as a separate LG accessory 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 (CH227) and end of life (CH229).

Table 1: Refrigerant Leak Sensor Specifications.

Item	Specification
Refrigerant	R32
Detection Concentration	5,000 ppm
Power Supply	DC 5V
Operating Temperature	-25 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
- High ceiling
- Hot start
- Self diagnostics
- Timer (on / off)
- Weekly schedule
- Auto direction / swing (up /down)
- Fan speed control
- Jet cool (fast cooling)
- Auto fan
- Leak detection
- Wi-Fi compatible
- R32 leak detection sensor

Table 2: Two-Way Ceiling-Cassette Indoor Unit General Data.

Model No.	ZRNU183TSAA	ZRNU243TSAA
Panel Model No.	PT-USC	PT-USC
<i>Cooling Mode Performance</i>		
Capacity (Btu/h)	19,100	24,200
Max. Power Input ¹ (W)	70	70
L/M/H Power at Factory Default (W)	24 / 29 / 34	25 / 30 / 40
<i>Heating Mode Performance</i>		
Capacity (Btu/h)	21,500	27,300
Max Power Input ¹ (W)	70	70
L/M/H Power at Factory Default (W)	24 / 29 / 34	25 / 30 / 40
<i>Entering Mixed Air</i>		
Cooling Max. (°F WB)	76	76
Heating Min. (°F DB)	59	59
<i>Unit Data</i>		
Refrigerant Type ²	R32	R32
Refrigerant Control	EEV	EEV
Sound Pressure ³ dB(A) (H/M/L)	35 / 33 / 31	40 / 37 / 33
Sound Power ⁴ dB(A) (H)	44	48
Net Unit Weight (lbs.)	41	41
Shipping Weight (lbs.)	48.7	48.7
Panel Weight (lbs)	10.3	10.3
Panel Shipping Weight (lbs)	14.3	14.3
Communication Cable ⁵ (No. x AWG)	2 x 18	2 x 18
<i>Fan</i>		
Type	Turbo	Turbo
Quantity	1	1
Motor/Drive	Brushless Digitally Controlled / Direct	
Airflow Rate H/M/L (CFM)	417 / 381 / 346	512 / 438 / 364
<i>Piping</i>		
Liquid Line (in., O.D.)	1/4 Flare	1/4 Flare
Vapor Line (in., O.D.)	1/2 Flare	1/2 Flare
Condensate Line (in., I.D.)	1	1

EEV: Electronic Expansion Valve

Power wiring is field supplied and must comply with the applicable local and national codes. See page 32 for detailed electrical data.

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 www.ahridirectory.org.

¹Maximum power Input is rated at maximum setting value.

²Take 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.

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

⁴Sound Power levels are tested in a reverberation room under ISO Standard 3741.

⁵Communication 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 ODU chassis only. Ⓞ Do not ground the ODU to IDUs / HRUs communication cable at any other point. Wiring must comply with all applicable local and national codes.

Table 3: Two-Way Ceiling-Cassette Indoor Unit Electrical Data.

Model	Voltage Range	MCA	MOP	Rated Amps (A)	Power Supply			Power Input (W)		
					Hz	Volts	Phase	Max. Cooling	Max. Heating	L / M / H at Factory Default
ZRNU183TSAA	187-253	0.84	15	0.67	60	208-230	1	70	70	24 / 29 / 34
ZRNU243TSAA		0.84	15	0.67				70	70	25 / 30 / 40

MCA : Minimum Circuit Ampacity.

MOP : Maximum Overcurrent Protection.

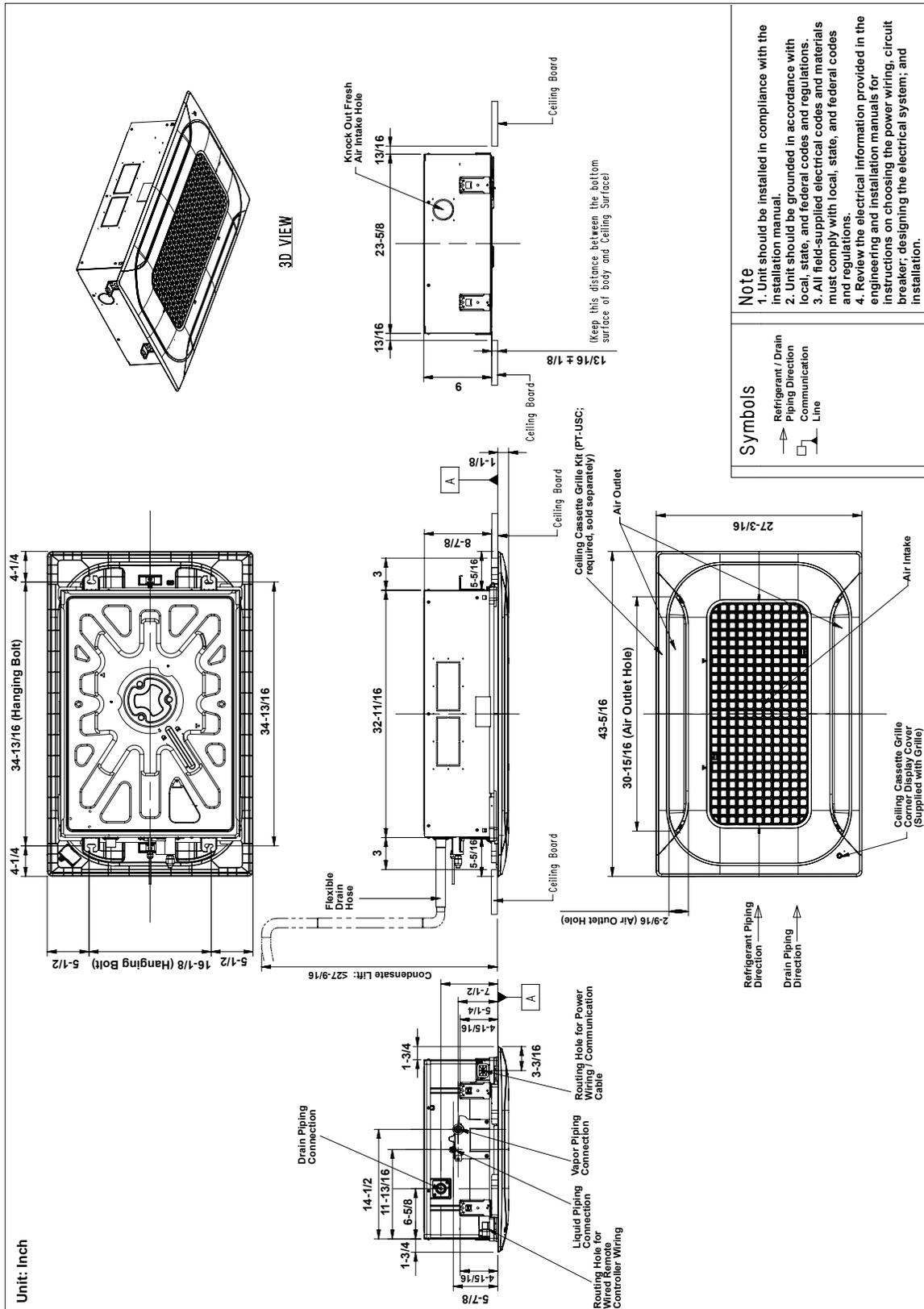
Units are suitable for use on an electrical system where voltage supplied to unit terminals is within the listed range limits.

Select wire size based on the larger MCA value.

Instead of a fuse, use the circuit breaker.

Maximum power input is rated at maximum setting valve.

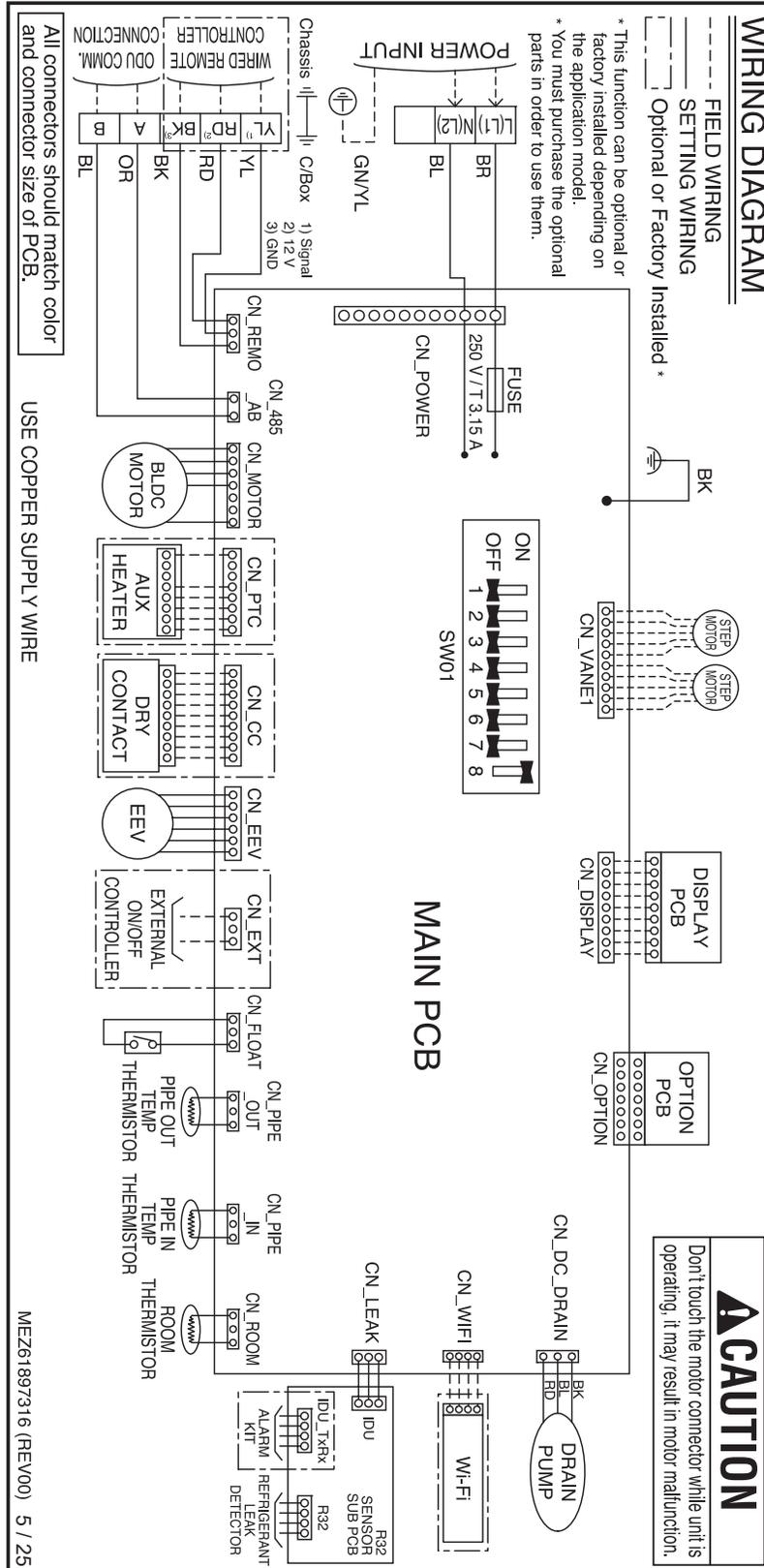
Figure 2: Two-Way Ceiling-Cassette Dimensions.



TWO-WAY CEILING CASSETTE

Electrical Wiring Diagram

Figure 3: Two-Way Ceiling-Cassette Wiring Diagram.



R32 MULTI V™ Ceiling Cassette Indoor Unit Engineering Manual

Table 4: Two-Way Ceiling-Cassette Wiring Diagram Legend.

Terminal	Purpose	Function
CN_POWER	AC Power supply	AC Power line input for indoor controller
CN_VANE1	Step Motor	Step motor output
CN_DISPLAY	Display	Display of indoor status
CN_OPTION	Option PCB (EEPROM)	Option PCB connection
CN_DC_DRAIN	Drain pump output	AC output for drain pump
CN_WIFI	Wi-Fi module	Wi-Fi module connection
CN_LEAK	Leak sensor	Leak sensor connection
CN_ROOM	Room sensor	Room air thermistor
CN_PIPE_IN	Suction pipe sensor	Pipe in thermistor
CN_PIPE_OUT	Discharge pipe sensor	Pipe out thermistor
CN_FLOAT	Float switch input	Float switch sensing
CN_EXT	External on/off controller	External on/off controller connection
CN_EEV	EEV Output	EEV Control output
CN_CC	Dry Contact	Dry Contact
CN_PTC	Auxiliary heater	Auxiliary heater connection
CN_MOTOR	Fan motor output	Motor output of BLDC
CN_485_AB	Communication	Connection between indoor and outdoor units
CN_REMO	Remote controller	Remote control line

*If a Third-Party Dry Contact and an LG internal heater or an LG Auxiliary Heater Kit is installed, supplemental heat capability cannot be controlled by the Third-Party Thermostat.

Table 5: Two-Way Ceiling-Cassette DIP Switch Settings.

DIP Switch Setting		Off	On	Remarks
SW3	GROUP CONTROL	Main	Sub	Group control setting using 7-Day 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.
SW8	REFRIGERANT LEAK DETECTOR	Off	On	Selection of Installed or Not Installed. By default, SW8 is set to ON. Keep this setting.

*For Multi V two-way ceiling cassette indoor units, DIP switches 1, 2, 5, 6, 7 must be OFF and 8 must be ON.

TWO-WAY CEILING CASSETTE

Refrigerant Flow Diagram

Figure 4: Two-Way Ceiling-Cassette Piping Diagram.

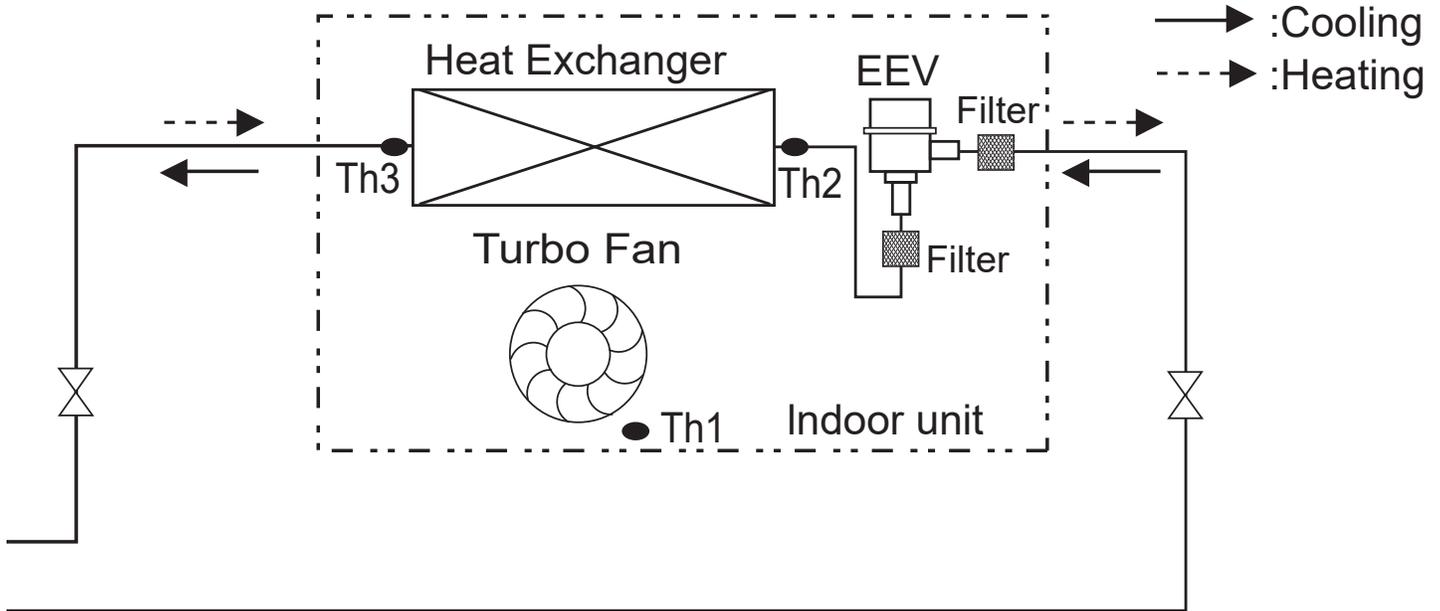


Table 6: Two-Way Ceiling-Cassette Refrigerant Pipe Connection Port Diameters.

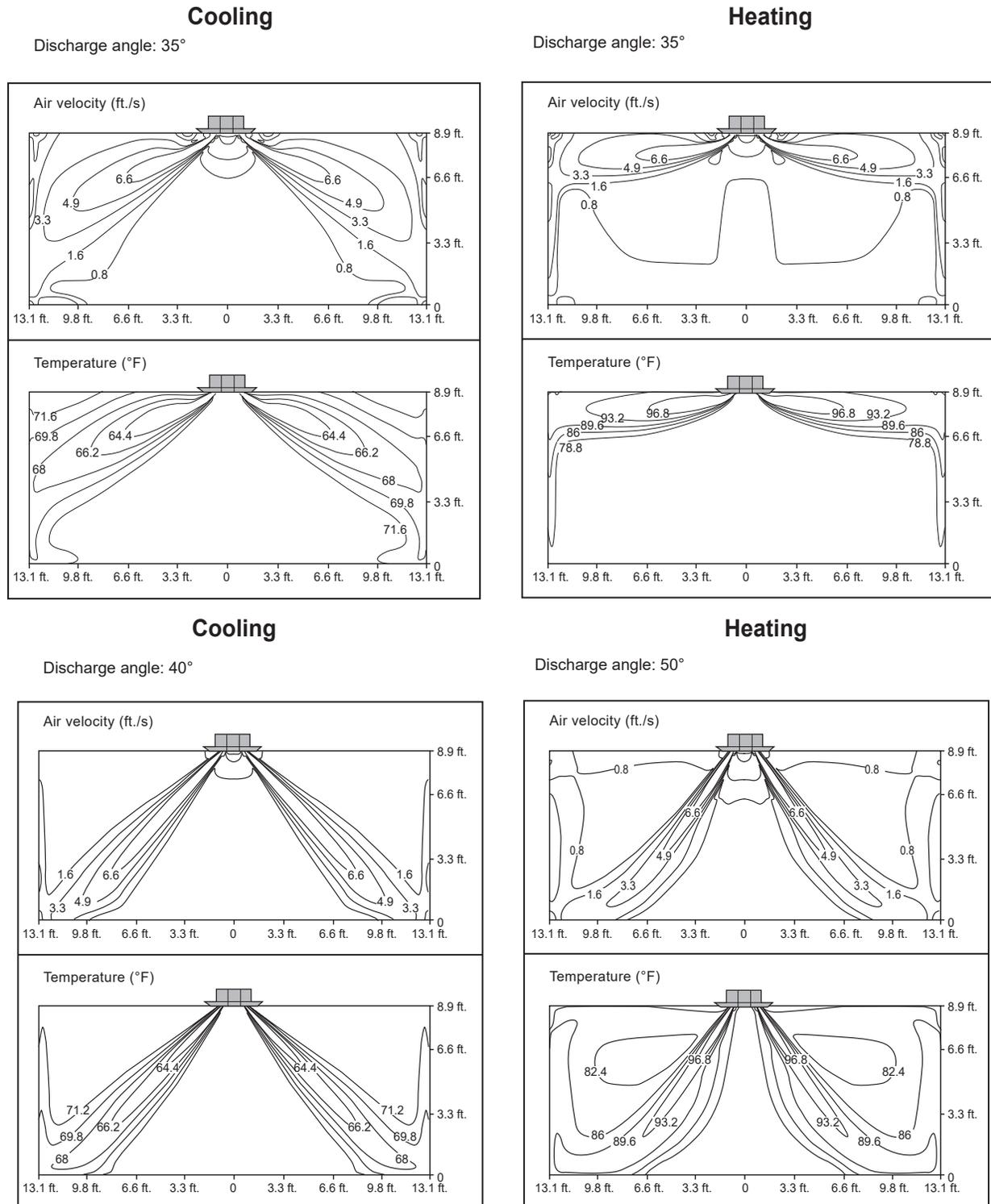
Model	Liquid (inch)	Vapor (inch)
ZRNU183TSAA	1/4 Flare	1/2 Flare
ZRNU243TSAA		

Table 7: Two-Way Ceiling-Cassette Thermistors.

Thermistor	Description	PCB Connector
TH1	Return (Room) Air Temperature Thermistor	CN_ROOM
TH2	Pipe In Temperature Thermistor	CN_PIPE_IN
TH3	Pipe Out Temperature Thermistor	CN_PIPE_OUT

Figure 5: ZRNU183TSAA.

ZRNU183TSAA



The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

TWO-WAY CEILING CASSETTE

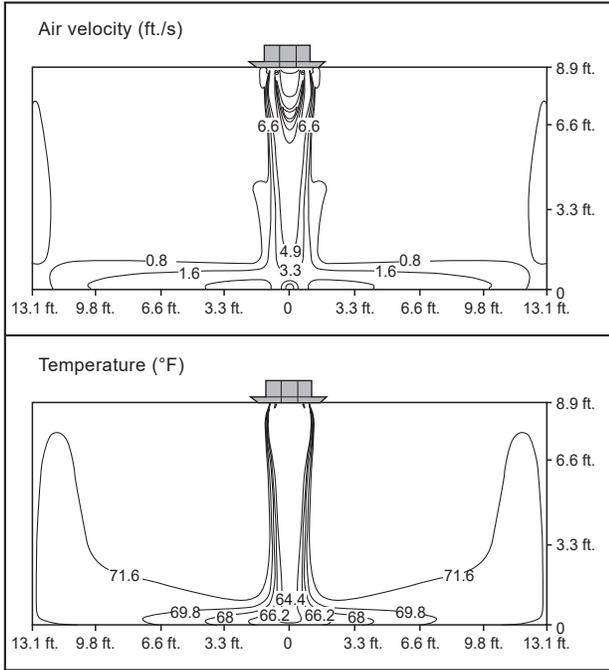


Air Velocity / Temperature Distribution

Figure 6: ZRNU183TSAA, continued.

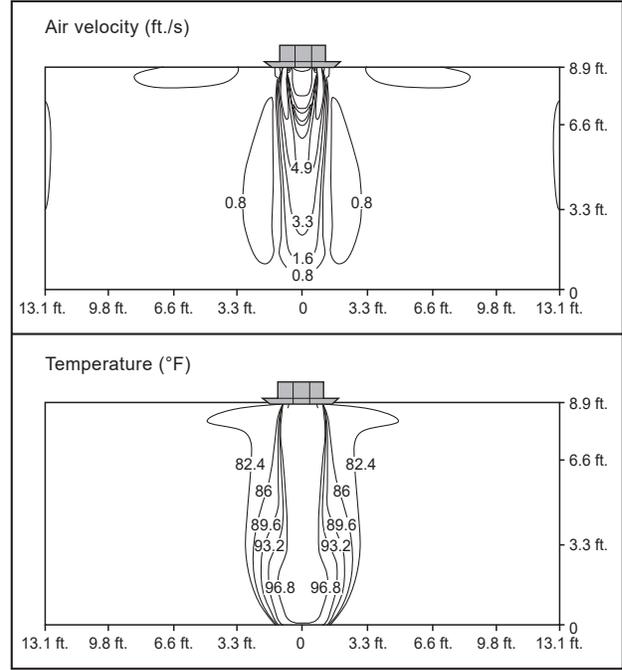
Cooling

Discharge angle: 80°



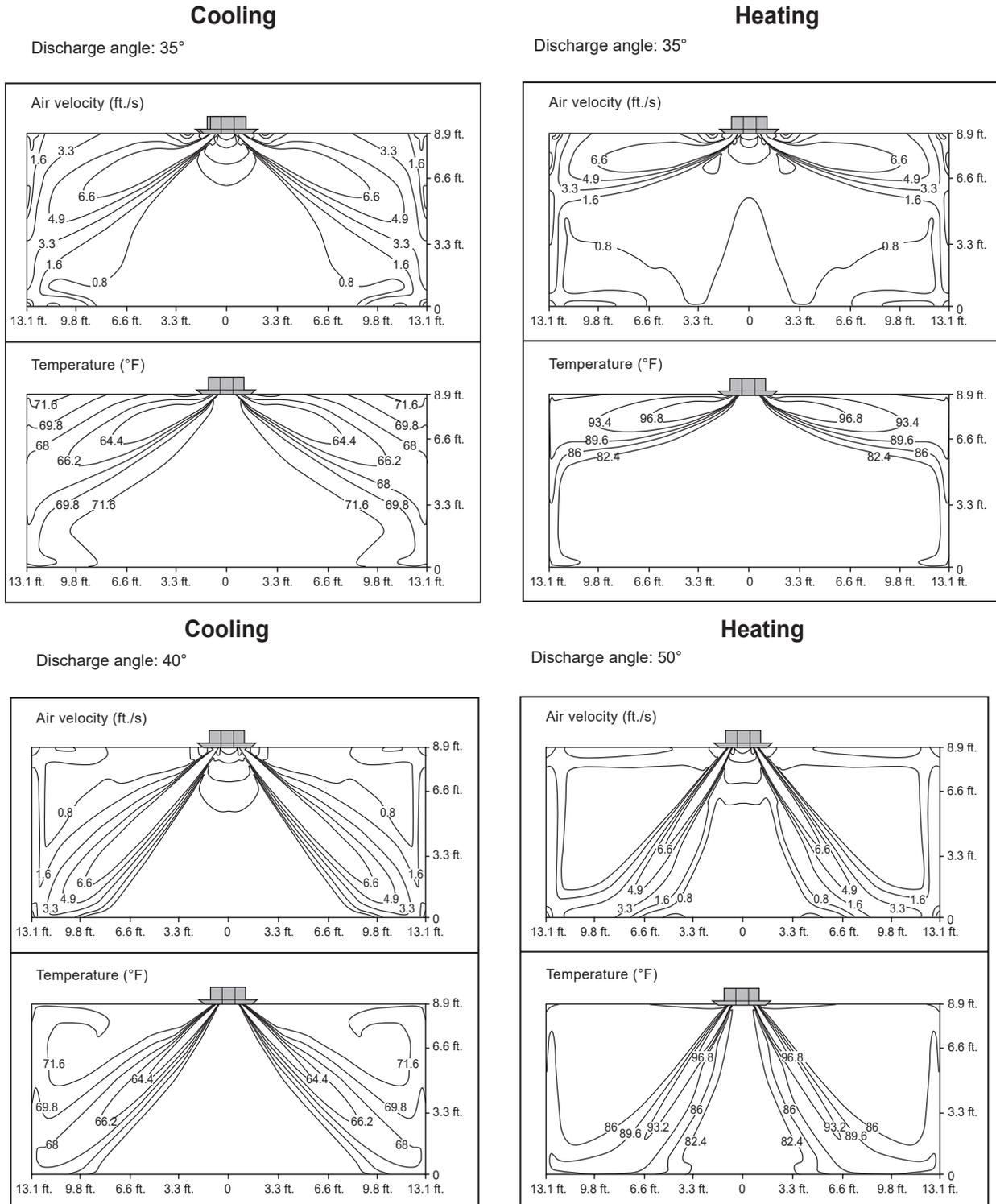
Heating

Discharge angle: 80°



The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

Figure 7: ZRNU243TSAA.
ZRNU243TSAA



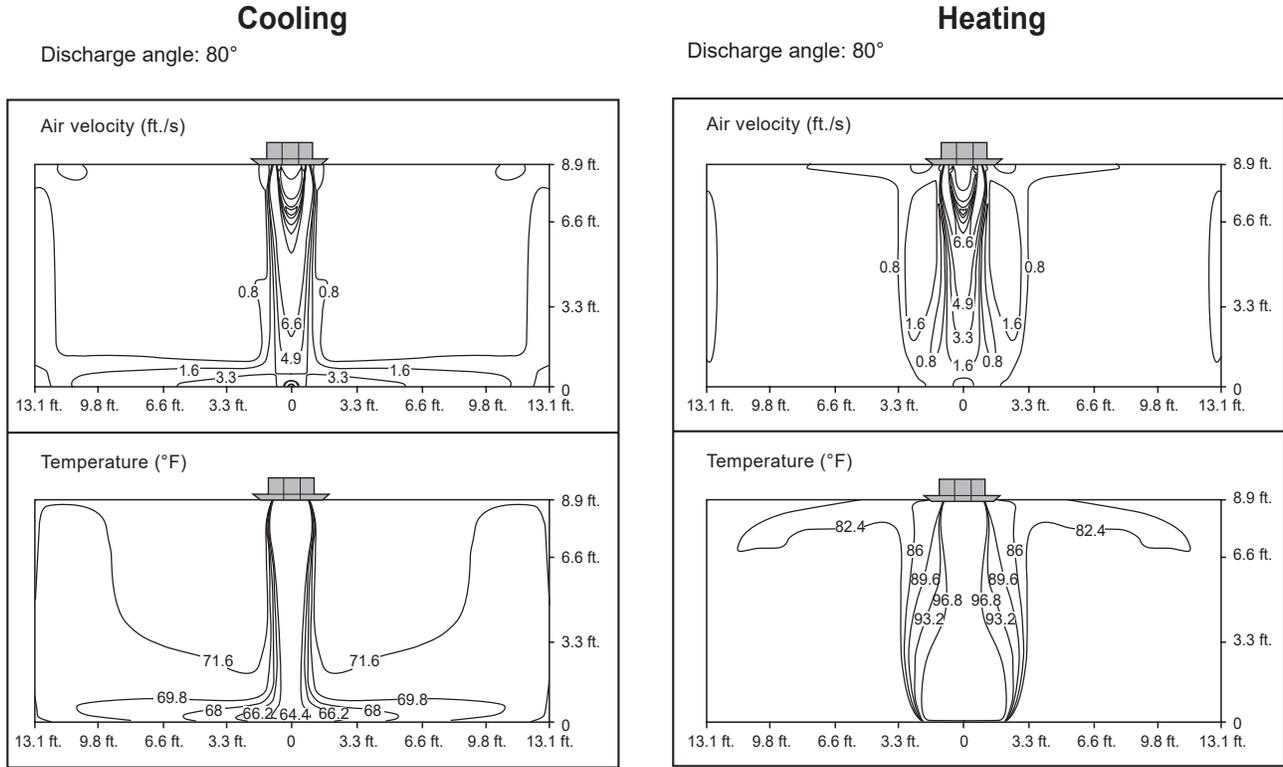
The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

TWO-WAY CEILING CASSETTE



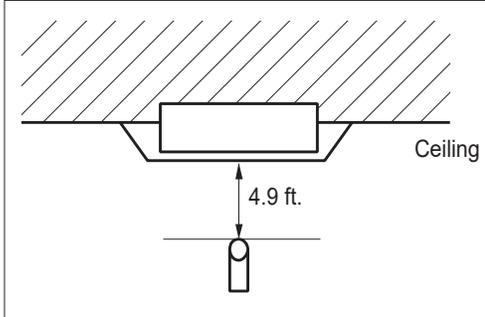
Air Velocity / Temperature Distribution

Figure 8: ZRNU243TSAA, continued.



The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

Table 8: Two-Way Ceiling Cassette Indoor Unit Sound Pressure Levels.



- Measurements are taken 4.9 ft away from the front of the unit.
- Data is valid under nominal operating conditions.
- 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.
- Reference acoustic pressure: 0dB = 20 μ Pa.

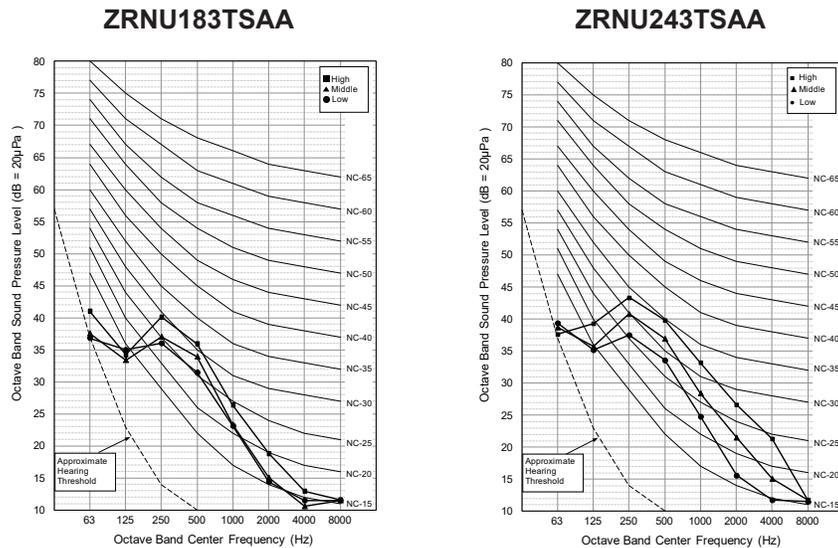
Operating Conditions:

- 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 9: Two-Way Ceiling Cassette Indoor Unit Sound Pressure Levels.

Model	Sound Pressure Levels dB(A)		
	High Fan Speed	Medium Fan Speed	Low Fan Speed
ZRNU183TSAA	35.0	33.0	31.0
ZRNU243TSAA	40.0	37.0	33.0

Figure 9: ZRNU183TSAA and ZRNU243TSAA Sound Pressure Level Diagrams.



TWO-WAY CEILING CASSETTE



Acoustic Data

Sound Power Levels

Table 10: Two-Way Ceiling Cassette Indoor Unit Sound Power Levels.

Model	Sound Power Levels dB(A)
	High Fan Speed
ZRNU183TSAA	44.0
ZRNU243TSAA	48.0

- 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 chamber under ISO Standard 3741.
- 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/m²

Figure 10: ARNU183TSA4 and ARNU243TSA4 Sound Power Level Diagrams.

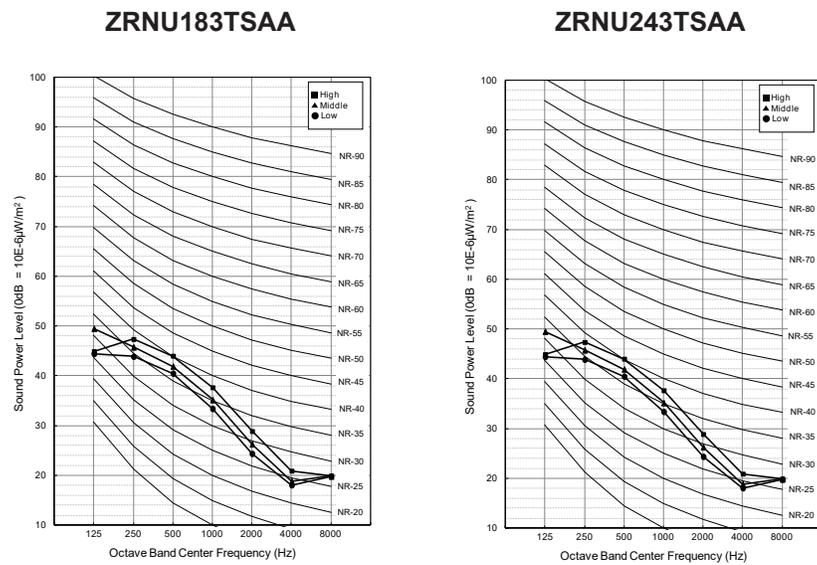


Table 11: Two-Way Ceiling-Cassette Cooling Capacity Table.

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
ZRNU183TSAA / 19.1	95	12.7	10.2	15.3	11.7	17.2	12.6	19.1	12.9	20.5	13.9	20.9	13.3	21.2	12.5
ZRNU243TSAA / 24.2	95	15.9	12.9	19.4	14.6	21.8	15.8	24.2	16.2	25.9	17.4	26.4	16.7	26.8	15.8

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 www.ahridirectory.org.

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

Table 12: Two-Way Ceiling-Cassette 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
ZRNU183TSAA / 19.1	47	43	24.1	23.9	23.7	22.6	21.5	20.9	19.8	18.8
ZRNU243TSAA / 24.2	47	43	30.6	30.3	30.0	28.7	27.3	26.5	25.1	23.9

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

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

TWO-WAY CEILING CASSETTE



Accessories

Table 13: Accessories for Two-Way Ceiling-Cassette Indoor Units.

Accessory	Model Number
Two-Way Ceiling Cassette Panel (One Required) For Use With Both Two-Way Ceiling Cassette Indoor Units	PT-USC
Ventilation Flange For Use With Both Two-Way Ceiling Cassette Indoor Units	PTVK430
Auxiliary Heater Kit ¹ For Use With Both Two-Way Ceiling Cassette Indoor Units	PRARH1
Wi-Fi Module For Use With Both Two-Way Ceiling Cassette Indoor Units	PWFMDD200

¹If a Third-Party Dry Contact and an LG internal heater or an LG Auxiliary Heater Kit is installed, supplemental heat capability cannot be controlled by the Third-Party Thermostat.

All accessories are sold separately.

FOUR-WAY CEILING CASSETTE



2' x 2' Frame



3' x 3' Frame

Mechanical Specifications on page 46

General Data on page 48

Electrical Data on page 51

Dimensions on page 52

Electrical Wiring Diagrams on page 55

Refrigerant Flow Diagram on page 59

Air Velocity / Temperature Distribution on page 60

Outside Air Ventilation on page 74

Branch Duct Options on page 76

Acoustic Data on page 78

Capacity Tables on page 86

Accessories on page 88

FOUR-WAY CEILING CASSETTE

MULTI V™

Mechanical Specifications

Casing

The case is designed to mount recessed in the ceiling and has a surface-mounted concentric panel on the bottom of the unit. The unit case is manufactured with coated metal. Cold surfaces are covered with a coated polystyrene insulating material. The case is provided with metal ears designed to support the unit weight on four corners. Ears have pre-punched holes designed to accept field-supplied all-thread rod hangers.

Ventilation Air TQ, TR Frame

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

TA Frame

The case has a factory designated cutout for the connection of a field-supplied outside air duct. LG offers two flange kits.

Supply Air Branch Duct Connections

Factory designated cutouts are marked on the unit case. Branch ducts provide the designer with the ability to duct up to 1/2 the unit airflow capacity to adjacent spaces. The adjacent space must be in the room where the ceiling cassette is installed. It cannot be branched to another room.

Architectural Filter/Panel

The ceiling cassette assembly is provided with a white ABS polymeric resin architectural panel equipped with a tapered trim edge and a hinged, spring clip (screwless) return air filter-panel door.

TA Frame

The unit case allows access to hanger rods and the inspection of piping through corner access panels on the architectural panel. The optional auto-elevating panel kit is designed to provide motorized ascent/descent of the return air panel/pre-filter assembly a distance of up to 12 feet allowing easy access to remove and clean the filter.

The kit consists of two lifting mechanisms comprised of an electric motor driven winch with four (4) braided steel lifting cables. The winch kit is mounted behind the panel and is not visible during normal unit operation. The auto-elevating return air panel appearance and finish matches that of the architectural panel on similar indoor unit models equipped with the standard hinged filter panels. The auto-elevating panel control algorithm accepts up, down, and stop control commands from either a wall-mounted or the lift remote controller. The algorithm does not permit the lowering of the panel while the indoor unit fan is operating. The pair of winch controllers work in unison to keep the return air panel level during lift and descent operations and will automatically stop the descent of the return air panel/filter if contact is made with any obstacle.

Figure 2: Four-Way 2' x 2' Ceiling Cassette Indoor Units.



Figure 3: Four-Way 3' x 3' Ceiling Cassette Indoor Units.



Fan Assembly and Control

The indoor unit has a single, direct-drive, turbo fan. The fan wheel is made of high strength ABS HT-700 polymeric resin. 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. The fan speed algorithm provides a field selectable, fixed-speed or auto-speed setting that adjusts the fan speed to simulate natural airflow.

Air Filter

Return air is filtered with a removable, washable, MERV 6 rated pre-filter. An optional Premium Panel accessory with the PTAHMP0 Air Purification Kit is also available.

Airflow Guide Vanes

The architectural panel has four-directional slot diffusers each equipped with independent dual-vane oscillating motorized guide vanes (3'x3' cassette only) designed to change the angle airflow is discharged. Discharge range of motion is 10° to 85° in an up/down direction. A control algorithm provides the capability of locking each guide vane independently in a field adjusted fixed position. Guide vanes provide airflow in all directions. The ends of each vane are tapered to provide airflow to the space in the direction of the four corners of the architectural panel.

Microprocessor Controls

The unit is provided with an integrated microprocessor controller 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 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 indoor unit(s) and outdoor unit is to be a minimum of 18 AWG, 2 conductor, twisted, stranded, and shielded cable (RS-485),

terminated via screw terminals on the control boards. The microprocessor control algorithms provide the following functions: auto addressing, 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 control of the indoor 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 indoor unit operation when the indoor room temperature falls below setpoint temperature. At which point, a signal is sent to 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 wireless remote controller. In lieu of wireless remote or 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 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 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 the reason for the code displayed.

The indoor units are Wi-Fi compatible with the addition of an LG Wi-Fi module accessory, and can be controlled by LG's ThinQ™ app on a smart device. A field-supplied Wi-Fi network and smart device are required. The ThinQ app is free, and is available for Android™ and iOS. (Android is a trademark of Google LLC.)

Condensate Lift/Pump

The indoor unit is provided with a factory installed and wired condensate lift/pump capable of providing a maximum 27-9/16 inch lift from the bottom surface of the unit. The lift pump comes with a safety switch that shuts off the indoor unit if condensate rises too high in the drain pan.

Condensate Drain Pan

The condensate drain pan is constructed of EPS (expandable polystyrene resin).

Coil

The indoor unit coil is constructed with grooved design copper tubes with slit coil fins, three (3) rows, 18 columns, and 22 fins per inch.

Refrigerant Leak Detection

The indoor unit contains an R32 refrigerant leak sensor. The sensor is designed to control optional refrigerant piping shutoff valves if a leak is detected. Shutoff valve units are available as a separate LG accessory 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 (CH227) and end of life (CH229).

Table 2: Refrigerant Leak Sensor Specifications.

Item	Specification
Refrigerant	R32
Detection Concentration	5,000 ppm
Power Supply	DC 5V
Operating Temperature	-25 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
- High ceiling
- Hot start
- Self diagnostics
- Timer (on / off)
- Weekly schedule
- Multiple fan operation settings
- Various programmable airflow modes
- Fan speed control
- Power cool (fast cooling)
- Wi-Fi compatible
- Auto fan
- R32 leak detection sensor

FOUR-WAY CEILING CASSETTE



General Data

Table 3: Four-Way 2 x 2 TR and TQ Frame Ceiling -Cassette Indoor Unit General Data.

Model No.	ZRNU053TRAA	ZRNU073TRAA	ZRNU093TRAA	ZRNU123TRAA	ZRNU153TQAA	ZRNU183TQAA
Panel Model No.	PT-QAGW0	PT-QAGW0	PT-QAGW0	PT-QAGW0	PT-QAGW0	PT-QAGW0
<i>Cooling Mode Performance</i>						
Capacity (Btu/h)	5,500	7,500	9,600	12,300	15,400	19,100
Max. Power Input ¹ (W)	30	30	30	30	30	30
L/M/H Power at Factory Default (W)	11 / 12 / 13	11 / 12 / 13	12 / 13 / 14	13 / 15 / 17	18 / 21 / 24	19 / 22 / 25
<i>Heating Mode Performance</i>						
Capacity (Btu/h)	6,100	8,500	10,900	13,600	17,100	21,500
Max Power Input ¹ (W)	30	30	30	30	30	30
L/M/H Power at Factory Default (W)	11 / 12 / 13	11 / 12 / 13	12 / 13 / 14	13 / 15 / 17	18 / 21 / 24	19 / 22 / 25
<i>Entering Mixed Air</i>						
Cooling Max. (°F WB)	76	76	76	76	76	76
Heating Min. (°F DB)	59	59	59	59	59	59
<i>Unit Data</i>						
Refrigerant Type ²	R32	R32	R32	R32	R32	R32
Refrigerant Control	EEV	EEV	EEV	EEV	EEV	EEV
Sound Pressure ³ dB(A) (H/M/L)	29 / 27 / 26	29 / 27 / 26	30 / 29 / 27	32 / 30 / 27	36 / 34 / 32	37 / 35 / 34
Sound Power ⁴ dB(A) (H/M/L)	47 / 46 / 45	47 / 46 / 45	48 / 46 / 45	51 / 48 / 45	52 / 50 / 46	52 / 50 / 46
Net Unit Weight (lbs.)	26.5	26.5	29.1	29.1	31.3	31.3
Shipping Weight (lbs.)	31.3	31.3	34.0	34.0	36.8	36.8
Panel Weight (lbs)	6.3	6.3	6.3	6.3	6.3	6.3
Panel Shipping Weight (lbs)	8.6	8.6	8.6	8.6	8.6	8.6
Communication Cable ⁵ (No. x AWG)	2 x 18	2 x 18	2 x 18	2 x 18	2 x 18	2 x 18
<i>Fan</i>						
Type	Turbo	Turbo	Turbo	Turbo	Turbo	Turbo
Quantity	1	1	1	1	1	1
Motor/Drive	Brushless Digitally Controlled / Direct					
Airflow Rate H/M/L (CFM)	265 / 247 / 212	265 / 247 / 212	283 / 265 / 251	307 / 283 / 247	388 / 353 / 328	396 / 388 / 353
<i>Piping</i>						
Liquid Line (in., O.D.)	1/4 Flare	1/4 Flare	1/4 Flare	1/4 Flare	1/4 Flare	1/4 Flare
Vapor Line (in., O.D.)	3/8 Flare	3/8 Flare	3/8 Flare	3/8 Flare	1/2 Flare	1/2 Flare
Condensate Line (in., O.D. / I.D.)	1-1/4 / 1	1-1/4 / 1	1-1/4 / 1	1-1/4 / 1	1-1/4 / 1	1-1/4 / 1

EEV: Electronic Expansion Valve

Power wiring is field supplied and must comply with the applicable local and national codes. See page 51 for detailed electrical data.

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 www.ahridirectory.org.

¹Maximum power Input is rated at maximum setting value.

²Take 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.

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

⁴Sound Power levels are tested in a reverberation room under ISO Standard 3741.

⁵Communication 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 ODU chassis only. Ⓞ Do not ground the ODU to IDUs / HRUs communication cable at any other point. Wiring must comply with all applicable local and national codes.

Table 4: Four-Way 3 x 3 TA Frame Ceiling Cassette Indoor Unit General Data.

Model No.	ZRNU073TAAA	ZRNU093TAAA	ZRNU123TAAA	ZRNU153TAAA	ZRNU183TAAA
Panel Model No.	PT-AAGW0	PT-AAGW0	PT-AAGW0	PT-AAGW0	PT-AAGW0
<i>Cooling Mode Performance</i>					
Capacity (Btu/h)	7,500	9,600	12,300	15,400	19,100
Max. Power Input ¹ (W)	79	79	79	79	79
L/M/H Power at Factory Default (W)	10.9 / 16.1 / 23.3	10.9 / 17.6 / 24.7	13.3 / 19.2 / 26.1	14.8 / 20.4 / 28.5	16.1 / 23.3 / 31.1
<i>Heating Mode Performance</i>					
Capacity (Btu/h)	8,500	10,900	13,600	17,100	21,500
Max. Power Input ¹ (W)	79	79	79	79	79
L/M/H Power at Factory Default (W)	10.9 / 16.1 / 23.3	10.9 / 17.6 / 24.7	13.3 / 19.2 / 26.1	14.8 / 20.4 / 28.5	16.1 / 23.3 / 31.1
<i>Entering Mixed Air</i>					
Cooling Max. (°F WB)	76	76	76	76	76
Heating Min. (°F DB)	59	59	59	59	59
<i>Unit Data</i>					
Refrigerant Type ²	R32	R32	R32	R32	R32
Refrigerant Control	EEV	EEV	EEV	EEV	EEV
Sound Pressure ³ dB(A) (H/M/L)	24 / 27.5 / 30	24 / 28 / 31	25 / 29 / 31.5	26.5 / 29.5 / 32	27.5 / 30 / 33
Sound Power ⁴ dB(A) (H/M/L)	36 / 37 / 40	36 / 39 / 42	36 / 39 / 42	37 / 40 / 42	38 / 41 / 44
Net Unit Weight (lbs.)	59.5	59.5	59.5	59.5	59.5
Shipping Weight (lbs.)	71.7	71.7	71.7	71.7	71.7
Panel Weight (lbs)	15.6	15.6	15.6	15.6	15.6
Panel Shipping Weight (lbs)	20.5	20.5	20.5	20.5	20.5
Communication Cable ⁵ (No. x AWG)	2 x 18	2 x 18	2 x 18	2 x 18	2 x 18
<i>Fan</i>					
Type	Full 3D Turbo Fan	Full 3D Turbo Fan	Full 3D Turbo Fan	Full 3D Turbo Fan	Full 3D Turbo Fan
Quantity	1	1	1	1	1
Motor/Drive	Brushless Digitally Controlled / Direct				
Airflow Rate H/M/L (CFM)	468 / 556 / 653	468 / 576 / 670	515 / 599 / 687	547 / 615 / 711	556 / 653 / 735
<i>Piping</i>					
Liquid Line (in., O.D.)	3/8 Flare	3/8 Flare	3/8 Flare	3/8 Flare	3/8 Flare
Vapor Line (in., O.D.)	5/8 Flare	5/8 Flare	5/8 Flare	5/8 Flare	5/8 Flare
Condensate Line (in., O.D. / I.D.)	1-1/4 / 1	1-1/4 / 1	1-1/4 / 1	1-1/4 / 1	1-1/4 / 1

EEV: Electronic Expansion Valve

Power wiring is field supplied and must comply with the applicable local and national codes. See page 51 for detailed electrical data.

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 www.ahridirectory.org.

¹Maximum power Input is rated at maximum setting value.

²Take 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.

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

⁴Sound Power levels are tested in a reverberation room under ISO Standard 3741.

⁵Communication 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 ODU chassis only. Do not ground the ODU to IDUs / HRUs communication cable at any other point. Wiring must comply with all applicable local and national codes.

FOUR-WAY CEILING CASSETTE



General Data

Table 5: Four-Way 3 x 3 TA Frame Ceiling Cassette Indoor Unit General Data Continued.

Model No.	ZRNU243TAAA	ZRNU283TAAA	ZRNU363TAAA	ZRNU423TAAA	ZRNU483TAAA
Panel Model No.	PT-AAGW0	PT-AAGW0	PT-AAGW0	PT-AAGW0	PT-AAGW0
<i>Cooling Mode Performance</i>					
Capacity (Btu/h)	24,200	28,000	36,200	42,000	48,100
Max. Power Input ¹ (W)	199	199	199	199	199
L/MH Power at Factory Default (W)	24.7 / 31.1 / 40.0	26.1 / 35.2 / 45.5	31.1 / 43.4 / 64.7	43.4 / 64.7 / 85.8	53.1 / 66.8 / 100
<i>Heating Mode Performance</i>					
Capacity (Btu/h)	27,300	31,500	40,600	43,800	51,200
Max. Power Input ¹ (W)	199	199	199	199	199
L/MH Power at Factory Default (W)	24.7 / 31.1 / 40.0	26.1 / 35.2 / 45.5	31.1 / 43.4 / 64.7	43.4 / 64.7 / 85.8	53.1 / 66.8 / 100
<i>Entering Mixed Air</i>					
Cooling Max. (°F WB)	76	76	76	76	76
Heating Min. (°F DB)	59	59	59	59	59
<i>Unit Data</i>					
Refrigerant Type ²	R32	R32	R32	R32	R32
Refrigerant Control	EEV	EEV	EEV	EEV	EEV
Sound Pressure ³ dB(A) (H/M/L)	31 / 33.5 / 36.5	31.5 / 35 / 37.5	33 / 37 / 40	37 / 40 / 43.5	39 / 41 / 45
Sound Power ⁴ dB(A) (H/M/L)	42 / 45 / 47	42 / 46 / 48	44 / 48 / 51	48 / 51 / 54	50 / 52 / 56
Net Unit Weight (lbs.)	59.5	59.5	59.5	59.5	59.5
Shipping Weight (lbs.)	71.7	71.7	71.7	71.7	71.7
Panel Weight (lbs)	15.6	15.6	15.6	15.6	15.6
Panel Shipping Weight (lbs)	20.5	20.5	20.5	20.5	20.5
Communication Cable ⁵ (No. x AWG)	2 x 18	2 x 18	2 x 18	2 x 18	2 x 18
<i>Fan</i>					
Type	Full 3D Turbo Fan	Full 3D Turbo Fan	Full 3D Turbo Fan	Full 3D Turbo Fan	Full 3D Turbo Fan
Quantity	1	1	1	1	1
Motor/Drive	Brushless Digitally Controlled / Direct				
Airflow Rate H/M/L (CFM)	670 / 742 / 813	687 / 771 / 855	735 / 838 / 988	838 / 988 / 1,091	908 / 1,000 / 1,158
<i>Piping</i>					
Liquid Line (in., O.D.)	3/8 Flare	3/8 Flare	3/8 Flare	3/8 Flare	3/8 Flare
Vapor Line (in., O.D.)	5/8 Flare	5/8 Flare	5/8 Flare	5/8 Flare	5/8 Flare
Condensate Line (in., O.D. / I.D.)	1-1/4 / 1	1-1/4 / 1	1-1/4 / 1	1-1/4 / 1	1-1/4 / 1

EEV: Electronic Expansion Valve

Power wiring is field supplied and must comply with the applicable local and national codes. See page 51 for detailed electrical data.

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 www.ahridirectory.org.

¹Maximum power Input is rated at maximum setting value.

²Take 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.

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

⁴Sound Power levels are tested in a reverberation room under ISO Standard 3741.

⁵Communication 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 ODU chassis only. Ⓞ Do not ground the ODU to IDUs / HRUs communication cable at any other point. Wiring must comply with all applicable local and national codes.

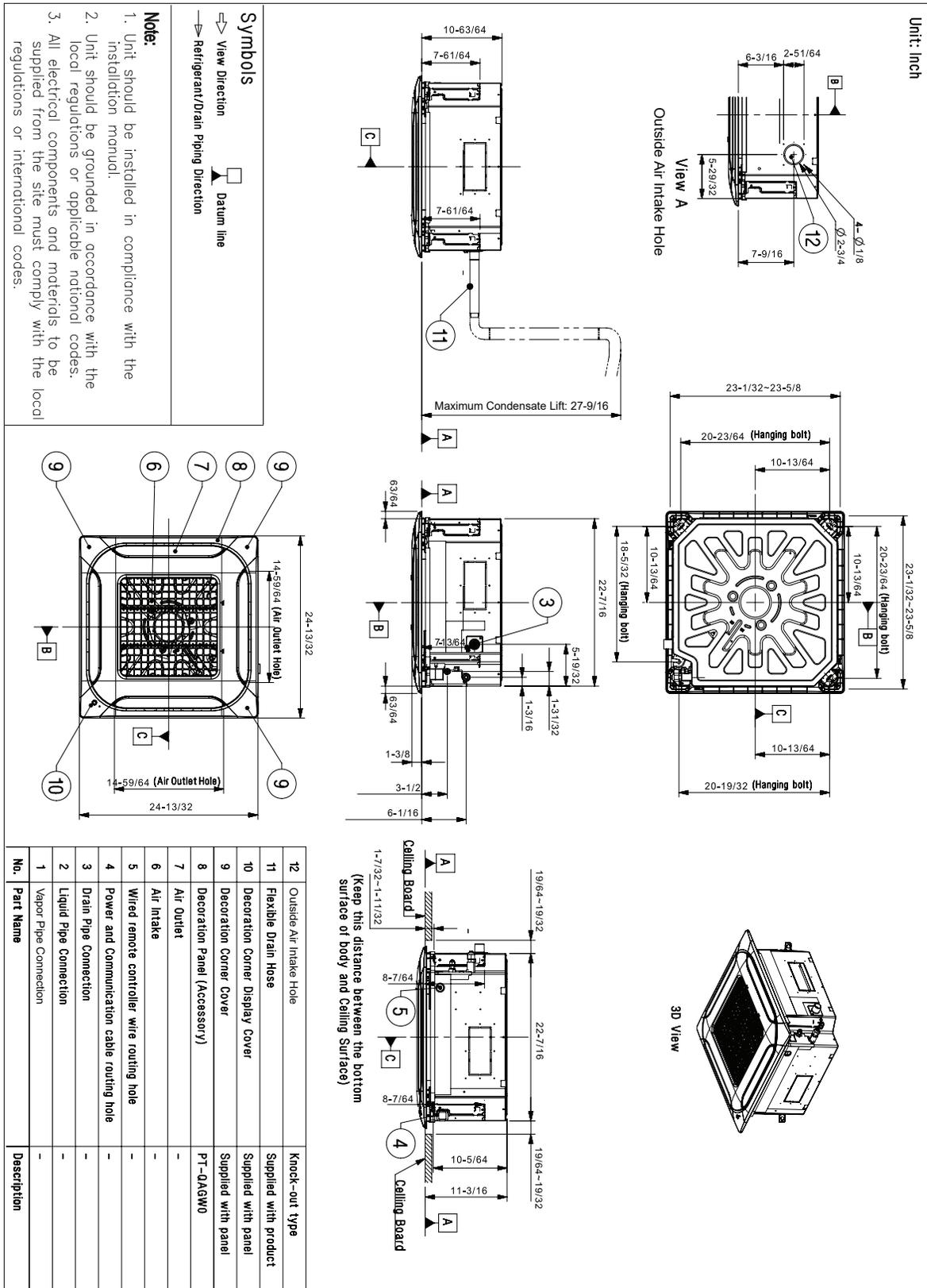
Table 6: Four-Way Ceiling Cassette Indoor Unit Electrical Data.

Model	Voltage Range	MCA	MOP	Rated Amps (A)	Power Supply			Power Input (W)		
					Hz	Volts	Phase	Max. Cooling	Max. Heating	L / M / H at Factory Default
<i>2' x 2' TR and TQ Frames</i>										
ZRNU053TRAA	187-253	0.4	15	0.25	60	208-230	1	30	30	11 / 12 / 13
ZRNU073TRAA		0.4	15	0.25				30	30	11 / 12 / 13
ZRNU093TRAA		0.4	15	0.25				30	30	12 / 13 / 14
ZRNU123TRAA		0.4	15	0.25				30	30	13 / 15 / 17
ZRNU153TQAA		0.4	15	0.25				30	30	18 / 21 / 24
ZRNU183TQAA		0.4	15	0.25				30	30	19 / 22 / 25
<i>3' x 3' TA Frames</i>										
ZRNU073TAAA	187-253	2.2	15	1.7	60	208-230	1	79	79	10.9 / 16.1 / 23.3
ZRNU093TAAA		2.2	15	1.7				79	79	10.9 / 17.6 / 24.7
ZRNU123TAAA		2.2	15	1.7				79	79	13.3 / 19.2 / 26.1
ZRNU153TAAA		2.2	15	1.7				79	79	14.8 / 20.4 / 28.5
ZRNU183TAAA		2.2	15	1.7				79	79	16.1 / 23.3 / 31.1
ZRNU243TAAA		2.2	15	1.7				199	199	24.7 / 31.1 / 40.0
ZRNU283TAAA		2.2	15	1.7				199	199	26.1 / 35.2 / 45.5
ZRNU363TAAA		2.2	15	1.7				199	199	31.1 / 43.4 / 64.7
ZRNU423TAAA		2.2	15	1.7				199	199	43.4 / 64.7 / 85.8
ZRNU483TAAA		2.2	15	1.7				199	199	53.1 / 66.8 / 100

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 a fuse, use the circuit breaker.
Maximum power input is rated at maximum setting valve.

Figure 5: 2 x 2 TQ Frame Ceiling Cassette Dimensions.

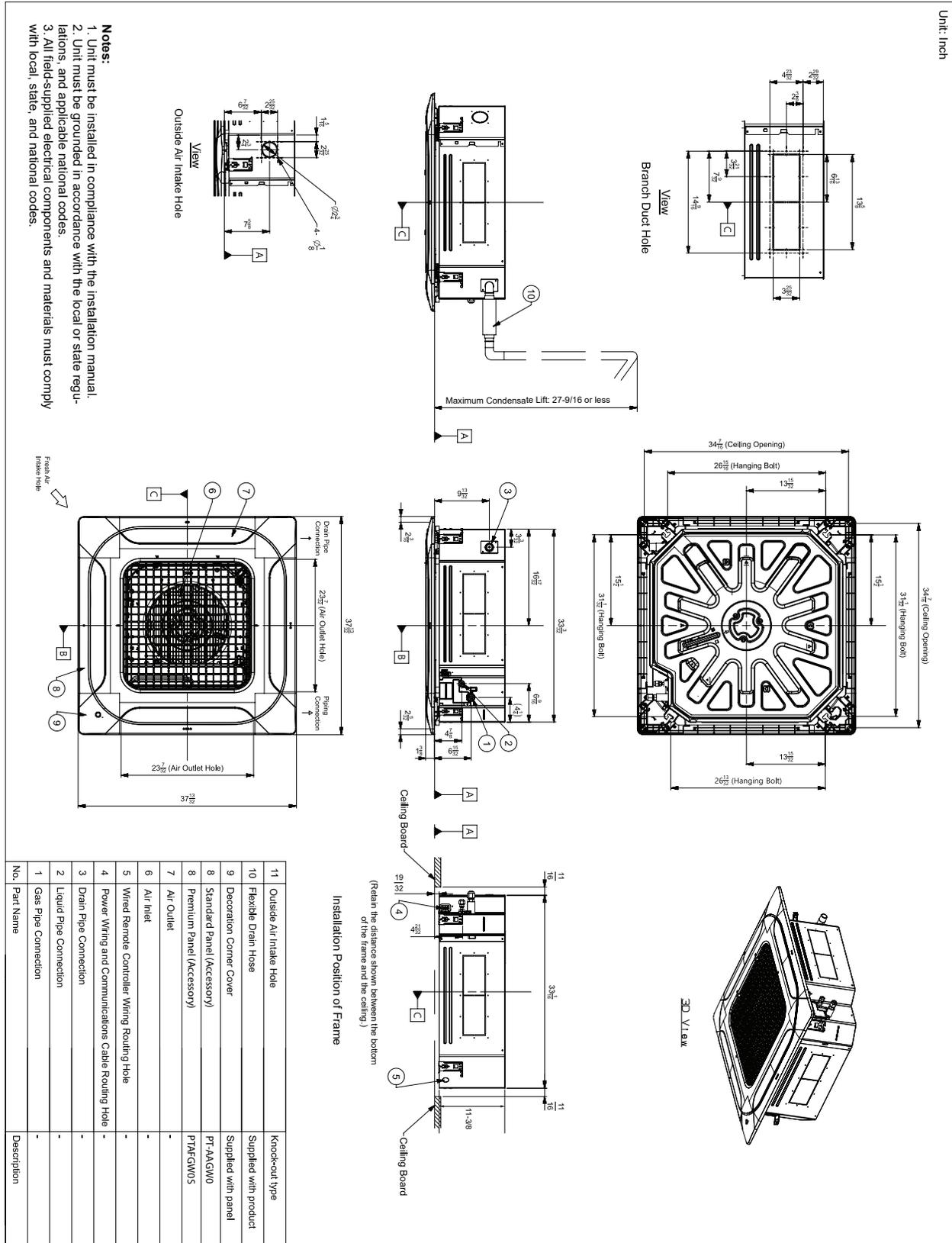


FOUR-WAY CEILING CASSETTE



3 x 3 TA Frame Dimensions

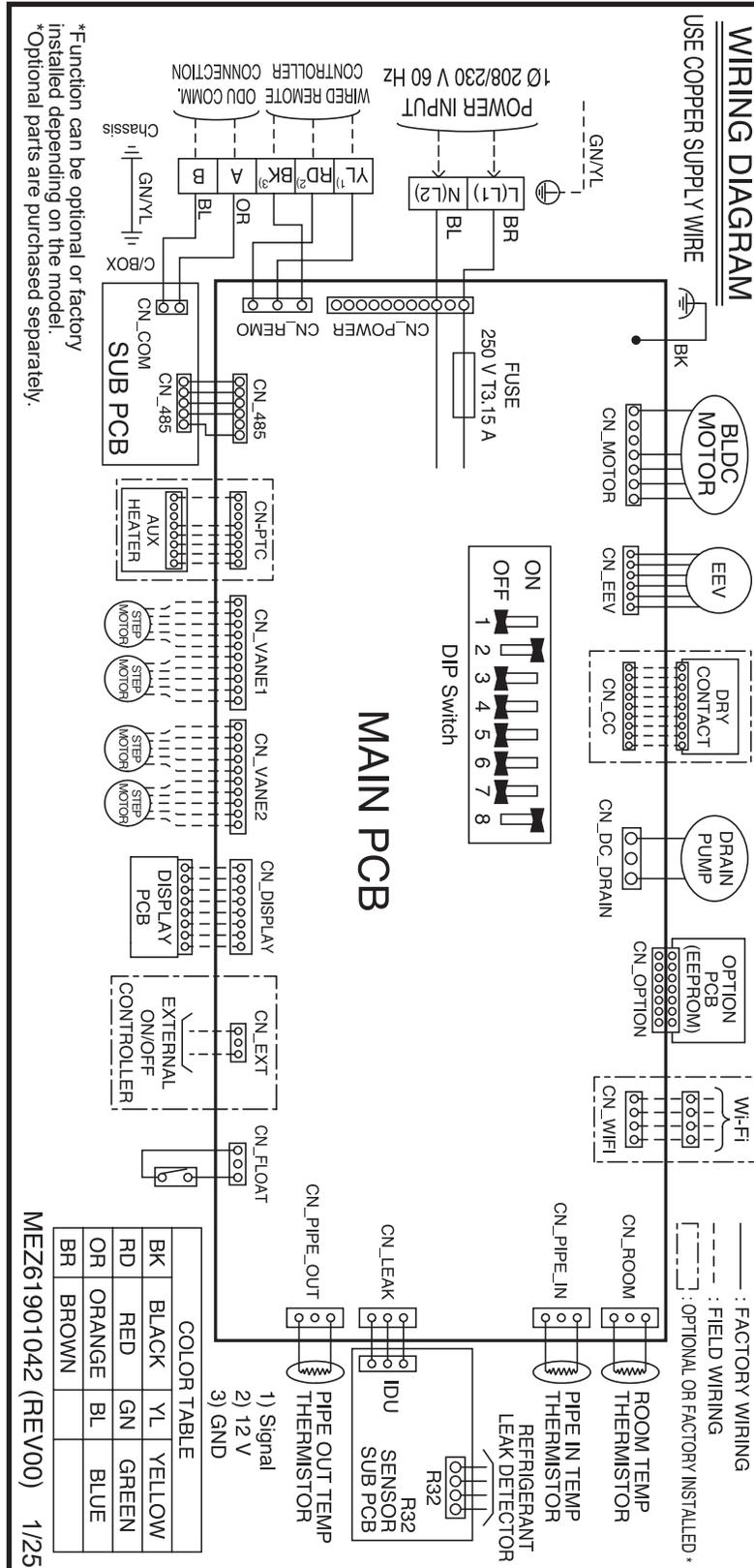
Figure 6: 3 x 3 TA Frame Ceiling Cassette Dimensions.



FOUR-WAY CEILING CASSETTE

2 x 2 TR and TQ Frame Wiring Diagram

Figure 7: 2 x 2 TR and TQ Frame Ceiling Cassette Wiring Diagram.



*Function can be optional or factory installed depending on the model.
 *Optional parts are purchased separately.

FOUR-WAY CEILING CASSETTE



2 x 2 TR and TQ Frame Wiring Diagram

Table 7: 2 x 2 TR and TQ Frame Ceiling Cassette Wiring Diagram Legend.

Terminal	Purpose	Function
CN_MOTOR	Fan motor output	Motor output of BLDC
CN_EEV	EEV output	EEV control output
CN_CC	Dry Contact	Connection to Dry Contact (Optional)
CN_DC_DRAIN	Drain pump output	AC output for drain pump
CN_OPTION	Option PCB (EEPROM)	Option PCB connection
CN_WIFI	Wi-Fi module	Wi-Fi module connection
CN_ROOM	Room sensor	Room air thermistor
CN_PIPE_IN	Suction pipe sensor	Pipe in thermistor
CN_LEAK	Leak sensor	Leak sensor connection
CN_PIPE_OUT	Discharge pipe sensor	Pipe out thermistor
CN_FLOAT	Float switch input	Float switch sensing
CN_EXT	External on/off controller	External on/off controller connection
CN_DISPLAY	Display	Display of indoor status
CN_VANE2	Step Motor	Step motor output
CN_VANE1	Step Motor	Step motor output
CN_PTC	Auxiliary heater	Auxiliary heater connection
CN_485	Communication	Connection between indoor and outdoor units
CN_REMO	Remote controller	Remote control connection
CN_POWER	AC Power supply	AC power line input for indoor controller

*If a Third-Party Dry Contact and an LG internal heater or an LG Auxiliary Heater Kit is installed, supplemental heat capability cannot be controlled by the Third-Party Thermostat.

Table 8: 2 x 2 TR and TQ Frame Ceiling Cassette DIP Switch Settings.

DIP Switch Setting		Off	On	Remarks
SW2	COMMUNICATION	Off	On	Selection of using 485 PCB. For TQ/TR Models, SW2 must be set to ON.
SW3	GROUP CONTROL	Main	Sub	Group control setting using 7-Day 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.
SW7	VENTILATOR INTERLOCK	Off	On	Selects ventilator interlock function for four-way ceiling cassette indoor units. 1. On: Automatic (vent relay will be turned on after ten [10] seconds of indoor unit operation). 2. Off: Manual (ventilator needs to be set through the controller).
SW8	REFRIGERANT LEAK DETECTOR	Off	On	Selection of Installed or Not Installed. By default, SW8 is set to ON. Keep this setting.

*For Multi V 2 x 2 four-way ceiling cassette indoor units, DIP switches 1, 5, 6 must be OFF; and 2, 8 must be ON.

FOUR-WAY CEILING CASSETTE



3 x 3 TA Frame Wiring Diagram

Table 9: 3 x 3 TA Frame Ceiling Cassette Wiring Diagram Legend.

Terminal	Purpose	Function
CN_POWER	AC Power supply	AC power line input for indoor controller
CN_VANE1	Step Motor	Step motor output
CN_VANE2	Step Motor	Step motor output
CN_DISPLAY	Display	Display of indoor status
CN_OPTION	Option PCB (EEPROM)	Option PCB connection
CN_DC_DRAIN	Drain pump output	AC output for drain pump
CN_VISION	Human detection sensor	Connection for human detection sensor
CN_THERMO	Floor temperature sensor	Connection for floor temperature sensor
CN_WIFI	Wi-Fi module	Wi-Fi module connection
CN_LEAK	Leak sensor	Leak sensor connection
CN_ROOM_HUMID / CN_HUMID	N/A	N/A
CN_ROOM	Room sensor	Room air thermistor
CN_PIPE_IN	Suction pipe sensor	Pipe in thermistor
CN_PIPE_OUT	Discharge pipe sensor	Pipe out thermistor
CN_FLOAT	Float switch input	Float switch sensing
CN_DUST1	PM 1.0 sensor	PM 1.0 sensor connection
CN_EXT	External on/off controller	External on/off controller connection
CN_EEV	EEV output	EEV control output
CN_CC	Dry Contact	Connection to Dry Contact (Optional)
CN_PTC	Auxiliary heater	Auxiliary heater connection
CN_MOTOR	Fan motor output	Motor output of BLDC
CN_485_AB	Communication	Connection between indoor and outdoor units
CN_REMO	Remote controller	Remote control connection

*If a Third-Party Dry Contact and an LG internal heater or an LG Auxiliary Heater Kit is installed, supplemental heat capability cannot be controlled by the Third-Party Thermostat.

Table 10: 3 x 3 TA Frame Ceiling Cassette DIP Switch Settings.

DIP Switch Setting		Off	On	Remarks
SW3	GROUP CONTROL	Main	Sub	Group control setting using 7-Day 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.
SW7	VENTILATOR INTERLOCK	Off	On	Selects ventilator interlock function for four-way ceiling cassette indoor units. 1. On: Automatic (vent relay will be turned on after ten [10] seconds of indoor unit operation). 2. Off: Manual (ventilator needs to be set through the controller).
SW8	REFRIGERANT LEAK DETECTOR	Off	On	Selection of Installed or Not Installed. By default, SW8 is set to ON. Keep this setting.

*For Multi V 3 x 3 four-way ceiling cassette indoor units, DIP switches 1, 2, 5, 6 must be OFF and 8 must be ON.

FOUR-WAY CEILING CASSETTE

2 x 2 TR and TQ / 3 x 3 TA Frame Refrigerant Flow Diagram

Figure 9: 2 x 2 TR and TQ Frame / 3 x 3 TA Frame Ceiling Cassette Piping Diagram.

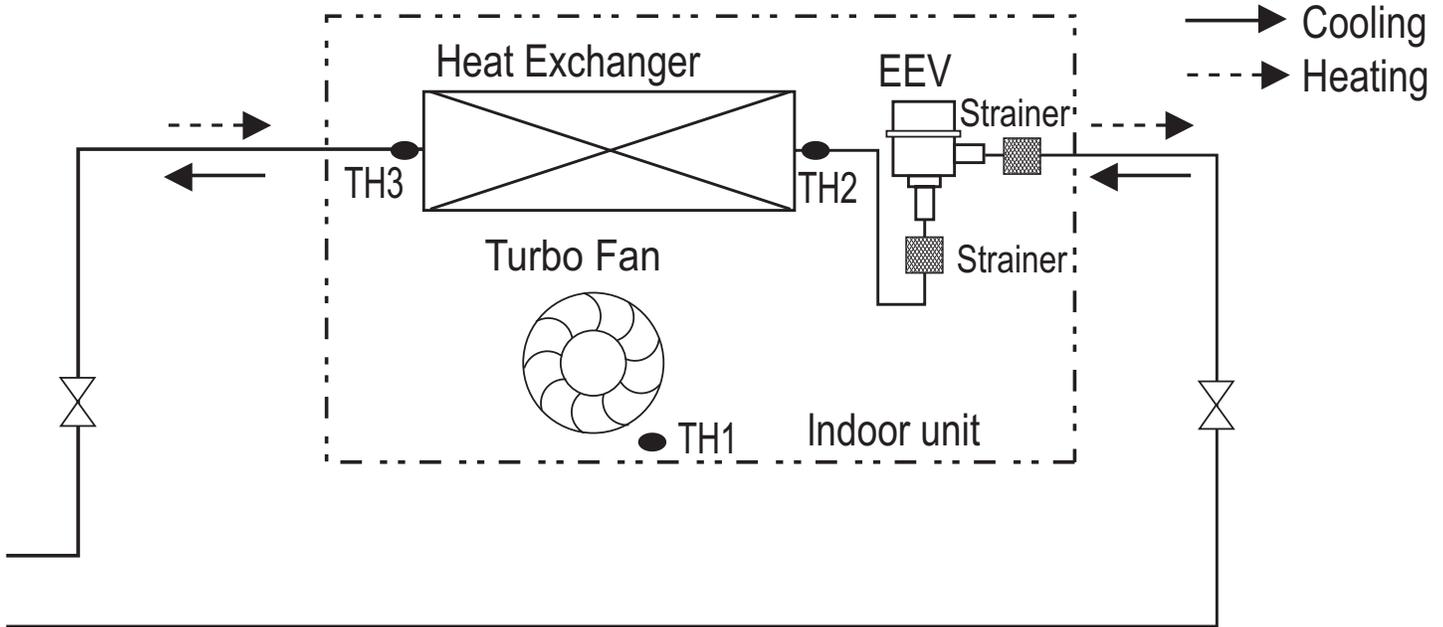


Table 11: 2 x 2 TR and TQ Frame / 3 x 3 TA Frame Ceiling Cassette Refrigerant Pipe Connection Port Diameters.

Model	Liquid (inch)	Vapor (inch)
2' x 2' TR and TQ Frames		
ZRNU053TRAA	1/4 Flare	3/8 Flare
ZRNU073TRAA		
ZRNU093TRAA		
ZRNU123TRAA		
ZRNU153TQAA		1/2 Flare
ZRNU183TQAA		
3' x 3' TA Frames		
ZRNU073TAAA	3/8 Flare	5/8 Flare
ZRNU093TAAA		
ZRNU123TAAA		
ZRNU153TAAA		
ZRNU183TAAA		
ZRNU243TAAA		
ZRNU283TAAA		
ZRNU363TAAA		
ZRNU423TAAA		
ZRNU483TAAA		

Table 12: 2 x 2 TR and TQ Frame / 3 x 3 TA Frame Ceiling Cassette Thermistors.

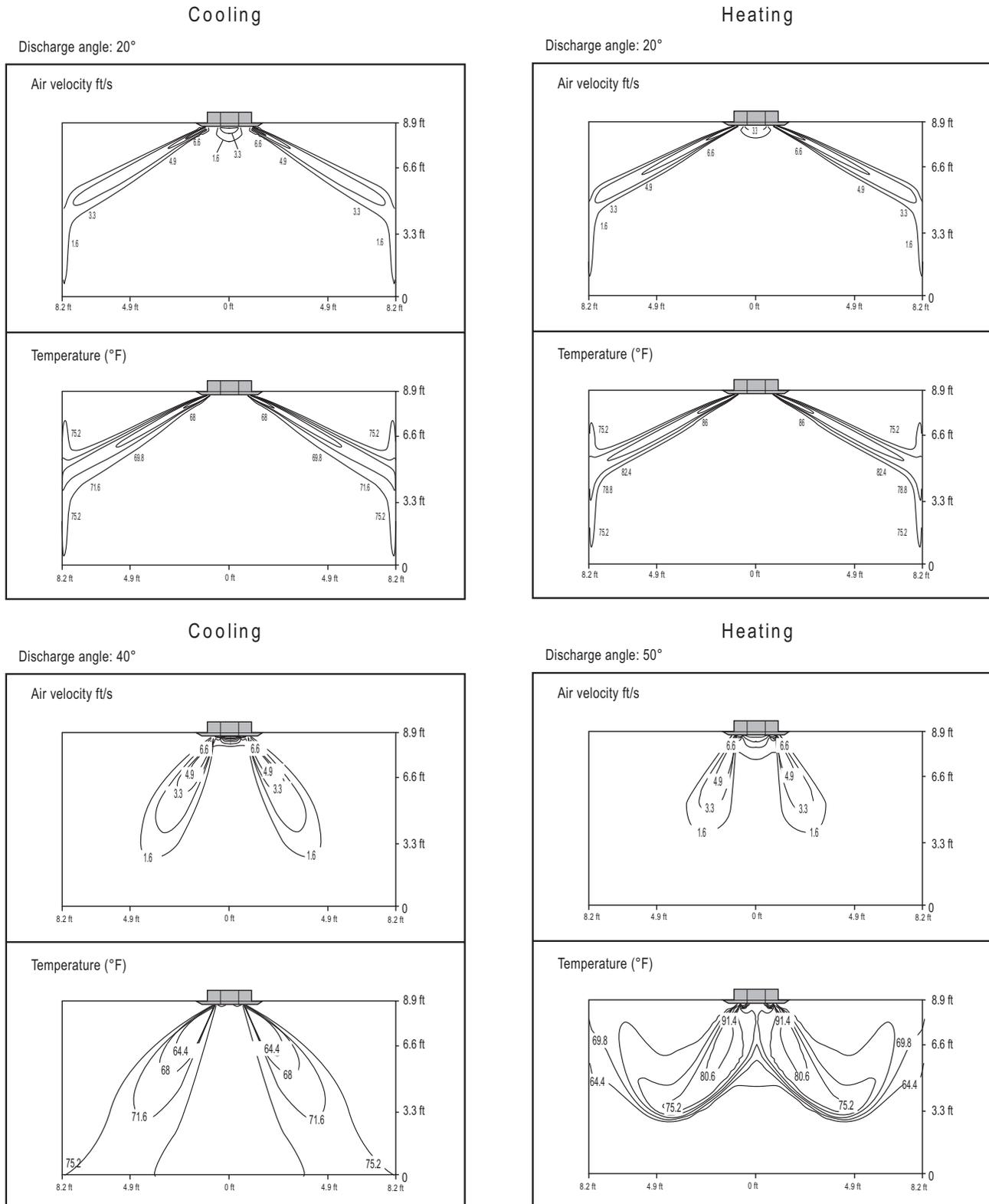
Thermistor	Description	PCB Connector
TH1	Return (Room) Air Temperature Thermistor	CN-ROOM (Yellow)
TH2	Pipe In Temperature Thermistor	CN-PIPE_IN (White)
TH3	Pipe Out Temperature Thermistor	CN-PIPE_OUT (Red)

FOUR-WAY CEILING CASSETTE



Air Velocity / Temperature Distribution

Figure 10: ZRNU053TRAA.



The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

Figure 11: ZRNU053TRAA, continued.

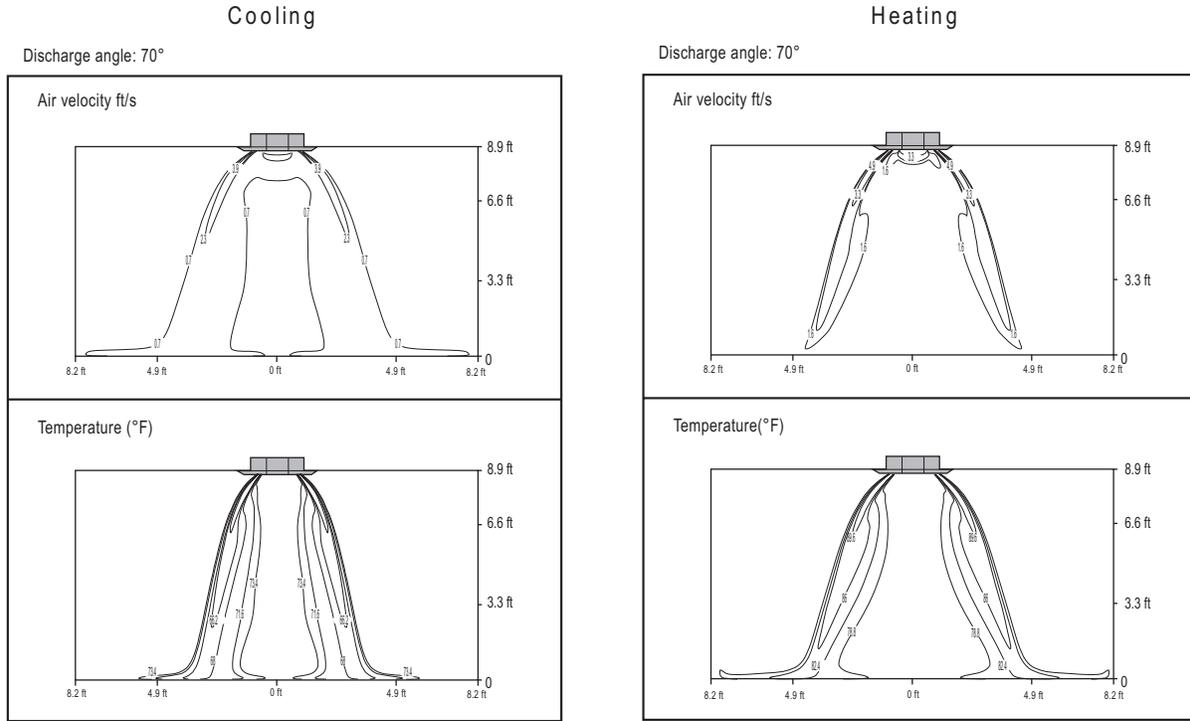
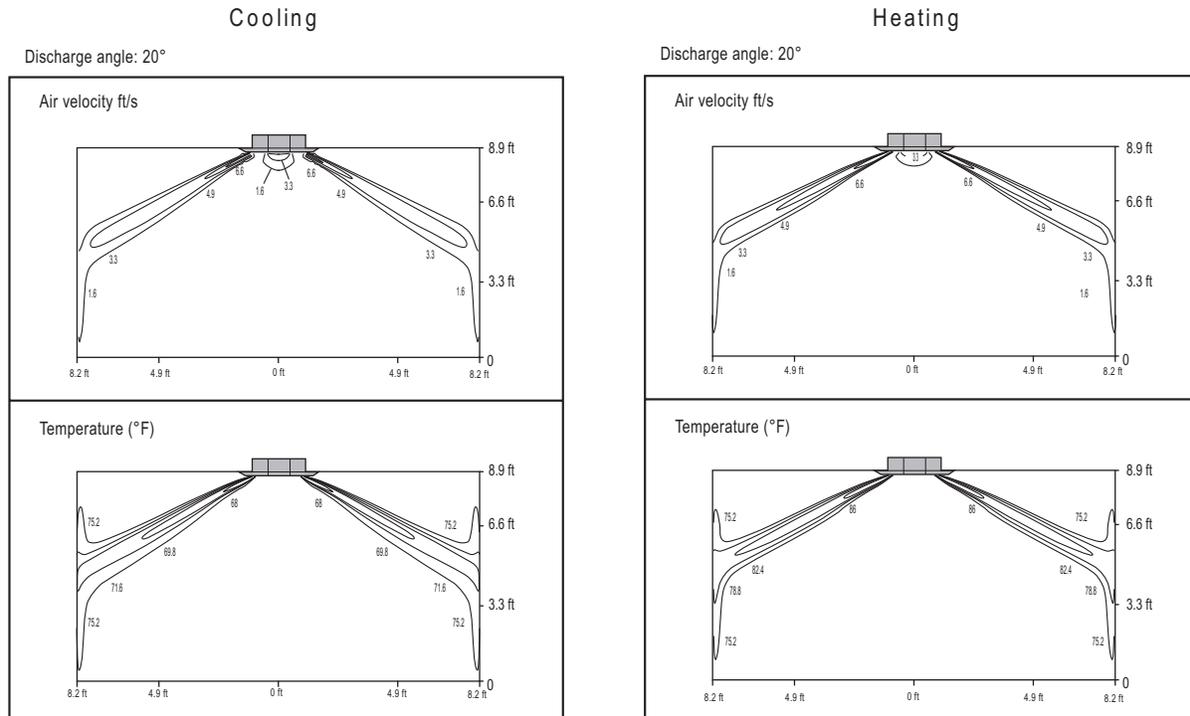


Figure 12: ZRNU073TRAA.



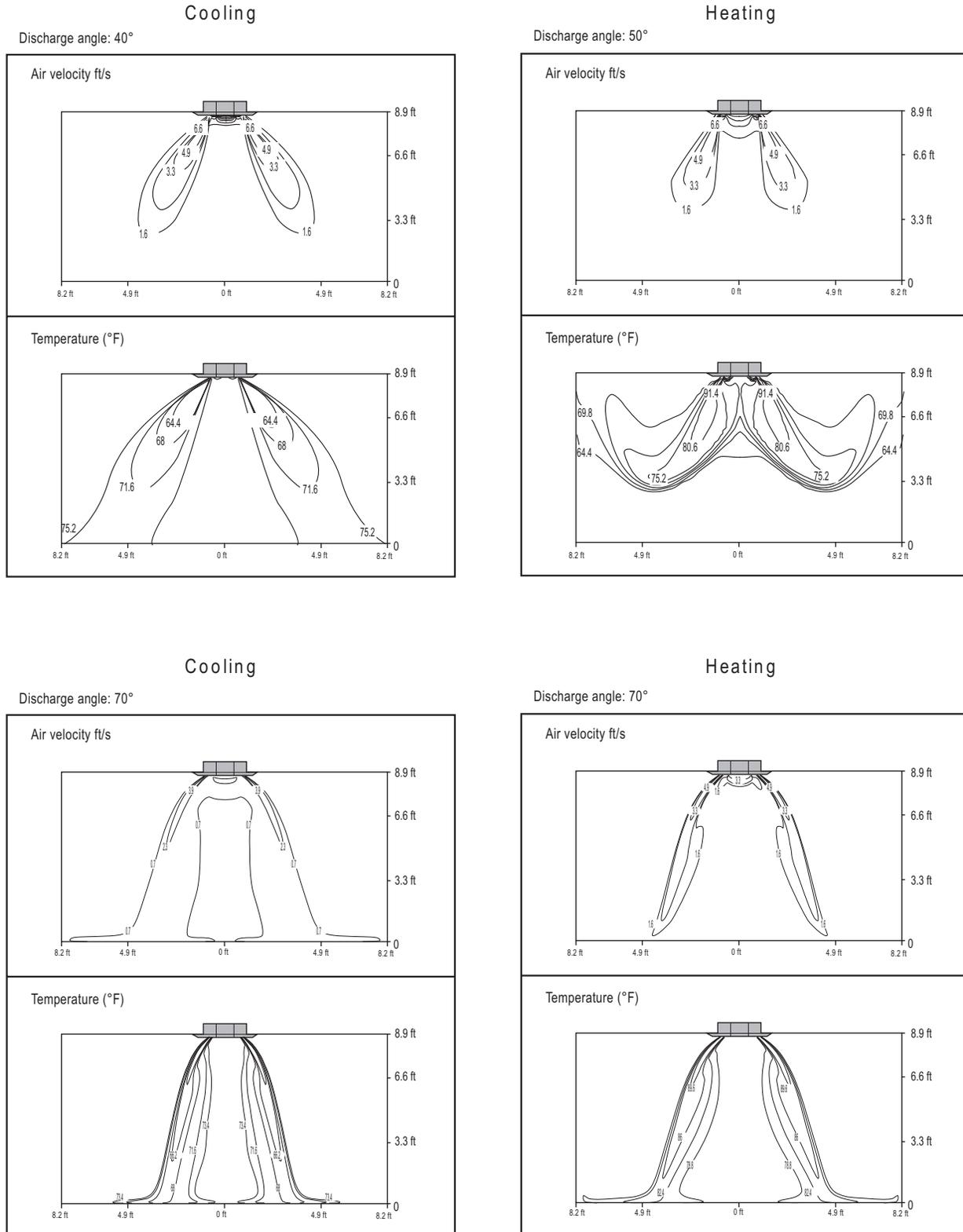
The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

FOUR-WAY CEILING CASSETTE



Air Velocity / Temperature Distribution

Figure 13: ZRNU073TRAA, continued.



The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.



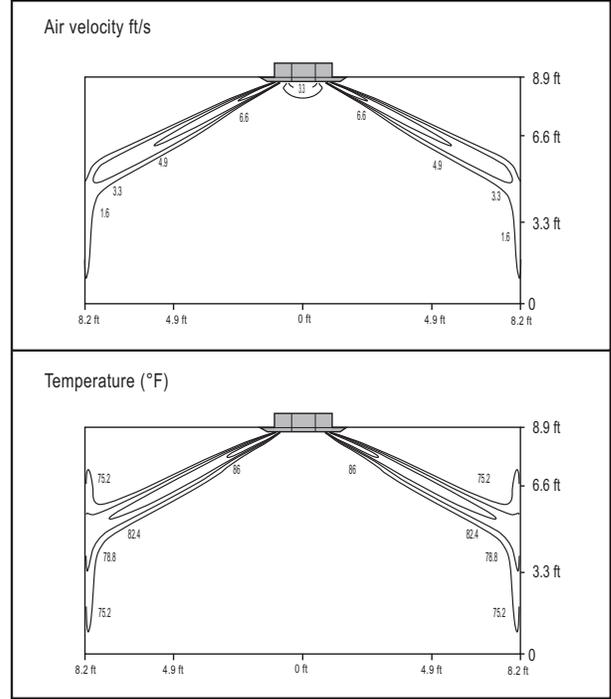
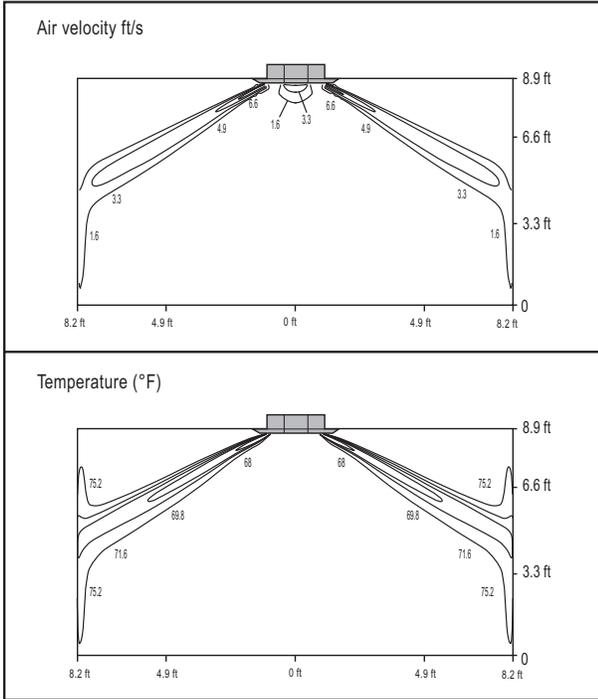
Figure 14: ZRNU093TRAA.

Cooling

Heating

Discharge angle: 20°

Discharge angle: 20°

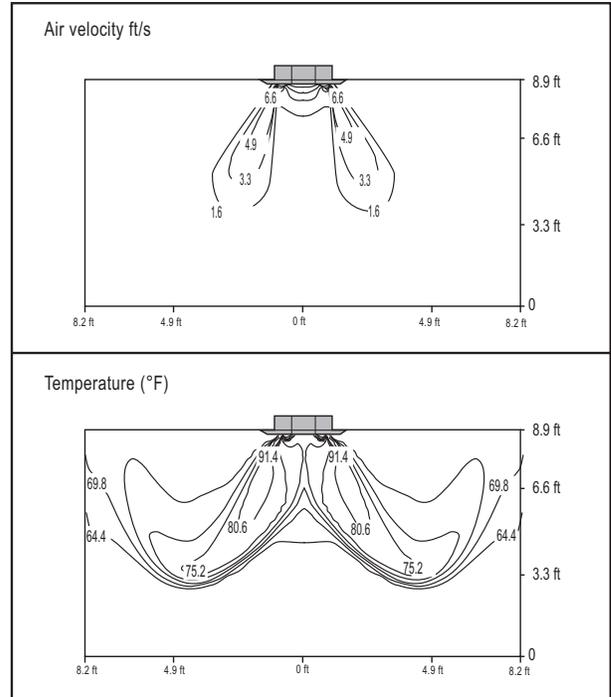
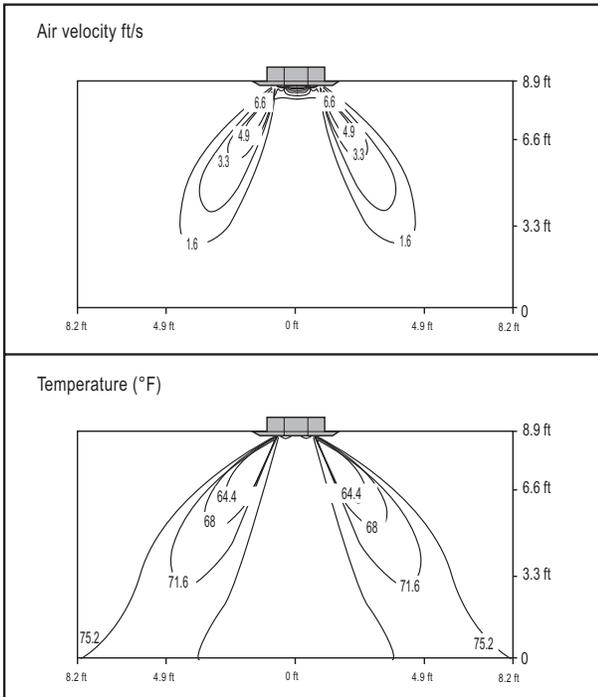


Cooling

Heating

Discharge angle: 40°

Discharge angle: 50°



The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

FOUR-WAY CEILING CASSETTE



Air Velocity / Temperature Distribution

Figure 15: ZRNU093TRAA, continued.

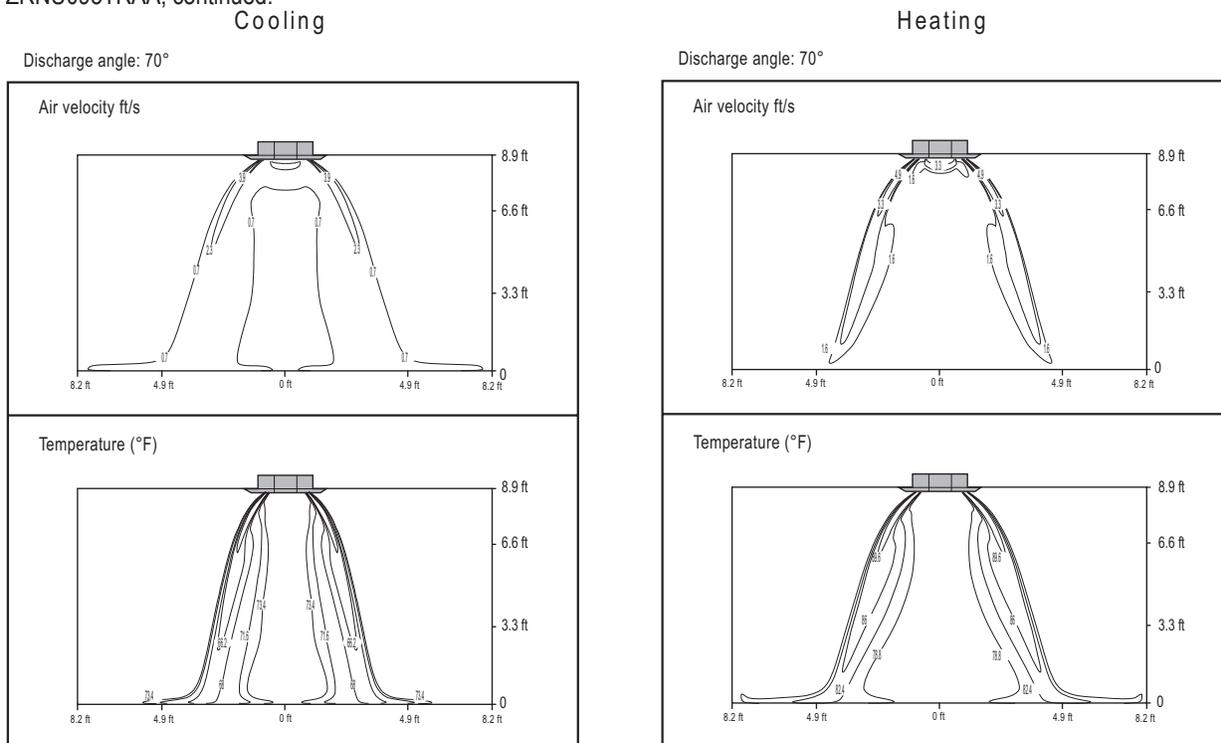
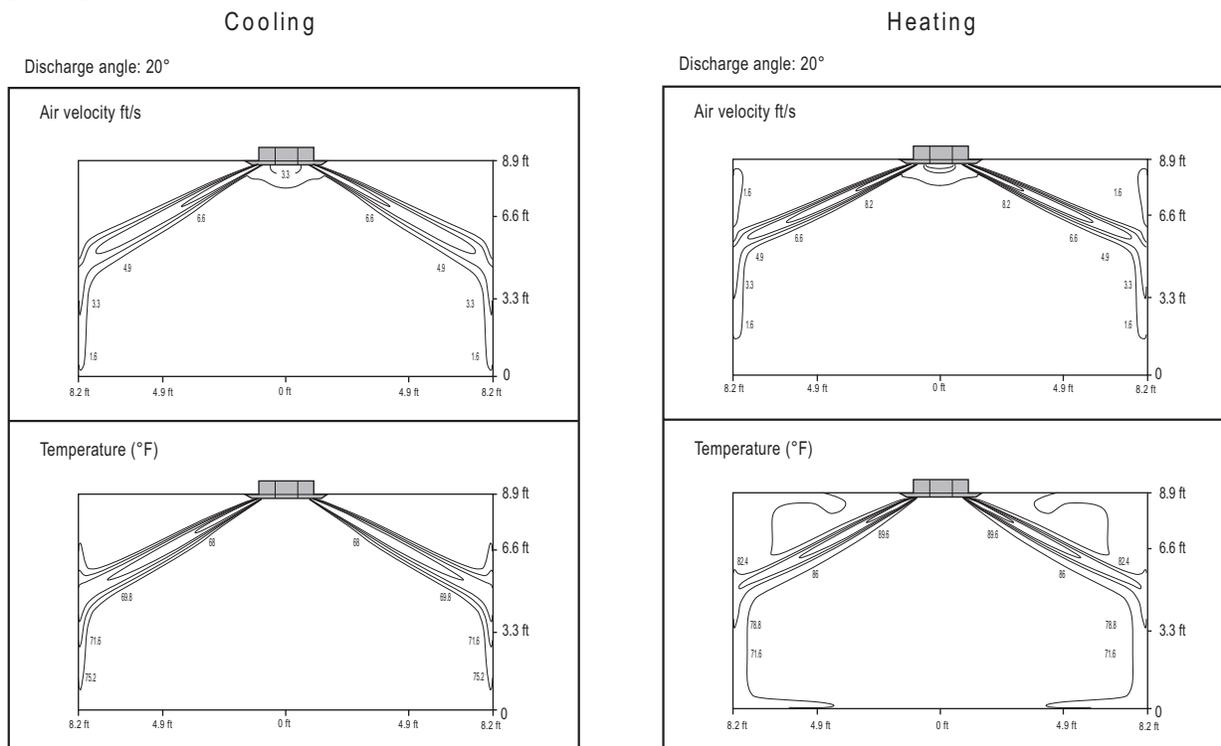
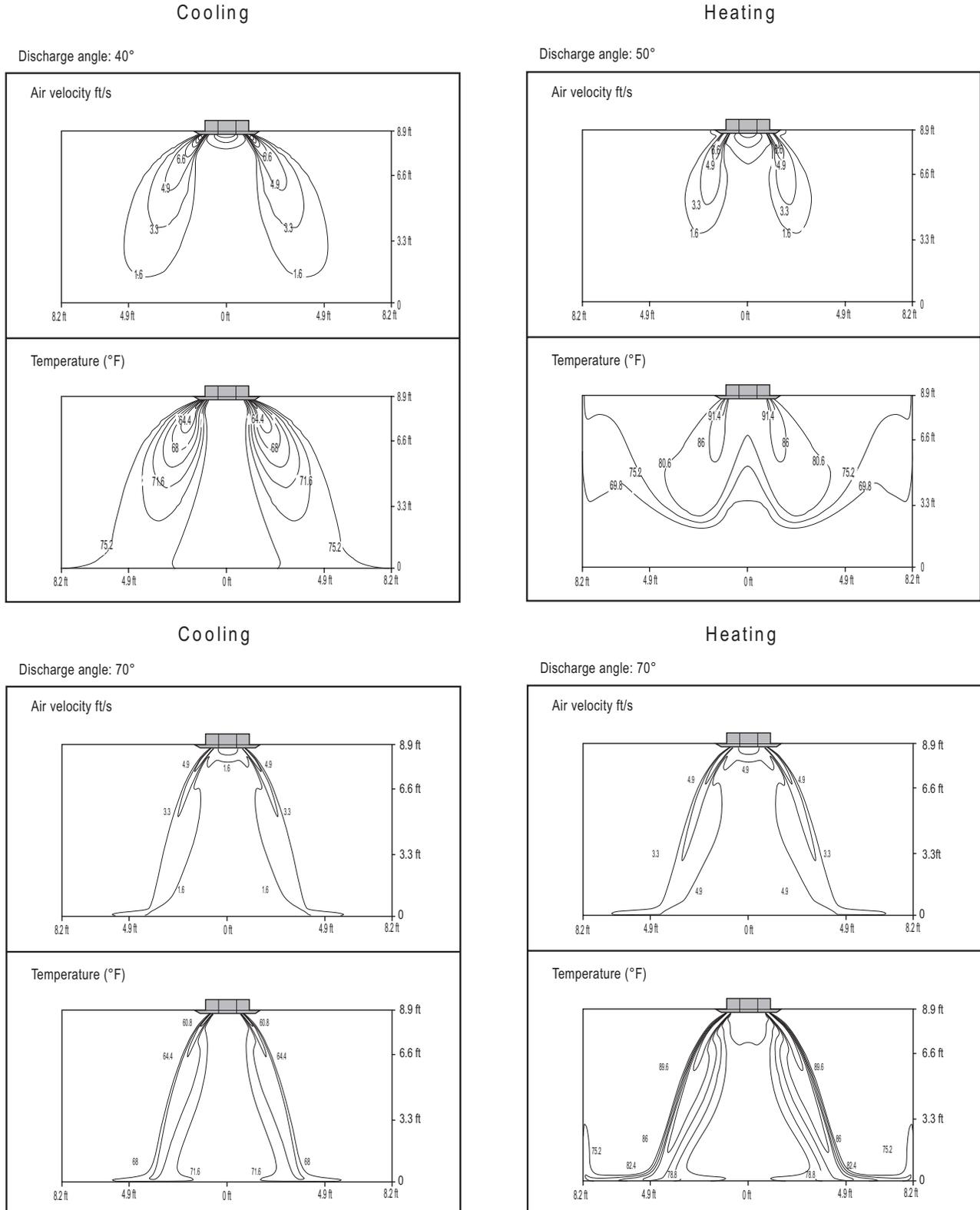


Figure 16: ZRNU123TRAA.



The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

Figure 17: ZRNU123TRAA, continued.

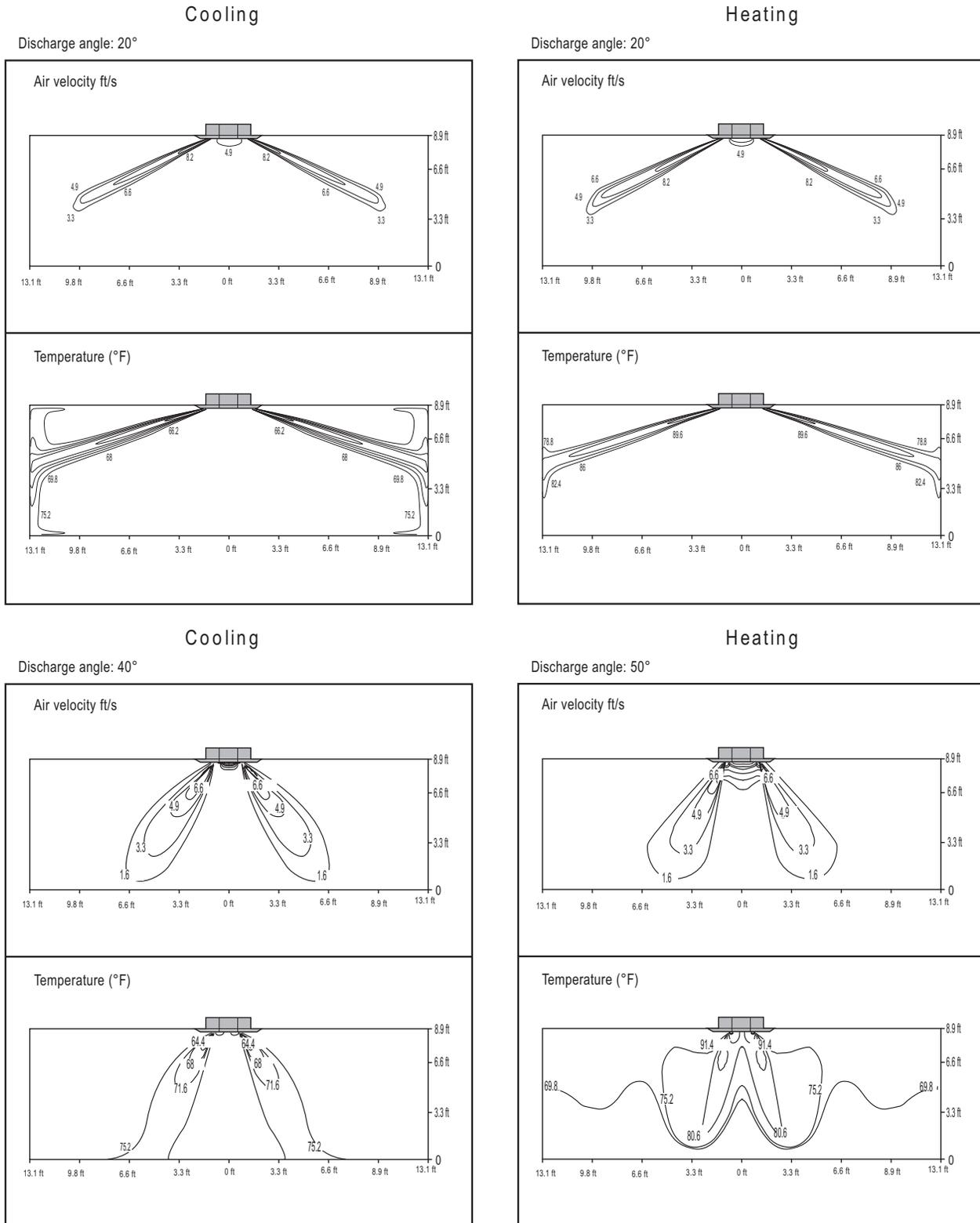


The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

FOUR-WAY CEILING CASSETTE

Air Velocity / Temperature Distribution

Figure 18: ZRNU153TQAA.



The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

Figure 20: ZRNU153TQAA, continued.

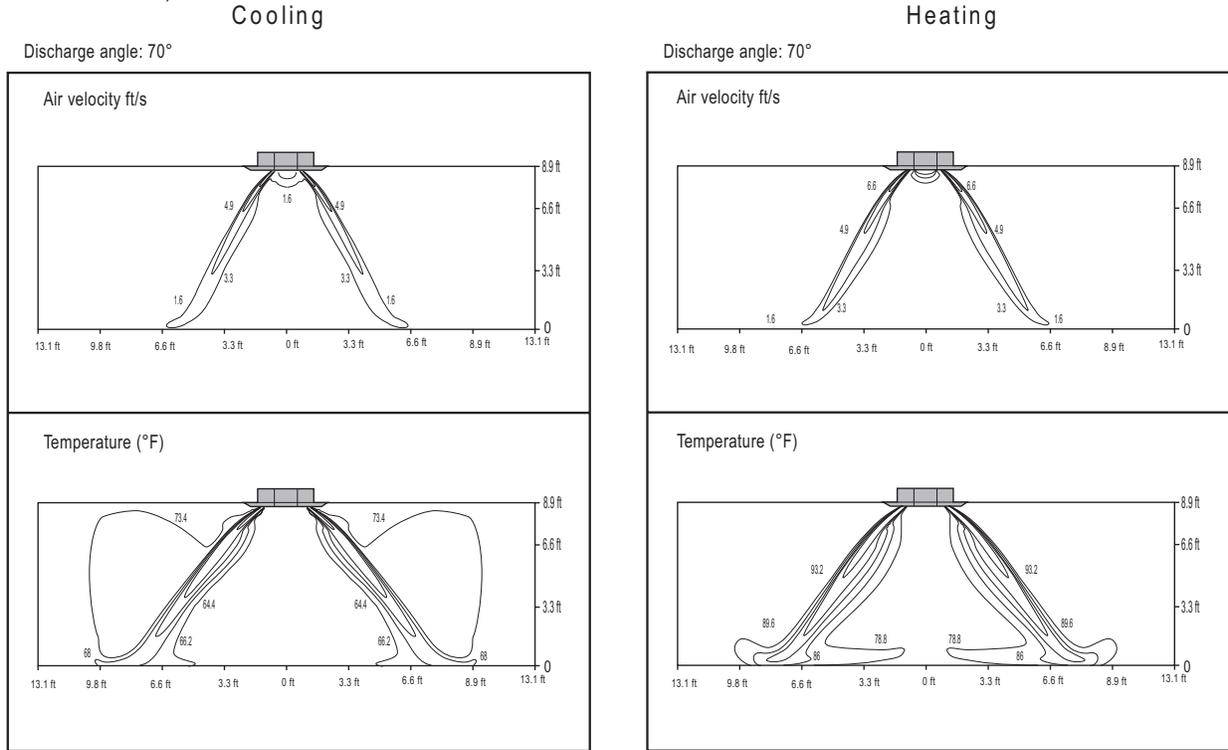
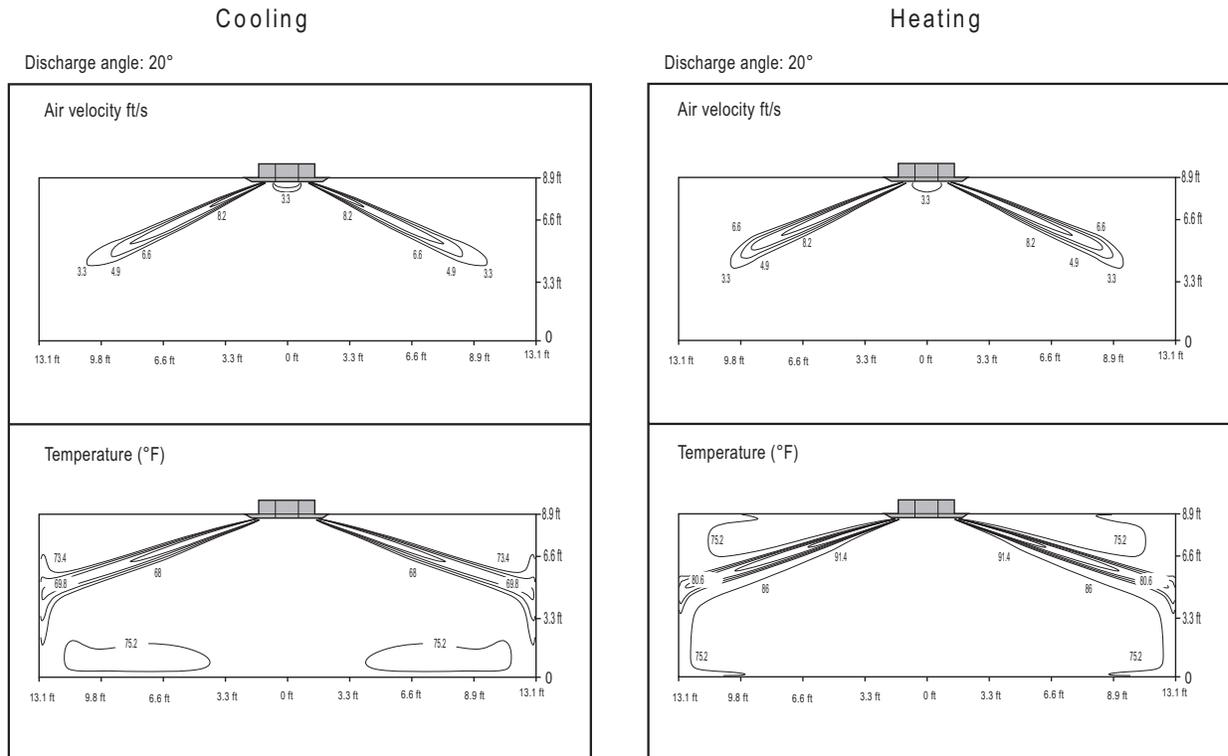


Figure 19: ZRNU183TQAA



The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

FOUR-WAY CEILING CASSETTE

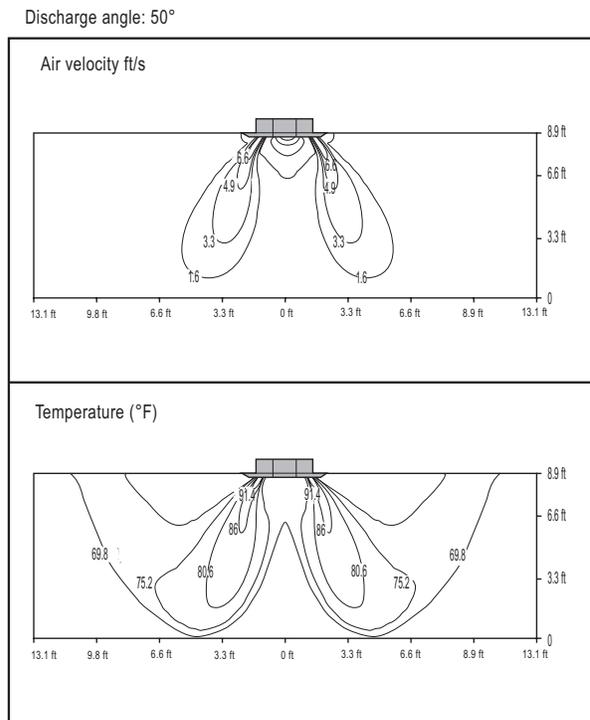
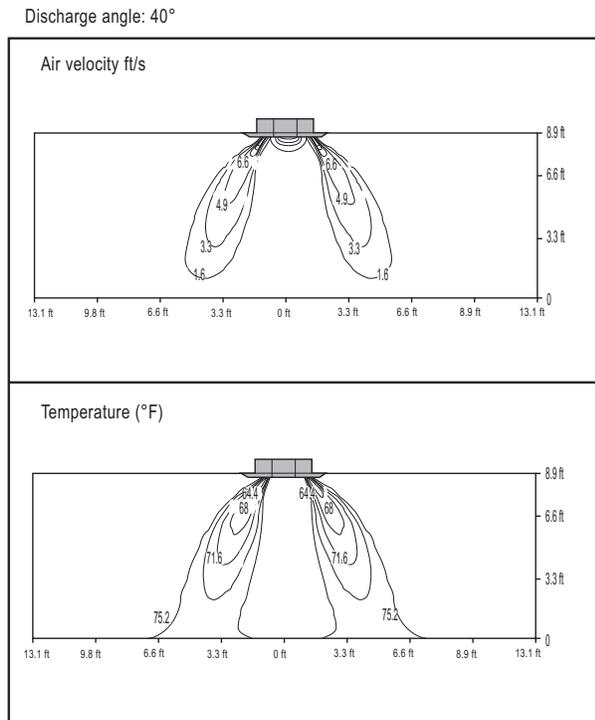


Air Velocity / Temperature Distribution

Figure 21: ZRNU183TQAA, continued.

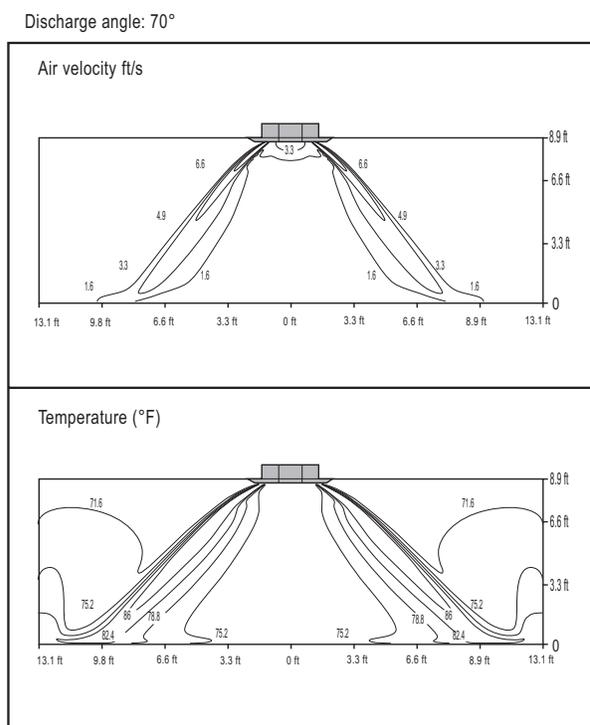
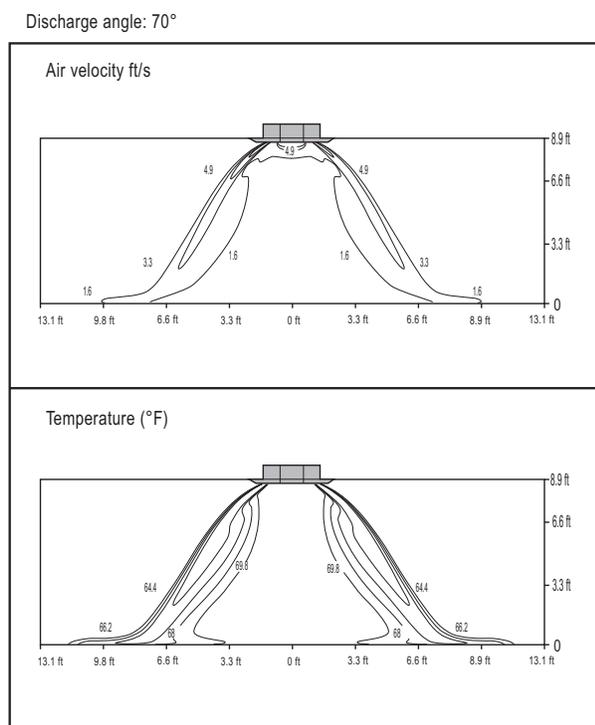
Cooling

Heating



Cooling

Heating

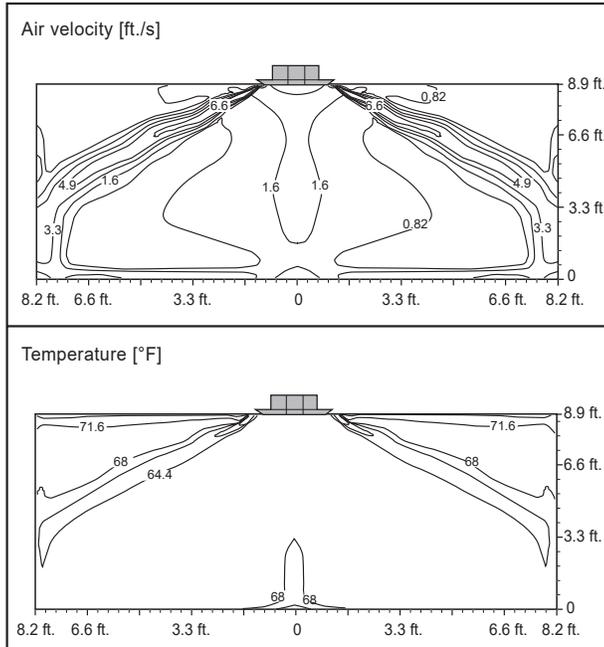


The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.

Figure 22: ZRNU073TAAA.

Cooling

Discharge angle: Outside - 30°, Inside - 67°



Heating

Discharge angle: Outside - 36°, Inside - 70°

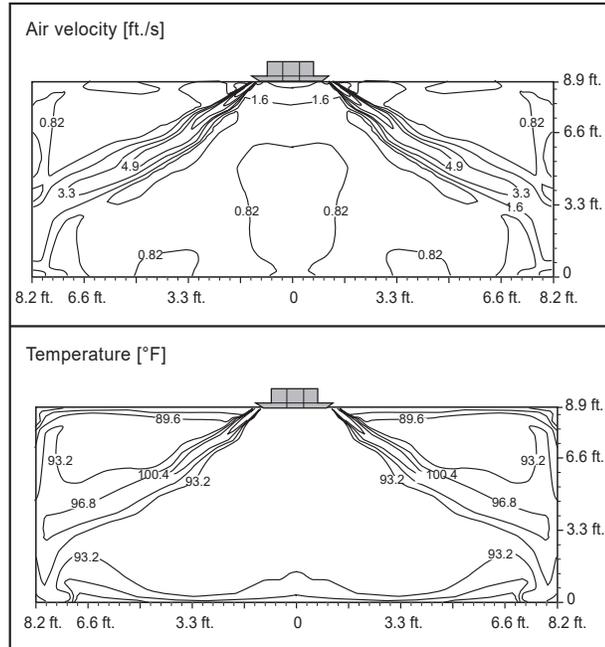
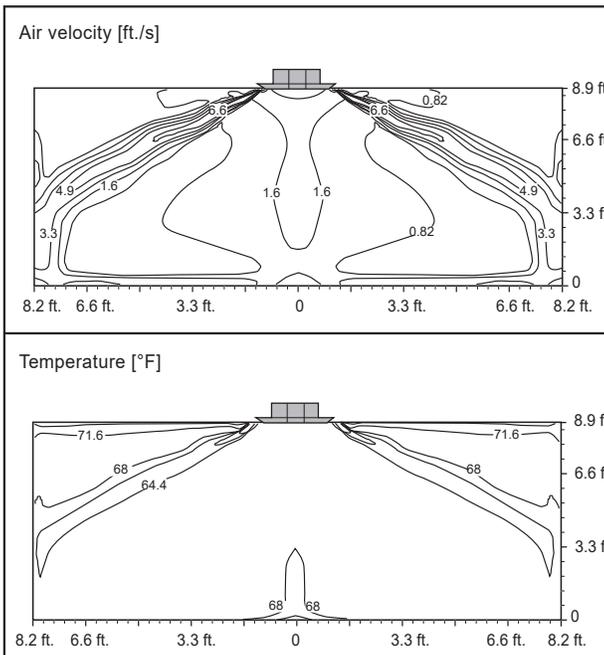


Figure 23: ZRNU093TAAA.

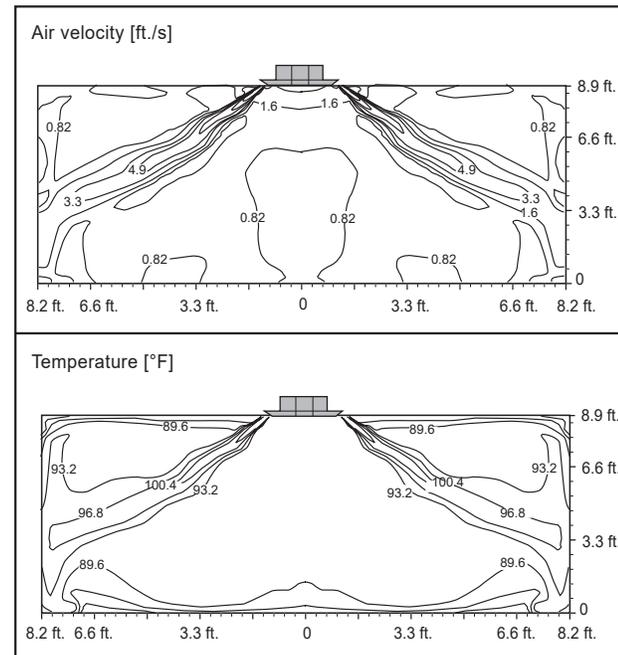
Cooling

Discharge angle: Outside - 30°, Inside - 67°



Heating

Discharge angle: Outside - 36°, Inside - 70°



- The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.
- Airflow step is 'High'. Air discharge angle is fixed as indicated angle.
- Indoor airflow distribution under actual installation or operating conditions depends on ambient temperature, ceiling height, product installation direction / location, and other obstacles, etc.

FOUR-WAY CEILING CASSETTE



Air Velocity / Temperature Distribution

Figure 24: ZRNU123TAAA.

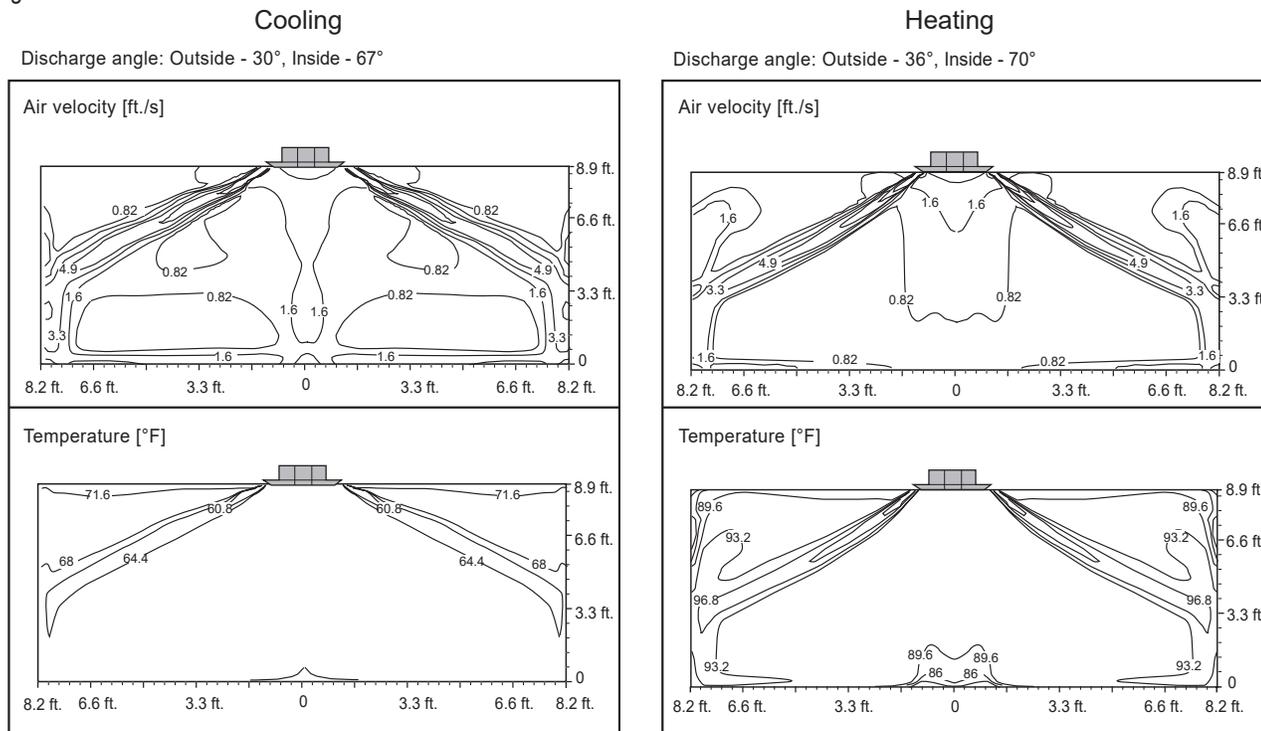
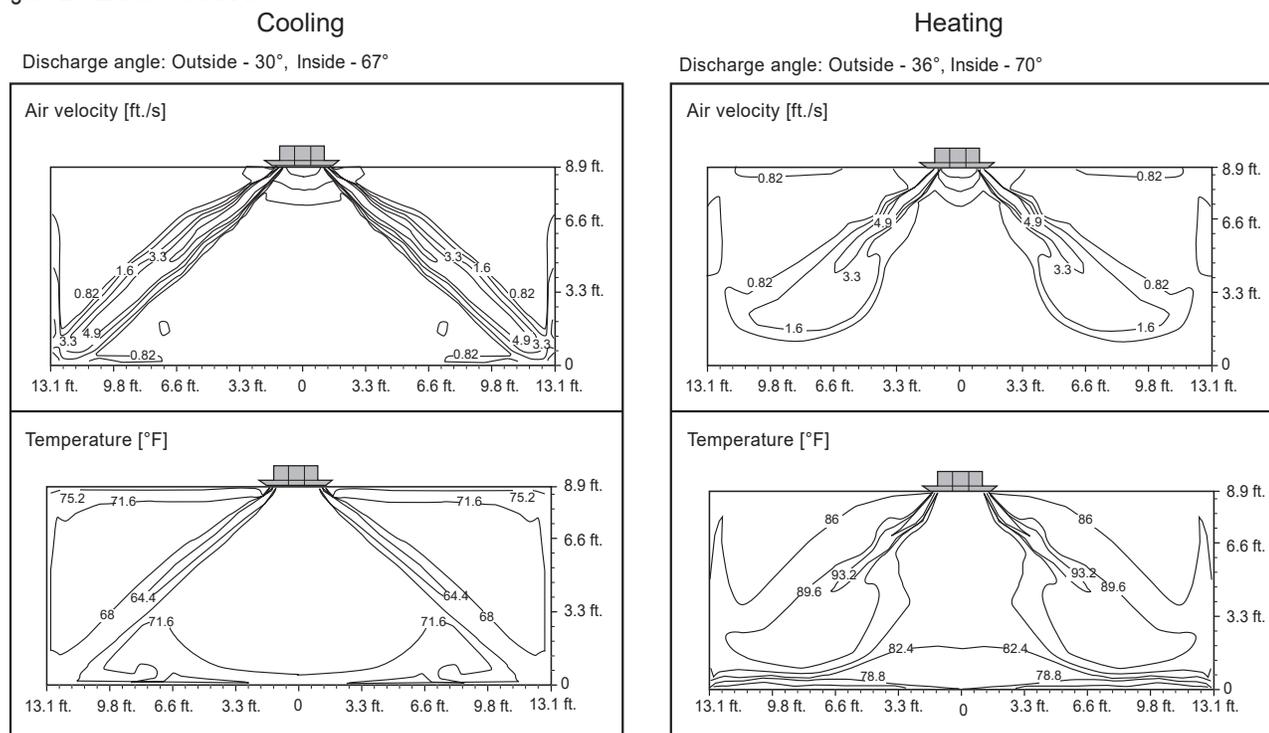


Figure 25: ZRNU153TAAA.



- The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.
- Airflow step is 'High'. Air discharge angle is fixed as indicated angle.
- Indoor airflow distribution under actual installation or operating conditions depends on ambient temperature, ceiling height, product installation direction / location, and other obstacles, etc.

Figure 26: ZRNU183TAAA.

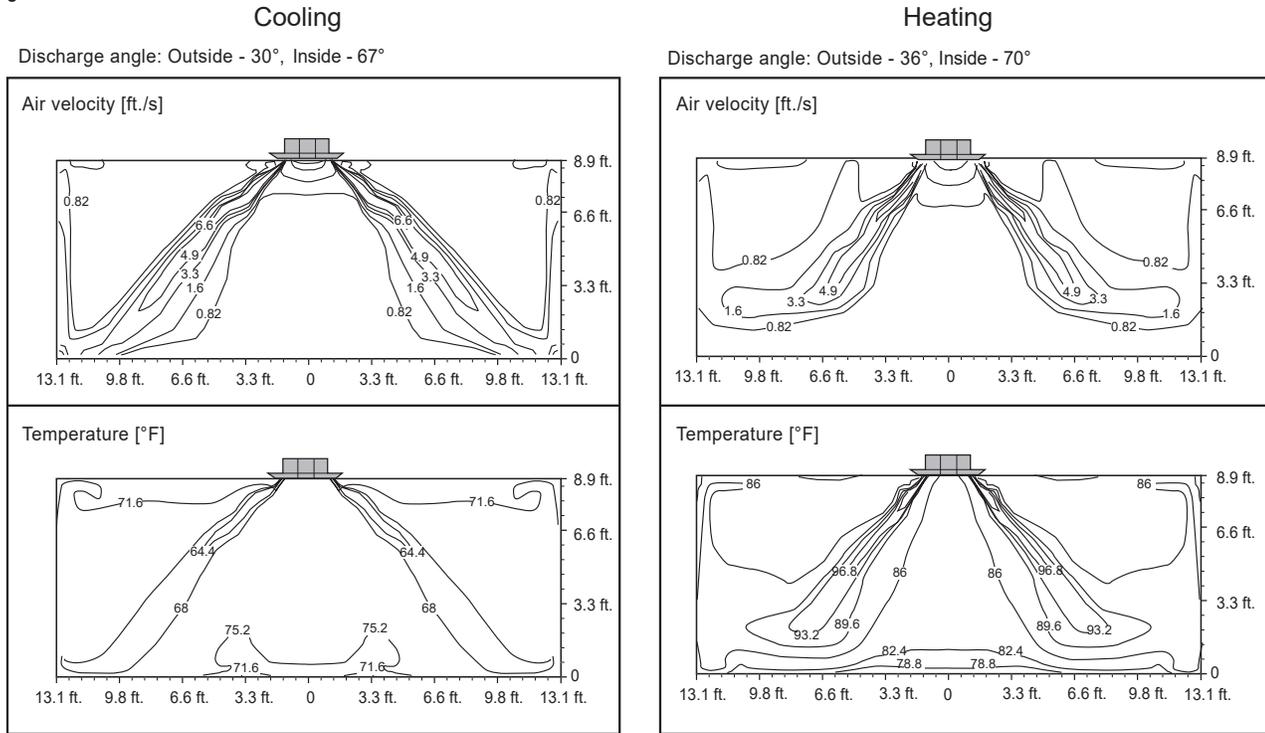
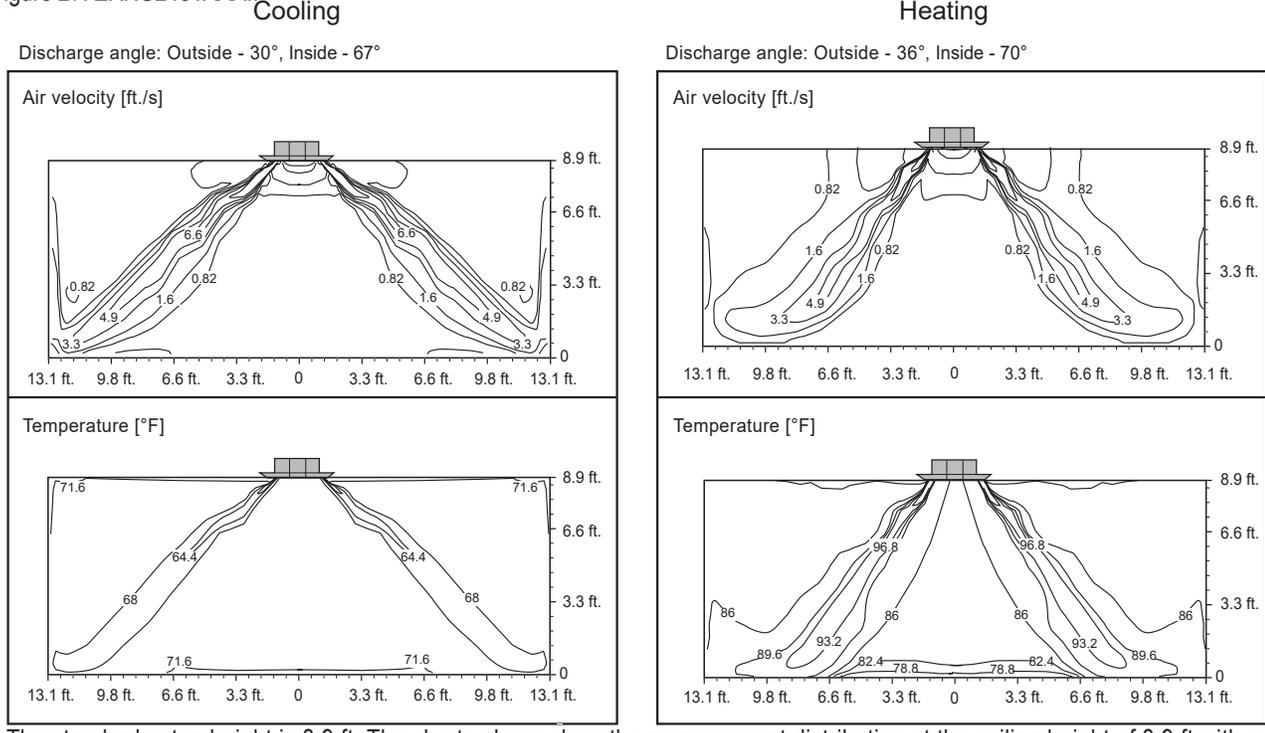


Figure 27: ZRNU243TAAA.



- The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.
- Airflow step is 'High'. Air discharge angle is fixed as indicated angle.
- Indoor airflow distribution under actual installation or operating conditions depends on ambient temperature, ceiling height, product installation direction / location, and other obstacles, etc.

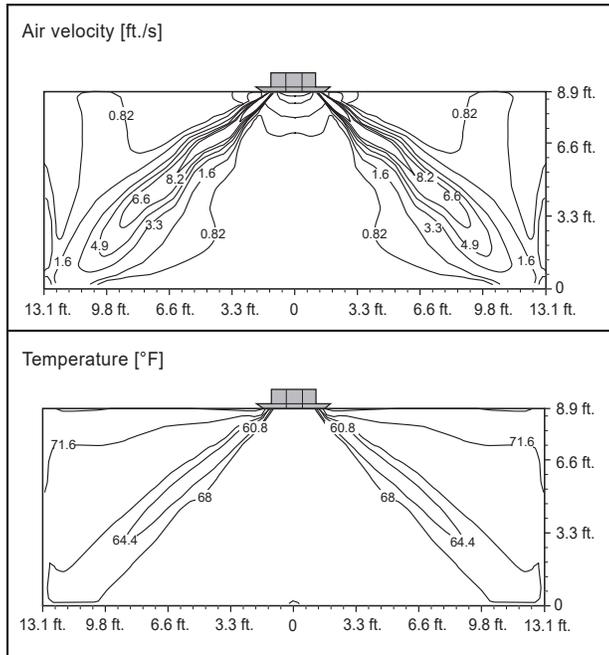
FOUR-WAY CEILING CASSETTE



Air Velocity / Temperature Distribution

Figure 28: ZRNU283TAAA. Cooling

Discharge angle: Outside - 30°, Inside - 67°



Heating

Discharge angle: Outside - 36°, Inside - 70°

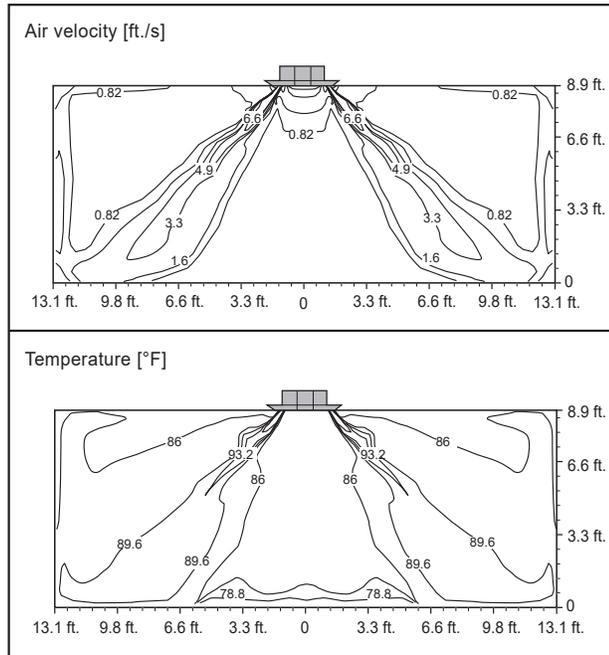
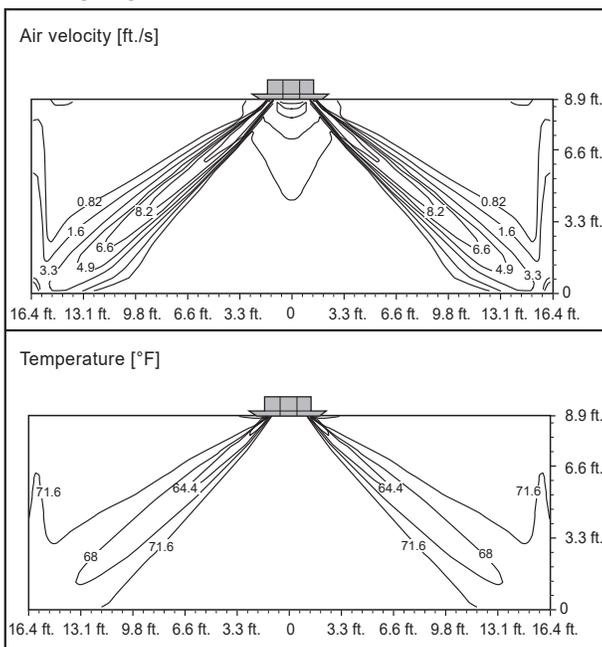


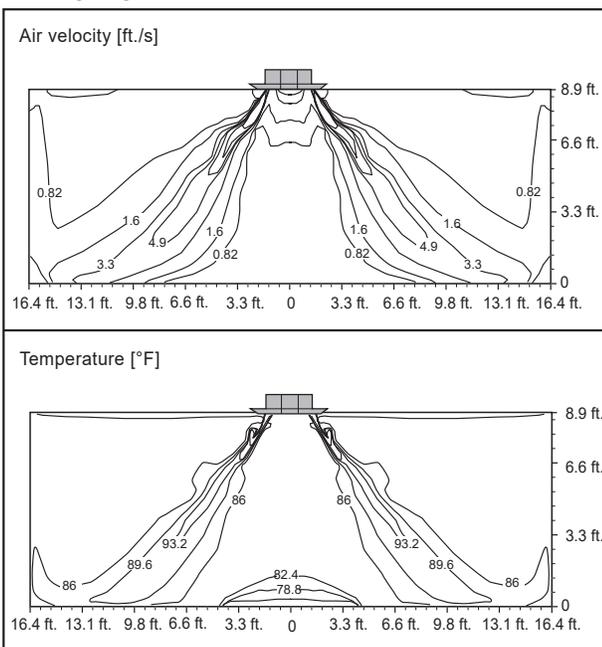
Figure 29: ZRNU363TAAA. Cooling

Discharge angle: Outside - 30°, Inside - 67°



Heating

Discharge angle: Outside - 36°, Inside - 70°

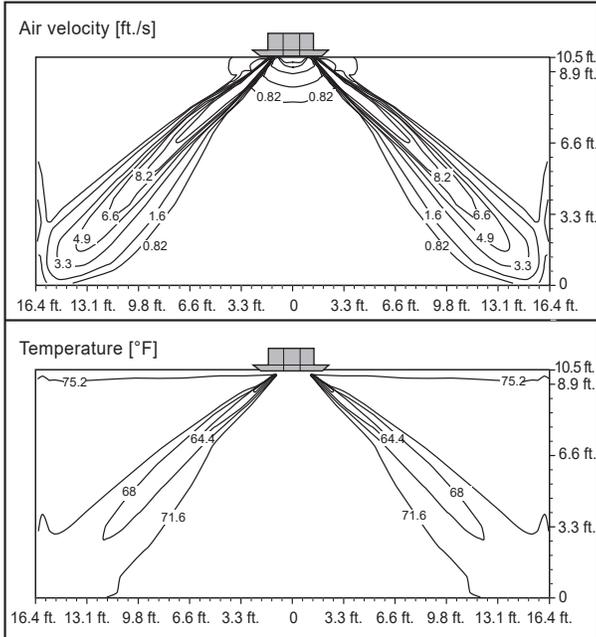


- The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.
- Airflow step is 'High'. Air discharge angle is fixed as indicated angle.
- Indoor airflow distribution under actual installation or operating conditions depends on ambient temperature, ceiling height, product installation direction / location, and other obstacles, etc.

Figure 30: ZRNU423TAAA.

Cooling

Discharge angle: Outside - 30°, Inside - 67°



Heating

Discharge angle: Outside - 36°, Inside - 70°

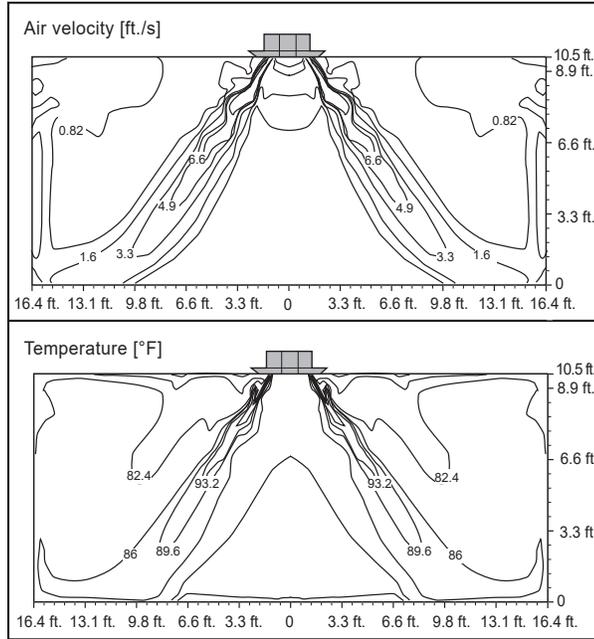
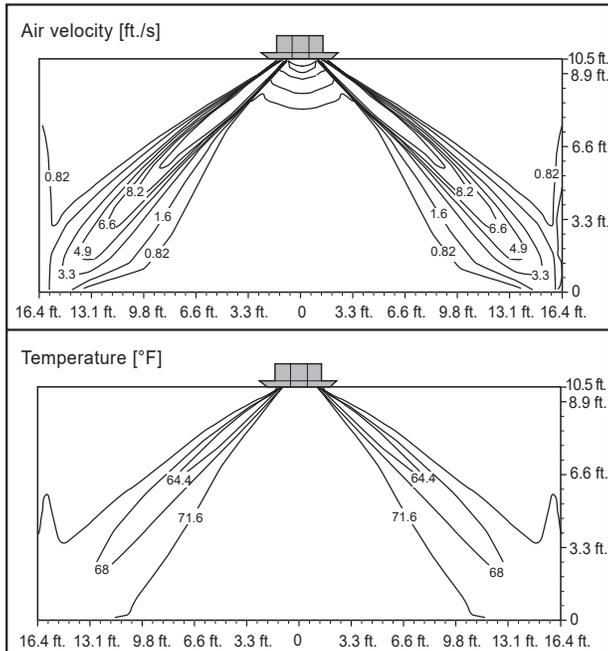


Figure 31: ZRNU483TAAA.

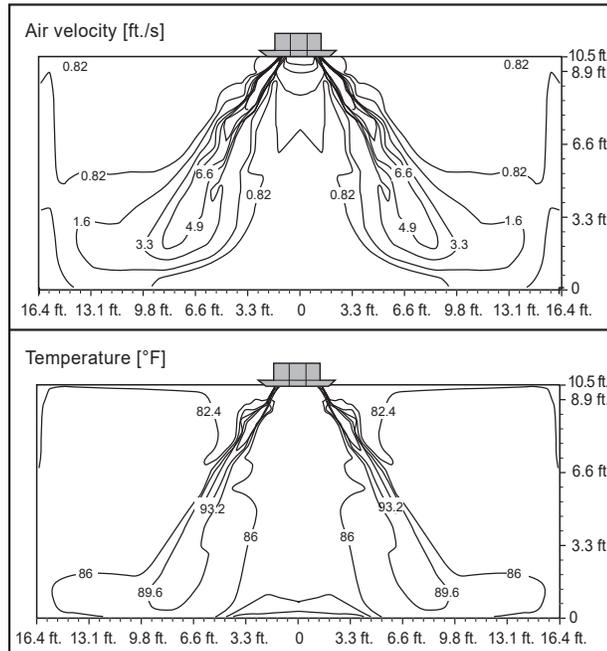
Cooling

Discharge angle: Outside - 30°, Inside - 67°



Heating

Discharge angle: Outside - 36°, Inside - 70°



- The standard setup height is 8.9 ft. The charts above show the measurement distribution at the ceiling height of 8.9 ft with a high fan operating mode.
- Airflow step is 'High'. Air discharge angle is fixed as indicated angle.
- Indoor airflow distribution under actual installation or operating conditions depends on ambient temperature, ceiling height, product installation direction / location, and other obstacles, etc.

FOUR-WAY CEILING CASSETTE



2 x 2 TR and TQ Frame Outside Air Ventilation

Figure 32: TR Frame Outside Air Ventilation.

Outside Air Ventilation (with PTVK430)

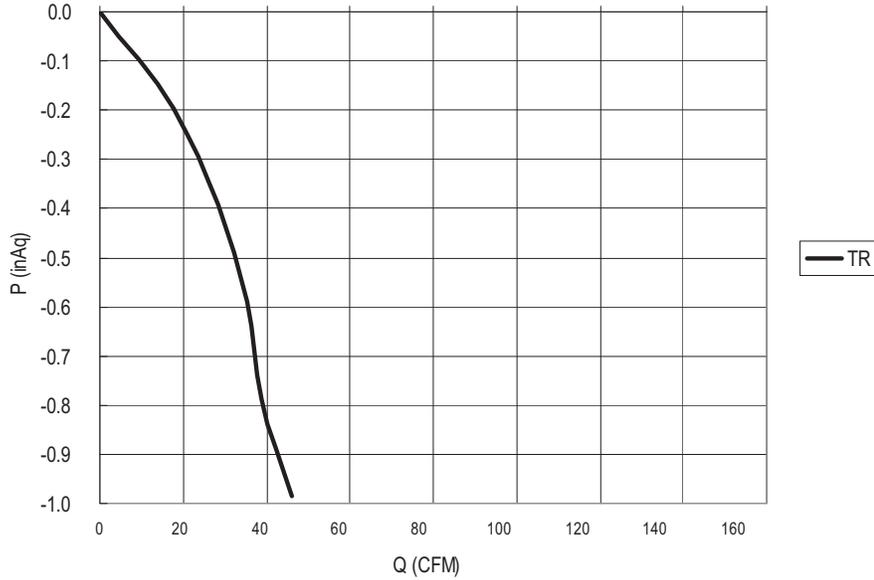


Figure 33: TQ Frame Outside Air Ventilation.

Outside Air Ventilation (with PTVK430)

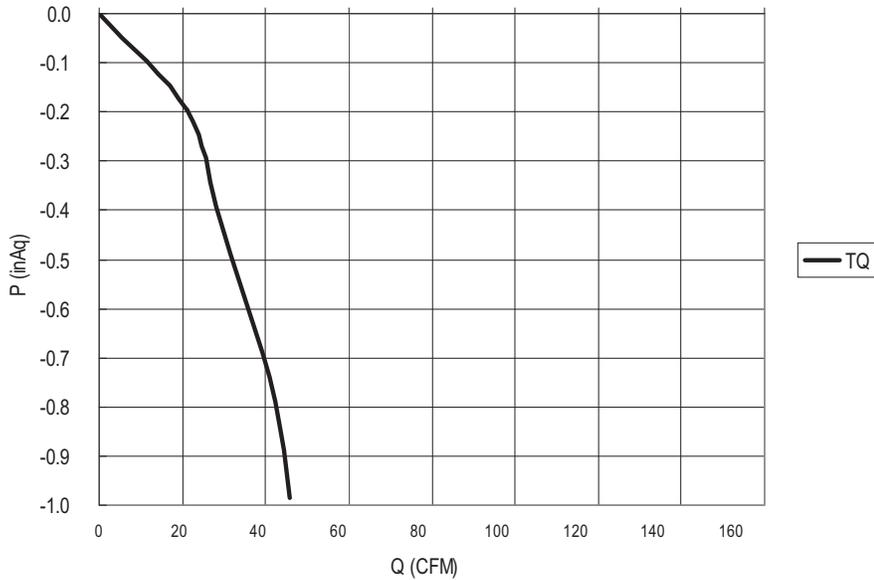


Figure 34: TA Frame Outside Air Ventilation with PTVK430 Accessory.

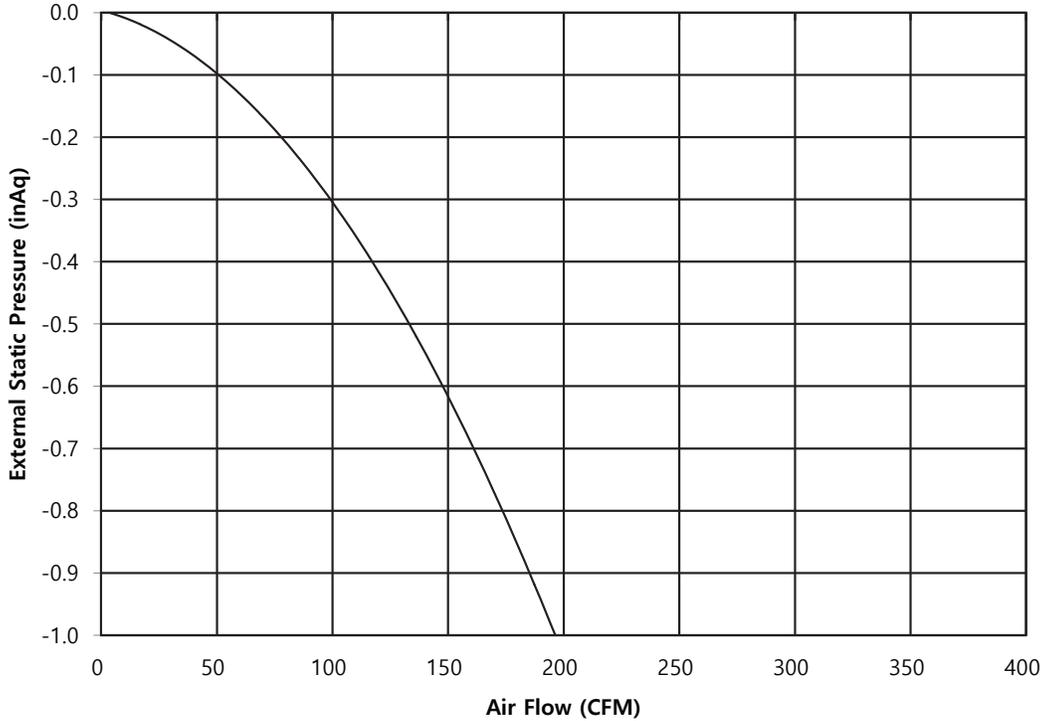
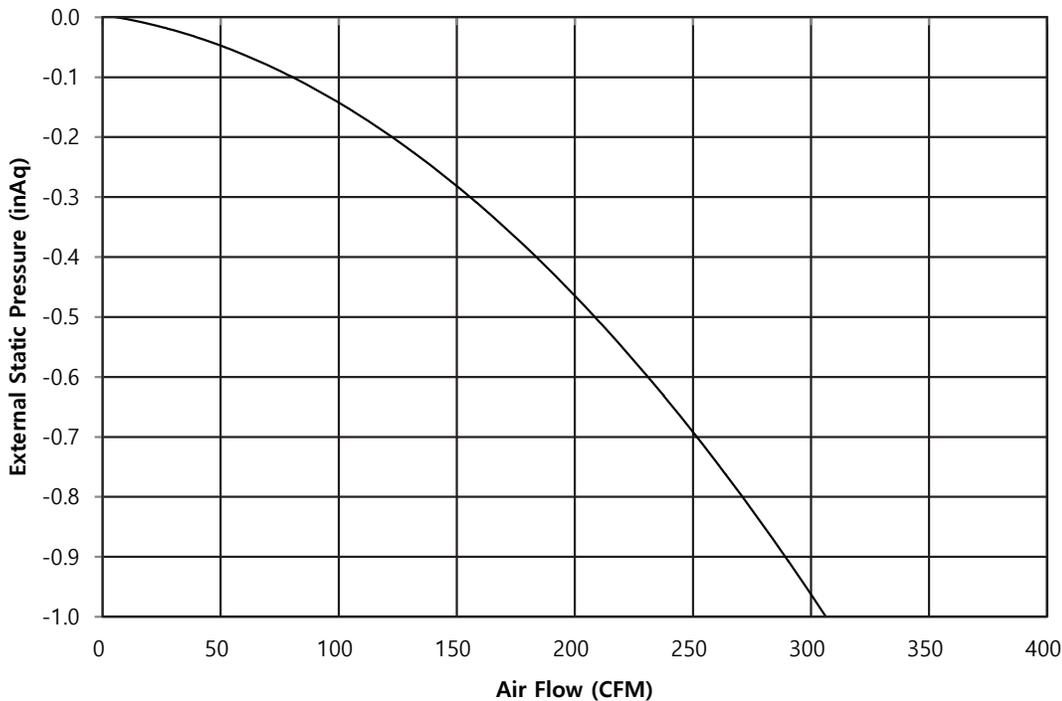


Figure 35: TA Frame Outside Air PTVK420 Ventilation Kit with PTVK420 Flange.



FOUR-WAY CEILING CASSETTE

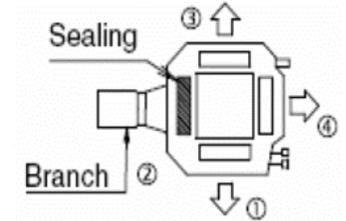
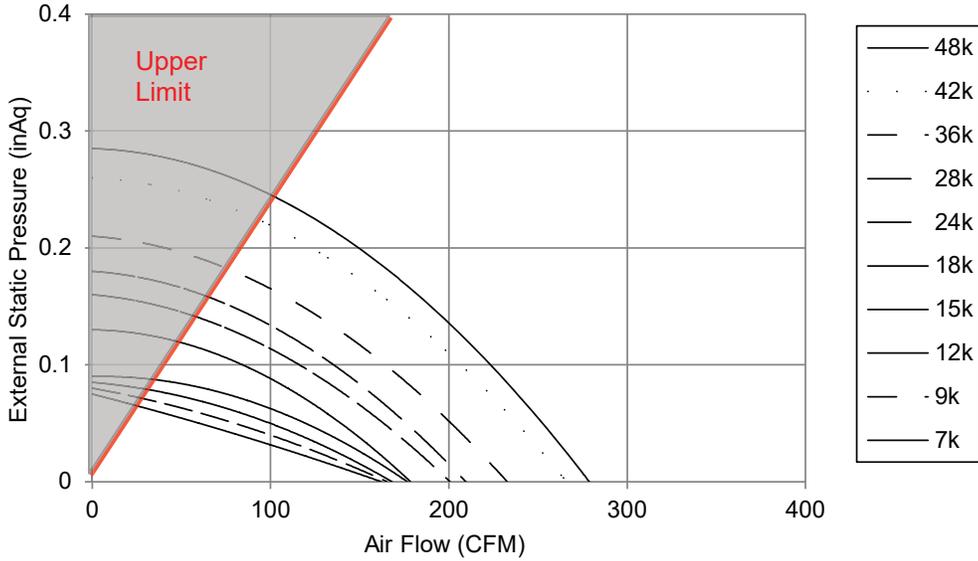


3 x 3 TA Frame Branch Duct Options

Figure 36: 3 x 3 TA Frame Ceiling Cassette Indoor Unit Branch Option P-Q Curves.

Figure 37: Four-Way TAA Cassette Indoor Unit Branch Duct Options.

Four-Way Ceiling Cassette – 7~48k Btu
Side Branch Duct, Option 1



Four-Way Ceiling Cassette – 7~48k Btu
Side Branch Duct, Option 2

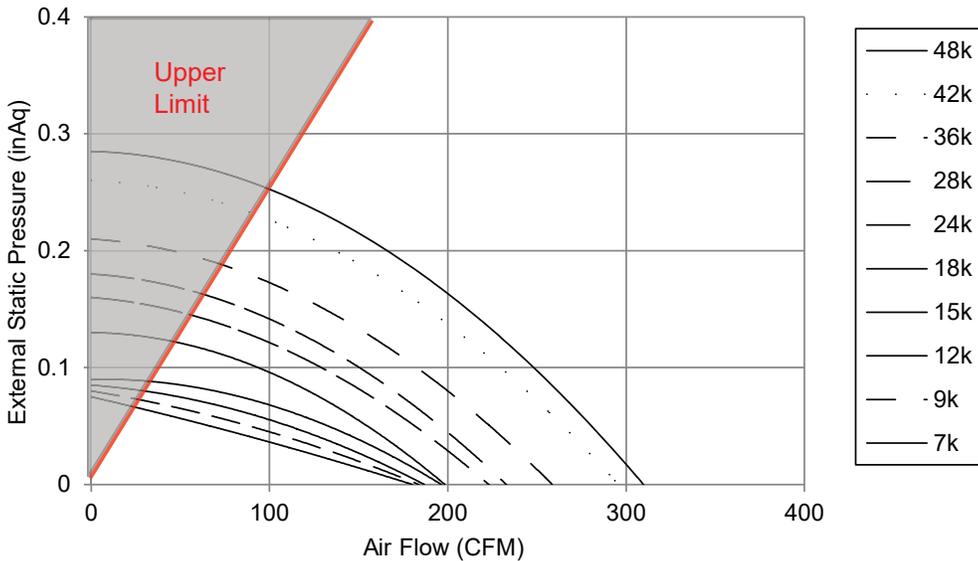
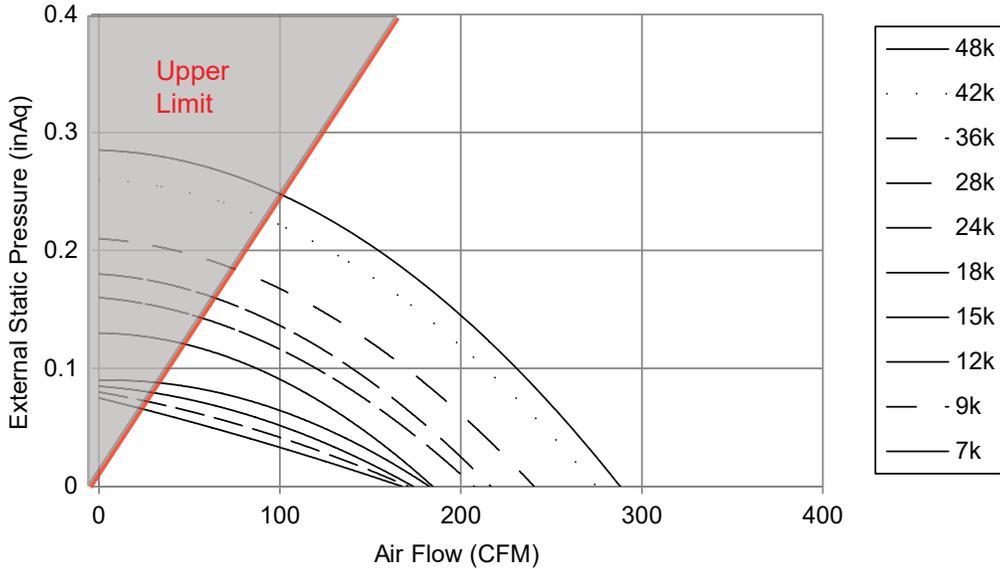
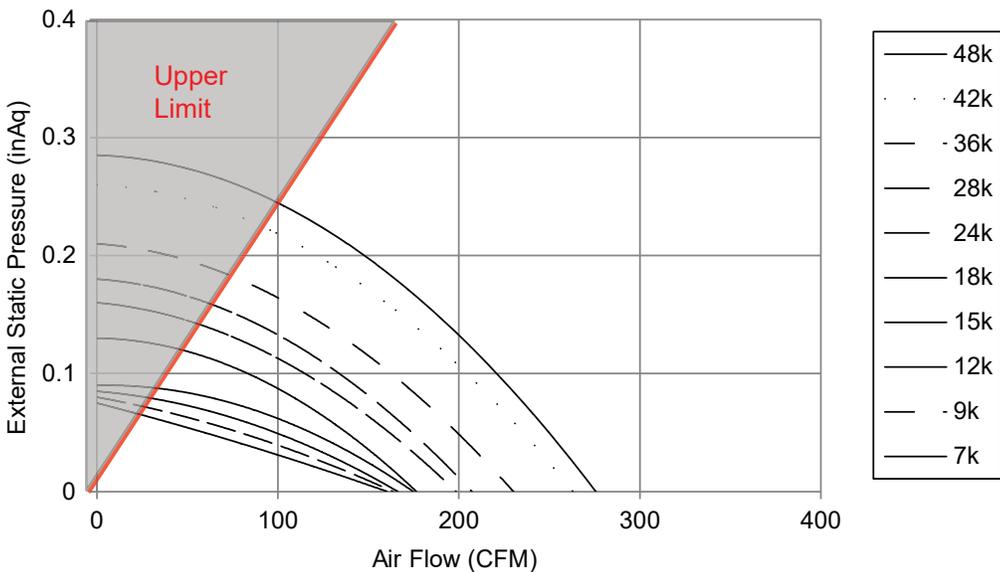


Figure 38: 3 x 3 TA Frame Ceiling Cassette Indoor Unit Branch Option P-Q Curves, continued.

**Four-Way Ceiling Cassette – 7~48k Btu
Side Branch Duct, Option 3**



**Four-Way Ceiling Cassette – 7~48k Btu
Side Branch Duct, Option 4**



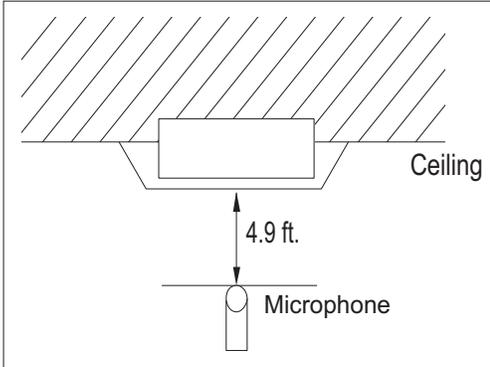
FOUR-WAY CEILING CASSETTE



Acoustic Data

Sound Pressure Levels

Figure 39: 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 ± 3 .
- Data is valid under nominal operating conditions.
- Sound pressure levels are tested in an anechoic chamber under ISO Standard 3745.
- Reference acoustic pressure: 0dB = 20 μ Pa.

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 13: Four-Way Ceiling Cassette Indoor Unit Sound Pressure Levels.

Model	Sound Pressure Levels dB(A)		
	High Fan Speed	Medium Fan Speed	Low Fan Speed
<i>2' x 2' TR and TQ Frames</i>			
ZRNU053TRAA	29	27	26
ZRNU073TRAA	29	27	26
ZRNU093TRAA	30	29	27
ZRNU123TRAA	32	30	27
ZRNU153TQAA	36	34	32
ZRNU183TQAA	37	35	34
<i>3' x 3' TA Frames</i>			
ZRNU073TAAA	30	27.5	24.0
ZRNU093TAAA	31.0	28.0	24.0
ZRNU123TAAA	31.5	29.0	25.0
ZRNU153TAAA	32.0	29.5	26.5
ZRNU183TAAA	36.0	34.0	32.0
ZRNU243TAAA	36.5	33.5	31.0
ZRNU283TAAA	37.5	35.0	31.5
ZRNU363TAAA	40.0	37.0	33.0
ZRNU423TAAA	43.5	40.0	37.0
ZRNU483TAAA	45.0	41.0	39.0

Figure 40: ZRNU053TRAA, ZRNU073TRAA, and ZRNU093TRAA Sound Pressure Level Diagrams.

ZRNU053TRAA

ZRNU073TRAA

ZRNU093TRAA

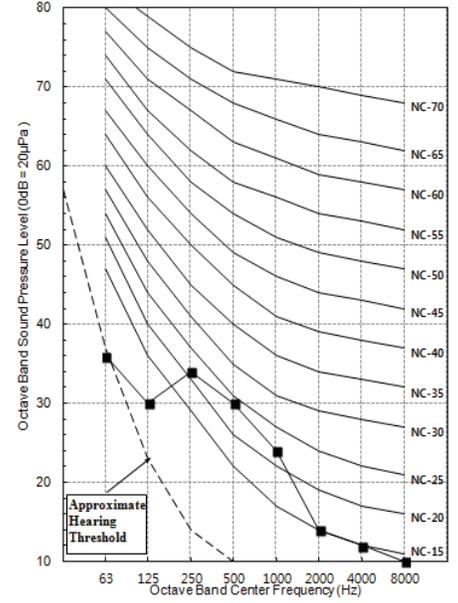
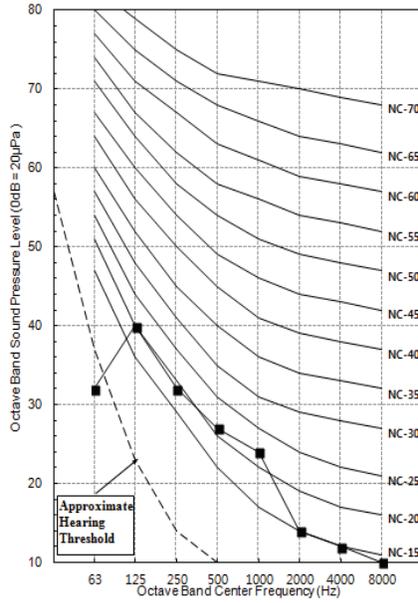
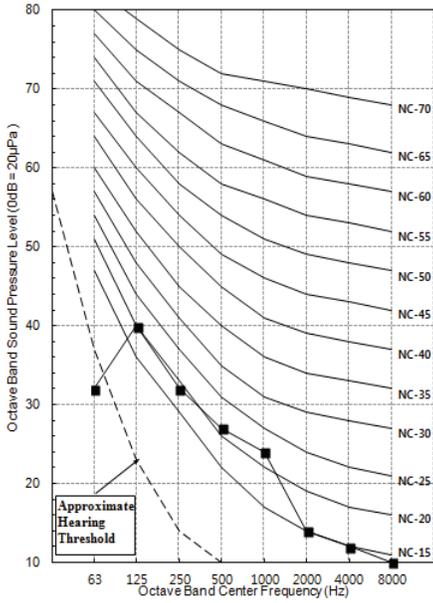
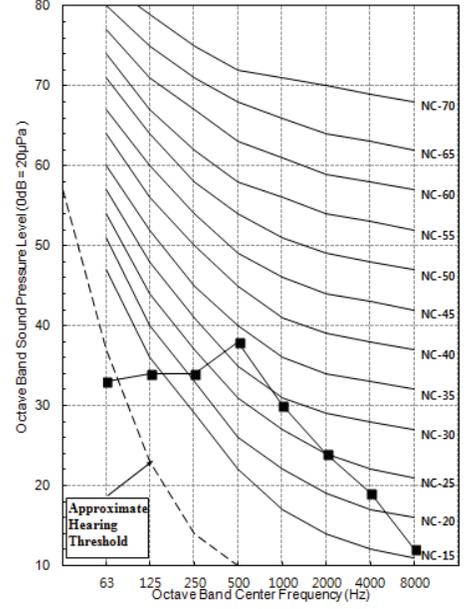
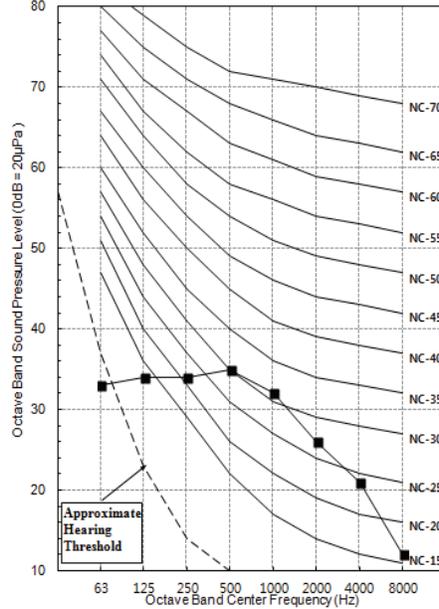
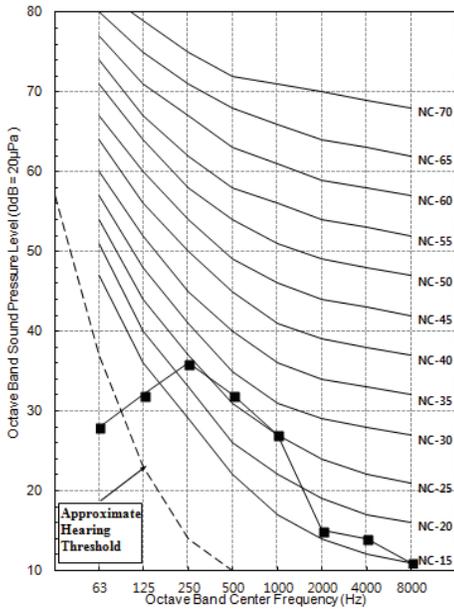


Figure 41: ZRNU123TRAA, ZRNU153TQAA, and ZRNU183TQAA Sound Pressure Level Diagrams.

ZRNU123TRAA

ZRNU153TQAA

ZRNU183TQAA



FOUR-WAY CEILING CASSETTE



Acoustic Data

Sound Pressure Levels

Figure 42: ZRNU073TAAA, ZRNU093TAAA, and ZRNU123TAAA Sound Pressure Level Diagrams.

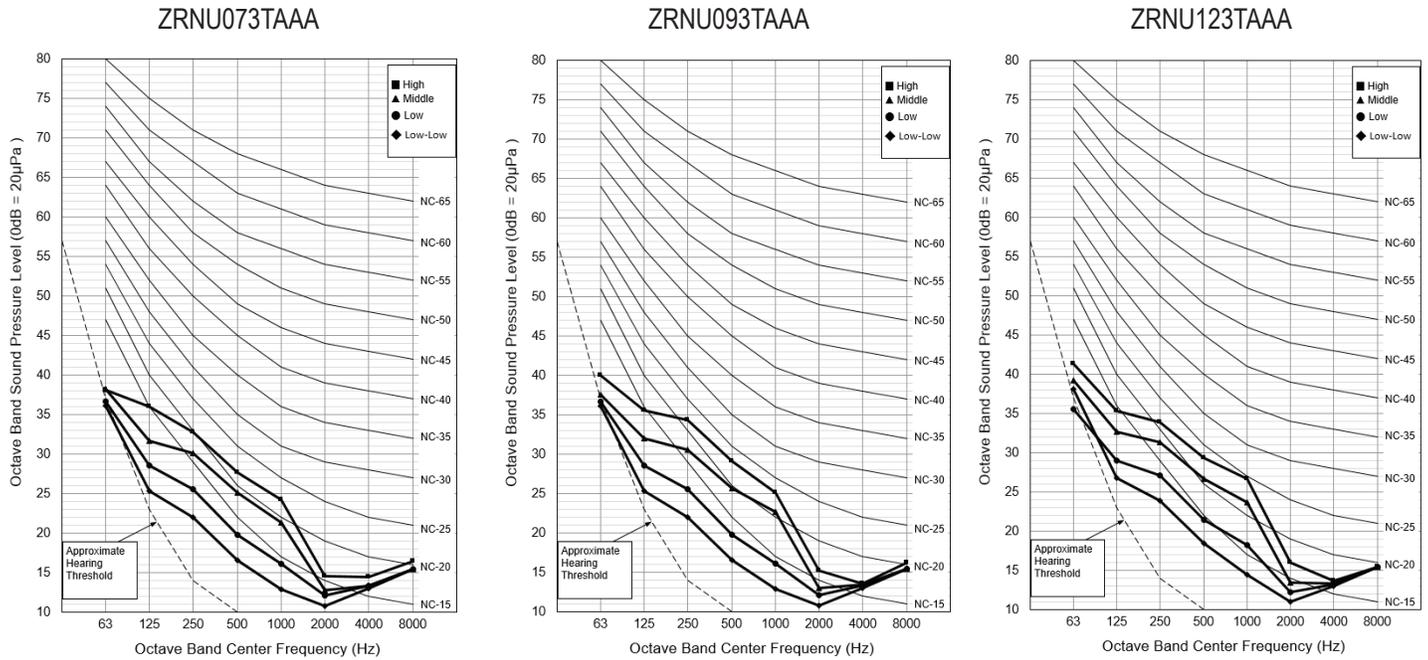


Figure 43: ZRNU153TAAA, ZRNU183TAAA, and ZRNU243TAAA Sound Pressure Level Diagrams.

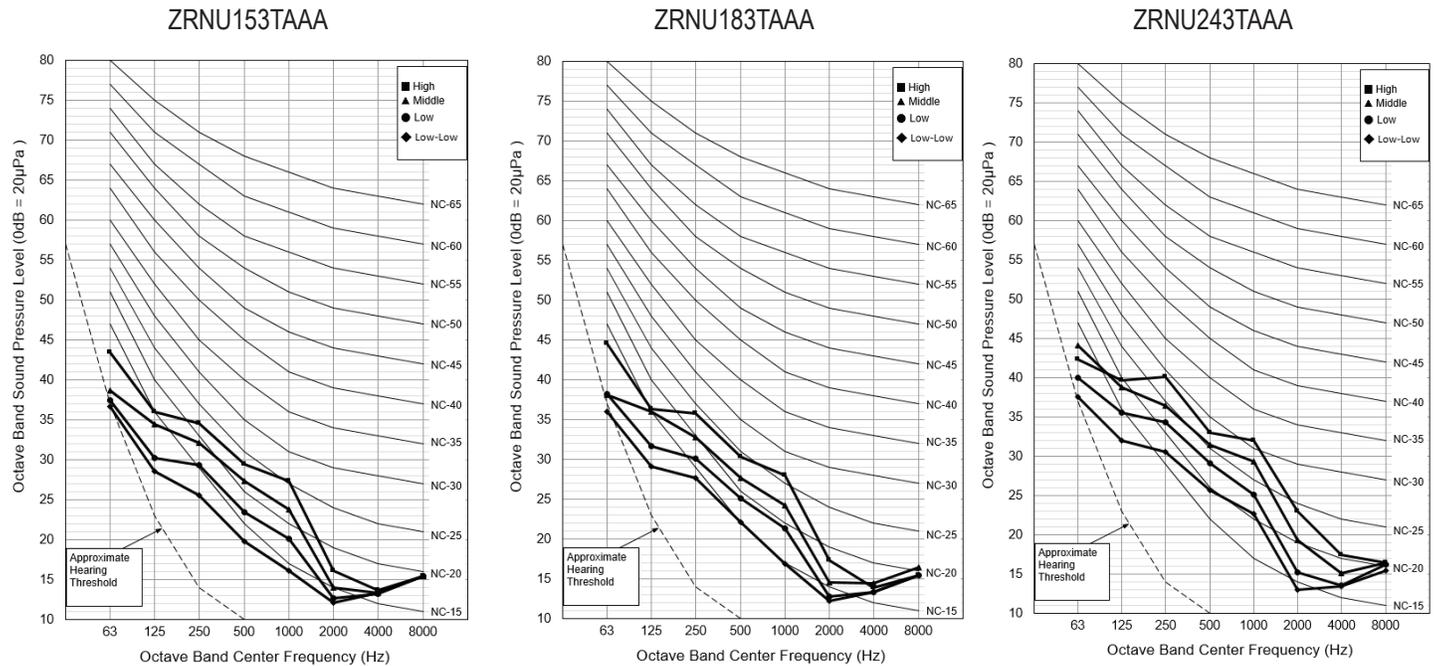


Figure 45: ZRNU283TAAA, ZRNU363TAAA, and ZRNU423TAAA Sound Pressure Level Diagrams.

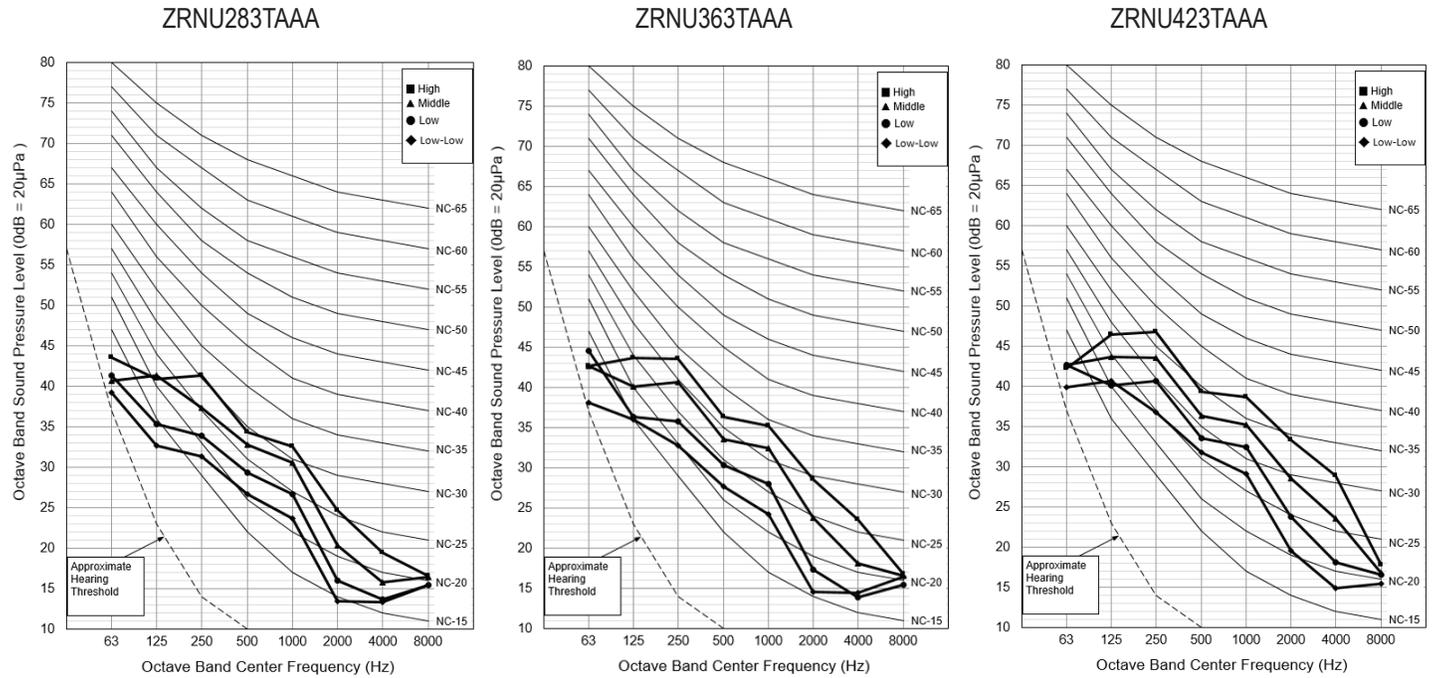
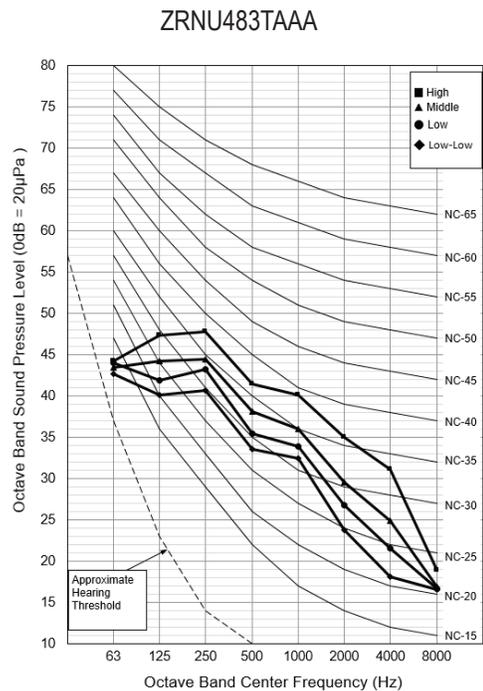


Figure 44: ZRNU483TAAA Sound Pressure Level Diagram.



FOUR-WAY CEILING CASSETTE



Acoustic Data

Sound Power Levels

Table 14: Four-Way Ceiling Cassette Indoor Unit Sound Power Levels.

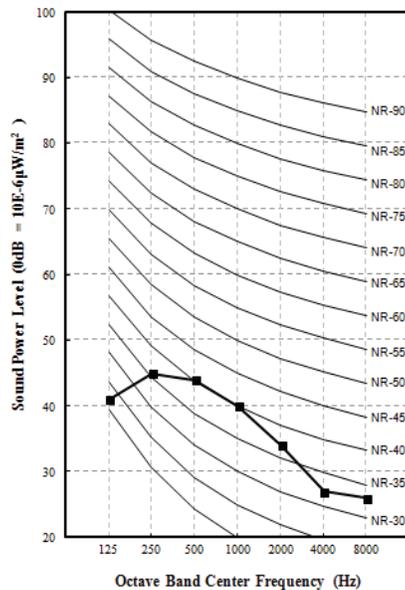
Model	Sound Power Levels dB(A)		
	High Fan Speed	Medium Fan Speed	Low Fan Speed
<i>2' x 2' TR and TQ Frames</i>			
ZRNU053TRAA	47	46	45
ZRNU073TRAA	47	46	45
ZRNU093TRAA	48	46	45
ZRNU123TRAA	51	48	45
ZRNU153TQAA	52	50	46
ZRNU183TQAA	52	50	46
<i>3' x 3' TA Frames</i>			
ZRNU073TAAA	40	37	36
ZRNU093TAAA	42	39	36
ZRNU123TAAA	42	40	37
ZRNU153TAAA	42	40	37
ZRNU183TAAA	44	41	38
ZRNU243TAAA	47	45	42
ZRNU283TAAA	48	46	42
ZRNU363TAAA	51	48	44
ZRNU423TAAA	54	51	48
ZRNU483TAAA	56	52	50

- 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 chamber under ISO Standard 3741.
- 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/m²

Figure 46: ZRNU053TRAA, ZRNU073TRAA, and ZRNU093TRAA Sound Power Level Diagrams.

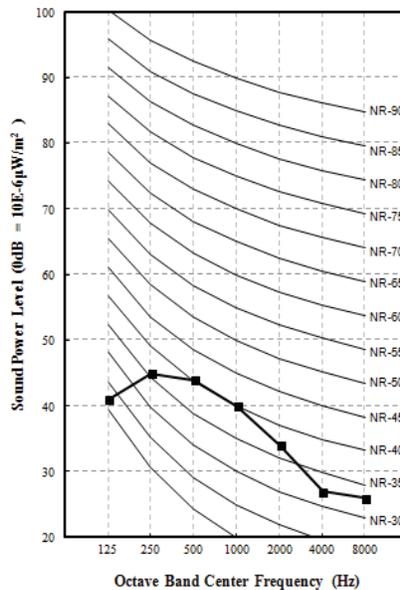
ZRNU053TRAA

Noise Criteria (NR)



ZRNU073TRAA

Noise Criteria (NR)



ZRNU093TRAA

Noise Criteria (NR)

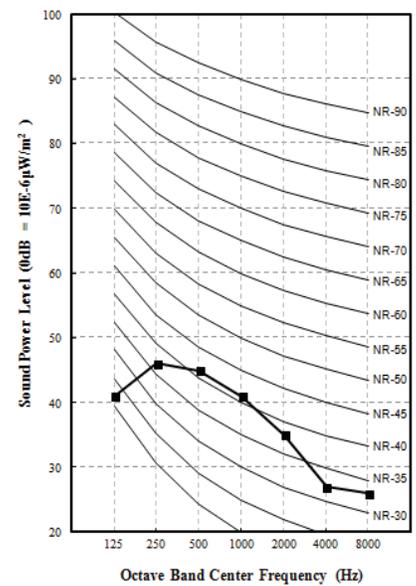


Figure 48: ZRNU123TRAA, ZRNU153TQAA, and ZRNU183TQAA Sound Power Level Diagrams.

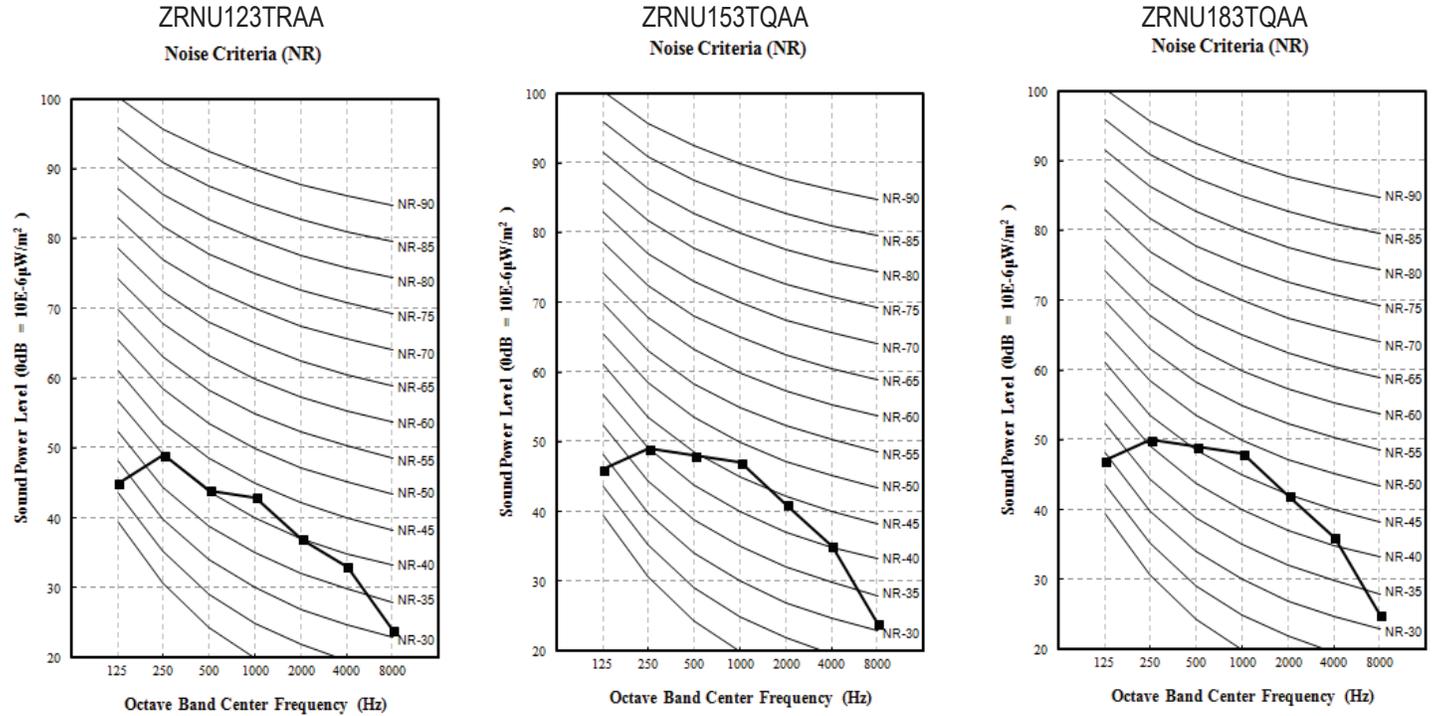
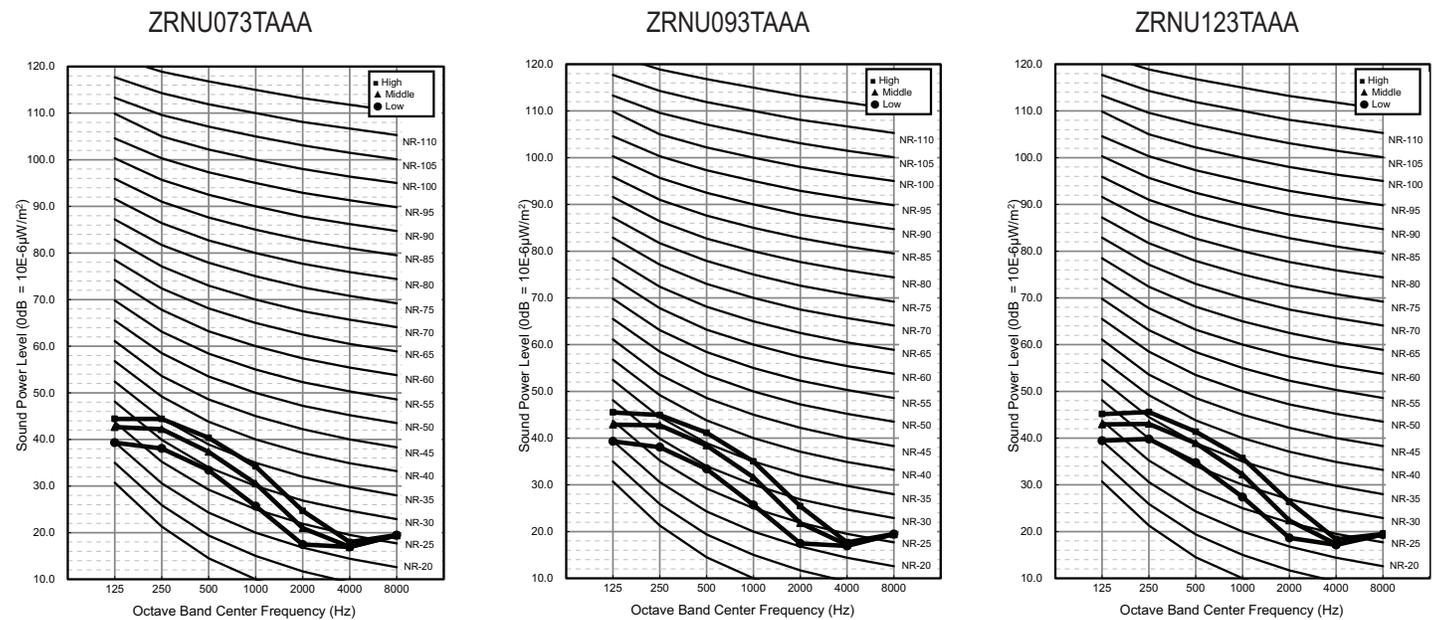


Figure 47: ZRNU073TAAA, ZRNU093TAAA, and ZRNU123TAAA Sound Power Level Diagrams.



FOUR-WAY CEILING CASSETTE



Acoustic Data

Sound Power Levels

Figure 49: ZRNU153TAAA, ZRNU183TAAA, and ZRNU243TAAA Sound Power Level Diagrams.

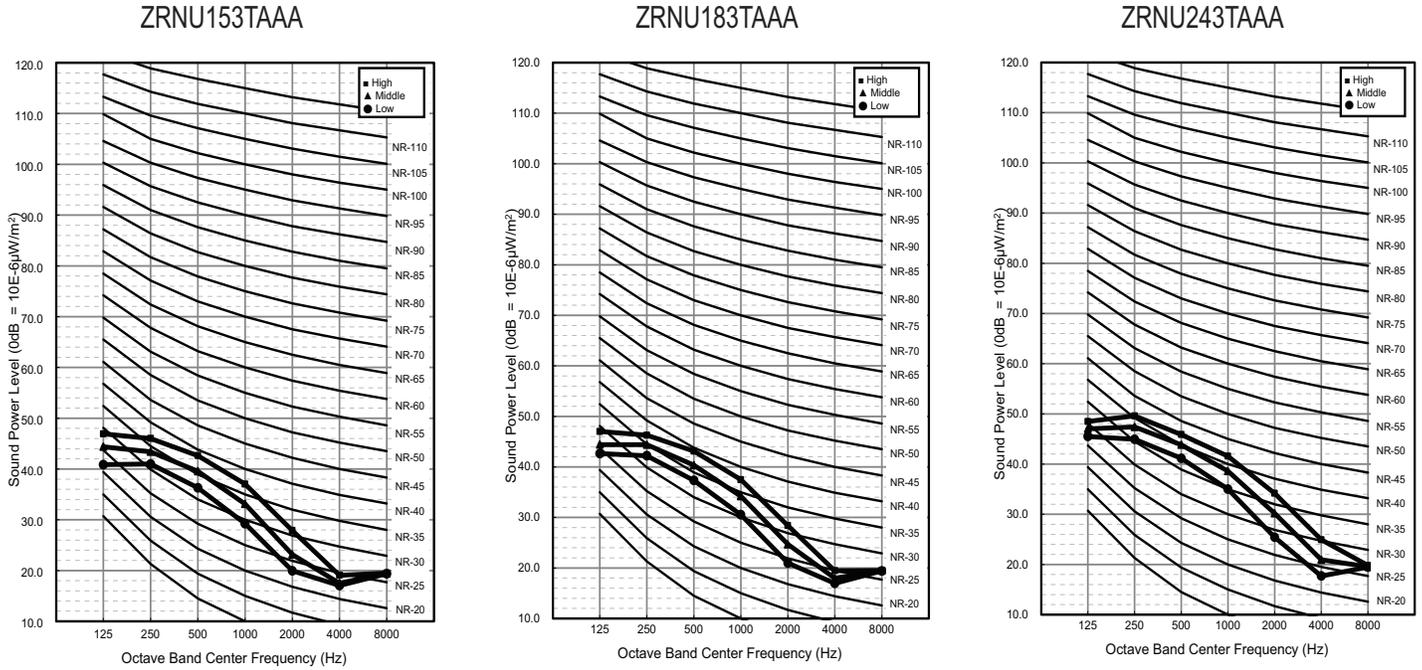


Figure 50: ZRNU283TAAA, ZRNU36TAAA, and ZRNU423TAAA Sound Power Level Diagram.

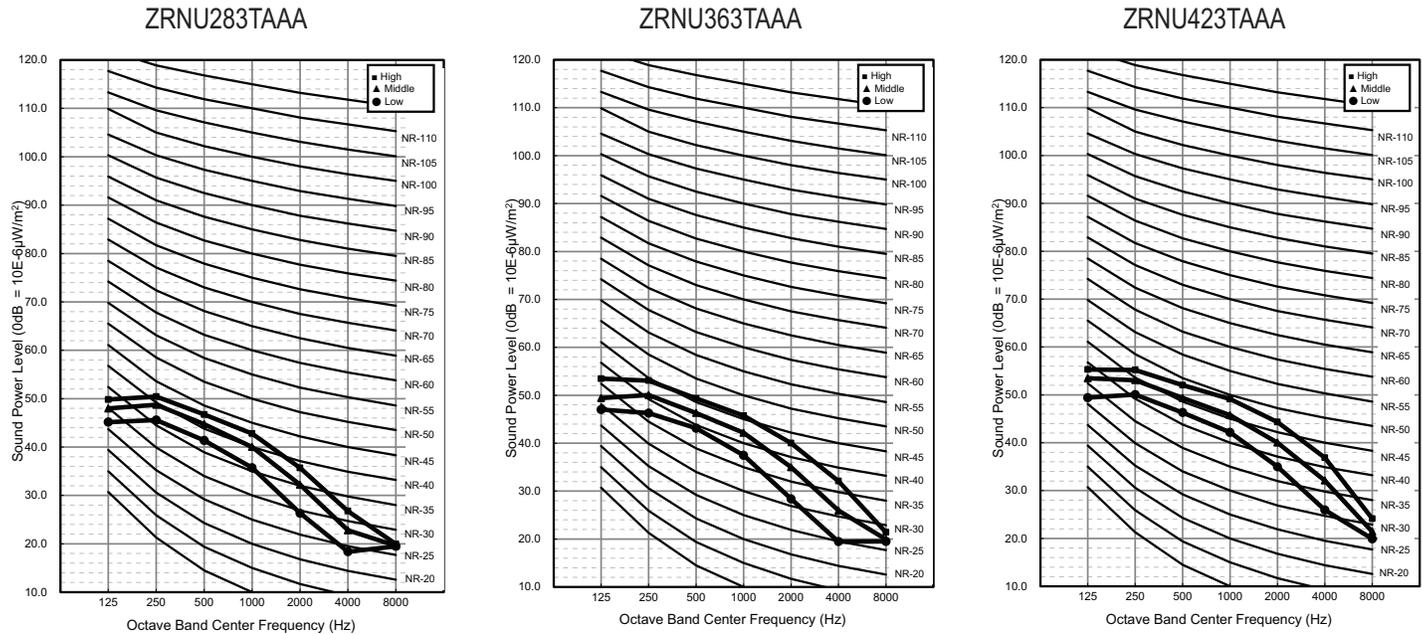
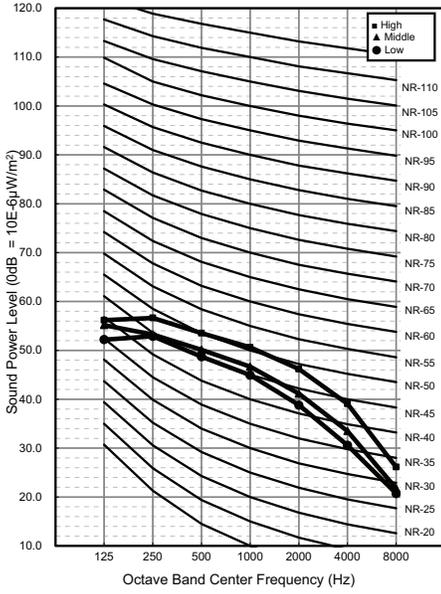


Figure 51: ZRNU483TAAA Sound Power Level Diagram.

ZRNU483TAAA



FOUR-WAY CEILING CASSETTE



Cooling Capacity Table

Table 15: Four-Way Ceiling Cassette 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
<i>2' x 2' TR and TQ Frames</i>															
ZRNU053TRAA / 5.5	95	3.6	3	4.4	3.4	5	3.7	5.5	3.9	5.9	4.1	6	3.9	6.1	3.6
ZRNU073TRAA / 7.5	95	4.9	4.1	6	4.8	6.8	5.1	7.5	5.4	8	5.6	8.2	5.3	8.3	5.0
ZRNU093TRAA / 9.6	95	6.3	5.3	7.7	6.1	8.6	6.5	9.6	6.9	10.3	7.2	10.5	6.8	10.6	6.4
ZRNU123TRAA / 12.3	95	8.1	6.8	9.8	7.9	11.1	8.4	12.3	8.8	13.2	9.3	13.4	8.8	13.6	8.3
ZRNU153TQAA / 15.4	95	10.1	8.5	12.3	9.8	13.9	10.4	15.4	11.1	16.5	11.5	16.8	11.0	17.1	10.4
ZRNU183TQAA / 19.1	95	12.6	10.2	15.3	11.4	17.2	13.0	19.1	12.6	20.5	13.6	20.9	13.3	21.2	12.9
<i>3' x 3' TA Frames</i>															
ZRNU073TAAA / 7.5	95	4.9	4.3	6.0	4.9	6.8	5.3	7.5	5.6	8.0	5.8	8.2	5.5	8.3	5.2
ZRNU093TAAA / 9.6	95	6.3	5.4	7.7	6.3	8.6	6.7	9.6	7.1	10.3	7.4	10.5	7.0	10.6	6.6
ZRNU123TAAA / 12.3	95	8.1	7.0	9.8	8.0	11.1	8.5	12.3	9.1	13.2	9.5	13.4	9.0	13.6	8.5
ZRNU153TAAA / 15.4	95	10.1	8.7	12.3	10.1	13.9	10.7	15.4	11.4	16.5	11.8	16.8	11.3	17.1	10.6
ZRNU183TAAA / 19.1	95	12.6	11.7	15.3	13.5	17.2	14.4	19.1	15.3	20.5	15.9	20.9	15.1	21.2	14.3
ZRNU243TAAA / 24.2	95	15.9	15.0	19.4	17.3	21.8	18.4	24.2	19.6	25.9	20.4	26.4	19.4	26.8	18.3
ZRNU283TAAA / 28.0	95	18.4	16.3	22.4	18.8	25.2	20.0	28.0	21.3	30.0	22.1	30.6	21.1	31.0	19.9
ZRNU363TAAA / 36.2	95	23.8	20.5	29.0	23.6	32.6	25.1	36.2	26.8	38.8	27.8	39.5	26.5	40.1	25.0
ZRNU423TAAA / 42.0	95	27.7	23.1	33.6	26.6	37.8	28.3	42.0	30.2	45.0	31.4	45.9	29.9	46.6	28.2
ZRNU483TAAA / 48.1	95	31.7	26.4	38.5	30.5	43.3	32.4	48.1	33.5	51.5	35.9	52.5	34.2	53.3	32.3

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 www.ahridirectory.org.

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

Table 16: Four-Way Ceiling Cassette 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
<i>2' x 2' TR and TQ Frames</i>										
ZRNU053TRAA / 5.5	47	43	6.8	6.8	6.7	6.4	6.1	5.9	5.6	5.3
ZRNU073TRAA / 7.5	47	43	9.5	9.4	9.4	8.9	8.5	8.3	7.8	7.4
ZRNU093TRAA / 9.6	47	43	12.2	12.1	12.0	11.5	10.9	10.6	10.0	9.5
ZRNU123TRAA / 12.3	47	43	15.2	15.1	15.0	14.3	13.6	13.2	12.5	11.9
ZRNU153TQAA / 15.4	47	43	19.2	19.0	18.8	18.0	17.1	16.6	15.7	15.0
ZRNU183TQAA / 19.1	47	43	24.1	23.9	23.7	22.6	21.5	20.9	19.8	18.8
<i>3' x 3' TA Frames</i>										
ZRNU073TAAA / 7.5	47	43	9.5	9.4	9.4	8.9	8.5	8.3	7.8	7.4
ZRNU093TAAA / 9.6	47	43	12.2	12.1	12.0	11.5	10.9	10.6	10.0	9.5
AZRNU123TAAA / 12.3	47	43	15.2	15.1	15.0	14.3	13.6	13.2	12.5	11.9
ZRNU153TAAA / 15.4	47	43	19.2	19.0	18.8	18.0	17.1	16.6	15.7	15.0
ZRNU183TAAA / 19.1	47	43	24.1	23.9	23.7	22.6	21.5	20.9	19.8	18.8
ZRNU243TAAA / 24.2	47	43	30.6	30.3	30.0	28.7	27.3	26.5	25.1	23.9
ZRNU283TAAA / 28.0	47	43	35.3	35.0	34.7	33.1	31.5	30.6	29.0	27.6
ZRNU363TAAA / 36.2	47	43	45.5	45.1	44.7	42.6	40.6	39.4	37.4	35.5
ZRNU423TAAA / 42.0	47	43	49.1	48.6	48.2	46.0	43.8	42.5	40.3	38.3
ZRNU483TAAA / 48.1	47	43	57.3	56.8	56.3	53.8	51.2	49.7	47.1	44.8

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

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

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

FOUR-WAY CEILING CASSETTE



Accessories

Table 17: Accessories Overview (Sold Separately).

Accessory	Model Number
24-13/32" x 24-13/32" (2' x 2') Four-Way Ceiling Cassette Panel — White (One Required) For Use with 2' x 2' TR and TQ Four-Way Ceiling Cassette Indoor Units	PT-QAGW0
Standard Panel — White (One Required) For Use with 3' x 3' TA Four-Way Ceiling Cassette Indoor Units	PT-AAGW0
Premium Panel (Includes Panel PT-AFGW0 + Air Purification Kit PTAHMP0) For Use with 3' x 3' TA Four-Way Ceiling Cassette Indoor Units	PT-AFGW0S
Air Purification Kit (Only Available with Premium Panel PTAFGW0S) For Use with 3' x 3' TA Four-Way Ceiling Cassette Indoor Units	PTAHMP0
Floor Temperature Sensor For Use with 3' x 3' TA Four-Way Ceiling Cassette Indoor Units	PTFSMA0
Human Detection Sensor For Use with 3' x 3' TA Four-Way Ceiling Cassette Indoor Units	PTVSAA0
Cassette Decorative Cover For Use with 3' x 3' TA Four-Way Ceiling Cassette Indoor Units	PTDCA
Ventilation Flange For Use With All Four-Way Ceiling Cassette Indoor Units	PTVK430
Auxiliary Heater Kit ¹ For Use With All Four-Way Ceiling Cassette Indoor Units	PRARH1
Wi-Fi Module For Use With All Four-Way Ceiling Cassette Indoor Units	PWFMDD200

¹If a Third-Party Dry Contact and an LG internal heater or an LG Auxiliary Heater Kit is installed, supplemental heat capability cannot be controlled by the Third-Party Thermostat.
All accessories are sold separately.

APPLICATION GUIDELINES

Selecting the Best Location on page 90

General Drain Piping Information on page 91

Wiring Guidelines on page 93

Controllers on page 96

Selecting the Best Location

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.
- Place the unit where noise prevention is taken into consideration.
- Ensure there is sufficient space from the ceiling and floor.
- Ensure there is sufficient maintenance 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 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.)

WARNING

The unit must 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.

NOTICE

- Indoor units (IDUs) must not be placed in an environment where the IDUs will be exposed to harmful volatile organic compounds (VOCs) or in environments where there is improper air make up or supply or inadequate ventilation. If there are concerns about VOCs in the environment where the IDUs are installed, proper air make up or supply and / or adequate ventilation should be provided. Additionally, in buildings where IDUs will be exposed to VOCs consider a factory-applied epoxy coating to the fan coils for each IDU.
- If the unit is installed near a body of water, the installation parts are at risk of corroding. Appropriate anti-corrosion methods 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 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.

Figure 30: Selecting the Best Location / Minimum Clearance Requirements: One-, Two-, and Four-Way Ceiling-Cassette Indoor Units.

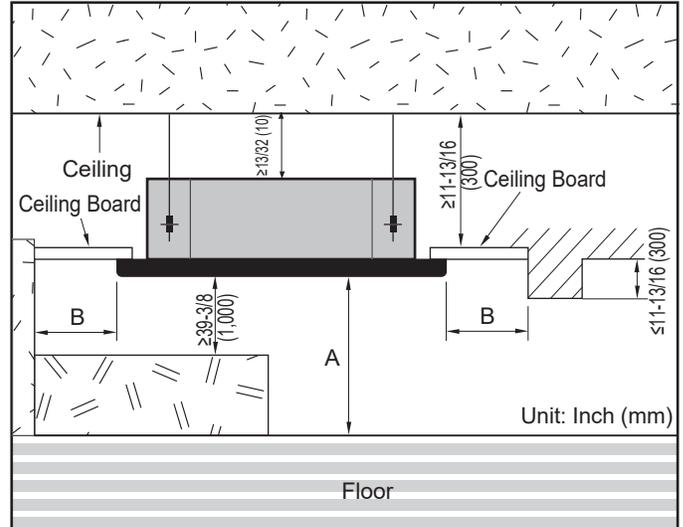
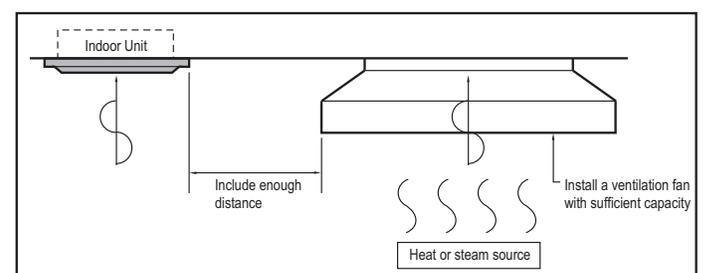


Table 4: Ceiling-Cassette Indoor Unit Height Clearances.

Model, Capacity	A (Inches)	B (Inches)
One-Way, 7,500 to 19,100 Btu/h	70-55/64 < A ≤ 129-59/64	7-7/8
Two-Way, 19,100 and 24,200 Btu/h	70-55/64 < A ≤ 129-59/64	19-1/2
Four-Way, 7,500 to 34,000 Btu/h	78-47/64 < A ≤ 141-23/32	19-1/2
Four-Way, 34,000 to 48,000 Btu/h	98-27/64 < A ≤ 165-11/32	19-1/2

Figure 31: Installing Near a Heat or Steam Source.



General Drain Piping Information

All indoor units generate water during cooling operation, therefore, properly handling this condensation must be considered.

Ceiling-cassette indoor units include factory-installed drain pumps. 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.

Flexible Drain Hose

NOTICE

All condensate piping is to be installed per applicable local codes. Avoid any contact with building sewer lines and vent lines.

Ceiling-cassette indoor units include a factory-provided flexible drain hose (with two clamps) to connect the indoor unit to the drain piping / drain piping system. If necessary, the drain hose can be extended. When the bottom surface of the indoor unit is at an elevation below the receiving drain line connection, install an inverted trap at the top of the condensate pump discharge riser before connection to the 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 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 drain line.

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

Drain Piping

- Drain piping must have 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.
- The outside diameter of the drain connection on the indoor unit is 1-1/4 inches.
- Drain piping material is polyvinyl chloride pipe (1 inch).

NOTICE

- To prevent reversal flow, do not install with an up / 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 the indoor unit.

Figure 33: Ceiling-Cassette Indoor Unit Drain Pump to Drain Piping System.

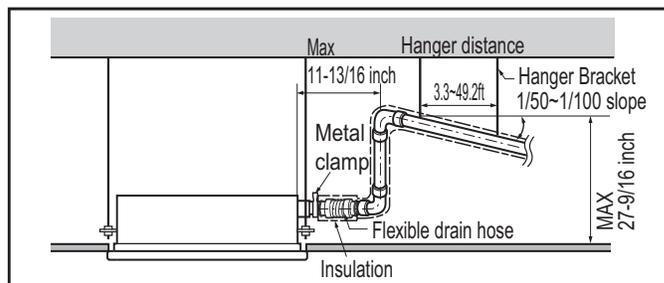


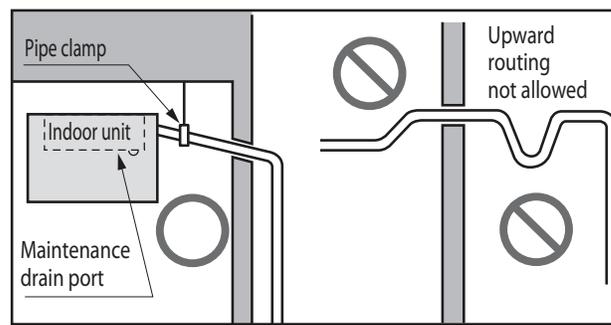
Figure 34: Flexible Drain Hose Connection.



Table 5: Ceiling-Cassette Indoor Unit Drainage Specifications.

Indoor Unit	Drain Type	Drain Pipe Dia. (ID, in.)
One-Way Ceiling Cassette	27-1/2 Max. Lift Drain Pump, Factory Installed	Ø1
Two-Way Ceiling Cassette	27-9/16 in. Max. Lift Drain Pump, Factory Installed	Ø1
Four-Way Ceiling Cassette	27-9/16 in. Max. Lift Drain Pump, Factory Installed	Ø1

Figure 32: Drain Piping Slope.



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.

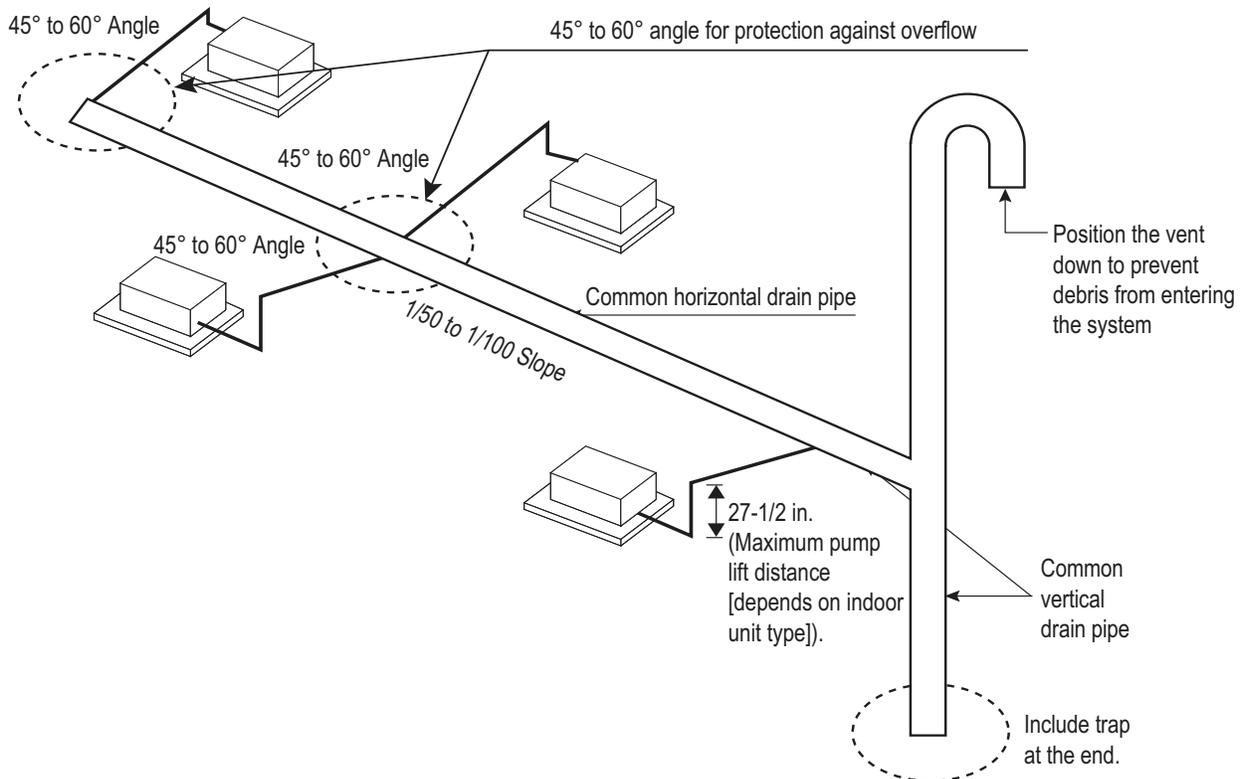
Common Indoor Unit Drainage System

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 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 must be positioned below its connection to the condensate pan. All traps must be primed, insulated, and leak tested.

Figure 35: Example of a Common Indoor Unit Drainage System.



NOTICE

- It is recommended 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 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.

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 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 ODU chassis only. Ⓞ Do not ground the ODU to IDUs / HRUs communication cable at any other point. Wiring must comply with all applicable local and national codes.
- 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 unit the wires to burnout or the terminal to overheat and catch fire. There is a risk of electric shock, physical injury or death.*

NOTICE

- *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 or heat recovery unit (Heat Recovery systems only) through the access hole of the indoor unit (ground wire must be longer than the other wires / cables) and to the control board using the designated path. If a control board cover is present, detach it.
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 to the control board. If a control board cover is present, reattach it.

Wiring Guidelines

One-Way Cassette TC Frames

Figure 36: TC Frame One-Way Cassette Wiring / Cable Routing.

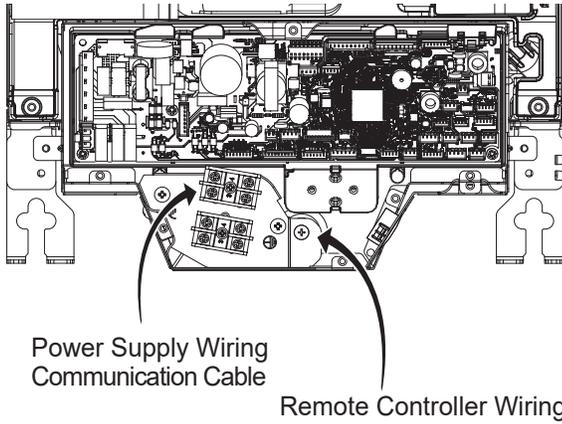


Figure 37: TC Frame One-Way Cassette Wiring / Cable Routing, Side View.

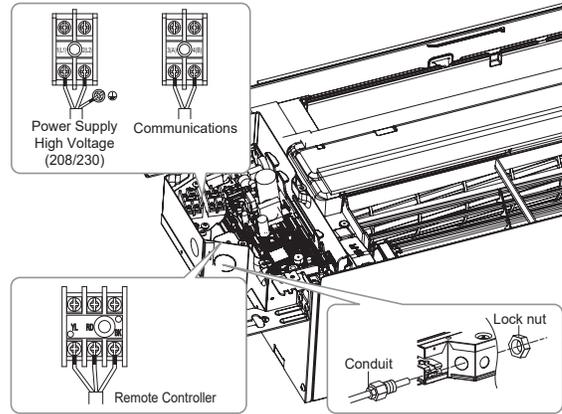
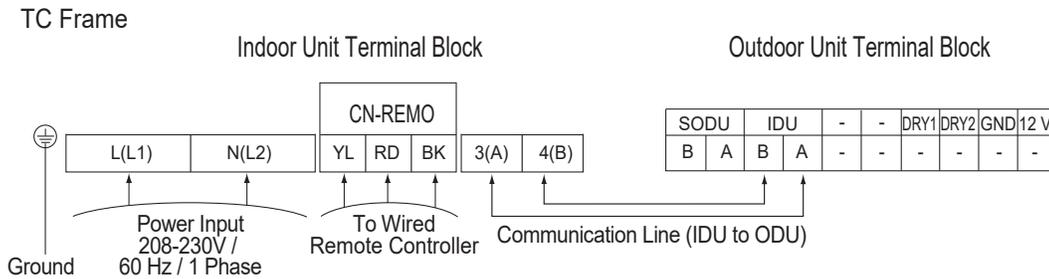


Figure 38: TC Frame One-Way Ceiling-Cassette Wiring / Cable Connections.



Two-Way Cassette TS Frames

Figure 39: TS Frame Two-Way Cassette Wiring / Cable Routing.

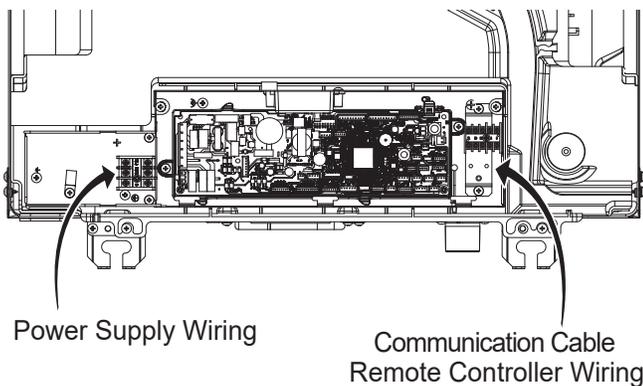


Figure 40: TS Frame Two-Way Cassette Wiring / Cable Routing, Side View.

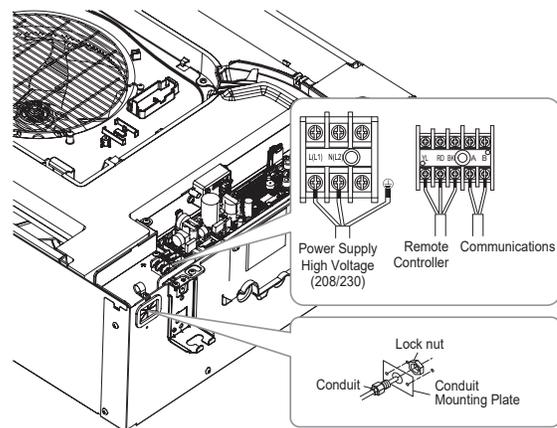
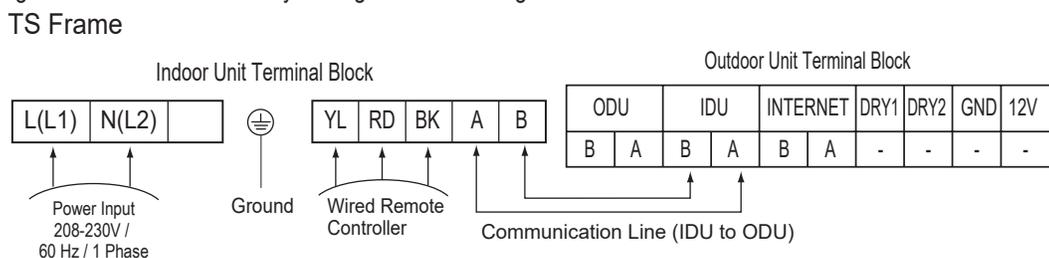


Figure 41: TS Frame Two-Way Ceiling-Cassette Wiring / Cable Connections.



Four-Way Cassette 2' x 2' TR and TQ Frames

Figure 42: 2' x 2' TR and TQ Frame Four-Way Cassette Wiring / Cable Routing.

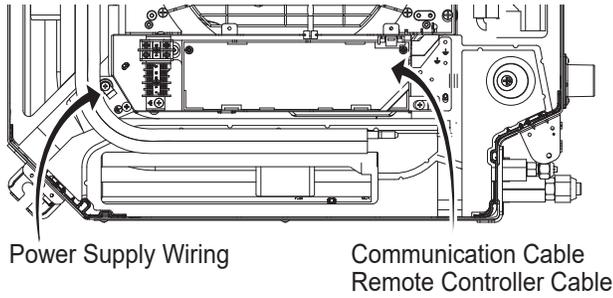


Figure 43: 2' x 2' TR and TQ Frame Four-Way Cassette Wiring / Cable Routing, Side View.

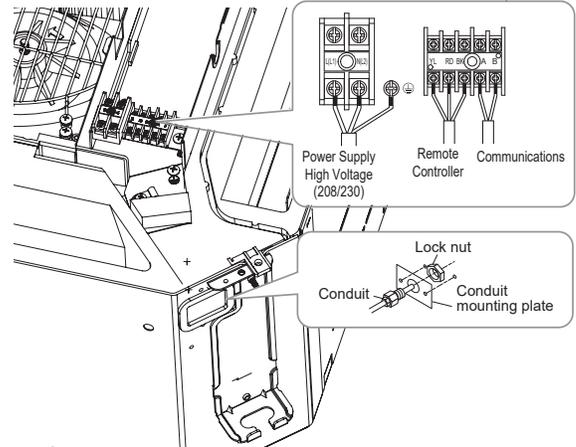
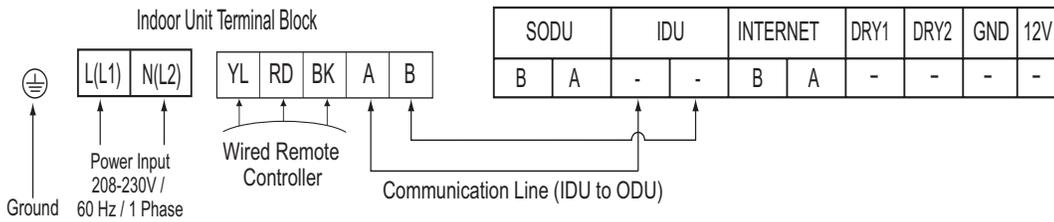


Figure 44: 2' x 2' TR and TQ Frame Four-Way Ceiling-Cassette Wiring / Cable Connections. TR/TQ Frame



Four-Way Cassette 3' x 3' TA Frames

Figure 45: 3' x 3' TA Frame Four-Way Cassette Wiring / Cable Routing.

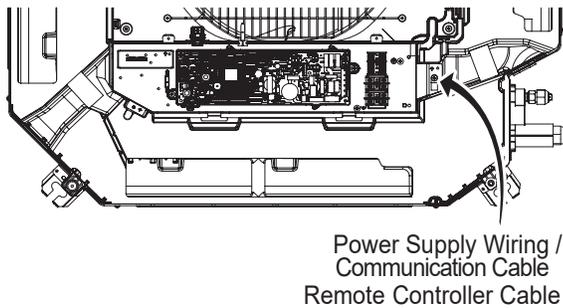


Figure 46: 3' x 3' TA Frame Four-Way Cassette Wiring / Cable Routing, Side View.

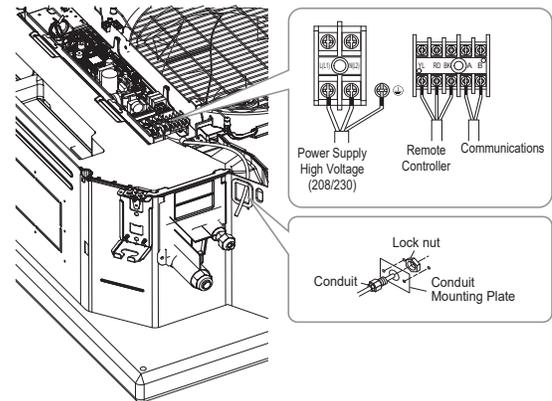
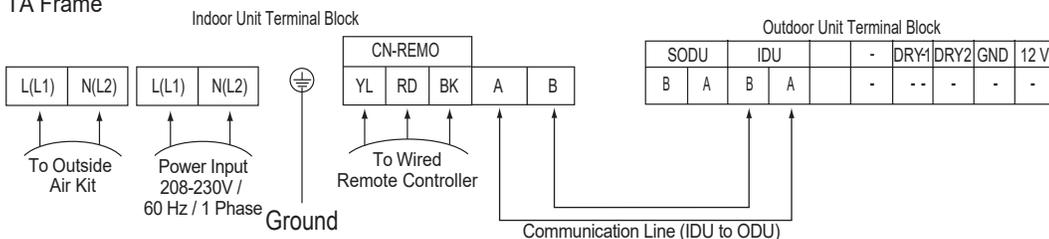


Figure 47: 3' x 3' TA Frame Four-Way Ceiling-Cassette Wiring / Cable Connections. TA Frame

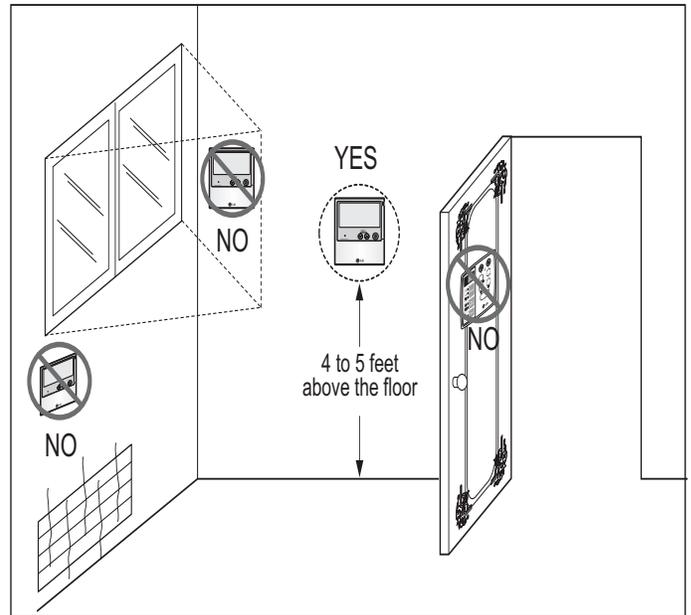


Wired Controller Placement

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 48: 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 Wi-Fi Control

Wi-Fi control is an option for ceiling cassette indoor units. Wi-Fi control requires the optional Wi-Fi 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 / CN_WiFi connector on the indoor unit motherboard. Refer to the ThinQ manual for operation details.

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

Inverter



LG Electronics, U.S.A., Inc.
Air Conditioning Technologies
4300 North Point Parkway
Alpharetta, Georgia 30022
www.lghvac.com

EM_MultiV_CeilingCassette_IndoorUnits_R32_6_25
Supersedes: EM_MultiV_CeilingCassette_IndoorUnits_R32_5_25
EM_MultiV_CeilingCassette_IndoorUnits_R32_4_25
EM_MultiV_CeilingCassette_IndoorUnits_R32_12_24