SINGLE ZONE
MID STATIC DUCTED LGRED° R32 SYSTEMS
ENGINEERING MANUAL



KSUJA181A (18,000 Btu/h)
KSUJA241A (24,000 Btu/h



KSUJA301A (30,000 Btu/h)
KSUJA361A (36,000 Btu/h)



KSSJA421A (42,000 Btu/h)
KSSJA481A (48,000 Btu/h)

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A summary list of safety precautions is on page 6.

For more technical materials such as submittals, catalogs, installation, owner's, and service manuals, visit www.lghvac.com.

Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps (excluding ductless systems) must be matched with appropriate coil components to meet ENERGY STAR® criteria. Ask your contractor for details or visit www.energystar.gov.

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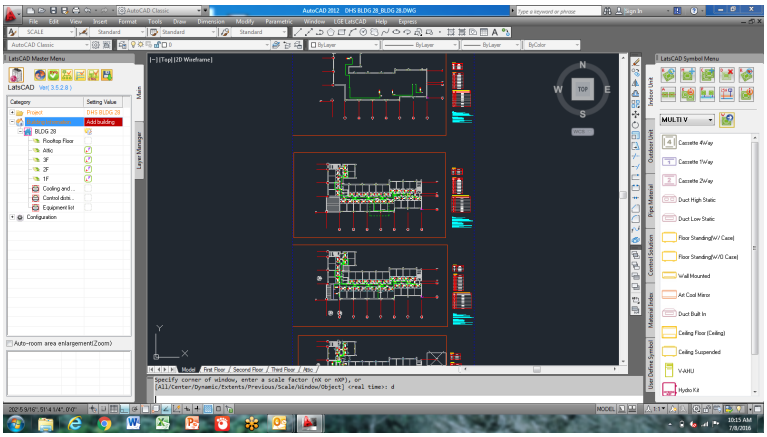
LG Air Conditioner Technical Solution (LATS) Software

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

NOTICE

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

Figure 1: LATS CAD2 Example.



Formats

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

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

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

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

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

Features

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

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

The program can also:

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

NOTICE

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

NOTICE

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

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LG AIR CONDITIONER TECHNICAL SOLUTION (LATS)

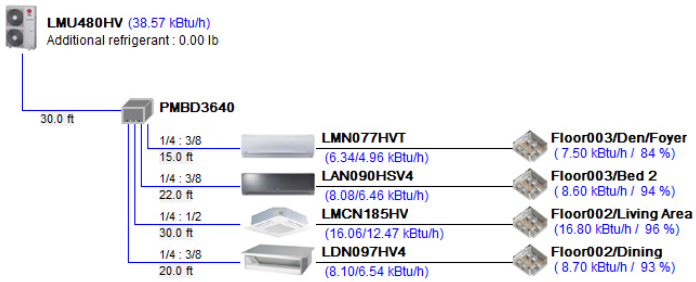
LATS Generates a Complete Project Report

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

Proper Design to Install Procedure

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

Figure 2: Example of a LATS Tree Diagram.



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

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

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

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

NOTICE

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 commissioning.

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TABLE OF SYMBOLS

	*Indicates that this appliance uses a flammable refrigerant. If the refrigerant is leaked and exposure 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.*

[1]Signal 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 R32.
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.*

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UNIT NOMENCLATURE



1. Refrigerant
K = R32

2. Component
N = Indoor Unit
S = System
U = Outdoor Unit

3. Product Category
S = Single
U = Universal

4. Product Type
H = High-Static Duct
J = Mid-Static Duct
K = Low-Static Duct
X = Null

5. Product Grade
A = LGRED°
B = High Efficiency (Deluxe)

6. Nominal Capacity (Btu/h) or 7. Nominal Capacity (Gallon)

18 = 18,000 Btu/h	36 = 36,000 Btu/h
24 = 24,000 Btu/h	42 = 42,000 Btu/h
30 = 30,000 Btu/h	48 = 48,000 Btu/h

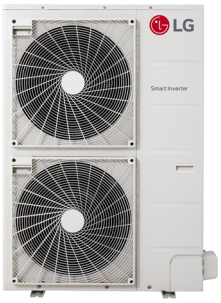
8. Generation
1 to 9

9. Function
A = 208~230V

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PAIRING TABLE

Table 1: Single Zone High Static Ducted LGRED° System Pairing Table

System Model Numbers	Outdoor Unit Model	Indoor Unit Model
KSUJA181A (18,000 Btu/h) **KSUJA241A (24,000 Btu/h)**	**KUSXA181A** **KUSXA241A** 	**KNUJB181A** **KNUJB241A** 
KSUJA301A (30,000 Btu/h) **KSUJA361A (36,000 Btu/h)**	**KUSXA301A** **KUSXA361A** 	**KNUJB301A** **KNUJB361A** 
KSSJA421A (42,000 Btu/h) **KSSJA481A (48,000 Btu/h)**	**KUSXA421A** **KUSXA481A** 	**KNSJB421A** **KNSJB481A** 

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MECHANICAL SPECIFICATIONS

General

System

LG single zone mid static ducted systems are comprised of a single frame outdoor unit connected to a single indoor unit with a single refrigerant circuit. An LG single zone mid static ducted system can operate in either cooling or heating mode. The system is capable of changing mode within a maximum time of three (3) minutes to ensure indoor temperature can be properly maintained. LG components are manufactured in a facility registered to ISO 9001 and ISO 14001, which is a set of standards applying to environmental protection set by the International Organization for Standardization (ISO). The system components comply with Underwriters Laboratories (UL) 1995 Heating and Cooling Equipment Standard for Safety and bear the CSA label. Wiring in these units are in accordance with the national Electrical Code (NEC). LG single zone mid static ducted systems have published performance ratings certified by AHRI (Air-Conditioning, Heating, and Refrigeration Institute) and are listed in the AHRI Standard 210/240 certified product directory.

Mid Static Ducted Systems Temperature Operating Ranges

- Operating ranges for outdoor units of 5°F to +118°F (DB) for cooling; -13°F to +64°F (WB) for heating.
- Operating ranges for indoor units of 57°F to 77°F (WB) for cooling; 59°F to 81°F (DB) for heating.
- Indoor unit temperature setting range of 65°F to 86°F (DB) for cooling; 61°F to 86°F (WB) for heating.
- Cooling range can be extended from 5°F down to -4°F using the Low Ambient Wind Baffle Kit (sold separately).

Refrigerant System

The system is designed for use with R32 refrigerant, and consists of a single refrigeration circuit. The refrigeration circuit is pressure-tested at the factory and shipped with a holding charge of helium gas. The outdoor unit is provided with factory installed components, including a refrigerant strainer, accumulator, four-way reversing valve, electronic expansion valve (EEV), high and low side charging ports, service valves, and interconnecting piping. All refrigerant lines from the outdoor unit to the indoor unit are field-installed and must be insulated separately.

Electrical

The system was designed to operate using 208–230/60/1 power with voltage variances of ±10% and includes overcurrent protection. The indoor unit is powered through the outdoor unit.

Controls

Indoor and outdoor units are factory wired with necessary electrical control components, printed circuit boards, thermistors, sensors, terminal blocks, and lugs for power wiring. Factory installed microprocessor controls in the outdoor unit and indoor unit perform functions to efficiently operate the single zone system, communicating via 18 AWG, two-conductor, stranded, shielded or unshielded communications wiring (if shielded, must be grounded to the chassis at the outdoor unit only) and must comply with applicable local and national codes. Microprocessor-based algorithms provide component protection, soft-start capability, refrigeration system pressure, temperature, defrost, and ambient control. System can be operated through an optional handheld wireless controller and optional infrared receiver.

Figure 3: Typical Single Zone Mid Static Ducted LGRED° System



Outdoor Unit

Sound Levels

The outdoor unit has sound levels not exceeding 54 dB(A) tested in an anechoic chamber under ISO Standard 3745.

Casing / Frame

The outdoor condensing unit case is constructed from pre-coated metal (PCM) that has been tested in accordance with ASTM B-117 salt spray procedure for a minimum of 1,000 hours. Case has a removable panel to allow access to major internal components, and legs to secure the unit during installation.

Compressors

The 18,000 ~ 48,000 Btu/h outdoor units are equipped with one hermetically sealed, digitally controlled, inverter-driven R1 scroll compressor to modulate capacity (modulation in 1 Hz increments). Teflon coated bearings, overcurrent protection and vibration isolation are integrated with the compressor.

Frequency ranges for the 18,000 ~ 48,000 Btu/h outdoor units are:

18k Btu/h = 10 to 75 Hz Cooling; 10 to 100 Hz Heating
24k Btu/h = 10 to 75 Hz Cooling; 10 to 100 Hz Heating
30k Btu/h = 10 to 120 Hz Cooling; 10 to 135 Hz Heating
36k Btu/h = 10 to 120 Hz Cooling; 10 to 135 Hz Heating
42k Btu/h = 15 to 110 Hz Cooling; 15 to 120 Hz Heating
48k Btu/h = 15 to 110 Hz Cooling; 15 to 120 Hz Heating

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Indoor Unit

Mid Static Ducted units are designed for air volume against an external static pressure up to 0.59"WG.

The indoor unit casing is designed to mount fully concealed above a finished ceiling or has the flexibility to be installed vertically along the wall, in a closet. Vertical installation is available for the 18kBtu/h and 24kBtu/h systems only. The vertical up flow configuration installation requires optional installation kit (ABDAMA0) to change the condensate drain pan position suitable for vertical installation.

Return air opening is on the bottom in the vertical position or right end in the horizontal position. Return air plenum sub-base is to be field-provided. The supply air connection is male flange. Casing is manufactured of galvanized steel plate. Cold surfaces of the unit are covered internally with a coated polystyrene insulating material, and covered externally with sheet insulation made of ethylene propylene diene monomer (M-Class) (EPDM). External insulation is plenum rated and conforms to ASTM Standard D-1418. Hanger brackets are included on the casing to support the weight on four corners. The indoor unit has a front horizontal supply air discharge, and one dedicated rear horizontal return air. The supply air opening is flanged to accept field-installed ductwork that must not exceed the external static pressure limitation of the unit.

Coil

Outdoor Unit

Heat pump outdoor unit coils are made of nonferrous louvered aluminum fins protected with an integral coil guard. The coil for each outdoor unit has a minimum of 14 fins per inch (FPI); heat exchanger has two rows. The coil fins have a factory applied corrosion resistant GoldFin™ material with hydrophilic coating tested in accordance with ASTM B-117 salt spray test procedure for a minimum of 1,000 hours. Coils are factory tested to a pressure of 626 psig.

Indoor Unit

Indoor unit coils are factory built and are comprised of aluminum fins mechanically bonded to copper tubing. Each indoor unit has a minimum of two rows of coils, which are pressure tested to 626 psig at the factory. The mid-static ducted unit can be installed horizontally above the ceiling (all systems) or can be installed in a vertical position on the wall or in a closet using an optional drain kit accessory (18kBtu/h, 24kBtu/h systems only). Each unit is provided with a factory installed condensate drain pan below the coil.

Fans and Motors

Outdoor Unit

The outdoor unit includes one or two direct drive, variable speed axial / propeller type fans with a horizontal air discharge. Fan blades are made of Acrylonitrile Butadiene Styrene (ABS) material, and have a Brushless Digitally Controlled (BLDC) fan motor. The fan motor has inherent protection, permanently lubricated bearings, and variable speed with a maximum speed up to 760 rpm (KUSXA181A, KUSXA241A, KUSXA301A), or 750 rpm (KUSXA361A, KUSXA421A, KUSXA481A). Raised guards are provided to limit contact with moving parts.

Indoor Unit

The indoor unit has one direct-drive Sirocco fan made of high strength ABS GP-2200 polymeric resin.

The fan is statically and dynamically balanced, mounted on a common brushless digitally controlled (BLDC) motor, and mounted on vibration-attenuating rubber grommets. Fan speed is controlled using a microprocessor-based direct digital control algorithm. The indoor fan has Low, Med, High, and Auto settings for Cooling mode; and has Low, Med, High, and Auto settings for Heating mode. The Auto setting adjusts the fan speed based on the difference between the controller set-point and space temperature.

Air Filter - Indoor Unit

The return air inlet on the indoor unit includes a factory-supplied removable, washable filter that is accessible from the back of the unit. Options include a return filter box that holds a field-provided high efficiency one or two inch MERV-rated filters, and a LG-supplied air cleaner (each sold separately).

Electrical

The system is designed to operate using 208–230 / 60 /1 power with voltage variances of ±10% and includes overcurrent protection. The indoor unit is powered through the outdoor unit.

Controls

Indoor and outdoor units are factory wired with necessary electrical control components, printed circuit boards, thermistors, sensors, terminal blocks, and lugs for power wiring. Factory installed microprocessor controls in the outdoor unit and indoor unit perform functions to efficiently operate the single zone system, communicating via 18 AWG, two-conductor, stranded, shielded or unshielded communications wiring (if shielded, must be grounded to the chassis at the outdoor unit only). Microprocessor-based algorithms provide component protection, soft-start capability, refrigeration system pressure, temperature, defrost, and ambient control. System can be operated through a simple wired remote controller (required, but sold separately).

Refrigerant Leak Detector

The single zone Console unit has a built-in Leak detector sensor to detect any refrigerant leak.

Shut-off Valve

LG single port shutoff valve (PRHPZ010A) is available as an accessory for the Console unit.

Condensate Lift/Pump

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

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GENERAL DATA

Table 2: Single Zone KSUJA181A, KSUJA241A Specifications

System (Model) (Outdoor Unit / Indoor Unit)		KSUJA181A (KUSXA181A / KNUJB181A)	KSUJA241A (KUSXA241A / KNUJB241A)
Cooling Capacity (Min/Rated/Max) (Btu/h)		7,200 ~ 18,000 ~ 22,000	9,200 ~ 23,000 ~ 29,500
Cooling Power Input[1] (Min/Rated/Max) (kW)		0.50 ~ 1.45 ~ 2.80	0.55 ~ 1.95 ~ 3.00
EER2 (@95°F)		12.40	11.80
SEER2		17.50	17.00
Heating Capacity (Min/Rated/Max) (Btu/h)		6,800 ~ 20,000 ~ 24,000	8,000 ~ 27,000 ~ 33,000
Heating Power Input[1] (Min/Rated/Max) (kW)		0.50 ~ 1.58 ~ 2.54	0.60 ~ 2.20 ~ 3.30
COP (@47°F)		3.70	3.60
HSPF2		9.2	9.5
Rated Low Heating Capacity (Btu/h)			
Outdoor 17°F (WB)/Indoor 70°F (DB)		13,000	17,000
Low COP (@17°F)		2.72	2.53
Maximum Heating Capacity (Btu/h)			
Outdoor 17°F (WB)/Indoor 70°F (DB)		22,200	29,700
Outdoor 5°F (WB)/Indoor 70°F (DB)		20,000	28,000
Outdoor -4 °F (WB)/Indoor 70°F (DB)		17,500	24,800
Outdoor -13 °F (WB)/Indoor 70°F (DB)		15,200	21,600
ENERGY STAR / Cold Climate		Yes / No	Yes / No
Power Supply (To Outdoor Unit) (V / Hz / φ)		208-230 / 60 / 1	
Power Supply Wiring (To Outdoor Unit) (No. x AWG)[2]		3 x 12	3 x 12
Power Wiring / Communication Wiring (ODU to IDU) (No. x AWG)[2]		3 x 14 / 2 x 18	3 x 14 / 2 x 18
Indoor Unit Data			
Operating Range	Cooling (°F WB)	57 to 77	
	Heating (°F DB)	59 to 81	
Temperature Setting Range	Cooling (°F)	65 to 86	
	Heating (°F)	61 to 86	
Sound Pressure[3] dB(A) (H/M/L)	Cooling	36 / 32 / 29	38 / 33 / 30
	Heating	36 / 32 / 29	38 / 33 / 30
Indoor Unit Dimensions (W x H x D) (in.)		35-7/16 x 9-21/32 x 27-9/16	35-7/16 x 9-21/32 x 27-9/16
Indoor Unit Net / Shipping Weight (lbs.)		61.5 / 71.7	64.2 / 74.3
Vertical Installation Kit Net / Shipping Weight (lbs.)		- / 5.95	- / 5.95
Fan Type x Qty.		Sirocco x 1	Sirocco x 1
Fan Motor (W) x Qty.		165 x 1	165 x 1
Fan Motor / Drive		Brushless Digitally Controlled / Direct	
Airflow Rate (Max./) H/M/L (CFM)		635.7 / 529.7 / 423.8	706.3 / 547.4 / 459.1
Factory Set (High) External Static Pressure (in. wg)		0.24	0.24
Dehumidification Rate (pts./hr.)		2.75	4.23

EEV: Electronic Expansion Valve IDU: Indoor Unit ODU: Outdoor Unit

This data is rated 0 ft above sea level with 24.6 of refrigerant line per indoor unit and a 0 ft level difference outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB) and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).
Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 59ºF wet bulb (WB) and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

[1]Power Input is rated at high speed.

[2]All power supply wiring to the outdoor unit is field supplied, solid or stranded. The power wiring and the communication wiring from the outdoor unit to the indoor unit is field supplied and must be stranded, shielded or unshielded (if shielded, it must be grounded to the chassis of the outdoor unit only). All wiring must comply with applicable local and national codes.

All power supply wiring to the outdoor unit is field supplied, solid or stranded. The power wiring and the communication wiring from the outdoor unit to the indoor unit is field supplied and must be stranded, shielded or unshielded (if shielded, it must be grounded to the chassis of the outdoor unit only). All wiring must comply with applicable local and national codes.

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

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Table 3: Single Zone KSUJA181A, KSUJA241A Specifications - continued

System (Model) (Outdoor Unit / Indoor Unit)		KSUJA181A (KUSXA181A / KNUJB181A)	KSUJA241A (KUSXA241A / KNUJB241A)
Outdoor Unit Data			
Operating Range[1]	Cooling (°F DB)	5 to 118[1]	
	Heating (°F WB)	-13 to +64	
Sound Pressure[2] dB(A)	Cooling	51	51
	Heating	52	52
Net Dimensions (W x H x D) (in.)		37-13/32 x 32-27/32 x 13	37-13/32 x 32-27/32 x 13
Shipping Dimensions (W x H x D) (in.)		44-7/8 x 36-5/32 x 18-5/32	44-7/8 x 36-5/32 x 18-5/32
Net / Shipping Weight (lbs.)		141.8 / 160.1	141.8 / 160.1
Exterior Color Codes		Warm Gray: Munsell 2.5Y 7.5/1 (RAL 7044)	
Fan Type x Qty.		Axial x 1	Axial x 1
Fan Motor (W) x Qty.		124 x 1	124 x 1
Fan Motor / Drive		Brushless Digitally Controlled / Direct	
Airflow Rate Max. (CFM)		2,048	2,048
Factory Set (High) External Static Pressure (in. wg)		0.4	0.4
Compressor (Type x Qty.)		R1 Scroll x 1	R1 Scroll x 1
Heat Exchanger			
Material and Fin Coating		CU / AL	
Rows / Columns / Fin per inch		2 / 38 / 14	2 / 38 / 14
Refrigerant			
Type[3] / Control		R32 / EEV	
Pre-Charge (oz.)		38.8	38.8
Additional Charge (oz/ft)		0.38	0.38
Piping			
ODU Connection Size	Liquid (in.)	3/8	3/8
	Vapor (in.)	5/8	5/8
IDU Connection Size	Liquid (in.)	1/4	3/8
	Vapor (in.)	1/2	5/8
Installed Pipe Size	Liquid (in.)	3/8	3/8
	Vapor (in.)	5/8	5/8
Condensation Line (OD, ID, in.)		1-1/4 / 1	1-1/4 / 1
Pipe Length[4] (Minimum/Maximum) (ft)		16.4 / 164	16.4 / 164
Piping Length[4] (no add'l refrigerant, ft)		24.6	24.6
Max Elevation Difference (ft)		98.4	98.4

EEV: Electronic Expansion Valve IDU: Indoor Unit ODU: Outdoor Unit

This data is rated 0 ft above sea level with 24.6 of refrigerant line per indoor unit and a 0 ft level difference outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB) and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).
Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 59ºF wet bulb (WB) and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

[1]Optional Low Ambient Wind Baffle Kit allows operation down to -4°F in cooling mode.

[2]Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.

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

[4]Piping lengths are equivalent.

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Table 4: Single Zone KSUJA301A, KSUJA361A System Specifications.

System (Model) (Outdoor Unit / Indoor Unit)		KSUJA301A (KUSXA301A / KNUJB301A)	KSUJA361A (KUSXA361A / KNUJB361A)
Cooling Capacity (Min/Rated/Max) (Btu/h)		12,000 ~ 30,000 ~ 36,000	14,400 ~ 36,000 ~ 44,000
Cooling Power Input[1] (Min/Rated/Max) (kW)		0.56 ~ 2.22 ~ 3.50	0.70 ~ 2.93 ~ 5.50
EER2 (@95°F)		13.50	12.30
SEER2		18.80	19.00
Heating Capacity (Min/Rated/Max) (Btu/h)		14,000 ~ 34,000 ~ 40,000	16,000 ~ 40,000 ~ 46,000
Heating Power Input[1] (Min/Rated/Max) (kW)		0.64 ~ 2.65 ~ 4.08	0.84 ~ 3.26 ~ 4.70
COP (@47°F)		3.76	3.60
HSPF2		9.50	9.50
Rated Low Heating Capacity (Btu/h)			
Outdoor 17°F (WB)/Indoor 70°F (DB)		21,400	26,400
Low COP (@17°F)		2.58	2.61
Maximum Heating Capacity (Btu/h)			
Outdoor 17°F (WB)/Indoor 70°F (DB)		36,000	41,700
Outdoor 5°F (WB)/Indoor 70°F (DB)		34,000	36,000
Outdoor -4 °F (WB)/Indoor 70°F (DB)		29,500	35,500
Outdoor -13 °F (WB)/Indoor 70°F (DB)		28,250	30,000
ENERGY STAR / Cold Climate		Yes / No	Yes / No
Power Supply (To Outdoor Unit) (V / Hz / φ)		208-230 / 60 / 1	
Power Supply Wiring (To Outdoor Unit) (No. x AWG)[2]		3 x 10	3 x 10
Power Wiring / Communication Wiring (ODU to IDU) (No. x AWG)[2]		3 x 14 / 2 x 18	3 x 14 / 2 x 18
Indoor Unit Data			
Operating Range	Cooling (°F WB)	57 to 77	
	Heating (°F DB)	59 to 81	
Temperature Setting Range	Cooling (°F)	65 to 86	
	Heating (°F)	61 to 86	
Sound Pressure[3] dB(A) (H/M/L)	Cooling	34 / 33 / 32	36 / 34 / 33
	Heating	34 / 33 / 32	36 / 34 / 33
Indoor Unit Dimensions (W x H x D) (in.)		49-7/32 x 10-5/8 x 27-9/16	49-7/32 x 10-5/8 x 27-9/16
Indoor Unit Net / Shipping Weight (lbs.)		85.3 / 98.3	85.3 / 98.3
Fan Type x Qty.		Sirocco x 1	Sirocco x 1
Fan Motor (W) x Qty.		350 x 1	350 x 1
Fan Motor / Drive		Brushless Digitally Controlled / Direct	
Airflow Rate (Max./) H/M/L (CFM)		989 / 848 / 741	1130 / 989 / 848
Factory Set (High) External Static Pressure (in. wg)		0.24	0.24
Dehumidification Rate (pts./hr.)		5.6	6.9

EEV: Electronic Expansion Valve IDU: Indoor Unit ODU: Outdoor Unit

This data is rated 0 ft above sea level with 24.6 of refrigerant line per indoor unit and a 0 ft level difference outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB) and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).
Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 59ºF wet bulb (WB) and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

[1]Power Input is rated at high speed.

[2]All power supply wiring to the outdoor unit is field supplied, solid or stranded. The power wiring and the communication wiring from the outdoor unit to the indoor unit is field supplied and must be stranded, shielded or unshielded (if shielded, it must be grounded to the chassis of the outdoor unit only). All wiring must comply with applicable local and national codes.

All power supply wiring to the outdoor unit is field supplied, solid or stranded. The power wiring and the communication wiring from the outdoor unit to the indoor unit is field supplied and must be stranded, shielded or unshielded (if shielded, it must be grounded to the chassis of the outdoor unit only). All wiring must comply with applicable local and national codes.

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

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Table 5: Single Zone KSUJA301A, KSUJA361A System Specifications - continued.

System (Model) (Outdoor Unit / Indoor Unit)		KSUJA301A (KUSXA301A / KNUJB301A)	KSUJA361A (KUSXA361A / KNUJB361A)
Outdoor Unit Data			
Operating Range[1]	Cooling (°F DB)	5 to 118[1]	
	Heating (°F WB)	-13 to +64	
Sound Pressure[2] dB(A)	Cooling	52	52
	Heating	54	54
Net Dimensions (W x H x D) (in.)		37-13/32 x 54-11/32 x 13	37-13/32 x 54-11/32 x 13
Shipping Dimensions (W x H x D) (in.)		45-5/32 x 57-19/32 x 18-5/32	45-5/32 x 57-19/32 x 18-5/32
Net / Shipping Weight (lbs.)		190.2 / 214.3	190.2 / 214.3
Exterior Color Codes		Warm Gray: Munsell 2.5Y 7.5/1 (RAL 7044)	
Fan Type x Qty.		Axial x 2	Axial x 2
Fan Motor (W) x Qty.		124 x 2	124 x 2
Fan Motor / Drive		Brushless Digitally Controlled / Direct	
Airflow Rate Max. (CFM)		1,942 x 2	1,942 x 2
Factory Set (High) External Static Pressure (in. wg)		0.4	0.4
Compressor (Type x Qty.)		R1 Scroll x 1	R1 Scroll x 1
Heat Exchanger			
Material and Fin Coating		CU / AL	
Rows / Columns / Fin per inch		2 / 64 / 14	2 / 64 / 14
Refrigerant			
Type[3] / Control		R32 / EEV	
Pre-Charge (oz.)		106	106
Additional Charge (oz/ft)		0.43	0.43
Piping			
ODU Connection Size	Liquid (in.)	3/8	3/8
	Vapor (in.)	5/8	5/8
IDU Connection Size	Liquid (in.)	3/8	3/8
	Vapor (in.)	5/8	5/8
Installed Pipe Size	Liquid (in.)	3/8	3/8
	Vapor (in.)	5/8	5/8
Condensation Line (OD, ID, in.)		1-1/4 / 1	1-1/4 / 1
Pipe Length[4] (Minimum/Maximum) (ft)		16.4 / 164	16.4 / 246
Piping Length[4] (no add'l refrigerant, ft)		24.6	24.6
Max Elevation Difference (ft)		98.4	98.4

EEV: Electronic Expansion Valve IDU: Indoor Unit ODU: Outdoor Unit

This data is rated 0 ft above sea level with 24.6 of refrigerant line per indoor unit and a 0 ft level difference outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB) and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).
Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 59ºF wet bulb (WB) and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

[1]Optional Low Ambient Wind Baffle Kit allows operation down to -4°F in cooling mode.

[2]Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.

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

[4]Piping lengths are equivalent.

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GENERAL DATA

Table 6: Single Zone KSSJA421A, KSSJA481A Specifications

System (Model) (Outdoor Unit / Indoor Unit)		KSSJA421A (KUSXA421A / KNSJB421A)	KSSJA481A (KUSXA481A / KNSJB481A)
Cooling Capacity (Min/Rated/Max) (Btu/h)		16,800 ~ 42,000 ~ 50,000	18,400 ~ 48,000 ~ 55,000
Cooling Power Input[1] (Min/Rated/Max) (kW)		1.19 ~ 3.33 ~ 5.30	1.40 ~ 4.00 ~ 5.75
EER2 (@95°F)		12.60	12.00
SEER2		18.80	17.60
Heating Capacity (Min/Rated/Max) (Btu/h)		18,000 ~ 48,000 ~ 57,000	19,000 ~ 52,000 ~ 60,000
Heating Power Input[1] (Min/Rated/Max) (kW)		1.34 ~ 4.04 ~ 5.92	1.40 ~ 4.40 ~ 6.19
COP (@47°F)		3.48	3.46
HSPF2		9.40	9.30
Rated Low Heating Capacity (Btu/h)			
Outdoor 17°F (WB)/Indoor 70°F (DB)		30,000	33,400
Low COP (@17°F)		2.61	2.65
Maximum Heating Capacity (Btu/h)			
Outdoor 17°F (WB)/Indoor 70°F (DB)		50,700	52,800
Outdoor 5°F (WB)/Indoor 70°F (DB)		42,500	44,000
Outdoor -4 °F (WB)/Indoor 70°F (DB)		38,500	40,430
Outdoor -13 °F (WB)/Indoor 70°F (DB)		35,900	37,700
ENERGY STAR / Cold Climate		Yes / No	Yes / No
Power Supply (To Outdoor Unit) (V / Hz / φ)		208-230 / 60 / 1	
Power Supply Wiring (To Outdoor Unit) (No. x AWG)[2]		3 x 10	3 x 10
Power Wiring / Communication Wiring (ODU to IDU) (No. x AWG)[2]		3 x 14 / 2 x 18	3 x 14 / 2 x 18
Indoor Unit Data			
Operating Range	Cooling (°F WB)	57 to 77	
	Heating (°F DB)	59 to 81	
Temperature Setting Range	Cooling (°F)	65 to 86	
	Heating (°F)	61 to 86	
Sound Pressure[3] dB(A) (H/M/L)	Cooling	39 / 38 / 36	42 / 40 / 39
	Heating	39 / 38 / 36	42 / 40 / 39
Indoor Unit Dimensions (W x H x D) (in.)		49-7/32 x 14-3/16 x 27-9/16	49-7/32 x 14-3/16 x 27-9/16
Indoor Unit Net / Shipping Weight (lbs.)		96.6 / 110.7	96.6 / 110.7
Fan Type x Qty.		Sirocco x 1	Sirocco x 1
Fan Motor (W) x Qty.		400 x 1	400 x 1
Fan Motor / Drive		Brushless Digitally Controlled / Direct	
Airflow Rate (Max./) H/M/L (CFM)		1412 / 1200 / 988	1765 / 1589 / 1412
Factory Set (High) External Static Pressure (in. wg)		0.24	0.24
Dehumidification Rate (pts./hr.)		7.9	8.64

EEV: Electronic Expansion Valve IDU: Indoor Unit ODU: Outdoor Unit

This data is rated 0 ft above sea level with 24.6 of refrigerant line per indoor unit and a 0 ft level difference outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB) and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).
Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 59ºF wet bulb (WB) and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

[1]Power Input is rated at high speed.

[2]All power supply wiring to the outdoor unit is field supplied, solid or stranded. The power wiring and the communication wiring from the outdoor unit to the indoor unit is field supplied and must be stranded, shielded or unshielded (if shielded, it must be grounded to the chassis of the outdoor unit only). All wiring must comply with applicable local and national codes.

All power supply wiring to the outdoor unit is field supplied, solid or stranded. The power wiring and the communication wiring from the outdoor unit to the indoor unit is field supplied and must be stranded, shielded or unshielded (if shielded, it must be grounded to the chassis of the outdoor unit only). All wiring must comply with applicable local and national codes.

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

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Table 7: Single Zone KSSJA421A, KSSJA481A Specifications - continued.

System (Model) (Outdoor Unit / Indoor Unit)		KSSJA421A (KUSXA421A / KNSJB421A)	KSSJA481A (KUSXA481A / KNSJB481A)
Outdoor Unit Data			
Operating Range[1]	Cooling (°F DB)	5 to 118[1]	
	Heating (°F WB)	-13 to +64	
Sound Pressure[2] dB(A)	Cooling	54	54
	Heating	56	56
Net Dimensions (W x H x D) (in.)		37-13/32 x 54-11/32 x 13	37-13/32 x 54-11/32 x 13
Shipping Dimensions (W x H x D) (in.)		45-5/32 x 57-19/32 x 18-5/32	45-5/32 x 57-19/32 x 18-5/32
Net / Shipping Weight (lbs.)		190.2 / 214.3	190.2 / 214.3
Exterior Color Codes		Warm Gray: Munsell 2.5Y 7.5/1 (RAL 7044)	
Fan Type x Qty.		Axial x 2	Axial x 2
Fan Motor (W) x Qty.		124 x 2	124 x 2
Fan Motor / Drive		Brushless Digitally Controlled / Direct	
Airflow Rate Max. (CFM)		1,942 x 2	1,942 x 2
Factory Set (High) External Static Pressure (in. wg)		0.4	0.4
Compressor (Type x Qty.)		R1 Scroll x 1	R1 Scroll x 1
Heat Exchanger			
Material and Fin Coating		CU / AL	
Rows / Columns / Fin per inch		3 / 64 / 14	3 / 64 / 14
Refrigerant			
Type[3] / Control		R32 / EEV	
Pre-Charge (oz.)		120	120
Additional Charge (oz/ft)		0.43	0.43
Piping			
ODU Connection Size	Liquid (in.)	3/8	3/8
	Vapor (in.)	5/8	5/8
IDU Connection Size	Liquid (in.)	3/8	3/8
	Vapor (in.)	5/8	5/8
Installed Pipe Size	Liquid (in.)	3/8	3/8
	Vapor (in.)	5/8	5/8
Condensation Line (OD, ID, in.)		1-1/4 / 1	1-1/4 / 1
Pipe Length[4] (Minimum/Maximum) (ft)		16.4 / 246	16.4 / 246
Piping Length[4] (no add'l refrigerant, ft)		24.6	24.6
Max Elevation Difference (ft)		98.4	98.4

EEV: Electronic Expansion Valve IDU: Indoor Unit ODU: Outdoor Unit

This data is rated 0 ft above sea level with 24.6 of refrigerant line per indoor unit and a 0 ft level difference outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB) and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).
Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 59ºF wet bulb (WB) and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

[1]Optional Low Ambient Wind Baffle Kit allows operation down to -4°F in cooling mode.

[2]Sound Pressure levels are tested in an anechoic chamber under ISO Standard 3745.

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

[4]Piping lengths are equivalent.

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ELECTRICAL DATA

Table 8: Single Zone Mid Static Ducted LGRED° R32 Electrical Data Table.

Nominal Tons	Unit Model No.	Hertz	Voltage	Voltage Range (Min. to Max.)	MCA	MOP	Compressor Quantity	Compressor Motor RLA (Cooling)	Condenser Fan Motor(s)	
									Condenser Fan Qty.	Condenser Fan Motor FLA
1-1/2	KUSXA181A	60	208/230	187-253	19.1	30	1	14.0	1	1.6
2	KUSXA241A				19.1	30		14.0		
2-1/2	KUSXA301A				32.0	35		22.0	2	1.6 x 2
3	KUSXA361A				32.0	35		22.0		
3-1/2	KUSXA421A				32.0	40		22.0		
4	KUSXA481A				32.0	40		22.0		

Voltage tolerance is ±10%.

Maximum allowable voltage unbalance is 2%.

MCA = Minimum Circuit Ampacity.

LRA = Locked Motor Amps

Maximum Overcurrent Protection (MOP) is calculated as follows: (Largest motor FLA x 2.25) + (Sum of other motor FLA) rounded down to the nearest standard fuse size.

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Table 9: Single Zone Mid Static Ducted LGRED° R32 Indoor Units Functions, Controls, Options Table.

Category	Functions	MA Chassis	M2, M3 Chassis
		KNUJB181A KNUJB241A	KNUJB301A KNUJB361A KNSJB421A KNSJB481A
Airflow	Air supply outlet	1	1
	Airflow direction control (left and right)	X	X
	Airflow direction control (up and down)	X	X
	Auto swing (left and right)	X	X
	Auto swing (up and down)	X	X
	Airflow steps (fan/cool/heat)	3 / 3 / 3	3 / 3 / 3
	Jet cool/heat	X / X	X / X
	Swirl wind	X	X
	Refresh Mode / Smart Mode	X	X
	Indirect Wind / Direct Wind	X	X
Air Purification	Long-life prefilter (Washable)	√	√
Installation	Drain pump	√	√
	E.S.P. control*	√	√
	Electric heater	X	X
	High Ceiling Operation*	X	X
	Vertical installation	○ (ABDAMA0)	X
Reliability	Hot start	√	√
	Self diagnosis	√	√
	Soft dry operation	√	√
Convenience	Auto cleaning	X	X
	Auto operation (artificial intelligence)	√	√
	Auto Changeover	√	√
	Auto restart	√	√
	Child lock*	√	√
	Forced operation	X	X
	Group control*	√	√
	Sleep mode	√	√
	Timer (on/off)	√	√
	Timer (weekly)*	√	√
	Two thermistor control*	√	√
	Automatic filter sign check*	X	X
Individual Control	Standard wired remote controller	○ (PREMTB101 / PREMTBB11)	○ (PREMTB101 / PREMTBB11)
	Deluxe wired remote controller	○ (PREMTA200)	○ (PREMTA200)
	Simple wired remote controller	○ (PREMTC00U)	○ (PREMTC00U)
	MultiSITE CRC	○ (PREMTBVC2/C3/C4)	○ (PREMTBVC2/C3/C4)
	Simple wired controller (hotel use)	○ (PQRCHCA0Q(W))	○ (PQRCHCA0Q(W))
	Wireless remote controller	○ (PQWRHQ0FDB)	○ (PQWRHQ0FDB)
Network Function	Network solution (LGAP)	X	X
	Dry contact	○ (PDRYCB100/PDRYCB300/ PDRYCB320/PDRYCB400)	○ (PDRYCB100/PDRYCB300/ PDRYCB320/PDRYCB400)
	Wi-Fi	○ (PWFMDD200)	○ (PWFMDD200)
Others	Remote temperature sensor	○ (PQRSTA0)	○ (PQRSTA0)
	Aux. Heat Relay Kit	○ (PRARH1)	○ (PRARH1)
	Group control wire	○ (PZCWRCG3)	○ (PZCWRCG3)
	Filter box	○ (ZFBXMA01A)	○ (ZFBXM201A/ZFBXM301A)

1. √ = Standard feature; o = Optional accessory (must be purchased separately); X = Not available
2. (Accessory model name) : Installed in the field; ordered and purchased separately by model number; supplied in separate package.
3. *These functions require a wired remote controller.

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FUNCTIONS, CONTROLS, OPTIONS

Table 10: Single Zone Mid Static Ducted LGRED° R32 Outdoor Units Functions, Controls, Options Table.

Category	Functions	KUSXA181A KUSXA241A	KUSXA301A KUSXA361A KUSXA421A KUSXA481A
Reliability	Defrost / Deicing	√	√
	Base Pan Heater	√ (PQSH1200)	√ (PQSH1200)
	High pressure sensor	√	√
	Pressure Switch	√	√
	Phase Protection	X	X
	Restart Delay (3-Minutes)	√	√
	Self Diagnosis	√	√
	Soft Start	√	√
Convenience	Night Quiet Operation	√	√
	Mode Lock	√	√
	Pump Down (Forced Cooling Operation)	√	√
	Network Solution (LGAP)	√	√
Central Controller	AC Smart 5	○ (PACS5A000)	○ (PACS5A000)
	ACP 5	○ (PACP5A000)	○ (PACP5A000)
	PI485	√	√
Integration Solution	MultiSITE™ Communications Manager	○ (PBACNBTR0A)	○ (PBACNBTR0A)
Special Function	AHU Communications Kit	○ (PAHCMR000)	○ (PAHCMR000)
Option	Low Ambient Wind Baffle	○ (ZLABGP04A)	○ (ZLABGP04A)(2 EA)

1. √ = Standard feature; o = Optional accessory (must be purchased separately); X = Not available
2. (Accessory model name) : Installed in the field; ordered and purchased separately by model number; supplied in separate package.

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Mid Static Ducted Units Accessories

Table 11: Mid Static Ducted Units Accessories.

Model No.	Description
ABDAMA0	Vertical Installation Conversion Kit for Mid Static Ducted Indoor Unit MA Chassis - KNUJB181A, KNUJB241A
ZFBXMA01A	High Efficiency Filter Box for Mid Static Ducted Indoor Units - KNUJB181A, KNUJB241A
ZFBXM201A	High Efficiency Filter Box for Mid Static Ducted Indoor Units - KNUJB301A, KNUJB361A
ZFBXM301A	High Efficiency Filter Box for Mid Static Ducted Indoor Units - KNSJB421A, KNSJB481A
ZLABGP04A	Low Ambient Wind Baffle for Mid Static Ducted Outdoor Units (One required per ODU fan) KUSXA181A, KUSXA241A, KUSXA301A, KUSXA361A, KUSXA421A, KUSXA481A
PRHPZ010A	Single Port Refrigerant Shutoff Valve

Vertical Installation Conversion Kit

Figure 5: Vertical Installation Conversion Kit.

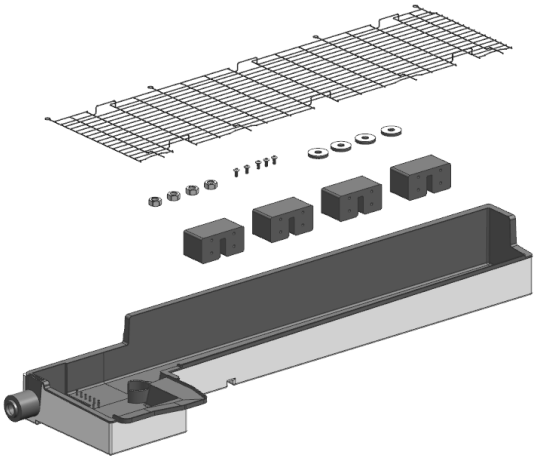


Figure 4: Drain Pan Heater.



Table 12: Drain Pan Heater Capacities.

ODU	Heater kW	Accessory Model	Note
KUSXA181A, KUSXA241A, KUSXA301A, KUSXA361A, KUSXA421A, KUSXA481A	120W	PQSH1200	Standard

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ACCESSORIES

LG Monitoring View (LGMV) Diagnostic Software and Cable

LG Monitoring View (LGMV) is a maintenance and troubleshooting tool for Multi V™ air conditioning systems. LGMV formats are available for computer or mobile phone use.

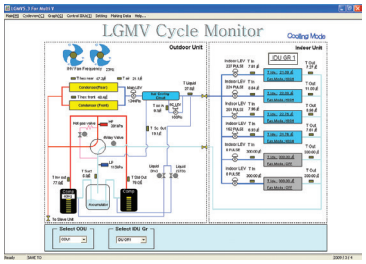
The main screen for LGMV allows the user to view the following real time data:

- Actual inverter compressor speed
- Target inverter compressor speed
- Actual outdoor fan speed
- Target outdoor unit fan speed
- Actual superheat
- Target superheat
- Actual subcooler circuit superheat
- Target subcooler circuit superheat
- Main EEV position
- Subcooling EEV position
- Inverter compressor current transducer value
- Outdoor air temperature
- Actual high pressure/saturation temperature
- Actual low pressure/saturation temperature
- Suction temperature
- Inverter compressor discharge temperature
- Constant speed compressor discharge temperature
- Front outdoor coil pipe temperature
- Back outdoor coil pipe temperature
- Liquid line pipe temperature
- Subcooler inlet temperature
- Subcooler outlet temperature
- Average indoor unit (IDU) pipe temperature
- Inverter compressor operation indicator light
- Four-way reversing valve operation indicator light
- Pressure graph showing actual low pressure and actual high pressure levels
- Error code display
- Operating mode indicator
- Target high pressure
- Target low pressure
- PCB (printed circuit board) version
- Software version
- Installer name
- Model no. of outdoor units
- Site name
- Total number of connected indoor units
- Communication indicator lights
- Indoor unit capacity
- Indoor unit operating mode
- Indoor unit fan speed
- Indoor unit EEV position
- Indoor unit room temperature
- Indoor unit inlet pipe temperature
- Indoor unit outlet pipe temperature
- Indoor unit error code

Additional screens can be accessed by tabs on the main screen

1. Cycleview: Graphic of internal components including
   - Compressors showing actual speeds
   - EEVs
   - Indoor Units
   - Liquid injection valves
   - Temperature and pressure sensors
   - Four-way reversing valve
   - Outdoor fans showing status and speeds
2. Graph:
   Full screen graph of actual high and low pressures and high and low pressure limits. A sliding bar enables user to go back in time and view data.
3. Control IDU: Enables user to turn on all IDUs default setpoints of 86°F in heat mode or 64°F in cool mode.
4. Setting: Converts metric values to imperial values.
5. Making Data: Recording of real time data to a separate file created to be stored on the user's computer.
6. Loading Data: Recorded data from a saved ".CSV" file can be loaded to create an LGMV session.
7. Electrical Data: Screen is changed to show the following:
   - Inverter compressor
     - Amps / Volts / Power Hz
     - Inverter control board fan Hz
   - Constant compressor
     - Current transducer value
     - Phase

Figure 6: Sample Cycleview (Computer View Example).



In lieu of connecting to the outdoor unit, user has the option to connect to the indoor unit with a connector kit. When connected through the indoor unit, user will not be able to record data.

This software can be used to both pre-set-up new systems and troubleshoot existing systems. LGMV data can be recorded to a ".CSV" file and emailed to an LG representative to assist with diagnostic evaluations.

LGMV is available in different formats. Contact your LG Sales Representative for system requirements and for more information.

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ThinQ

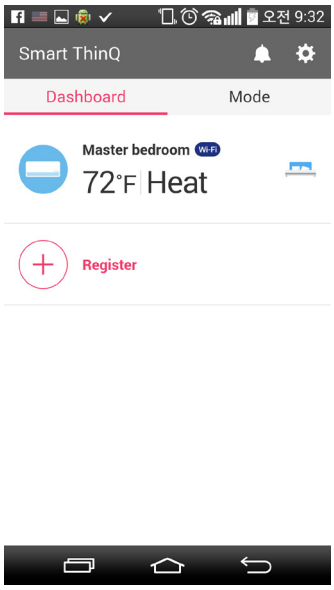
LG ThinQ is a built-in Wi-Fi module, along with a free smart phone app that provides monitoring and remote control capabilities for certain LG single zone systems. The app has the following features and benefits:

- Sign in to the app using LG credentials, or using Google® or Facebook® login credentials. Users only have to log in to the app once; the app remembers login details for subsequent logins.
- View current temperature settings of the air conditioning unit and change temperature, fan speed, and air flow direction from anywhere in the house or at a remote location (through the use of wireless connection). Multiple users can control the household air conditioning unit remotely.
- Monitor filter usage of the unit.
- Set up weekly schedules to start and stop air conditioner activity.
- Set up the unit to run in different Modes, depending on the user's schedule. Set up specific temperatures for when the user is home, away on vacation, or sleeping.
- Troubleshoot problems, and view tips on general maintenance of the system using the Smart Diagnosis function.

**Google is a registered trademark of Google Inc.; Facebook is a registered trademark of Facebook.*

Contact your LG Sales Representative or visit www.lghvac.com for system requirements, how to download the app, a user's manual, or other information.

Figure 7: Example of an LG Smart ThinQ Screen (appearances my differ depending on version of software).

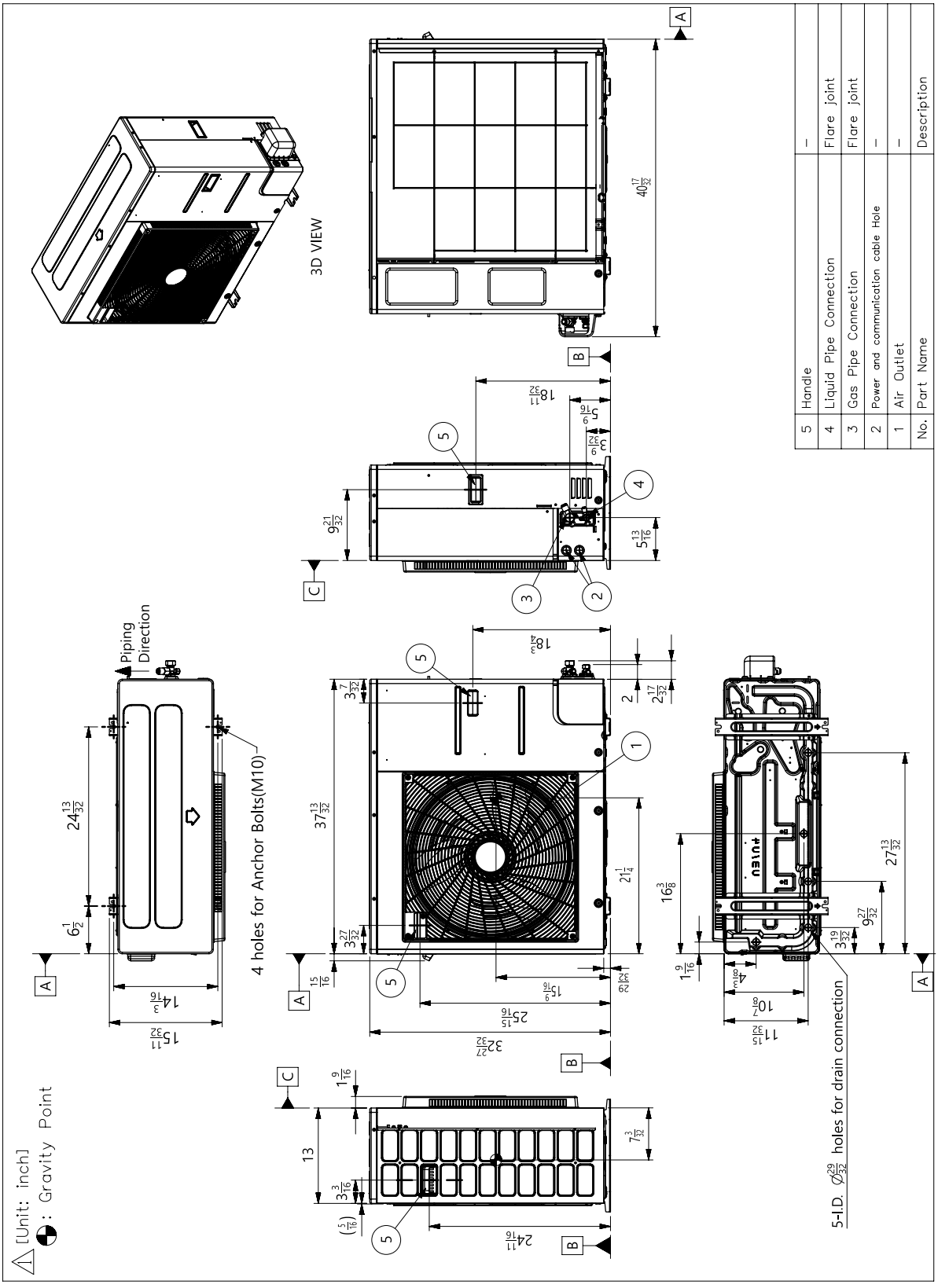


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OUTDOOR UNIT DIMENSIONS

KUSXA181A, KUSXA241A, KUSXA301A

Figure 8: KUSXA181A, KUSXA241A, KUSXA301A Outdoor Unit Dimensions.

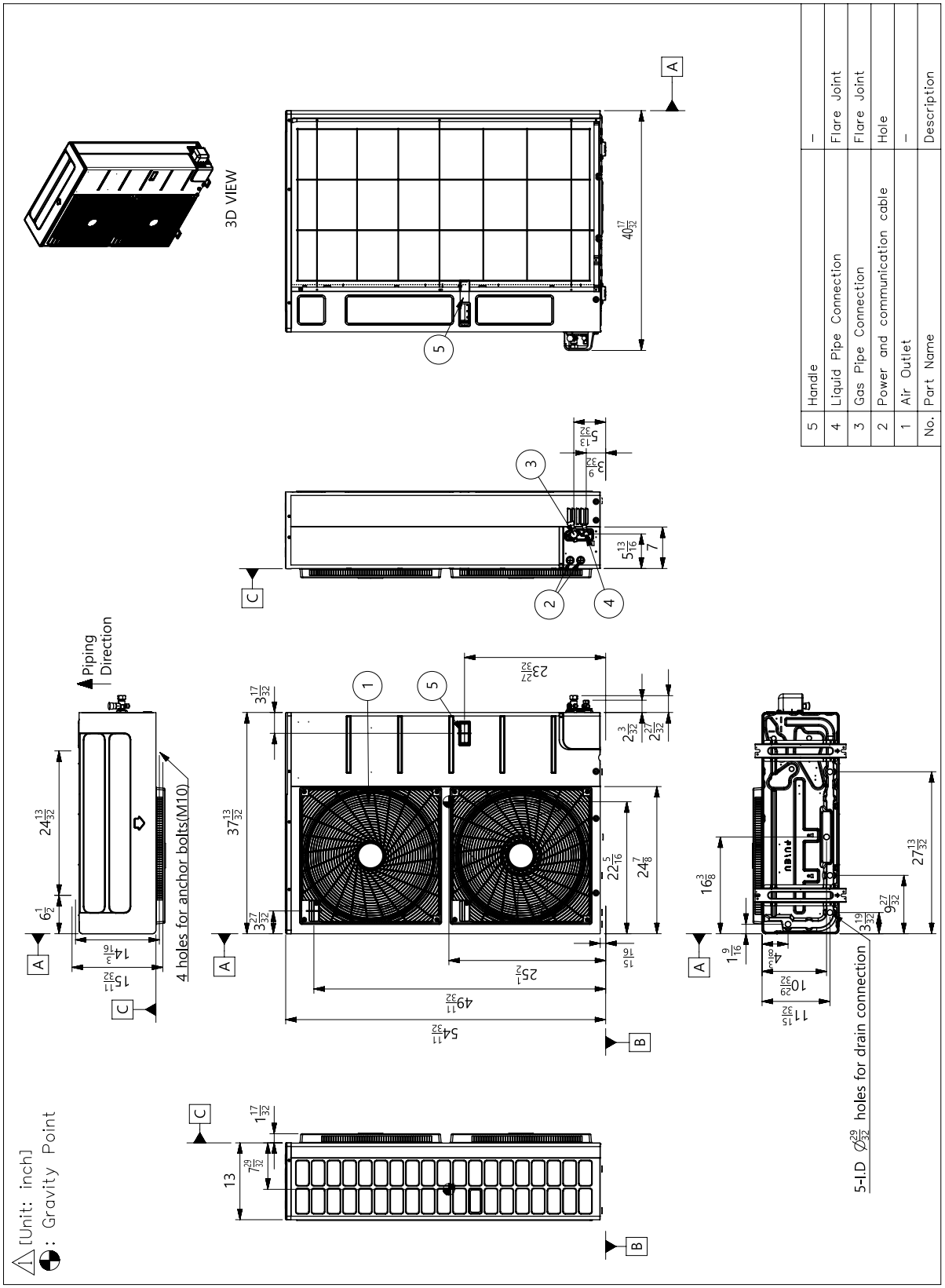


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OUTDOOR UNIT DIMENSIONS

KUSXA361A, KUSXA421A, KUSXA481A

Figure 9: KUSXA361A, KUSXA421A, KUSXA481A Outdoor Unit Dimensions.



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OUTDOOR UNIT CENTER OF GRAVITY / CORNER WEIGHT

Figure 10: Center of Gravity and Corner Weight Dimensions Diagram.

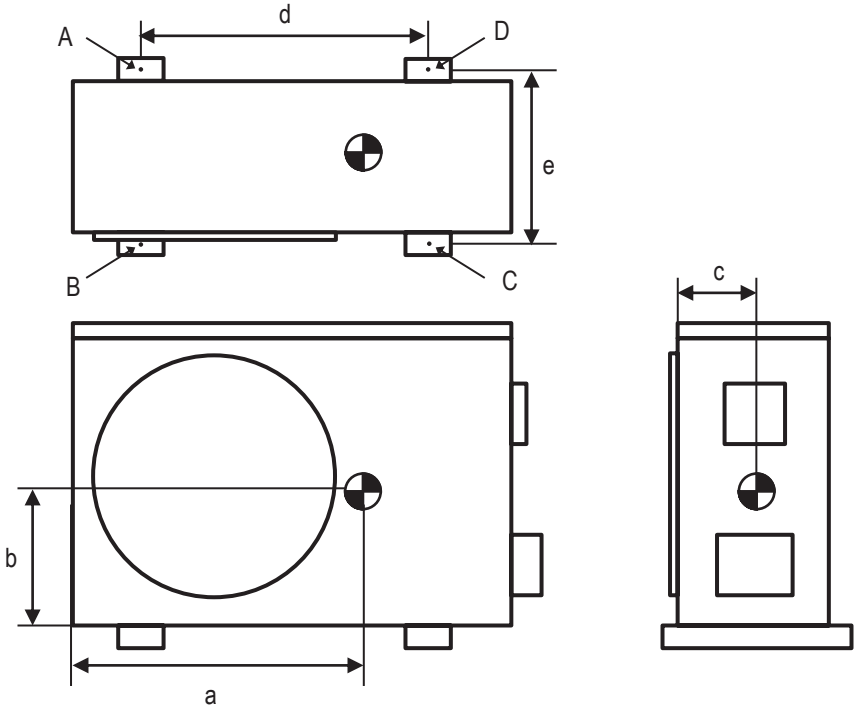


Table 13: Center of Gravity and Corner Weight Dimensions.

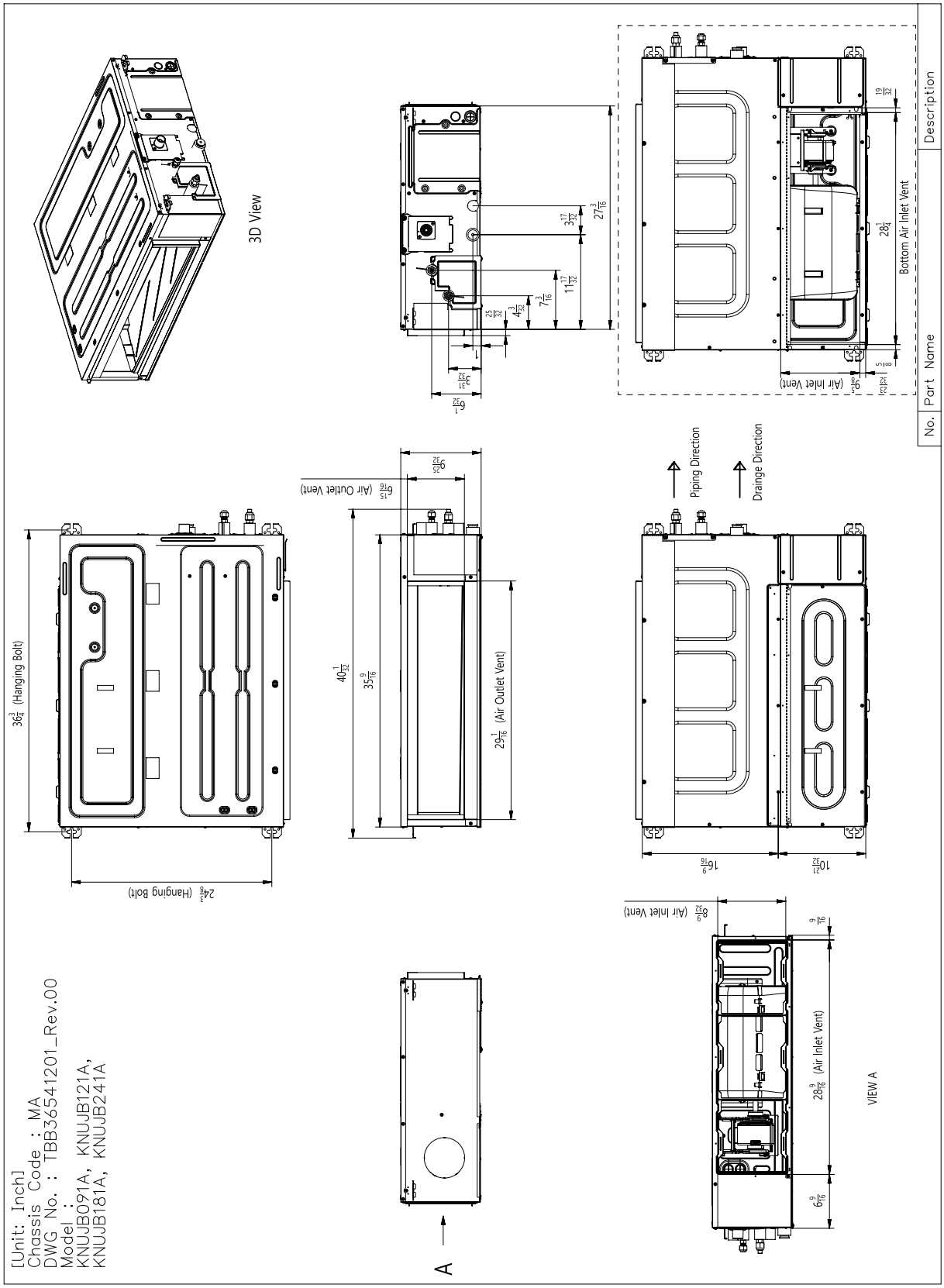
Model	Weight (lb.)		Center of Gravity (inch)			Leg (inch)		Corner Weight (lb.)			
	Shipping	Net	a	b	c	d	e	A	B	C	D
KUSXA181A	160.1	141.8	23 7/32	12 19/32	5 29/32	24 13/32	14 3/16	20.0	28.0	54.7	39.0
KUSXA241A	160.1	141.8	23 7/32	12 19/32	5 29/32	24 13/32	14 3/16	20.0	28.0	54.7	39.0
KUSXA301A	214.3	190.2	27 7/32	21 15/32	6 5/8	24 13/32	14 3/16	15.8	18.1	84.9	74.4
KUSXA361A	214.3	190.2	27 7/32	21 15/32	6 5/8	24 13/32	14 3/16	15.8	18.1	84.9	74.4
KUSXA421A	238.1	217.6	27 7/32	21 15/32	6 5/8	24 13/32	14 3/16	17.4	19.9	93.4	81.8
KUSXA481A	238.1	217.6	27 7/32	21 15/32	6 5/8	24 13/32	14 3/16	17.4	19.9	93.4	81.8

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INDOOR UNIT DIMENSIONS

KNUJB181A, KNUJB241A

Figure 11: KNUJB181A, KNUJB241A Indoor Unit Dimensions.

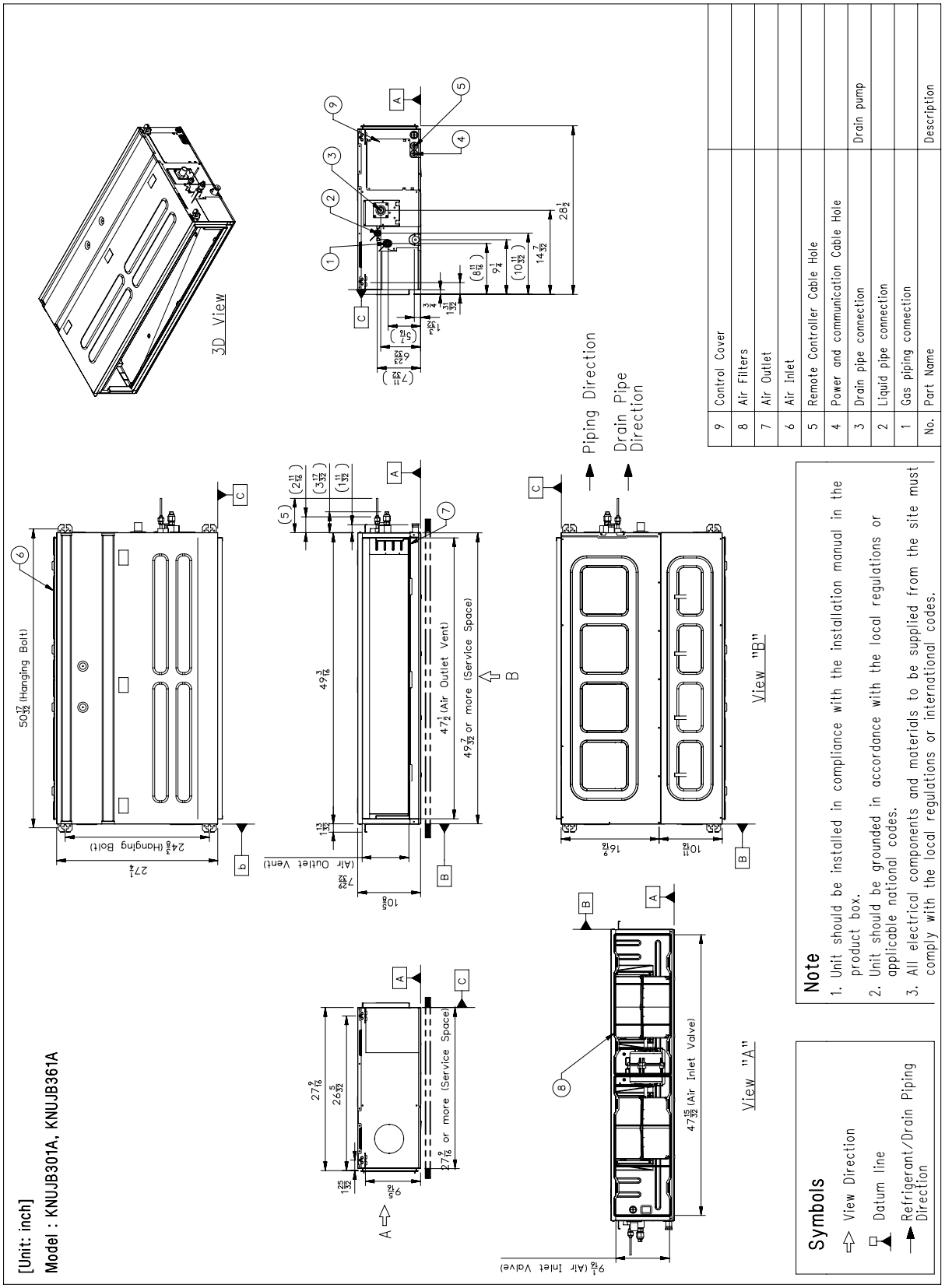


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INDOOR UNIT DIMENSIONS

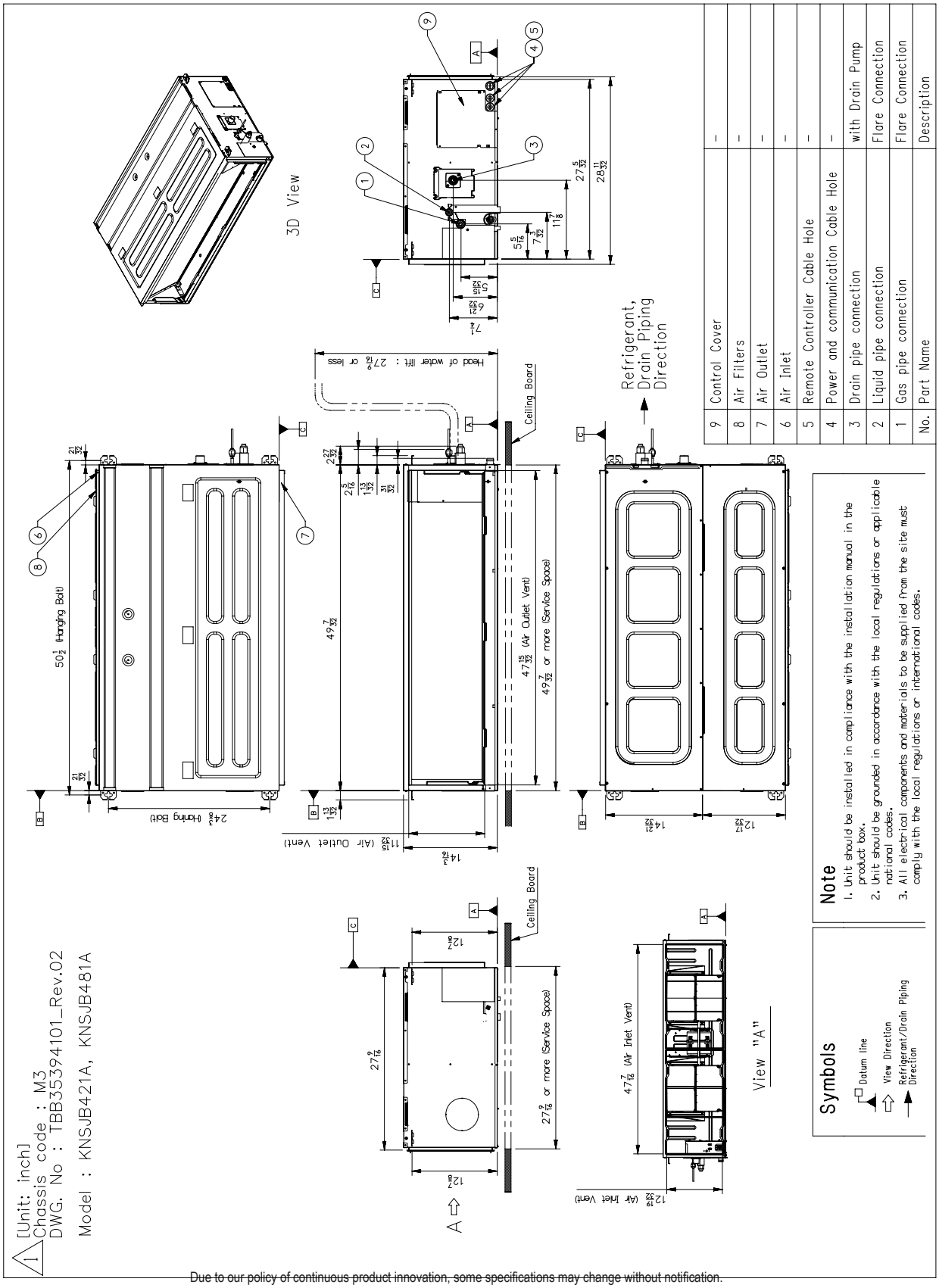
KNUJB301A, KNUJB361A

Figure 12: KNUJB301A, KNUJB361A Indoor Unit Dimensions.



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Figure 13: KNSJB421A, KNSJB481A Indoor Unit Dimensions.



No.	Part Name	Description
9	Control Cover	-
8	Air Filters	-
7	Air Outlet	-
6	Air Inlet	-
5	Remote Controller Cable Hole	-
4	Power and communication Cable Hole	-
3	Drain pipe connection	with Drain Pump
2	Liquid pipe connection	Flare Connection
1	Gas pipe connection	Flare Connection

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AIR FLOW

Indoor Unit External Static Pressure

Mid Static Ducted External Static Pressure Settings

Table 14: Mid Static Ducted Indoor Unit External Static Pressure Setting Values Table.

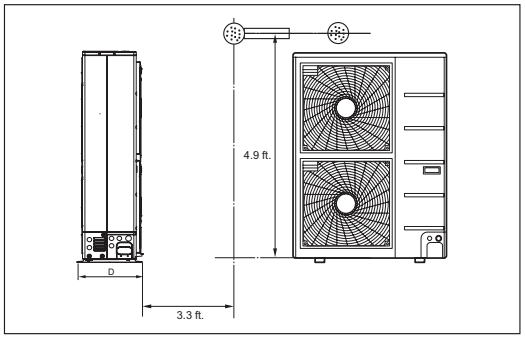
Static Pressure (in. wg)			0.1	0.16	0.2	0.24	0.28	0.31	0.35	0.39	0.43	0.47	0.51	0.59
Model No. / Nominal Capacity of System (Btu/h)	Airflow Rate	CFM	Setting Value (in. wg)											
KNUJB181A 18,000	High	635.7	106	113	117	121	126	128	133	137	139		149	156
	Mid	529.7	94	102	108	109	115	119	122	130	134		145	152
	Low	423.8	82	92	100	103	108	114	118	126	130		139	147
KNUJB241A 24,000	High	706.3	122	128	131	132	136	143	146	148	152		158	164
	Mid	547.4	103	110	114	117	121	127	130	135	138		145	154
	Low	459.1	93	100	105	109	114	118	122	128	131		139	146
KNUJB301A 30,000	High	989	92	96	99	101	105	108	115	118	124		124	124
	Mid	848	88	92	94	95	100	101	108	113	118		118	118
	Low	741	84	88	89	90	95	96	100	105	110		112	113
KNUJB361A 36,000	High	1130		109	112	115	119	122	126	128	131	134	137	144
	Mid	989		101	105	108	112	115	119	123	127	130	133	138
	Low	848		92	97	101	101	109	113	117	121	124	127	134
KNSJB421A 42,000	High	1412		83	89	92	94	98	100	102	105	108	110	116
	Mid	1200		78	82	84	89	94	96	98	101	104	106	112
	Low	988		74	76	79	82	89	92	94	96	99	102	107
KNSJB481A 48,000	High	1765		94	97	100	104	107	109	112	115	117	119	121
	Mid	1589		90	92	96	98	102	104	106	109	112	114	117
	Low	1412		82	89	72	94	98	98	102	105	108	110	113

Note:

- *To get the desired air flow and external static pressure combination, use the setting value from the table. Using a setting value other than that listed in the table will not provide the desired combination.*
- *Table data is based at 230V. Air flow rate varies according to voltage fluctuation.*

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Figure 14: Mid Static Ducted LGRED° Outdoor Unit Sound Pressure Level Measurement Location.



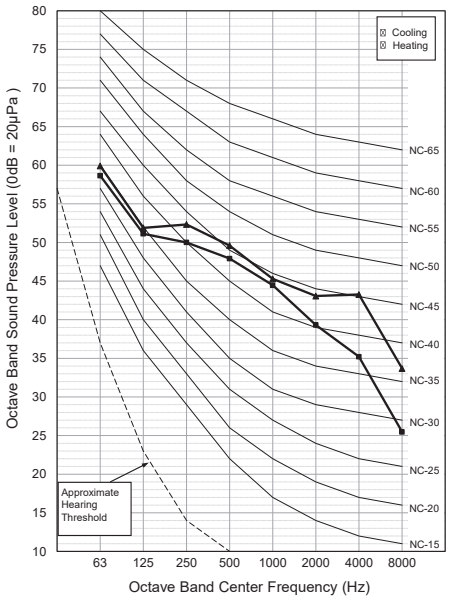
- Measurements taken with no attenuation and units operating at full load normal operating condition.
- Sound level will vary depending on a range of factors such as construction (acoustic absorption coefficient) of particular area in which the equipment is installed.
- Sound levels are measured in dB(A)±1.
- Tested in anechoic chamber per ISO Standard 3745.

Table 15: Mid Static Ducted LGRED° Outdoor Unit Sound Pressure Levels (dB[A]).

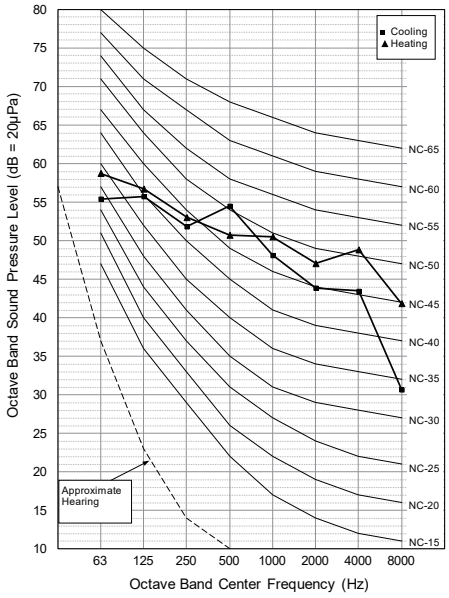
Model	Sound Pressure Levels (dB[A])	
	Cooling	Heating
KUSXA181A	51	52
KUSXA241A	51	52
KUSXA301A	52	54
KUSXA361A	52	54
KUSXA421A	54	56
KUSXA481A	54	56

Figure 15: Mid Static Ducted LGRED° Outdoor Unit Sound Pressure Level Diagrams.

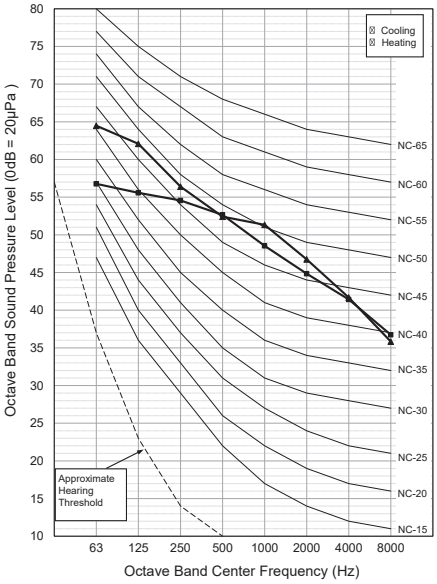
KUSXA181A, KUSXA241A



KUSXA301A, KUSXA361A



KUSXA421A, KUSXA481A



Product Data

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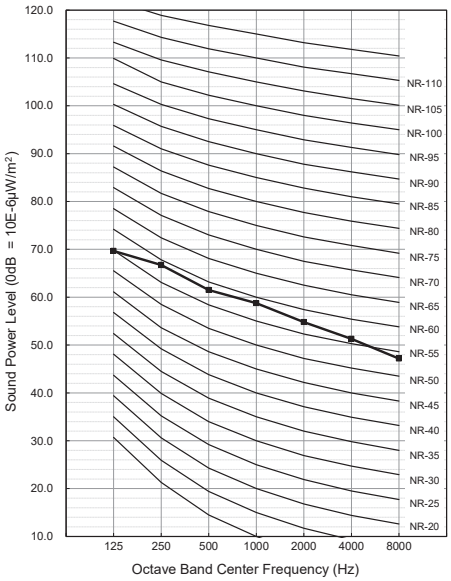
Sound Power for Outdoor Units

Table 16: Mid Static Ducted LGRED° Outdoor Unit Sound Power Levels (dB[A]).

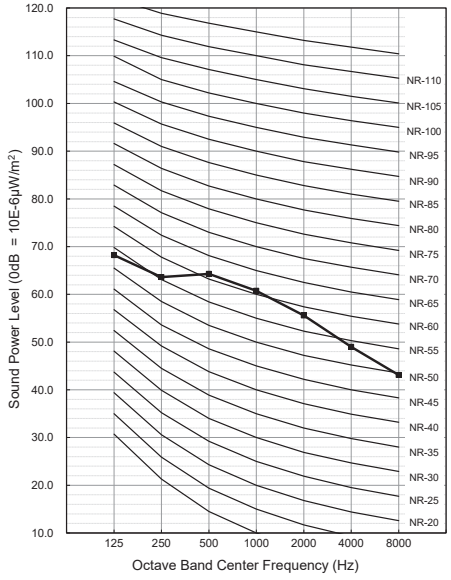
Model	Sound Power Levels (dB[A])
KUSXA181A	67
KUSXA241A	67
KUSXA301A	69
KUSXA361A	69
KUSXA421A	71
KUSXA481A	71

Figure 16: Mid Static Ducted LGRED° Outdoor Unit Sound Power Level Diagrams.

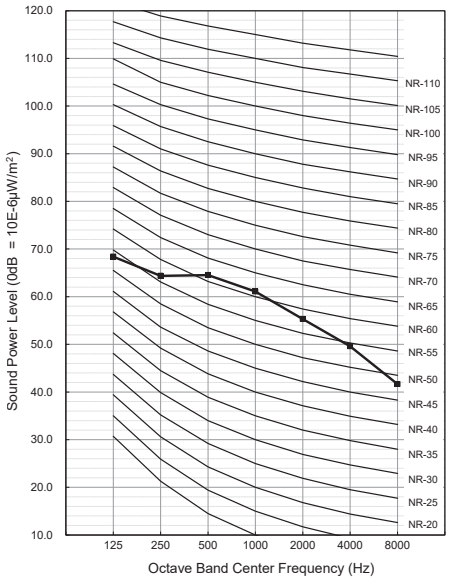
KUSXA181A, KUSXA241A



KUSXA301A, KUSXA361A

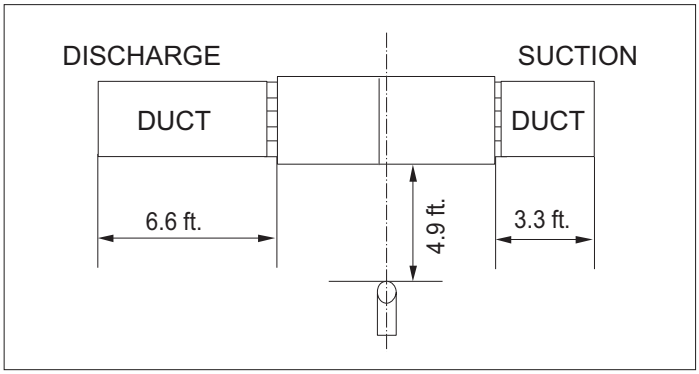


KUSXA421A, KUSXA481A



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Figure 17: Mid Static Ducted Indoor Unit Sound Pressure Level Measurement Location.



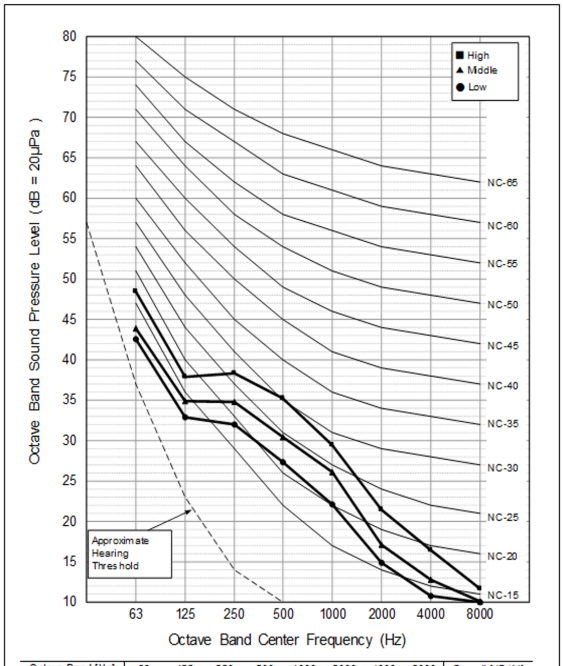
- Measurements taken with no attenuation and units operating at full load normal operating condition.
- Sound level will vary depending on a range of factors such as construction (acoustic absorption coefficient) of particular area in which the equipment is installed.
- Sound pressure levels are measured in dB(A)±1.
- Tested in anechoic chamber per ISO Standard 3745.

Table 17: Mid Static Ducted LGRED° Indoor Unit Sound Levels (dB[A]).

Model	Sound Pressure Levels (dB[A])		
	H	M	L
KNUJB181A	36	32	29
KNUJB241A	38	33	30
KNUJB301A	34	33	32
KNUJB361A	36	34	33
KNSJB421A	39	37	35
KNSJB481A	42	40	39

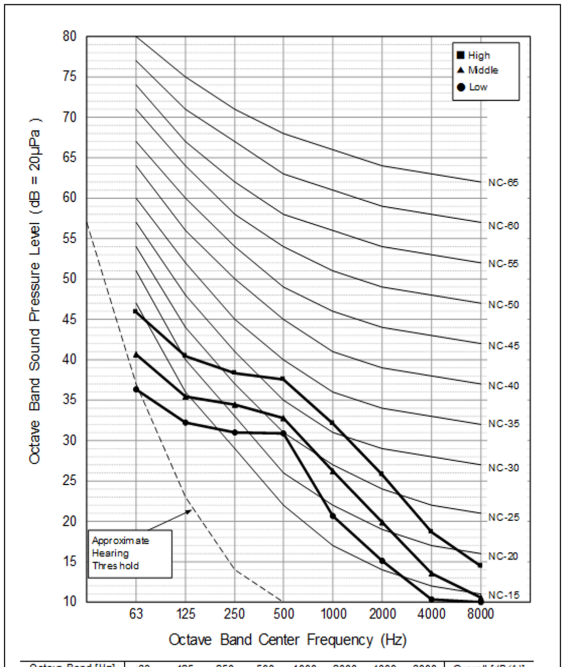
Figure 18: Mid Static Ducted LGRED° Indoor Unit Sound Pressure Level Diagrams.

18K KNUJB181A



Octave Band [Hz]	63	125	250	500	1000	2000	4000	8000	*Overall [dB(A)]*
High [dB]	48.4	37.9	38.4	35.2	29.5	21.4	16.5	11.7	*36.0*
Middle [dB]	43.9	34.9	34.8	30.4	26.1	17.2	12.8	10.1	*32.0*
Low [dB]	42.6	33.0	32.0	27.3	22.1	14.9	10.8	10.0	*29.0*

24K KNUJB241A



Octave Band [Hz]	63	125	250	500	1000	2000	4000	8000	*Overall [dB(A)]*
High [dB]	45.9	40.4	38.3	37.6	32.2	25.8	18.6	14.4	*38.0*
Middle [dB]	40.6	35.5	34.4	32.8	26.3	19.9	13.6	10.5	*33.0*
Low [dB]	36.4	32.3	31.0	30.9	20.7	15.1	10.3	10.0	*30.0*

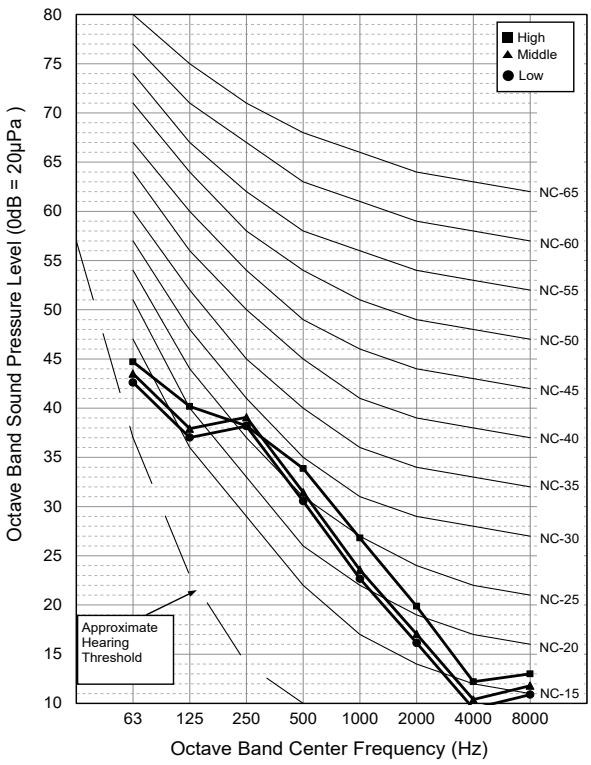
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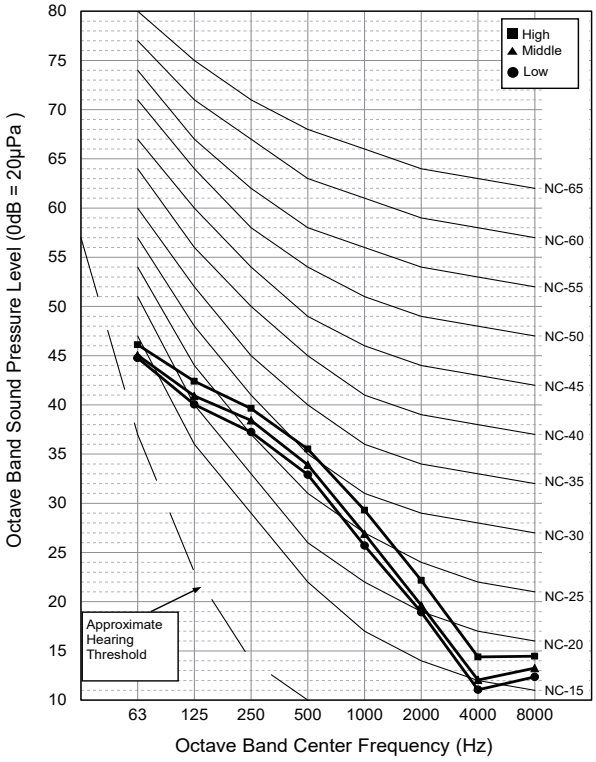
Sound Pressure for Indoor Units

Figure 19: Mid Static Ducted LGRED° Indoor Unit Sound Pressure Level Diagrams.

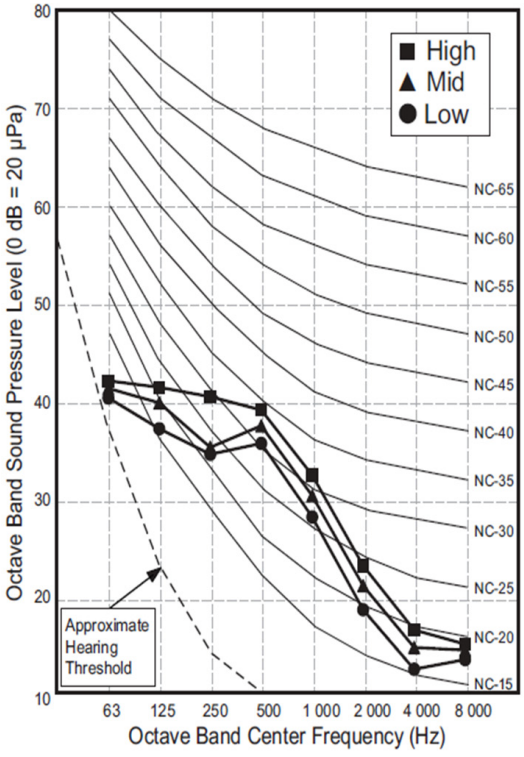
KNUJB301A



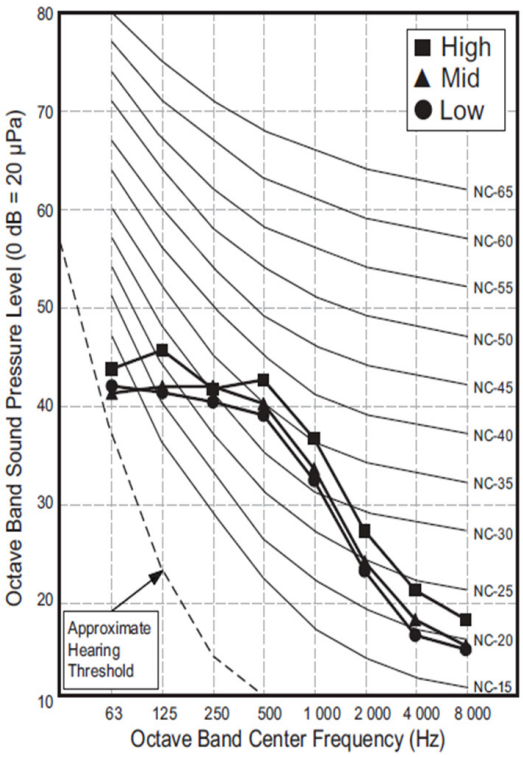
KNUJB361A



KNSJB421A



KNSJB481A



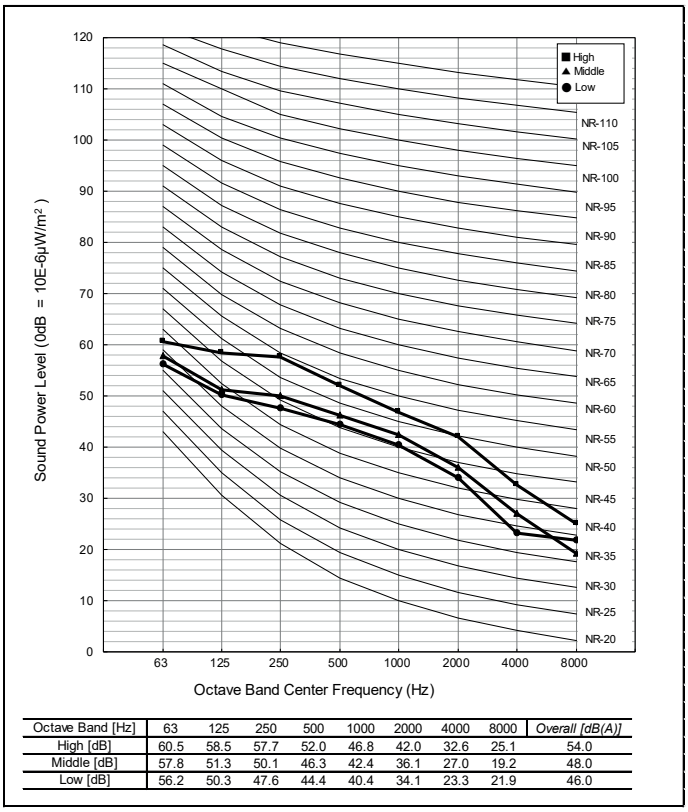
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Table 18: Mid Static Ducted Indoor Unit Sound Power Levels (dB[A]).

Model	Sound Power Levels (dB[A])
	H
KNUJB181A	54
KNUJB241A	57
KNUJB301A	-
KNUJB361A	-
KNSJB421A	-
KNSJB481A	-

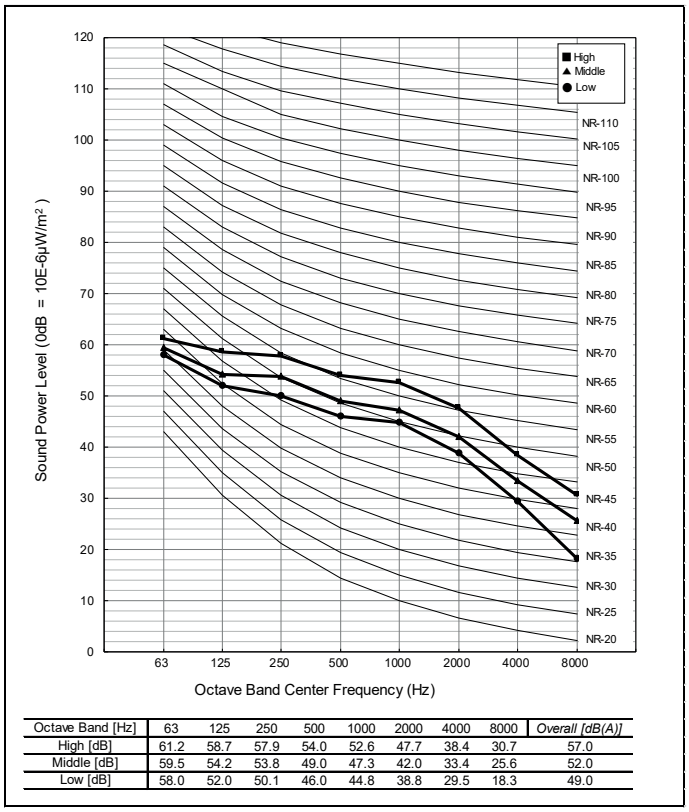
Figure 20: Mid Static Ducted Indoor Unit Sound Power Level Diagrams.

KNUJB181A



Octave Band [Hz]	63	125	250	500	1000	2000	4000	8000	*Overall [dB(A)]*
High [dB]	60.5	58.5	57.7	52.0	46.8	42.0	32.6	25.1	54.0
Middle [dB]	57.8	51.3	50.1	46.3	42.4	36.1	27.0	19.2	48.0
Low [dB]	56.2	50.3	47.6	44.4	40.4	34.1	23.3	21.9	46.0

KNUJB241A



Octave Band [Hz]	63	125	250	500	1000	2000	4000	8000	*Overall [dB(A)]*
High [dB]	61.2	58.7	57.9	54.0	52.6	47.7	38.4	30.7	57.0
Middle [dB]	59.5	54.2	53.8	49.0	47.3	42.0	33.4	25.6	52.0
Low [dB]	58.0	52.0	50.1	46.0	44.8	38.8	29.5	18.3	49.0

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PERFORMANCE DATA

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Maximum Cooling Capacity on page XX
Heating Capacity on page XX
Maximum Heating Capacity on page XX
Correction Factors on page XX
Check Selection on page XX

Cooling Capacity Table for KSUJA181A (KUSXA181A / KNUJB181A)

Table 19: KSUJA181A Mid Static Ducted System Cooling Capacity Table.

Outdoor Air Temp. (°F DB)	Indoor Air Temp. °F DB / °F WB																	
	68 / 57			72 / 61			77 / 64			80 / 67			86 / 72			90 / 75		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
-4	17.7	12.85	0.86	18.8	13.58	0.89	19.89	13.14	0.92	20.69	13.42	0.93	22.09	13.53	0.94	23.19	13.79	0.96
-0.4	17.69	12.93	0.87	18.79	13.66	0.90	19.88	13.22	0.93	20.68	13.5	0.94	22.08	13.61	0.95	23.18	13.87	0.97
5	17.67	13.04	0.89	18.77	13.77	0.91	19.87	13.34	0.94	20.66	13.62	0.95	22.06	13.73	0.97	23.16	13.99	0.99
10	17.66	13.14	0.90	18.76	13.88	0.92	19.85	13.44	0.95	20.64	13.73	0.97	22.05	13.84	0.98	23.14	14.1	1.00
15	17.65	13.25	0.91	18.74	13.99	0.93	19.84	13.55	0.97	20.63	13.83	0.98	22.03	13.95	1.00	23.12	14.22	1.02
20	17.63	13.35	0.91	18.73	14.1	0.95	19.82	13.65	0.98	20.61	13.94	0.99	22.01	14.06	1.01	23.11	14.33	1.03
25	17.62	13.45	0.93	18.71	14.21	0.96	19.81	13.76	1.00	20.6	14.05	1.01	22	14.17	1.03	23.09	14.44	1.05
30	17.6	13.56	0.94	18.7	14.32	0.97	19.79	13.87	1.01	20.58	14.16	1.02	21.98	14.28	1.04	23.07	14.55	1.06
35	17.59	13.66	0.95	18.68	14.43	0.99	19.78	13.97	1.02	20.57	14.27	1.04	21.96	14.39	1.05	23.05	14.66	1.09
40	17.58	13.76	0.97	18.67	14.54	1.00	19.76	14.08	1.04	20.55	14.37	1.05	21.94	14.49	1.07	23.04	14.77	1.10
45	17.56	13.87	0.98	18.66	14.65	1.01	19.75	14.18	1.05	20.53	14.48	1.06	21.93	14.6	1.09	23.02	14.88	1.12
50	17.55	13.97	0.99	18.64	14.75	1.03	19.73	14.29	1.07	20.52	14.59	1.09	21.91	14.71	1.11	23	14.99	1.13
55	17.54	14.07	1.00	18.63	14.86	1.04	19.72	14.39	1.09	20.5	14.69	1.10	21.89	14.82	1.12	22.98	15.1	1.14
60	17.52	14.17	1.02	18.61	14.97	1.05	19.7	14.5	1.10	20.49	14.8	1.12	21.88	14.93	1.14	22.97	15.21	1.16
65	17.51	14.27	1.03	18.6	15.08	1.07	19.69	14.6	1.12	20.47	14.91	1.13	21.86	15.03	1.15	22.95	15.32	1.17
70	17.50	14.38	1.04	18.58	15.19	1.09	19.67	14.70	1.13	20.46	15.01	1.14	21.84	15.14	1.17	22.93	15.43	1.19
75	17.08	14.14	1.11	18.16	14.96	1.15	19.24	14.50	1.19	20.03	14.81	1.21	21.41	14.96	1.23	22.50	15.25	1.25
80	16.66	13.90	1.17	17.74	14.72	1.21	18.82	14.29	1.25	19.60	14.61	1.27	20.98	14.77	1.29	22.06	15.07	1.32
85	16.24	13.64	1.22	17.32	14.47	1.27	18.40	14.06	1.31	19.17	14.39	1.33	20.55	14.57	1.35	21.63	14.88	1.38
90	15.82	13.39	1.28	16.90	14.22	1.33	17.97	13.84	1.37	18.75	14.17	1.39	20.12	14.36	1.41	21.20	14.69	1.44
95	15.37	13.25	1.34	16.44	14.09	1.38	17.51	13.73	1.43	**18.00**	**13.86**	**1.452**	19.65	14.29	1.48	20.72	14.62	1.51
100	14.99	12.89	1.39	16.06	13.74	1.44	17.13	13.40	1.49	17.77	13.65	1.51	19.28	13.98	1.54	20.35	14.32	1.57
105	14.62	12.54	1.45	15.69	13.38	1.50	16.76	13.08	1.55	17.53	13.43	1.57	18.90	13.67	1.60	19.97	14.02	1.63
110	14.24	12.11	1.50	15.32	12.95	1.56	16.39	12.67	1.62	17.16	13.03	1.63	18.53	13.29	1.66	19.60	13.64	1.70
115	13.87	11.75	1.56	14.94	12.58	1.62	16.01	12.34	1.68	16.79	12.70	1.69	18.15	12.97	1.73	19.22	13.33	1.76
118	13.65	11.66	1.59	14.72	12.51	1.65	15.79	12.27	1.71	16.56	12.64	1.73	17.93	12.92	1.76	19.00	13.29	1.80
122	13.57	11.63	1.64	14.64	12.48	1.70	15.71	12.25	1.76	16.49	12.62	1.78	17.85	12.91	1.82	18.92	13.28	1.86

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

SHC: Sensible Capacity (kBtu/h) PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.

2. Cooling range can be extended from 0°F down to -4°F using the Low Ambient Wind Baffle Kit (sold separately).

3. Grey shading indicates reference data. Operation outside of the verified temperature range is subject to decreased performance and / or safety interruption.

4. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB), and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).

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PERFORMANCE DATA

Mid Static Ducted Cooling Capacity Tables

Cooling Capacity Table for KSUJA241A (KUSXA241A / KNUJB241A)

Table 20: KSUJA241A Mid Static Ducted System Cooling Capacity Table.

Outdoor Air Temp. (°F DB)	Indoor Air Temp. °F DB / °F WB																	
	68 / 57			72 / 61			77 / 64			80 / 67			86 / 72			90 / 75		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
-4	22.61	17.06	1.15	24.02	18.02	1.2	25.42	17.45	1.24	26.44	17.82	1.25	28.23	17.97	1.28	29.63	18.31	1.3
-0.4	22.6	17.16	1.17	24	18.13	1.21	25.41	17.55	1.25	26.42	17.92	1.27	28.21	18.07	1.29	29.62	18.42	1.32
5	22.58	17.31	1.19	23.98	18.29	1.23	25.39	17.71	1.27	26.4	18.08	1.29	28.19	18.23	1.31	29.59	18.58	1.34
10	22.56	17.45	1.2	23.97	18.43	1.25	25.37	17.85	1.29	26.38	18.22	1.31	28.17	18.38	1.33	29.57	18.72	1.36
15	22.55	17.59	1.22	23.95	18.58	1.26	25.35	17.99	1.31	26.36	18.37	1.33	28.15	18.52	1.35	29.55	18.87	1.38
20	22.53	17.72	1.24	23.93	18.72	1.28	25.33	18.13	1.33	26.34	18.51	1.35	28.13	18.67	1.37	29.53	19.02	1.4
25	22.51	17.86	1.26	23.91	18.87	1.3	25.31	18.27	1.35	26.32	18.65	1.36	28.1	18.81	1.39	29.5	19.17	1.42
30	22.5	18	1.27	23.89	19.01	1.32	25.29	18.41	1.37	26.3	18.8	1.38	28.08	18.95	1.41	29.48	19.31	1.44
35	22.48	18.13	1.29	23.87	19.16	1.34	25.27	18.55	1.39	26.28	18.94	1.4	28.06	19.1	1.43	29.46	19.46	1.46
40	22.46	18.27	1.31	23.86	19.3	1.36	25.25	18.69	1.41	26.26	19.08	1.42	28.04	19.24	1.45	29.44	19.61	1.48
45	22.44	18.41	1.33	23.84	19.44	1.37	25.23	18.83	1.42	26.24	19.22	1.44	28.02	19.39	1.47	29.41	19.75	1.5
50	22.43	18.54	1.34	23.82	19.59	1.39	25.21	18.97	1.44	26.22	19.37	1.46	28	19.53	1.49	29.39	19.9	1.52
55	22.41	18.68	1.36	23.8	19.73	1.41	25.19	19.11	1.46	26.2	19.51	1.48	27.98	19.67	1.51	29.37	20.04	1.54
60	22.39	18.81	1.38	23.78	19.87	1.43	25.17	19.24	1.48	26.18	19.65	1.5	27.95	19.81	1.53	29.35	20.19	1.56
65	22.37	18.95	1.4	23.76	20.02	1.45	25.15	19.38	1.5	26.16	19.79	1.52	27.93	19.96	1.55	29.32	20.34	1.58
70	22.36	19.08	1.41	23.75	20.16	1.46	25.13	19.52	1.52	26.14	19.93	1.54	27.91	20.10	1.56	29.30	20.48	1.60
75	21.82	18.77	1.49	23.20	19.85	1.54	24.59	19.25	1.60	25.59	19.67	1.62	27.36	19.86	1.65	28.75	20.25	1.68
80	21.28	18.45	1.57	22.66	19.54	1.62	24.04	18.97	1.68	25.04	19.39	1.70	26.81	19.61	1.73	28.19	20.01	1.77
85	20.75	18.11	1.64	22.13	19.21	1.70	23.50	18.67	1.76	24.50	19.11	1.78	26.26	19.34	1.82	27.64	19.76	1.85
90	20.22	17.77	1.72	21.59	18.88	1.78	22.96	18.37	1.85	23.96	18.81	1.87	25.71	19.07	1.90	27.09	19.50	1.94
95	19.64	17.58	1.79	21.00	18.71	1.86	22.37	18.23	1.93	**23.00**	**18.40**	**1.949**	25.11	18.97	1.99	26.48	19.41	2.03
100	19.16	17.11	1.87	20.53	18.24	1.94	21.89	17.79	2.01	22.70	18.11	2.03	24.63	18.56	2.07	26.00	19.02	2.11
105	18.68	16.64	1.95	20.05	17.76	2.02	21.42	17.36	2.09	22.40	17.83	2.12	24.15	18.15	2.16	25.52	18.62	2.20
110	18.20	16.07	2.02	19.57	17.19	2.10	20.94	16.82	2.17	21.93	17.30	2.20	23.67	17.64	2.24	25.04	18.11	2.28
115	17.72	15.59	2.10	19.09	16.71	2.18	20.46	16.38	2.26	21.45	16.86	2.28	23.20	17.22	2.32	24.56	17.70	2.37
118	17.44	15.48	2.15	18.80	16.60	2.22	20.17	16.29	2.30	21.16	16.78	2.33	22.91	17.16	2.37	24.28	17.65	2.42
122	17.34	15.44	2.21	18.71	16.57	2.29	20.08	16.27	2.37	21.07	16.76	2.40	22.81	17.14	2.44	24.18	17.63	2.49

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

SHC: Sensible Capacity (kBtu/h) PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.

2. Cooling range can be extended from 0°F down to -4°F using the Low Ambient Wind Baffle Kit (sold separately).

3. Grey shading indicates reference data. Operation outside of the verified temperature range is subject to decreased performance and / or safety interruption.

4. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB), and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).

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Cooling Capacity Table for KSUJA301A (KUSXA301A / KNUJB301A)

Table 21: KSUJA301A Mid Static Ducted System Cooling Capacity Table.

Outdoor Air Temp. (°F DB)	Indoor Air Temp. °F DB / °F WB																	
	68 / 57			72 / 61			77 / 64			80 / 67			86 / 72			90 / 75		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
-4	29.50	22.22	1.31	31.33	23.46	1.35	33.15	22.72	1.42	34.48	23.20	1.43	36.82	23.39	1.45	38.65	23.84	1.48
-0.4	29.48	22.34	1.32	31.32	23.61	1.37	33.13	22.86	1.43	34.47	23.34	1.45	36.80	23.53	1.46	38.63	23.98	1.50
5	29.45	22.54	1.35	31.28	23.82	1.40	33.12	23.05	1.45	34.43	23.53	1.46	36.77	23.75	1.50	38.60	24.19	1.53
10	29.43	22.72	1.37	31.27	24.00	1.42	33.08	23.23	1.46	34.40	23.73	1.50	36.75	23.92	1.51	38.57	24.39	1.54
15	29.42	22.90	1.39	31.23	24.19	1.43	33.07	23.43	1.50	34.38	23.91	1.51	36.72	24.12	1.54	38.53	24.58	1.57
20	29.38	23.07	1.42	31.22	24.39	1.46	33.03	23.61	1.51	34.35	24.10	1.53	36.68	24.30	1.56	38.52	24.76	1.59
25	29.37	23.25	1.43	31.18	24.56	1.48	33.02	23.78	1.54	34.33	24.30	1.56	36.67	24.49	1.57	38.48	24.95	1.62
30	29.33	23.43	1.45	31.17	24.76	1.50	32.98	23.98	1.56	34.30	24.47	1.57	36.63	24.69	1.61	38.45	25.15	1.64
35	29.32	23.61	1.46	31.13	24.94	1.53	32.97	24.16	1.57	34.28	24.67	1.59	36.60	24.87	1.62	38.42	25.34	1.65
40	29.30	23.80	1.50	31.12	25.13	1.54	32.93	24.33	1.61	34.25	24.85	1.62	36.57	25.06	1.65	38.40	25.54	1.68
45	29.27	23.98	1.51	31.10	25.33	1.56	32.92	24.51	1.62	34.22	25.02	1.64	36.55	25.24	1.67	38.37	25.72	1.70
50	29.25	24.14	1.53	31.07	25.50	1.59	32.88	24.71	1.64	34.20	25.22	1.67	36.52	25.43	1.70	38.33	25.91	1.73
55	29.23	24.31	1.54	31.05	25.70	1.61	32.87	24.88	1.67	34.17	25.40	1.68	36.48	25.61	1.72	38.30	26.11	1.75
60	29.20	24.49	1.57	31.02	25.88	1.62	32.83	25.06	1.68	34.15	25.59	1.70	36.47	25.81	1.73	38.28	26.29	1.78
65	29.18	24.67	1.59	31.00	26.07	1.65	32.82	25.24	1.70	34.12	25.77	1.73	36.43	25.98	1.76	38.25	26.48	1.79
70	29.17	24.85	1.61	30.97	26.25	1.67	32.78	25.42	1.73	34.10	25.95	1.75	36.40	26.18	1.78	38.22	26.68	1.81
75	28.47	24.44	1.70	30.27	25.86	1.76	32.07	25.06	1.83	33.38	25.61	1.84	35.68	25.86	1.87	37.50	26.37	1.92
80	27.77	24.03	1.78	29.57	25.45	1.84	31.37	24.69	1.92	32.67	25.26	1.94	34.97	25.52	1.97	36.77	26.05	2.02
85	27.07	23.59	1.87	28.87	25.02	1.94	30.67	24.31	2.02	31.95	24.88	2.03	34.25	25.18	2.06	36.05	25.73	2.11
90	26.37	23.14	1.95	28.17	24.58	2.03	29.95	23.92	2.09	31.25	24.49	2.13	33.53	24.83	2.17	35.33	25.40	2.20
95	25.62	22.90	2.05	27.40	24.37	2.11	29.18	23.73	2.19	**30.00**	**23.96**	**2.22**	32.75	24.71	2.27	34.53	25.27	2.31
100	24.98	22.29	2.13	26.77	23.75	2.20	28.55	23.16	2.28	29.62	23.59	2.31	32.13	24.17	2.36	33.92	24.76	2.41
105	24.37	21.67	2.22	26.15	23.13	2.30	27.93	22.61	2.38	29.22	23.21	2.41	31.50	23.64	2.46	33.28	24.24	2.50
110	23.73	20.93	2.30	25.53	22.38	2.39	27.32	21.90	2.47	28.60	22.52	2.50	30.88	22.97	2.55	32.67	23.59	2.60
115	23.12	20.30	2.39	24.90	21.76	2.47	26.68	21.33	2.57	27.98	21.95	2.60	30.25	22.42	2.65	32.03	23.04	2.69
118	22.75	20.16	2.44	24.53	21.62	2.53	26.32	21.21	2.63	27.60	21.85	2.66	29.88	22.34	2.71	31.67	22.98	2.76
122	22.62	20.11	2.52	24.40	21.58	2.60	26.18	21.17	2.69	27.48	21.81	2.72	29.75	22.31	2.79	31.53	22.97	2.83

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

SHC: Sensible Capacity (kBtu/h) PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.

2. Cooling range can be extended from 0°F down to -4°F using the Low Ambient Wind Baffle Kit (sold separately).

3. Grey shading indicates reference data. Operation outside of the verified temperature range is subject to decreased performance and / or safety interruption.

4. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80°F dry bulb (DB) and 67°F wet bulb (WB), and outdoor ambient conditions of 95°F dry bulb (DB) and 75°F wet bulb (WB).

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PERFORMANCE DATA

Mid Static Ducted Cooling Capacity Tables

Cooling Capacity Table for KSUJA361A (KUSXA361A / KNUJB361A)

Table 22: KSUJA361A Mid Static Ducted System Cooling Capacity Table.

Outdoor Air Temp. (°F DB)	Indoor Air Temp. °F DB / °F WB																	
	68 / 57			72 / 61			77 / 64			80 / 67			86 / 72			90 / 75		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
-4	35.40	25.39	1.72	37.60	26.81	1.79	39.78	25.96	1.87	41.38	26.51	1.89	44.18	26.73	1.91	46.38	27.24	1.95
-0.4	35.38	25.53	1.75	37.58	26.97	1.81	39.76	26.12	1.89	41.36	26.67	1.91	44.16	26.89	1.93	46.36	27.40	1.97
5	35.34	25.76	1.79	37.54	27.22	1.85	39.74	26.35	1.91	41.32	26.89	1.93	44.12	27.14	1.97	46.32	27.64	2.02
10	35.32	25.96	1.81	37.52	27.42	1.87	39.70	26.55	1.93	41.28	27.12	1.97	44.10	27.34	1.99	46.28	27.87	2.04
15	35.30	26.16	1.83	37.48	27.64	1.89	39.68	26.77	1.97	41.26	27.32	1.99	44.06	27.56	2.04	46.24	28.09	2.08
20	35.26	26.37	1.87	37.46	27.87	1.93	39.64	26.97	1.99	41.22	27.54	2.02	44.02	27.77	2.06	46.22	28.29	2.10
25	35.24	26.57	1.89	37.42	28.07	1.95	39.62	27.18	2.04	41.20	27.77	2.06	44.00	27.99	2.08	46.18	28.52	2.14
30	35.20	26.77	1.91	37.40	28.29	1.97	39.58	27.40	2.06	41.16	27.97	2.08	43.96	28.21	2.12	46.14	28.74	2.16
35	35.18	26.97	1.93	37.36	28.50	2.02	39.56	27.60	2.08	41.14	28.19	2.10	43.92	28.41	2.14	46.10	28.96	2.18
40	35.16	27.20	1.97	37.34	28.72	2.04	39.52	27.81	2.12	41.10	28.39	2.14	43.88	28.64	2.18	46.08	29.19	2.22
45	35.12	27.40	1.99	37.32	28.94	2.06	39.50	28.01	2.14	41.06	28.60	2.16	43.86	28.84	2.20	46.04	29.39	2.24
50	35.10	27.58	2.02	37.28	29.14	2.10	39.46	28.23	2.16	41.04	28.82	2.20	43.82	29.06	2.24	46.00	29.61	2.29
55	35.08	27.79	2.04	37.26	29.37	2.12	39.44	28.43	2.20	41.00	29.02	2.22	43.78	29.27	2.27	45.96	29.83	2.31
60	35.04	27.99	2.08	37.22	29.57	2.14	39.40	28.64	2.22	40.98	29.25	2.24	43.76	29.49	2.29	45.94	30.04	2.35
65	35.02	28.19	2.10	37.20	29.79	2.18	39.38	28.84	2.24	40.94	29.45	2.29	43.72	29.69	2.33	45.90	30.26	2.37
70	35.00	28.39	2.12	37.16	30.00	2.20	39.34	29.04	2.29	40.92	29.65	2.31	43.68	29.92	2.35	45.86	30.48	2.39
75	34.16	27.93	2.24	36.32	29.55	2.33	38.48	28.64	2.41	40.06	29.27	2.43	42.82	29.55	2.47	45.00	30.14	2.54
80	33.32	27.46	2.35	35.48	29.08	2.43	37.64	28.21	2.54	39.20	28.86	2.56	41.96	29.16	2.60	44.12	29.77	2.66
85	32.48	26.95	2.47	34.64	28.60	2.56	36.80	27.79	2.66	38.34	28.43	2.68	41.10	28.78	2.72	43.26	29.41	2.78
90	31.64	26.45	2.58	33.80	28.09	2.68	35.94	27.34	2.76	37.50	27.99	2.81	40.24	28.37	2.87	42.40	29.02	2.91
95	30.74	26.16	2.70	32.88	27.85	2.78	35.02	27.12	2.89	**36.00**	**27.38**	**2.93**	39.30	28.23	2.99	41.44	28.88	3.05
100	29.98	25.47	2.81	32.12	27.14	2.91	34.26	26.47	3.01	35.54	26.95	3.05	38.56	27.62	3.12	40.70	28.29	3.18
105	29.24	24.76	2.93	31.38	26.43	3.03	33.52	25.84	3.14	35.06	26.53	3.18	37.80	27.01	3.24	39.94	27.70	3.30
110	28.48	23.91	3.03	30.64	25.57	3.16	32.78	25.03	3.26	34.32	25.74	3.30	37.06	26.24	3.37	39.20	26.95	3.43
115	27.74	23.20	3.16	29.88	24.87	3.26	32.02	24.38	3.39	33.58	25.09	3.43	36.30	25.62	3.49	38.44	26.33	3.55
118	27.30	23.04	3.22	29.44	24.70	3.35	31.58	24.24	3.47	33.12	24.97	3.51	35.86	25.53	3.57	38.00	26.26	3.64
122	27.14	22.98	3.32	29.28	24.66	3.43	31.42	24.20	3.55	32.98	24.93	3.59	35.70	25.49	3.68	37.84	26.24	3.74

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

SHC: Sensible Capacity (kBtu/h) PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.

2. Cooling range can be extended from 0°F down to -4°F using the Low Ambient Wind Baffle Kit (sold separately).

3. Grey shading indicates reference data. Operation outside of the verified temperature range is subject to decreased performance and / or safety interruption.

4. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80°F dry bulb (DB) and 67°F wet bulb (WB), and outdoor ambient conditions of 95°F dry bulb (DB) and 75°F wet bulb (WB).

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Cooling Capacity Table for KSSJA421A (KUSXA421A / KNSJB421A)

Table 23: KSSJA421A Mid Static Ducted System Cooling Capacity Table.

Outdoor Air Temp. (°F DB)	Indoor Air Temp. °F DB / °F WB																	
	68 / 57			72 / 61			77 / 64			80 / 67			86 / 72			90 / 75		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
-4	41.30	32.13	1.96	43.87	33.93	2.03	46.41	32.85	2.13	48.28	33.55	2.15	51.54	33.83	2.17	54.11	34.47	2.22
-0.4	41.28	32.31	1.98	43.84	34.14	2.05	46.39	33.06	2.15	48.25	33.75	2.17	51.52	34.03	2.20	54.09	34.68	2.24
5	41.23	32.60	2.03	43.80	34.44	2.10	46.36	33.34	2.17	48.21	34.03	2.20	51.47	34.34	2.24	54.04	34.98	2.29
10	41.21	32.85	2.05	43.77	34.70	2.13	46.32	33.60	2.20	48.16	34.32	2.24	51.45	34.60	2.27	53.99	35.27	2.31
15	41.18	33.11	2.08	43.73	34.98	2.15	46.29	33.88	2.24	48.14	34.57	2.27	51.40	34.88	2.31	53.95	35.55	2.36
20	41.14	33.37	2.13	43.70	35.27	2.20	46.25	34.14	2.27	48.09	34.86	2.29	51.36	35.14	2.34	53.92	35.81	2.39
25	41.11	33.62	2.15	43.66	35.52	2.22	46.22	34.39	2.31	48.07	35.14	2.34	51.33	35.42	2.36	53.88	36.09	2.43
30	41.07	33.88	2.17	43.63	35.81	2.24	46.18	34.68	2.34	48.02	35.39	2.36	51.29	35.70	2.41	53.83	36.37	2.46
35	41.04	34.14	2.20	43.59	36.06	2.29	46.15	34.93	2.36	48.00	35.68	2.39	51.24	35.96	2.43	53.78	36.65	2.48
40	41.02	34.42	2.24	43.56	36.34	2.31	46.11	35.19	2.41	47.95	35.93	2.43	51.19	36.24	2.48	53.76	36.93	2.53
45	40.97	34.68	2.27	43.54	36.63	2.34	46.08	35.45	2.43	47.90	36.19	2.46	51.17	36.50	2.50	53.71	37.19	2.55
50	40.95	34.91	2.29	43.49	36.88	2.39	46.04	35.73	2.46	47.88	36.47	2.50	51.12	36.78	2.55	53.67	37.47	2.60
55	40.93	35.16	2.31	43.47	37.17	2.41	46.01	35.98	2.50	47.83	36.73	2.53	51.08	37.04	2.57	53.62	37.76	2.62
60	40.88	35.42	2.36	43.42	37.42	2.43	45.97	36.24	2.53	47.81	37.01	2.55	51.05	37.32	2.60	53.60	38.01	2.67
65	40.86	35.68	2.39	43.40	37.70	2.48	45.94	36.50	2.55	47.76	37.27	2.60	51.01	37.58	2.65	53.55	38.29	2.69
70	40.83	35.93	2.41	43.35	37.96	2.50	45.90	36.75	2.60	47.74	37.52	2.62	50.96	37.86	2.67	53.50	38.58	2.72
75	39.85	35.34	2.55	42.37	37.40	2.65	44.89	36.24	2.74	46.74	37.04	2.76	49.96	37.40	2.81	52.50	38.14	2.88
80	38.87	34.75	2.67	41.39	36.81	2.76	43.91	35.70	2.88	45.73	36.52	2.90	48.95	36.91	2.95	51.47	37.68	3.02
85	37.89	34.11	2.81	40.41	36.19	2.90	42.93	35.16	3.02	44.73	35.98	3.05	47.95	36.42	3.09	50.47	37.22	3.16
90	36.91	33.47	2.93	39.43	35.55	3.05	41.93	34.60	3.14	43.75	35.42	3.19	46.95	35.91	3.26	49.47	36.73	3.31
95	35.86	33.11	3.07	38.36	35.24	3.16	40.86	34.32	3.28	**42.00**	**34.65**	**3.33**	45.85	35.73	3.40	48.35	36.55	3.47
100	34.98	32.24	3.19	37.47	34.34	3.31	39.97	33.50	3.42	41.46	34.11	3.47	44.99	34.96	3.54	47.48	35.81	3.61
105	34.11	31.34	3.33	36.61	33.44	3.45	39.11	32.70	3.57	40.90	33.57	3.61	44.10	34.19	3.68	46.60	35.06	3.76
110	33.23	30.26	3.45	35.75	32.37	3.59	38.24	31.67	3.71	40.04	32.57	3.76	43.24	33.21	3.83	45.73	34.11	3.90
115	32.36	29.36	3.59	34.86	31.47	3.71	37.36	30.85	3.85	39.18	31.75	3.90	42.35	32.42	3.97	44.85	33.32	4.04
118	31.85	29.16	3.66	34.35	31.26	3.80	36.84	30.67	3.94	38.64	31.60	3.99	41.84	32.31	4.06	44.33	33.24	4.13
122	31.66	29.08	3.78	34.16	31.21	3.90	36.66	30.62	4.04	38.48	31.54	4.09	41.65	32.26	4.18	44.15	33.21	4.25

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

SHC: Sensible Capacity (kBtu/h) PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.

2. Cooling range can be extended from 0°F down to -4°F using the Low Ambient Wind Baffle Kit (sold separately).

3. Grey shading indicates reference data. Operation outside of the verified temperature range is subject to decreased performance and / or safety interruption.

4. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB), and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).

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PERFORMANCE DATA

Mid Static Ducted Cooling Capacity Tables

Cooling Capacity Table for KSSJA481A (KUSXA481A / KNSJB481A)

Table 24: KSSJA481A Mid Static Ducted System Cooling Capacity Table.

Outdoor Air Temp. (°F DB)	Indoor Air Temp. °F DB / °F WB																	
	68 / 57			72 / 61			77 / 64			80 / 67			86 / 72			90 / 75		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
-4	47.20	35.96	2.35	50.13	37.97	2.44	53.04	36.76	2.55	55.17	37.54	2.58	58.91	37.85	2.61	61.84	38.57	2.67
-0.4	47.17	36.16	2.38	50.11	38.20	2.47	53.01	36.99	2.58	55.15	37.76	2.61	58.88	38.08	2.64	61.81	38.80	2.70
5	47.12	36.47	2.44	50.05	38.54	2.52	52.99	37.31	2.61	55.09	38.08	2.64	58.83	38.43	2.70	61.76	39.14	2.75
10	47.09	36.76	2.47	50.03	38.83	2.55	52.93	37.59	2.64	55.04	38.40	2.70	58.80	38.71	2.72	61.71	39.46	2.78
15	47.07	37.05	2.50	49.97	39.14	2.58	52.91	37.91	2.70	55.01	38.68	2.72	58.75	39.03	2.78	61.65	39.78	2.84
20	47.01	37.33	2.55	49.95	39.46	2.64	52.85	38.20	2.72	54.96	39.00	2.75	58.69	39.32	2.81	61.63	40.06	2.87
25	46.99	37.62	2.58	49.89	39.75	2.67	52.83	38.48	2.78	54.93	39.32	2.81	58.67	39.63	2.84	61.57	40.38	2.92
30	46.93	37.91	2.61	49.87	40.06	2.70	52.77	38.80	2.81	54.88	39.60	2.84	58.61	39.95	2.89	61.52	40.69	2.95
35	46.91	38.20	2.64	49.81	40.35	2.75	52.75	39.09	2.84	54.85	39.92	2.87	58.56	40.23	2.92	61.47	41.01	2.98
40	46.88	38.51	2.70	49.79	40.67	2.78	52.69	39.37	2.89	54.80	40.21	2.92	58.51	40.55	2.98	61.44	41.33	3.04
45	46.83	38.80	2.72	49.76	40.98	2.81	52.67	39.66	2.92	54.75	40.49	2.95	58.48	40.84	3.01	61.39	41.61	3.06
50	46.80	39.06	2.75	49.71	41.27	2.87	52.61	39.98	2.95	54.72	40.81	3.01	58.43	41.15	3.06	61.33	41.93	3.12
55	46.77	39.34	2.78	49.68	41.58	2.89	52.59	40.26	3.01	54.67	41.10	3.04	58.37	41.44	3.09	61.28	42.24	3.15
60	46.72	39.63	2.84	49.63	41.87	2.92	52.53	40.55	3.04	54.64	41.41	3.06	58.35	41.76	3.12	61.25	42.53	3.21
65	46.69	39.92	2.87	49.60	42.19	2.98	52.51	40.84	3.06	54.59	41.70	3.12	58.29	42.04	3.18	61.20	42.85	3.23
70	46.67	40.21	2.89	49.55	42.47	3.01	52.45	41.12	3.12	54.56	41.99	3.15	58.24	42.36	3.21	61.15	43.16	3.26
75	45.55	39.55	3.06	48.43	41.84	3.18	51.31	40.55	3.29	53.41	41.44	3.32	57.09	41.84	3.38	60.00	42.68	3.46
80	44.43	38.88	3.21	47.31	41.18	3.32	50.19	39.95	3.46	52.27	40.87	3.49	55.95	41.30	3.55	58.83	42.16	3.63
85	43.31	38.17	3.38	46.19	40.49	3.49	49.07	39.34	3.63	51.12	40.26	3.66	54.80	40.75	3.72	57.68	41.64	3.80
90	42.19	37.45	3.52	45.07	39.78	3.66	47.92	38.71	3.77	50.00	39.63	3.83	53.65	40.18	3.91	56.53	41.10	3.97
95	40.99	37.05	3.69	43.84	39.43	3.80	46.69	38.40	3.94	**48.00**	**38.77**	**4.00**	52.40	39.98	4.09	55.25	40.90	4.17
100	39.97	36.07	3.83	42.83	38.43	3.97	45.68	37.48	4.11	47.39	38.17	4.17	51.41	39.11	4.26	54.27	40.06	4.34
105	38.99	35.07	4.00	41.84	37.42	4.14	44.69	36.59	4.28	46.75	37.56	4.34	50.40	38.25	4.43	53.25	39.23	4.51
110	37.97	33.86	4.14	40.85	36.21	4.31	43.71	35.44	4.45	45.76	36.44	4.51	49.41	37.16	4.60	52.27	38.17	4.68
115	36.99	32.85	4.31	39.84	35.21	4.45	42.69	34.52	4.62	44.77	35.52	4.68	48.40	36.27	4.77	51.25	37.28	4.85
118	36.40	32.62	4.40	39.25	34.98	4.57	42.11	34.32	4.74	44.16	35.35	4.79	47.81	36.16	4.88	50.67	37.19	4.96
122	36.19	32.54	4.54	39.04	34.92	4.68	41.89	34.26	4.85	43.97	35.30	4.91	47.60	36.10	5.02	50.45	37.16	5.11

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)
SHC: Sensible Capacity (kBtu/h) PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.
2. Cooling range can be extended from 0°F down to -4°F using the Low Ambient Wind Baffle Kit (sold separately).
3. Grey shading indicates reference data. Operation outside of the verified temperature range is subject to decreased performance and / or safety interruption.
4. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80°F dry bulb (DB) and 67°F wet bulb (WB), and outdoor ambient conditions of 95°F dry bulb (DB) and 75°F wet bulb (WB).

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Maximum Cooling Capacity Table for KSUJA181A (KUSXA181A / KNUJB181A)

Table 25: KSUJA181A Mid Static Ducted System Maximum Cooling Capacity Table.

Outdoor Air Temp. (°F DB)	Indoor Air Temp. °F DB / °F WB																	
	68 / 57			72 / 61			77 / 64			80 / 67			86 / 72			90 / 75		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
-4	21.63	14.69	1.65	22.97	15.52	1.72	24.32	15.02	1.78	25.29	15.34	1.81	27	15.47	1.83	28.35	15.76	1.88
-0.4	21.62	14.77	1.68	22.96	15.61	1.74	24.3	15.11	1.81	25.27	15.43	1.82	26.99	15.56	1.85	28.33	15.85	1.89
5	21.6	14.9	1.71	22.94	15.74	1.76	24.28	15.24	1.83	25.25	15.56	1.85	26.97	15.69	1.89	28.31	15.99	1.92
10	21.58	15.02	1.72	22.92	15.87	1.79	24.26	15.36	1.86	25.23	15.69	1.88	26.94	15.82	1.92	28.29	16.12	1.95
15	21.57	15.14	1.75	22.91	15.99	1.82	24.25	15.48	1.88	25.21	15.81	1.9	26.92	15.94	1.95	28.26	16.25	1.97
20	21.55	15.26	1.78	22.89	16.12	1.85	24.23	15.61	1.9	25.19	15.93	1.93	26.9	16.07	1.97	28.24	16.37	2
25	21.53	15.38	1.81	22.87	16.24	1.86	24.21	15.73	1.93	25.17	16.06	1.96	26.88	16.19	2	28.22	16.5	2.03
30	21.52	15.49	1.83	22.85	16.37	1.89	24.19	15.85	1.96	25.15	16.18	1.99	26.86	16.32	2.03	28.2	16.63	2.06
35	21.5	15.61	1.85	22.84	16.49	1.92	24.17	15.97	1.99	25.14	16.3	2.02	26.84	16.44	2.06	28.18	16.75	2.09
40	21.48	15.73	1.88	22.82	16.62	1.95	24.15	16.09	2.02	25.12	16.43	2.04	26.82	16.56	2.09	28.16	16.88	2.13
45	21.47	15.85	1.9	22.8	16.74	1.97	24.13	16.21	2.04	25.1	16.55	2.07	26.8	16.69	2.11	28.13	17	2.16
50	21.45	15.96	1.93	22.78	16.86	2	24.12	16.33	2.07	25.08	16.67	2.1	26.78	16.81	2.13	28.11	17.13	2.18
55	21.43	16.08	1.96	22.77	16.99	2.03	24.1	16.45	2.1	25.06	16.79	2.13	26.76	16.94	2.16	28.09	17.26	2.21
60	21.42	16.2	1.97	22.75	17.11	2.06	24.08	16.57	2.13	25.04	16.92	2.16	26.74	17.06	2.18	28.07	17.38	2.24
65	21.4	16.31	2	22.73	17.23	2.07	24.06	16.69	2.16	25.02	17.04	2.18	26.72	17.18	2.21	28.05	17.51	2.27
70	21.39	16.43	2.03	22.71	17.36	2.10	24.04	16.80	2.18	25.00	17.16	2.21	26.70	17.30	2.24	28.03	17.63	2.30
75	20.87	16.16	2.14	22.20	17.09	2.21	23.52	16.57	2.30	24.48	16.93	2.32	26.17	17.09	2.37	27.50	17.43	2.42
80	20.36	15.88	2.25	21.68	16.82	2.32	23.00	16.33	2.42	23.95	16.70	2.45	25.64	16.88	2.49	26.96	17.23	2.53
85	19.85	15.59	2.35	21.16	16.54	2.45	22.48	16.07	2.53	23.44	16.45	2.56	25.12	16.65	2.60	26.44	17.01	2.66
90	19.34	15.30	2.46	20.65	16.25	2.56	21.97	15.81	2.65	22.92	16.20	2.69	24.60	16.42	2.73	25.91	16.79	2.79
95	18.78	15.14	2.58	20.09	16.11	2.67	21.40	15.69	2.77	**22.00**	**15.84**	**2.800**	24.02	16.33	2.86	25.33	16.71	2.91
100	18.33	14.73	2.69	19.63	15.70	2.79	20.94	15.32	2.88	21.71	15.59	2.91	23.56	15.98	2.97	24.87	16.37	3.04
105	17.87	14.33	2.80	19.18	15.29	2.90	20.48	14.94	3.01	21.43	15.35	3.04	23.10	15.63	3.09	24.41	16.03	3.16
110	17.41	13.84	2.90	18.72	14.80	3.01	20.03	14.48	3.12	20.97	14.89	3.15	22.64	15.18	3.22	23.95	15.59	3.28
115	16.95	13.42	3.01	18.26	14.38	3.12	19.57	14.10	3.23	20.52	14.51	3.28	22.19	14.82	3.33	23.50	15.23	3.40
118	16.68	13.33	3.08	17.99	14.29	3.19	19.30	14.03	3.30	20.24	14.45	3.35	21.91	14.77	3.42	23.22	15.19	3.47
122	20.28	15.19	4.40	21.88	16.30	4.56	23.47	16.00	4.73	24.63	16.49	4.79	26.67	16.86	4.86	28.27	17.35	4.98

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

SHC: Sensible Capacity (kBtu/h) PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.

2. Cooling range can be extended from 0°F down to -4°F using the Low Ambient Wind Baffle Kit (sold separately).

3. Grey shading indicates reference data. Operation outside of the verified temperature range is subject to decreased performance and / or safety interruption.

4. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB), and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).

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PERFORMANCE DATA

Mid Static Ducted Maximum Cooling Capacity Tables

Maximum Cooling Capacity Table for KSUJA241A (KUSXA241A / KNUJB241A)

Table 26: KSUJA241A Mid Static Ducted System Maximum Cooling Capacity Table.

Outdoor Air Temp. (°F DB)	Indoor Air Temp. °F DB / °F WB																	
	68 / 57			72 / 61			77 / 64			80 / 67			86 / 72			90 / 75		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
-4	29	21.88	1.77	30.8	23.12	1.84	32.6	22.38	1.91	33.91	22.85	1.93	36.21	23.05	1.97	38.01	23.48	2.01
-0.4	28.99	22.01	1.79	30.79	23.25	1.86	32.59	22.51	1.93	33.89	22.99	1.95	36.19	23.18	1.99	37.99	23.62	2.03
5	28.96	22.2	1.82	30.76	23.45	1.89	32.56	22.71	1.96	33.86	23.19	1.98	36.16	23.38	2.02	37.96	23.83	2.06
10	28.94	22.38	1.85	30.74	23.64	1.92	32.54	22.89	1.99	33.83	23.37	2.01	36.13	23.57	2.05	37.93	24.02	2.09
15	28.92	22.56	1.88	30.71	23.83	1.95	32.51	23.07	2.02	33.81	23.56	2.04	36.1	23.75	2.08	37.9	24.2	2.12
20	28.9	22.73	1.91	30.69	24.01	1.98	32.49	23.25	2.05	33.78	23.74	2.07	36.08	23.94	2.1	37.87	24.39	2.15
25	28.87	22.91	1.93	30.67	24.2	2.01	32.46	23.43	2.08	33.76	23.92	2.1	36.05	24.13	2.13	37.84	24.58	2.18
30	28.85	23.08	1.96	30.64	24.38	2.03	32.44	23.61	2.1	33.73	24.11	2.12	36.02	24.31	2.16	37.81	24.77	2.21
35	28.83	23.26	1.99	30.62	24.57	2.06	32.41	23.79	2.13	33.7	24.29	2.15	35.99	24.5	2.19	37.78	24.96	2.24
40	28.81	23.43	2.02	30.6	24.75	2.09	32.39	23.97	2.16	33.68	24.47	2.18	35.97	24.68	2.22	37.75	25.15	2.27
45	28.79	23.61	2.04	30.57	24.94	2.11	32.36	24.15	2.19	33.65	24.66	2.21	35.94	24.86	2.26	37.73	25.34	2.3
50	28.76	23.78	2.07	30.55	25.12	2.14	32.34	24.33	2.22	33.63	24.84	2.24	35.91	25.05	2.29	37.7	25.52	2.33
55	28.74	23.96	2.1	30.53	25.31	2.17	32.31	24.5	2.25	33.6	25.02	2.27	35.88	25.23	2.32	37.67	25.71	2.36
60	28.72	24.13	2.12	30.5	25.49	2.19	32.29	24.68	2.28	33.58	25.2	2.3	35.85	25.41	2.35	37.64	25.9	2.39
65	28.7	24.31	2.14	30.48	25.68	2.22	32.26	24.86	2.31	33.55	25.38	2.33	35.83	25.6	2.38	37.61	26.08	2.43
70	28.68	24.48	2.17	30.46	25.86	2.25	32.24	25.04	2.33	33.52	25.56	2.36	35.80	25.78	2.41	37.58	26.27	2.46
75	27.99	24.08	2.29	29.76	25.47	2.37	31.54	24.69	2.46	32.82	25.22	2.49	35.09	25.47	2.54	36.87	25.97	2.59
80	27.30	23.66	2.41	29.07	25.06	2.50	30.84	24.33	2.59	32.12	24.88	2.62	34.38	25.15	2.67	36.16	25.67	2.72
85	26.61	23.23	2.53	28.38	24.64	2.62	30.15	23.95	2.71	31.42	24.51	2.74	33.68	24.81	2.79	35.45	25.34	2.85
90	25.93	22.79	2.65	27.69	24.21	2.74	29.45	23.56	2.84	30.73	24.13	2.87	32.98	24.46	2.93	34.74	25.01	2.98
95	25.19	22.55	2.76	26.94	24.00	2.86	28.70	23.38	2.97	**29.50**	**23.60**	**3.00**	32.20	24.33	3.06	33.96	24.90	3.12
100	24.57	21.95	2.88	26.33	23.39	2.98	28.08	22.82	3.09	29.12	23.23	3.13	31.59	23.80	3.19	33.35	24.39	3.25
105	23.96	21.35	3.00	25.71	22.79	3.11	27.47	22.27	3.22	28.74	22.87	3.26	30.98	23.28	3.31	32.73	23.88	3.38
110	23.35	20.62	3.11	25.10	22.05	3.23	26.86	21.58	3.34	28.12	22.19	3.38	30.36	22.62	3.44	32.12	23.23	3.51
115	22.73	20.00	3.23	24.49	21.43	3.34	26.24	21.01	3.47	27.51	21.62	3.51	29.75	22.08	3.58	31.51	22.70	3.65
118	22.36	19.85	3.30	24.12	21.30	3.42	25.87	20.90	3.54	27.14	21.53	3.59	29.38	22.01	3.65	31.14	22.64	3.73
122	22.24	19.81	3.39	24.00	21.25	3.52	25.75	20.86	3.65	27.02	21.49	3.69	29.26	21.98	3.76	31.01	22.61	3.84

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

SHC: Sensible Capacity (kBtu/h) PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.

2. Cooling range can be extended from 0°F down to -4°F using the Low Ambient Wind Baffle Kit (sold separately).

3. Grey shading indicates reference data. Operation outside of the verified temperature range is subject to decreased performance and / or safety interruption.

4. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB), and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).

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Maximum Cooling Capacity Table for KSUJA301A (KUSXA301A / KNUJB301A)

Table 27: KSUJA301A Mid Static Ducted System Maximum Cooling Capacity Table.

Outdoor Air Temp. (°F DB)	Indoor Air Temp. °F DB / °F WB																	
	68 / 57			72 / 61			77 / 64			80 / 67			86 / 72			90 / 75		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
-4	35.39	26.67	2.08	37.60	28.16	2.15	39.79	27.26	2.22	41.37	27.84	2.25	44.19	28.07	2.30	46.38	28.60	2.33
-0.4	35.38	26.81	2.09	37.57	28.32	2.17	39.77	27.43	2.25	41.36	28.01	2.27	44.16	28.24	2.32	46.36	28.77	2.37
5	35.35	27.05	2.12	37.54	28.57	2.21	39.73	27.66	2.28	41.31	28.26	2.31	44.13	28.49	2.36	46.32	29.03	2.41
10	35.32	27.26	2.16	37.51	28.80	2.24	39.70	27.89	2.32	41.28	28.47	2.35	44.09	28.72	2.39	46.28	29.27	2.44
15	35.29	27.48	2.19	37.48	29.03	2.27	39.67	28.11	2.36	41.25	28.70	2.38	44.06	28.93	2.42	46.25	29.48	2.47
20	35.26	27.69	2.22	37.45	29.25	2.31	39.64	28.32	2.38	41.23	28.92	2.42	44.03	29.17	2.46	46.22	29.71	2.51
25	35.23	27.91	2.25	37.42	29.48	2.33	39.61	28.55	2.42	41.20	29.15	2.44	43.98	29.40	2.49	46.18	29.94	2.54
30	35.22	28.12	2.28	37.39	29.71	2.37	39.59	28.77	2.46	41.17	29.36	2.48	43.95	29.61	2.53	46.15	30.18	2.58
35	35.19	28.34	2.32	37.36	29.93	2.39	39.56	28.98	2.49	41.12	29.60	2.52	43.93	29.85	2.57	46.10	30.41	2.62
40	35.16	28.55	2.35	37.34	30.16	2.43	39.53	29.20	2.52	41.10	29.81	2.55	43.90	30.06	2.60	46.07	30.64	2.65
45	35.13	28.77	2.38	37.31	30.39	2.47	39.50	29.41	2.55	41.07	30.04	2.59	43.85	30.29	2.63	46.03	30.87	2.69
50	35.10	28.97	2.41	37.28	30.61	2.49	39.47	29.63	2.59	41.04	30.26	2.62	43.82	30.52	2.66	46.00	31.09	2.73
55	35.07	29.18	2.44	37.25	30.84	2.53	39.43	29.86	2.63	41.01	30.47	2.65	43.80	30.74	2.70	45.97	31.32	2.76
60	35.04	29.40	2.47	37.22	31.05	2.57	39.40	30.08	2.65	40.98	30.71	2.69	43.75	30.95	2.74	45.93	31.55	2.79
65	35.03	29.61	2.51	37.19	31.29	2.59	39.37	30.29	2.69	40.94	30.92	2.73	43.72	31.19	2.78	45.90	31.78	2.82
70	35.00	29.83	2.54	37.16	31.50	2.63	39.34	30.51	2.73	40.91	31.15	2.75	43.69	31.40	2.81	45.86	32.00	2.86
75	34.16	29.33	2.68	36.32	31.02	2.78	38.48	30.08	2.87	40.05	30.72	2.91	42.82	31.02	2.96	44.99	31.63	3.02
80	33.31	28.83	2.81	35.48	30.54	2.91	37.64	29.63	3.02	39.19	30.31	3.06	41.97	30.64	3.11	44.13	31.27	3.17
85	32.47	28.30	2.95	34.64	30.03	3.06	36.78	29.17	3.17	38.35	29.86	3.21	41.11	30.23	3.27	43.26	30.87	3.33
90	31.65	27.77	3.08	33.79	29.50	3.19	35.94	28.70	3.32	37.50	29.40	3.35	40.25	29.80	3.41	42.40	30.47	3.49
95	30.73	27.48	3.22	32.88	29.23	3.34	35.01	28.49	3.46	**36.00**	**28.75**	**3.50**	39.30	29.65	3.56	41.44	30.34	3.64
100	29.99	26.75	3.35	32.12	28.49	3.48	34.27	27.81	3.61	35.54	28.30	3.65	38.55	29.00	3.72	40.69	29.71	3.79
105	29.24	26.00	3.50	31.38	27.76	3.62	33.52	27.13	3.76	35.07	27.86	3.79	37.80	28.37	3.87	39.95	29.10	3.94
110	28.50	25.12	3.64	30.63	26.86	3.76	32.78	26.28	3.91	34.32	27.03	3.94	37.06	27.56	4.02	39.19	28.29	4.10
115	27.74	24.36	3.77	29.89	26.10	3.91	32.02	25.59	4.05	33.58	26.33	4.09	36.30	26.90	4.18	38.45	27.66	4.26
118	27.29	24.20	3.86	29.44	25.95	3.99	31.57	25.46	4.14	33.13	26.22	4.19	35.85	26.81	4.26	38.00	27.58	4.35
122	27.15	24.13	3.95	29.28	25.89	4.10	31.43	25.42	4.25	32.97	26.18	4.30	35.71	26.78	4.38	37.84	27.56	4.47

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

SHC: Sensible Capacity (kBtu/h) PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.

2. Cooling range can be extended from 0°F down to -4°F using the Low Ambient Wind Baffle Kit (sold separately).

3. Grey shading indicates reference data. Operation outside of the verified temperature range is subject to decreased performance and / or safety interruption.

4. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB), and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).

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PERFORMANCE DATA

Mid Static Ducted Maximum Cooling Capacity Tables

Maximum Cooling Capacity Table for KSUJA361A (KUSXA361A / KNUJB361A)

Table 28: KSUJA361A Mid Static Ducted System Maximum Cooling Capacity Table.

Outdoor Air Temp. (°F DB)	Indoor Air Temp. °F DB / °F WB																	
	68 / 57			72 / 61			77 / 64			80 / 67			86 / 72			90 / 75		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
-4	43.25	31.04	3.26	45.95	32.77	3.38	48.63	31.73	3.49	50.56	32.40	3.53	54.01	32.67	3.61	56.69	33.29	3.67
-0.4	43.24	31.21	3.28	45.92	32.96	3.42	48.61	31.92	3.53	50.55	32.60	3.57	53.97	32.87	3.65	56.67	33.48	3.72
5	43.20	31.48	3.34	45.88	33.25	3.47	48.56	32.19	3.59	50.49	32.89	3.63	53.94	33.16	3.71	56.61	33.79	3.78
10	43.17	31.73	3.40	45.85	33.52	3.51	48.52	32.46	3.65	50.46	33.14	3.69	53.88	33.43	3.76	56.56	34.06	3.84
15	43.13	31.98	3.44	45.81	33.79	3.57	48.49	32.71	3.71	50.42	33.41	3.74	53.85	33.68	3.80	56.53	34.31	3.88
20	43.10	32.23	3.49	45.77	34.04	3.63	48.45	32.96	3.74	50.39	33.66	3.80	53.81	33.95	3.86	56.49	34.58	3.94
25	43.06	32.48	3.53	45.74	34.31	3.67	48.42	33.23	3.80	50.35	33.93	3.84	53.76	34.22	3.92	56.44	34.85	3.99
30	43.04	32.73	3.59	45.70	34.58	3.72	48.38	33.48	3.86	50.32	34.18	3.90	53.72	34.47	3.98	56.40	35.12	4.05
35	43.01	32.98	3.65	45.67	34.83	3.76	48.35	33.73	3.92	50.26	34.45	3.96	53.69	34.74	4.03	56.35	35.39	4.11
40	42.97	33.23	3.69	45.63	35.10	3.82	48.31	33.98	3.96	50.23	34.70	4.01	53.65	34.99	4.09	56.31	35.66	4.17
45	42.94	33.48	3.74	45.60	35.37	3.88	48.28	34.24	4.01	50.19	34.97	4.07	53.60	35.26	4.13	56.26	35.93	4.23
50	42.90	33.72	3.78	45.56	35.62	3.92	48.24	34.49	4.07	50.16	35.22	4.11	53.56	35.53	4.19	56.22	36.18	4.28
55	42.86	33.97	3.84	45.53	35.89	3.98	48.19	34.76	4.13	50.12	35.47	4.17	53.53	35.78	4.25	56.19	36.45	4.34
60	42.83	34.22	3.88	45.49	36.14	4.03	48.15	35.01	4.17	50.09	35.74	4.23	53.47	36.03	4.30	56.14	36.72	4.38
65	42.81	34.47	3.94	45.45	36.41	4.07	48.12	35.26	4.23	50.03	35.99	4.28	53.44	36.30	4.36	56.10	36.99	4.44
70	42.78	34.72	3.99	45.42	36.66	4.13	48.08	35.51	4.28	50.00	36.26	4.32	53.40	36.55	4.42	56.05	37.24	4.50
75	41.75	34.14	4.21	44.39	36.11	4.36	47.03	35.01	4.52	48.95	35.76	4.57	52.34	36.11	4.65	54.98	36.82	4.75
80	40.72	33.56	4.42	43.36	35.55	4.57	46.00	34.49	4.75	47.90	35.28	4.81	51.29	35.66	4.88	53.94	36.39	4.98
85	39.69	32.94	4.63	42.33	34.95	4.81	44.96	33.95	4.98	46.87	34.76	5.04	50.25	35.18	5.13	52.87	35.93	5.23
90	38.68	32.33	4.84	41.30	34.33	5.02	43.93	33.41	5.21	45.83	34.22	5.27	49.20	34.68	5.36	51.82	35.47	5.48
95	37.56	31.98	5.06	40.19	34.02	5.25	42.79	33.16	5.44	**44.00**	**33.46**	**5.50**	48.03	34.51	5.60	50.65	35.32	5.71
100	36.65	31.13	5.27	39.26	33.16	5.46	41.89	32.37	5.67	43.43	32.94	5.73	47.12	33.75	5.85	49.73	34.58	5.96
105	35.73	30.26	5.50	38.36	32.31	5.69	40.97	31.58	5.91	42.86	32.42	5.96	46.20	33.02	6.08	48.83	33.87	6.19
110	34.83	29.24	5.71	37.44	31.27	5.91	40.06	30.59	6.14	41.94	31.46	6.19	45.30	32.08	6.31	47.90	32.92	6.45
115	33.90	28.36	5.92	36.53	30.38	6.14	39.14	29.78	6.37	41.04	30.65	6.43	44.37	31.31	6.56	47.00	32.19	6.70
118	33.35	28.16	6.06	35.98	30.21	6.27	38.59	29.63	6.50	40.49	30.52	6.58	43.82	31.21	6.70	46.45	32.10	6.83
122	33.18	28.09	6.21	35.79	30.13	6.45	38.41	29.59	6.68	40.29	30.48	6.75	43.65	31.17	6.89	46.25	32.08	7.02

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

SHC: Sensible Capacity (kBtu/h) PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.

2. Cooling range can be extended from 0°F down to -4°F using the Low Ambient Wind Baffle Kit (sold separately).

3. Grey shading indicates reference data. Operation outside of the verified temperature range is subject to decreased performance and / or safety interruption.

4. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB), and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).

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Maximum Cooling Capacity Table for KSSJA421A (KUSXA421A / KNSJB421A)

Table 29: KSSJA421A Mid Static Ducted System Maximum Cooling Capacity Table.

Outdoor Air Temp. (°F DB)	Indoor Air Temp. °F DB / °F WB																	
	68 / 57			72 / 61			77 / 64			80 / 67			86 / 72			90 / 75		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
-4	49.15	38.26	3.14	52.22	40.39	3.25	55.26	39.11	3.37	57.46	39.94	3.40	61.37	40.28	3.48	64.42	41.04	3.53
-0.4	49.13	38.47	3.16	52.18	40.63	3.29	55.24	39.35	3.40	57.44	40.18	3.44	61.33	40.51	3.51	64.40	41.27	3.59
5	49.09	38.80	3.22	52.14	40.99	3.35	55.18	39.68	3.46	57.38	40.54	3.50	61.29	40.87	3.57	64.33	41.65	3.64
10	49.05	39.11	3.27	52.10	41.32	3.38	55.14	40.01	3.51	57.34	40.85	3.55	61.23	41.20	3.63	64.27	41.99	3.70
15	49.01	39.42	3.31	52.06	41.65	3.44	55.10	40.32	3.57	57.30	41.18	3.61	61.19	41.51	3.66	64.23	42.30	3.74
20	48.97	39.73	3.37	52.02	41.96	3.50	55.06	40.63	3.61	57.26	41.49	3.66	61.15	41.84	3.72	64.19	42.63	3.79
25	48.93	40.04	3.40	51.98	42.30	3.53	55.02	40.96	3.66	57.22	41.82	3.70	61.09	42.18	3.78	64.13	42.96	3.85
30	48.91	40.35	3.46	51.94	42.63	3.59	54.98	41.27	3.72	57.18	42.13	3.76	61.05	42.49	3.83	64.09	43.29	3.91
35	48.87	40.66	3.51	51.90	42.94	3.63	54.94	41.58	3.78	57.12	42.46	3.81	61.01	42.82	3.89	64.03	43.63	3.96
40	48.83	40.96	3.55	51.85	43.27	3.68	54.90	41.89	3.81	57.08	42.77	3.87	60.97	43.13	3.94	63.99	43.96	4.02
45	48.79	41.27	3.61	51.81	43.60	3.74	54.86	42.20	3.87	57.04	43.10	3.92	60.91	43.46	3.98	63.93	44.29	4.07
50	48.75	41.56	3.64	51.77	43.91	3.78	54.82	42.51	3.92	57.00	43.41	3.96	60.87	43.79	4.04	63.89	44.60	4.13
55	48.71	41.87	3.70	51.73	44.24	3.83	54.76	42.84	3.98	56.96	43.72	4.02	60.83	44.10	4.09	63.85	44.93	4.18
60	48.67	42.18	3.74	51.69	44.55	3.89	54.72	43.15	4.02	56.92	44.05	4.07	60.77	44.41	4.15	63.79	45.27	4.22
65	48.65	42.49	3.79	51.65	44.89	3.92	54.68	43.46	4.07	56.85	44.36	4.13	60.73	44.74	4.20	63.75	45.60	4.28
70	48.61	42.79	3.85	51.61	45.19	3.98	54.64	43.77	4.13	56.81	44.70	4.17	60.69	45.05	4.26	63.69	45.91	4.33
75	47.44	42.08	4.05	50.44	44.51	4.20	53.45	43.15	4.35	55.63	44.08	4.41	59.48	44.51	4.48	62.48	45.38	4.57
80	46.27	41.37	4.26	49.27	43.82	4.41	52.28	42.51	4.57	54.44	43.48	4.63	58.29	43.96	4.70	61.29	44.86	4.80
85	45.10	40.61	4.46	48.10	43.08	4.63	51.09	41.84	4.80	53.27	42.84	4.85	57.10	43.36	4.95	60.08	44.29	5.04
90	43.95	39.85	4.67	46.94	42.32	4.84	49.92	41.18	5.02	52.08	42.18	5.08	55.91	42.75	5.17	58.89	43.72	5.28
95	42.68	39.42	4.87	45.67	41.94	5.06	48.63	40.87	5.24	**50.00**	**41.25**	**5.30**	54.58	42.53	5.39	57.56	43.53	5.50
100	41.65	38.37	5.08	44.62	40.87	5.26	47.60	39.90	5.47	49.35	40.61	5.52	53.55	41.61	5.63	56.51	42.63	5.75
105	40.60	37.31	5.30	43.59	39.82	5.49	46.55	38.92	5.69	48.71	39.97	5.75	52.50	40.70	5.86	55.48	41.75	5.97
110	39.58	36.05	5.50	42.54	38.54	5.69	45.52	37.71	5.91	47.66	38.78	5.97	51.47	39.54	6.08	54.44	40.58	6.21
115	38.53	34.95	5.71	41.51	37.45	5.91	44.48	36.71	6.14	46.63	37.78	6.19	50.42	38.59	6.32	53.41	39.68	6.45
118	37.90	34.72	5.84	40.89	37.23	6.04	43.85	36.52	6.27	46.01	37.61	6.34	49.80	38.47	6.45	52.78	39.56	6.58
122	37.70	34.62	5.99	40.67	37.14	6.21	43.65	36.47	6.43	45.79	37.57	6.51	49.60	38.42	6.64	52.56	39.54	6.77

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

SHC: Sensible Capacity (kBtu/h) PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.

2. Cooling range can be extended from 0°F down to -4°F using the Low Ambient Wind Baffle Kit (sold separately).

3. Grey shading indicates reference data. Operation outside of the verified temperature range is subject to decreased performance and / or safety interruption.

4. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB), and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).

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PERFORMANCE DATA

Mid Static Ducted Maximum Cooling Capacity Tables

Maximum Cooling Capacity Table for KSSJA481A (KUSXA481A / KNSJB481A)

Table 30: KSSJA481A Mid Static Ducted System Maximum Cooling Capacity Table.

Outdoor Air Temp. (°F DB)	Indoor Air Temp. °F DB / °F WB																	
	68 / 57			72 / 61			77 / 64			80 / 67			86 / 72			90 / 75		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
-4	54.07	41.20	3.41	57.44	43.50	3.53	60.79	42.12	3.65	63.21	43.02	3.69	67.51	43.37	3.77	70.86	44.19	3.83
-0.4	54.05	41.43	3.43	57.40	43.76	3.57	60.77	42.38	3.69	63.18	43.27	3.73	67.46	43.63	3.81	70.83	44.45	3.89
5	54.00	41.79	3.49	57.35	44.14	3.63	60.70	42.74	3.75	63.12	43.66	3.79	67.42	44.01	3.87	70.77	44.86	3.95
10	53.96	42.12	3.55	57.31	44.50	3.67	60.66	43.09	3.81	63.07	43.99	3.85	67.35	44.37	3.93	70.70	45.22	4.01
15	53.91	42.45	3.59	57.26	44.86	3.73	60.61	43.43	3.87	63.03	44.35	3.91	67.31	44.71	3.97	70.66	45.55	4.06
20	53.87	42.79	3.65	57.22	45.19	3.79	60.57	43.76	3.91	62.98	44.68	3.97	67.26	45.06	4.04	70.61	45.91	4.12
25	53.82	43.12	3.69	57.17	45.55	3.83	60.52	44.12	3.97	62.94	45.04	4.01	67.20	45.42	4.10	70.55	46.27	4.18
30	53.80	43.45	3.75	57.13	45.91	3.89	60.48	44.45	4.04	62.90	45.37	4.08	67.15	45.75	4.16	70.50	46.62	4.24
35	53.76	43.78	3.81	57.08	46.24	3.93	60.43	44.78	4.10	62.83	45.73	4.14	67.11	46.11	4.22	70.44	46.98	4.30
40	53.71	44.12	3.85	57.04	46.60	3.99	60.39	45.11	4.14	62.78	46.06	4.20	67.06	46.45	4.28	70.39	47.34	4.36
45	53.67	44.45	3.91	57.00	46.96	4.06	60.34	45.45	4.20	62.74	46.42	4.26	67.00	46.80	4.32	70.32	47.70	4.42
50	53.63	44.76	3.95	56.95	47.29	4.10	60.30	45.78	4.26	62.70	46.75	4.30	66.95	47.16	4.38	70.28	48.03	4.48
55	53.58	45.09	4.01	56.91	47.65	4.16	60.23	46.14	4.32	62.65	47.09	4.36	66.91	47.49	4.44	70.24	48.39	4.54
60	53.54	45.42	4.06	56.86	47.98	4.22	60.19	46.47	4.36	62.61	47.44	4.42	66.84	47.83	4.50	70.17	48.75	4.58
65	53.51	45.75	4.12	56.82	48.34	4.26	60.15	46.80	4.42	62.54	47.78	4.48	66.80	48.19	4.56	70.13	49.11	4.64
70	53.47	46.09	4.18	56.77	48.67	4.32	60.10	47.14	4.48	62.50	48.13	4.52	66.75	48.52	4.62	70.06	49.44	4.70
75	52.18	45.32	4.40	55.49	47.93	4.56	58.79	46.47	4.72	61.19	47.47	4.78	65.42	47.93	4.86	68.73	48.88	4.96
80	50.90	44.55	4.62	54.20	47.19	4.78	57.51	45.78	4.96	59.88	46.83	5.02	64.11	47.34	5.10	67.42	48.31	5.21
85	49.61	43.73	4.84	52.92	46.39	5.02	56.20	45.06	5.21	58.59	46.14	5.27	62.81	46.70	5.37	66.09	47.70	5.47
90	48.35	42.91	5.06	51.63	45.58	5.25	54.91	44.35	5.45	57.28	45.42	5.51	61.50	46.04	5.61	64.78	47.09	5.73
95	46.95	42.45	5.29	50.23	45.17	5.49	53.49	44.01	5.69	**55.00**	**44.42**	**5.75**	60.03	45.81	5.85	63.32	46.88	5.97
100	45.82	41.33	5.51	49.08	44.01	5.71	52.36	42.97	5.93	54.29	43.73	5.99	58.90	44.81	6.11	62.16	45.91	6.23
105	44.67	40.18	5.75	47.95	42.89	5.95	51.21	41.92	6.17	53.58	43.04	6.23	57.75	43.84	6.36	61.03	44.96	6.48
110	43.53	38.82	5.97	46.79	41.51	6.17	50.08	40.61	6.42	52.43	41.76	6.48	56.62	42.58	6.60	59.88	43.71	6.74
115	42.38	37.64	6.19	45.66	40.33	6.42	48.92	39.54	6.66	51.30	40.69	6.72	55.47	41.56	6.86	58.75	42.74	7.00
118	41.69	37.39	6.34	44.98	40.10	6.56	48.24	39.33	6.80	50.61	40.51	6.88	54.78	41.43	7.00	58.06	42.61	7.14
122	41.47	37.28	6.50	44.73	40.00	6.74	48.01	39.28	6.98	50.36	40.46	7.06	54.56	41.38	7.20	57.82	42.58	7.34

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)
SHC: Sensible Capacity (kBtu/h) PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.
2. Cooling range can be extended from 0°F down to -4°F using the Low Ambient Wind Baffle Kit (sold separately).
3. Grey shading indicates reference data. Operation outside of the verified temperature range is subject to decreased performance and / or safety interruption.
4. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Cooling capacity rating obtained with air entering the indoor unit at 80ºF dry bulb (DB) and 67ºF wet bulb (WB), and outdoor ambient conditions of 95ºF dry bulb (DB) and 75ºF wet bulb (WB).

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Heating Capacity Table for KSUJA181A (KUSXA181A / KNUJB181A)

Table 31: KSUJA181A Mid Static Ducted System Heating Capacity Table.

Outdoor Air Temp.		Indoor Air Temp. °F DB											
°F DB	°F WB	61		64		68		70		72		75	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-13	-13.4	3.0	0.96	2.4	1.00	2.6	1.03	2.6	1.04	2.7	1.06	2.5	1.08
-4	-4.4	6.8	1.07	6.2	1.10	6.2	1.14	6.2	1.16	6.1	1.18	5.8	1.21
0	-0.4	8.6	1.13	8.1	1.16	8.0	1.19	7.9	1.21	7.8	1.24	7.4	1.26
5	4.5	10.8	1.18	10.3	1.21	10.1	1.26	9.9	1.27	9.8	1.29	9.4	1.32
10	9	12.4	1.23	11.9	1.27	11.5	1.30	11.3	1.32	11.2	1.35	10.7	1.39
17	15	14.2	1.29	13.7	1.33	13.2	1.38	13.0	1.400	12.8	1.42	12.3	1.45
20	19	14.9	1.31	14.4	1.35	14.0	1.40	13.7	1.42	13.5	1.44	13.0	1.47
25	23	16.1	1.34	15.6	1.38	15.1	1.42	14.9	1.45	14.7	1.47	14.1	1.51
30	28	17.3	1.37	16.8	1.41	16.3	1.45	16.0	1.48	15.8	1.50	15.2	1.54
35	32	18.5	1.39	18.0	1.44	17.5	1.48	17.2	1.51	17.0	1.53	16.3	1.57
40	36	19.7	1.42	19.2	1.46	18.7	1.51	18.4	1.54	18.1	1.56	17.5	1.61
45	41	20.9	1.45	20.5	1.49	19.9	1.54	19.5	1.57	19.3	1.59	18.6	1.64
47	43	21.4	1.46	20.9	1.50	20.3	1.55	**20.00**	**1.584**	19.7	1.60	19.0	1.65
50	46	21.5	1.45	21.0	1.49	20.5	1.54	20.2	1.55	20.0	1.58	19.3	1.61
55	51	21.6	1.43	21.2	1.47	20.8	1.50	20.6	1.52	20.4	1.54	19.8	1.56
60	56	21.7	1.42	21.4	1.44	21.1	1.47	21.0	1.49	20.8	1.49	20.3	1.51
63	59	21.7	1.41	21.5	1.43	21.3	1.45	21.2	1.46	21.1	1.47	20.6	1.49
68	64	21.8	1.40	21.6	1.42	21.5	1.43	21.4	1.44	21.3	1.44	20.9	1.45

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.
2. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 60ºF wet bulb (WB), and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

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PERFORMANCE DATA

Mid Static Ducted Heating Capacity Tables

Heating Capacity Table for KSUJA241A (KUSXA241A / KNUJB241A)

Table 32: KSUJA241A Mid Static Ducted System Heating Capacity Table.

Outdoor Air Temp.		Indoor Air Temp. °F DB											
°F DB	°F WB	61		64		68		70		72		75	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-13	-13.4	11.6	1.38	11.3	1.43	11.0	1.46	10.8	1.49	10.7	1.51	10.3	1.56
-4	-4.4	13.2	1.46	12.9	1.51	12.5	1.56	12.3	1.59	12.2	1.62	11.7	1.66
0	-0.4	14.0	1.51	13.7	1.57	13.3	1.62	13.1	1.64	12.9	1.66	12.4	1.72
5	4.5	15.0	1.58	14.7	1.62	14.2	1.68	14.0	1.71	13.8	1.73	13.3	1.79
10	9	16.4	1.62	16.0	1.68	15.5	1.74	15.3	1.77	15.1	1.79	14.5	1.84
17	15	18.2	1.66	17.8	1.72	17.3	1.78	17.0	1.805	16.8	1.83	16.2	1.88
20	19	19.3	1.70	18.8	1.76	18.3	1.81	18.0	1.84	17.8	1.87	17.1	1.92
25	23	21.1	1.76	20.6	1.82	20.0	1.88	19.7	1.91	19.4	1.94	18.7	1.99
30	28	22.8	1.82	22.3	1.88	21.7	1.94	21.3	1.98	21.1	2.01	20.3	2.06
35	32	24.6	1.88	24.1	1.94	23.4	2.01	23.0	2.04	22.7	2.07	21.9	2.13
40	36	26.4	1.94	25.8	2.01	25.1	2.07	24.7	2.11	24.3	2.14	23.5	2.20
45	41	28.2	2.00	27.6	2.07	26.8	2.14	26.3	2.17	26.0	2.20	25.0	2.27
47	43	28.9	2.02	28.3	2.09	27.5	2.16	**27.00**	**2.200**	26.6	2.23	25.7	2.30
50	46	29.0	2.01	28.4	2.07	27.7	2.13	27.3	2.17	27.0	2.19	26.1	2.25
55	51	29.1	1.99	28.7	2.04	28.1	2.09	27.8	2.11	27.5	2.13	26.7	2.18
60	56	29.3	1.98	28.9	2.01	28.5	2.04	28.3	2.06	28.1	2.07	27.4	2.11
63	59	29.4	1.97	29.0	1.99	28.8	2.02	28.6	2.03	28.4	2.04	27.8	2.06
68	64	29.4	1.95	29.2	1.98	29.0	1.99	28.9	2.00	28.8	2.00	28.2	2.02

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.
2. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 60ºF wet bulb (WB), and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

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Heating Capacity Table for KSUJA301A (KUSXA301A / KNUJB301A)

Table 33: KSUJA301A Mid Static Ducted System Heating Capacity Table.

Outdoor Air Temp.		Indoor Air Temp. °F DB											
°F DB	°F WB	61		64		68		70		72		75	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-13	-13.4	11.9	1.78	10.7	1.83	10.9	1.89	10.8	1.92	10.7	1.94	10.2	2.00
-4	-4.4	16.0	1.91	15.0	1.97	14.8	2.02	14.6	2.06	14.5	2.08	13.8	2.14
0	-0.4	17.9	1.97	16.9	2.02	16.6	2.08	16.4	2.13	16.2	2.14	15.5	2.20
5	4.5	20.2	2.03	19.2	2.09	18.8	2.16	18.5	2.20	18.2	2.22	17.5	2.28
10	9	21.7	2.09	20.8	2.16	20.2	2.23	19.9	2.26	19.6	2.30	18.8	2.36
17	15	23.3	2.19	22.5	2.25	21.8	2.33	21.4	2.36	21.1	2.39	20.3	2.45
20	19	24.6	2.21	23.8	2.28	23.1	2.35	22.7	2.39	22.3	2.42	21.5	2.48
25	23	26.8	2.26	26.0	2.32	25.2	2.40	24.8	2.44	24.4	2.47	23.5	2.54
30	28	29.0	2.30	28.2	2.37	27.3	2.45	26.9	2.48	26.5	2.51	25.5	2.59
35	32	31.2	2.34	30.4	2.41	29.5	2.49	29.0	2.53	28.6	2.56	27.5	2.64
40	36	33.3	2.38	32.5	2.45	31.6	2.54	31.1	2.58	30.6	2.61	29.5	2.69
45	41	35.5	2.43	34.7	2.50	33.7	2.59	33.2	2.63	32.7	2.66	31.5	2.75
47	43	36.4	2.44	35.6	2.52	34.6	2.61	**34.00**	**2.65**	33.5	2.68	32.3	2.77
50	46	36.5	2.43	35.8	2.50	34.9	2.58	34.4	2.61	34.0	2.65	32.8	2.71
55	51	36.7	2.40	36.1	2.46	35.4	2.52	35.0	2.55	34.7	2.58	33.6	2.62
60	56	36.9	2.37	36.4	2.43	35.9	2.47	35.6	2.49	35.4	2.50	34.5	2.53
63	59	37.0	2.36	36.6	2.40	36.2	2.43	36.0	2.44	35.8	2.46	35.0	2.49
68	64	37.1	2.34	36.8	2.37	36.6	2.40	36.4	2.41	36.2	2.41	35.5	2.43

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.
2. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 60ºF wet bulb (WB), and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

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Mid Static Ducted Heating Capacity Tables

Heating Capacity Table for KSUJA361A (KUSXA361A / KNUJB361A)

Table 34: KSUJA361A Mid Static Ducted System Heating Capacity Table.

Outdoor Air Temp.		Indoor Air Temp. °F DB											
°F DB	°F WB	61		64		68		70		72		75	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-13	-13.4	14.74	2.17	13.23	2.22	13.42	2.30	13.33	2.34	13.25	2.36	12.59	2.43
-4	-4.4	19.78	2.32	18.46	2.39	18.27	2.45	18.04	2.51	17.84	2.53	17.07	2.60
0	-0.4	22.11	2.39	20.86	2.45	20.49	2.53	20.20	2.58	19.95	2.60	19.12	2.68
5	4.5	24.87	2.47	23.73	2.55	23.16	2.62	22.77	2.68	22.48	2.70	21.57	2.77
10	9	26.73	2.55	25.65	2.62	24.93	2.71	24.51	2.75	24.16	2.79	23.21	2.87
17	15	28.76	2.66	27.77	2.73	26.88	2.83	26.40	2.87	26.01	2.90	25.01	2.98
20	19	30.16	2.69	29.18	2.77	28.26	2.87	27.76	2.91	27.36	2.94	26.31	3.02
25	23	32.51	2.75	31.53	2.83	30.56	2.93	30.03	2.97	29.60	3.01	28.48	3.09
30	28	34.85	2.81	33.88	2.89	32.85	2.99	32.29	3.04	31.84	3.07	30.66	3.16
35	32	37.19	2.87	36.22	2.95	35.15	3.05	34.56	3.10	34.08	3.14	32.83	3.23
40	36	39.54	2.93	38.57	3.01	37.45	3.12	36.83	3.17	36.32	3.20	35.00	3.31
45	41	41.88	2.98	40.92	3.07	39.74	3.18	39.09	3.23	38.56	3.27	37.17	3.38
47	43	42.82	3.01	41.86	3.10	40.66	3.21	**40.00**	**3.26**	39.46	3.30	38.04	3.40
50	46	42.94	2.99	42.08	3.08	41.04	3.17	40.44	3.21	39.96	3.26	38.62	3.33
55	51	43.16	2.95	42.44	3.02	41.66	3.10	41.18	3.13	40.80	3.17	39.58	3.22
60	56	43.36	2.92	42.80	2.99	42.28	3.04	41.90	3.06	41.62	3.08	40.56	3.12
63	59	43.48	2.90	43.02	2.95	42.64	2.99	42.36	3.01	42.12	3.02	41.14	3.06
68	64	43.62	2.88	43.24	2.92	43.02	2.95	42.80	2.97	42.62	2.97	41.72	2.99

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.
2. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 60ºF wet bulb (WB), and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

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Heating Capacity Table for KSSJA421A (KUSXA421A / KNSJB421A)

Table 35: KSSJA421A Mid Static Ducted System Heating Capacity Table.

Outdoor Air Temp.		Indoor Air Temp. °F DB											
°F DB	°F WB	61		64		68		70		72		75	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-13	-13.4	16.74	2.47	15.03	2.53	15.25	2.62	15.14	2.66	15.05	2.68	14.31	2.77
-4	-4.4	22.47	2.64	20.98	2.72	20.76	2.79	20.50	2.85	20.28	2.87	19.40	2.96
0	-0.4	25.13	2.72	23.70	2.79	23.28	2.87	22.96	2.94	22.67	2.96	21.73	3.05
5	4.5	28.27	2.81	26.97	2.90	26.31	2.98	25.87	3.05	25.54	3.07	24.51	3.15
10	9	30.37	2.90	29.14	2.98	28.33	3.09	27.85	3.13	27.45	3.17	26.38	3.26
17	15	32.68	3.02	31.56	3.11	30.55	3.22	30.00	3.26	29.56	3.30	28.42	3.39
20	19	34.55	3.09	33.43	3.18	32.37	3.29	31.80	3.34	31.34	3.38	30.14	3.47
25	23	37.67	3.21	36.54	3.30	35.41	3.42	34.80	3.47	34.31	3.51	33.01	3.61
30	28	40.78	3.33	39.65	3.43	38.45	3.54	37.80	3.60	37.27	3.64	35.89	3.75
35	32	43.90	3.45	42.76	3.55	41.49	3.67	40.80	3.73	40.24	3.77	38.76	3.89
40	36	47.02	3.56	45.87	3.67	44.54	3.80	43.80	3.86	43.20	3.90	41.63	4.03
45	41	50.14	3.68	48.99	3.79	47.58	3.92	46.80	3.99	46.17	4.03	44.50	4.16
47	43	51.38	3.73	50.23	3.84	48.79	3.97	**48.00**	**4.04**	47.35	4.08	45.65	4.22
50	46	51.53	3.70	50.50	3.82	49.25	3.93	48.53	3.97	47.95	4.04	46.34	4.13
55	51	51.79	3.66	50.93	3.75	49.99	3.84	49.42	3.88	48.96	3.93	47.50	4.00
60	56	52.03	3.61	51.36	3.70	50.74	3.77	50.28	3.79	49.94	3.82	48.67	3.86
63	59	52.18	3.59	51.62	3.66	51.17	3.70	50.83	3.73	50.54	3.75	49.37	3.79
68	64	52.34	3.57	51.89	3.61	51.62	3.66	51.36	3.68	51.14	3.68	50.06	3.70

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.
2. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 60ºF wet bulb (WB), and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

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Mid Static Ducted Heating Capacity Tables

Heating Capacity Table for KSSJA481A (KUSXA481A / KNSJB481A)

Table 36: KSUJA361A Mid Static Ducted System Heating Capacity Table.

Outdoor Air Temp.		Indoor Air Temp. °F DB											
°F DB	°F WB	61		64		68		70		72		75	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-13	-13.4	18.6	2.70	16.7	2.77	17.0	2.87	16.9	2.91	16.8	2.94	15.9	3.03
-4	-4.4	25.0	2.89	23.4	2.98	23.1	3.05	22.8	3.12	22.6	3.15	21.6	3.24
0	-0.4	28.0	2.98	26.4	3.05	25.9	3.15	25.6	3.22	25.2	3.24	24.2	3.34
5	4.5	31.5	3.08	30.0	3.17	29.3	3.26	28.8	3.34	28.4	3.36	27.3	3.45
10	9	33.8	3.17	32.4	3.26	31.5	3.38	31.0	3.43	30.6	3.48	29.4	3.57
17	15	36.4	3.31	35.1	3.41	34.0	3.52	33.4	3.57	32.9	3.62	31.6	3.71
20	19	38.3	3.39	37.1	3.48	35.9	3.60	35.3	3.65	34.8	3.70	33.4	3.80
25	23	41.5	3.51	40.3	3.61	39.0	3.74	38.4	3.79	37.8	3.84	36.4	3.95
30	28	44.7	3.63	43.5	3.74	42.2	3.87	41.5	3.93	40.9	3.98	39.4	4.09
35	32	48.0	3.76	46.7	3.87	45.3	4.01	44.6	4.07	43.9	4.12	42.3	4.24
40	36	51.2	3.88	49.9	4.00	48.5	4.14	47.7	4.21	47.0	4.25	45.3	4.39
45	41	54.4	4.01	53.1	4.13	51.6	4.27	50.8	4.34	50.1	4.39	48.3	4.54
47	43	55.7	4.06	54.4	4.18	52.9	4.33	**52.00**	**4.40**	51.3	4.45	49.5	4.60
50	46	55.8	4.03	54.7	4.16	53.4	4.28	52.6	4.33	51.9	4.40	50.2	4.50
55	51	56.1	3.98	55.2	4.08	54.2	4.18	53.5	4.23	53.0	4.28	51.5	4.35
60	56	56.4	3.94	55.6	4.03	55.0	4.11	54.5	4.13	54.1	4.16	52.7	4.20
63	59	56.5	3.91	55.9	3.98	55.4	4.03	55.1	4.06	54.8	4.08	53.5	4.13
68	64	56.7	3.89	56.2	3.94	55.9	3.98	55.6	4.01	55.4	4.01	54.2	4.03

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.
2. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 60ºF wet bulb (WB), and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

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Maximum Heating Capacity Table for KSUJA181A (KUSXA181A / KNUJB181A)

Table 37: KSUJA181A Mid Static Ducted System Maximum Heating Capacity Table.

Outdoor Air Temp.		Indoor Air Temp. °F DB											
°F DB	°F WB	61		64		68		70		72		75	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-13	-13.4	16.3	2.41	15.9	2.48	15.5	2.56	15.2	2.60	15.0	2.64	14.5	2.73
-4	-4.4	18.8	2.53	18.4	2.61	17.9	2.70	17.6	2.75	17.4	2.77	16.7	2.86
0	-0.4	19.5	2.58	19.0	2.67	18.5	2.75	18.2	2.80	18.0	2.85	17.3	2.93
5	4.5	21.4	2.78	20.9	2.87	20.3	2.96	20.0	3.02	19.7	3.05	19.0	3.15
10	9	22.4	2.71	21.9	2.80	21.3	2.89	20.9	2.94	20.6	2.98	19.9	3.07
17	15	23.8	2.61	23.2	2.69	22.6	2.78	22.2	2.830	21.9	2.87	21.1	2.96
20	19	24.0	2.58	23.4	2.66	22.8	2.76	22.4	2.80	22.1	2.84	21.3	2.93
25	23	24.3	2.54	23.7	2.62	23.1	2.71	22.7	2.75	22.4	2.79	21.6	2.88
30	28	24.6	2.50	24.1	2.57	23.4	2.66	23.0	2.70	22.7	2.74	21.9	2.83
35	32	24.9	2.45	24.4	2.53	23.7	2.61	23.3	2.66	23.0	2.69	22.1	2.77
40	36	25.2	2.41	24.7	2.48	24.0	2.57	23.6	2.61	23.3	2.64	22.4	2.72
45	41	25.6	2.36	25.0	2.44	24.3	2.52	23.9	2.56	23.6	2.59	22.7	2.67
47	43	25.7	2.35	25.1	2.42	24.4	2.50	**24.00**	**2.540**	23.7	2.57	22.8	2.65
50	46	25.8	2.33	25.3	2.40	24.6	2.47	24.3	2.50	24.0	2.53	23.2	2.60
55	51	25.9	2.31	25.5	2.36	25.0	2.42	24.7	2.44	24.5	2.47	23.8	2.52
60	56	26.0	2.28	25.7	2.33	25.4	2.37	25.2	2.39	25.0	2.40	24.3	2.44
63	59	26.1	2.27	25.8	2.30	25.6	2.34	25.4	2.35	25.3	2.36	24.7	2.39
68	64	26.2	2.25	25.9	2.28	25.8	2.31	25.7	2.31	25.6	2.32	25.0	2.34

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.

2. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 60ºF wet bulb (WB), and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

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Mid Static Ducted Maximum Heating Capacity Tables

Maximum Heating Capacity Table for KSUJA241A (KUSXA241A / KNUJB241A)

Table 38: KSUJA241A Mid Static Ducted System Maximum Heating Capacity Table.

Outdoor Air Temp.		Indoor Air Temp. °F DB											
°F DB	°F WB	61		64		68		70		72		75	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-13	-13.4	23.1	3.67	22.6	3.79	22.0	3.91	21.6	3.98	21.3	4.03	20.5	4.16
-4	-4.4	26.6	3.84	25.9	3.96	25.2	4.08	24.8	4.15	24.5	4.21	23.6	4.33
0	-0.4	27.3	3.87	26.7	4.00	25.9	4.13	25.5	4.20	25.2	4.26	24.2	4.39
5	4.5	30.0	4.06	29.3	4.20	28.5	4.33	28.0	4.41	27.6	4.47	26.6	4.61
10	9	30.7	4.00	30.0	4.14	29.2	4.27	28.7	4.34	28.3	4.40	27.3	4.54
17	15	31.8	3.92	31.1	4.05	30.2	4.18	29.7	4.250	29.3	4.30	28.2	4.44
20	19	32.2	3.83	31.4	3.96	30.5	4.08	30.0	4.16	29.6	4.21	28.6	4.34
25	23	32.7	3.69	32.0	3.81	31.1	3.93	30.6	4.00	30.2	4.05	29.1	4.17
30	28	33.3	3.54	32.6	3.66	31.6	3.77	31.1	3.84	30.7	3.89	29.6	4.01
35	32	33.9	3.40	33.2	3.51	32.2	3.61	31.7	3.68	31.3	3.73	30.1	3.84
40	36	34.5	3.25	33.7	3.36	32.8	3.46	32.2	3.52	31.8	3.57	30.7	3.68
45	41	35.1	3.10	34.3	3.21	33.3	3.30	32.8	3.36	32.3	3.40	31.2	3.51
47	43	35.3	3.05	34.5	3.15	33.5	3.24	**33.00**	**3.300**	32.6	3.34	31.4	3.44
50	46	35.4	3.03	34.7	3.12	33.9	3.21	33.4	3.25	33.0	3.29	31.9	3.38
55	51	35.6	3.00	35.0	3.07	34.4	3.14	34.0	3.18	33.7	3.20	32.7	3.27
60	56	35.8	2.96	35.3	3.02	34.9	3.08	34.6	3.10	34.3	3.12	33.5	3.16
63	59	35.9	2.94	35.5	2.99	35.2	3.04	34.9	3.05	34.8	3.06	33.9	3.10
68	64	36.0	2.92	35.7	2.95	35.5	3.00	35.3	3.01	35.2	3.01	34.4	3.04

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.
2. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 60ºF wet bulb (WB), and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

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Maximum Heating Capacity Table for KSUJA301A (KUSXA301A / KNUJB301A)

Table 39: KSUJA301A Mid Static Ducted System Maximum Heating Capacity Table.

Outdoor Air Temp.		Indoor Air Temp. °F DB											
°F DB	°F WB	61		64		68		70		72		75	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-13	-13.4	30.25	4.49	29.58	4.64	28.73	4.79	28.25	4.87	27.88	4.94	26.87	5.09
-4	-4.4	31.59	4.42	30.88	4.58	29.99	4.72	29.50	4.80	29.12	4.87	28.05	5.01
0	-0.4	34.13	4.70	33.37	4.85	32.42	5.02	31.90	5.11	31.48	5.17	30.33	5.34
5	4.5	36.40	4.95	35.58	5.10	34.56	5.27	34.00	5.36	33.56	5.43	32.32	5.60
10	9	37.28	4.54	36.46	4.68	35.41	4.83	34.83	4.91	34.37	4.98	33.11	5.13
17	15	38.53	3.96	37.68	4.09	36.59	4.21	36.00	4.29	35.52	4.35	34.22	4.48
20	19	38.96	3.94	38.10	4.07	37.00	4.19	36.40	4.27	35.92	4.33	34.60	4.46
25	23	39.67	3.91	38.79	4.04	37.68	4.16	37.07	4.23	36.58	4.30	35.24	4.42
30	28	40.39	3.88	39.49	4.00	38.35	4.13	37.73	4.20	37.23	4.26	35.87	4.38
35	32	41.10	3.84	40.19	3.97	39.03	4.10	38.40	4.16	37.89	4.23	36.50	4.34
40	36	41.82	3.81	40.88	3.94	39.71	4.06	39.07	4.13	38.55	4.19	37.14	4.31
45	41	42.53	3.78	41.58	3.90	40.39	4.03	39.73	4.09	39.21	4.16	37.77	4.27
47	43	42.82	3.77	41.86	3.89	40.66	4.02	**40.00**	**4.08**	39.48	4.14	38.03	4.25
50	46	42.94	3.73	42.08	3.84	41.03	3.95	40.44	4.02	39.97	4.06	38.62	4.17
55	51	43.16	3.70	42.43	3.80	41.65	3.88	41.18	3.92	40.79	3.95	39.58	4.05
60	56	43.36	3.66	42.80	3.73	42.28	3.80	41.91	3.83	41.62	3.84	40.56	3.91
63	59	43.49	3.64	43.02	3.69	42.65	3.75	42.35	3.77	42.11	3.78	41.13	3.83
68	64	43.61	3.61	43.22	3.66	43.02	3.70	42.80	3.70	42.62	3.72	41.72	3.75

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.
2. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Heating capacity rating obtained with air entering the indoor unit at 70°F dry bulb (DB) and 60°F wet bulb (WB), and outdoor ambient conditions of 47°F dry bulb (DB) and 43°F wet bulb (WB).

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PERFORMANCE DATA

Mid Static Ducted Maximum Heating Capacity Tables

Maximum Heating Capacity Table for KSUJA361A (KUSXA361A / KNUJB361A)

Table 40: KSUJA361A Mid Static Ducted System Maximum Heating Capacity Table.

Outdoor Air Temp.		Indoor Air Temp. °F DB											
°F DB	°F WB	61		64		68		70		72		75	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-13	-13.4	32.12	5.07	31.41	5.24	30.51	5.41	30.00	5.50	29.61	5.58	28.54	5.74
-4	-4.4	38.02	5.62	37.16	5.82	36.09	5.99	35.50	6.10	35.04	6.19	33.76	6.37
0	-0.4	39.38	5.57	38.50	5.75	37.41	5.94	36.80	6.05	36.31	6.12	34.98	6.32
5	4.5	38.54	5.12	37.68	5.28	36.59	5.45	36.00	5.55	35.53	5.63	34.22	5.80
10	9	41.07	5.07	40.16	5.22	39.01	5.39	38.38	5.49	37.87	5.57	36.48	5.73
17	15	44.63	4.99	43.65	5.15	42.39	5.30	41.70	5.40	41.14	5.48	39.64	5.64
20	19	45.09	4.92	44.09	5.08	42.82	5.24	42.13	5.33	41.57	5.41	40.05	5.56
25	23	45.86	4.81	44.84	4.97	43.55	5.12	42.85	5.21	42.28	5.29	40.73	5.44
30	28	46.63	4.71	45.59	4.86	44.28	5.01	43.56	5.10	42.99	5.17	41.41	5.32
35	32	47.40	4.60	46.34	4.75	45.01	4.90	44.28	4.98	43.70	5.06	42.09	5.19
40	36	48.16	4.49	47.09	4.64	45.74	4.79	45.00	4.86	44.41	4.94	42.78	5.07
45	41	48.93	4.38	47.84	4.53	46.47	4.67	45.71	4.75	45.11	4.82	43.46	4.95
47	43	49.24	4.34	48.14	4.48	46.76	4.63	**46.00**	**4.70**	45.40	4.77	43.73	4.90
50	46	49.38	4.30	48.39	4.43	47.18	4.56	46.50	4.63	45.96	4.68	44.41	4.81
55	51	49.63	4.27	48.79	4.37	47.90	4.47	47.36	4.52	46.91	4.56	45.51	4.66
60	56	49.86	4.21	49.22	4.30	48.62	4.37	48.19	4.41	47.86	4.43	46.64	4.50
63	59	50.02	4.19	49.47	4.25	49.05	4.32	48.70	4.34	48.43	4.36	47.30	4.41
68	64	50.15	4.16	49.71	4.21	49.47	4.27	49.22	4.27	49.01	4.28	47.98	4.32

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.
2. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 60ºF wet bulb (WB), and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

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Maximum Heating Capacity Table for KSSJA421A (KUSXA421A / KNSJB421A)

Table 41: KSSJA421A Mid Static Ducted System Maximum Heating Capacity Table.

Outdoor Air Temp.		Indoor Air Temp. °F DB											
°F DB	°F WB	61		64		68		70		72		75	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-13	-13.4	38.44	5.86	37.58	6.05	36.51	6.24	35.90	6.35	35.43	6.44	34.15	6.63
-4	-4.4	41.23	5.99	40.30	6.20	39.14	6.39	38.50	6.50	38.01	6.59	36.61	6.78
0	-0.4	42.59	5.75	41.64	5.94	40.45	6.14	39.80	6.25	39.27	6.32	37.84	6.53
5	4.5	45.49	5.53	44.48	5.70	43.20	5.89	42.50	5.99	41.94	6.07	40.40	6.26
10	9	49.15	5.79	48.06	5.97	46.67	6.16	45.92	6.27	45.31	6.36	43.65	6.55
17	15	54.26	6.16	53.07	6.36	51.53	6.55	50.70	6.67	50.02	6.77	48.20	6.97
20	19	54.94	6.09	53.72	6.28	52.17	6.48	51.33	6.60	50.65	6.69	48.80	6.89
25	23	56.06	5.97	54.82	6.17	53.24	6.36	52.38	6.47	51.69	6.57	49.80	6.75
30	28	57.19	5.86	55.92	6.05	54.31	6.24	53.43	6.35	52.72	6.44	50.79	6.62
35	32	58.31	5.74	57.01	5.93	55.38	6.12	54.48	6.22	53.76	6.31	51.79	6.49
40	36	59.44	5.63	58.11	5.81	56.44	6.00	55.53	6.10	54.80	6.19	52.79	6.36
45	41	60.57	5.51	59.21	5.69	57.51	5.88	56.58	5.97	55.84	6.06	53.79	6.22
47	43	61.02	5.46	59.65	5.65	57.94	5.83	**57.00**	**5.92**	56.25	6.01	54.19	6.17
50	46	61.18	5.42	59.96	5.58	58.47	5.74	57.63	5.83	56.95	5.90	55.03	6.06
55	51	61.50	5.37	60.46	5.51	59.36	5.62	58.68	5.69	58.13	5.74	56.40	5.87
60	56	61.79	5.31	60.99	5.42	60.25	5.51	59.72	5.56	59.31	5.58	57.79	5.67
63	59	61.98	5.28	61.31	5.35	60.78	5.44	60.34	5.46	60.01	5.49	58.61	5.56
68	64	62.15	5.24	61.59	5.31	61.31	5.37	60.99	5.37	60.73	5.40	59.45	5.44

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.
2. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Heating capacity rating obtained with air entering the indoor unit at 70°F dry bulb (DB) and 60°F wet bulb (WB), and outdoor ambient conditions of 47°F dry bulb (DB) and 43°F wet bulb (WB).

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Mid Static Ducted Maximum Heating Capacity Tables

Maximum Heating Capacity Table for KSSJA481A (KUSXA481A / KNSJB481A)

Table 42: KSSJA481A Mid Static Ducted System Maximum Heating Capacity Table.

Outdoor Air Temp.		Indoor Air Temp. °F DB											
°F DB	°F WB	61		64		68		70		72		75	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-13	-13.4	40.36	6.15	39.46	6.35	38.33	6.56	37.70	6.67	37.20	6.76	35.86	6.96
-4	-4.4	43.29	6.29	42.32	6.51	41.10	6.71	40.43	6.83	39.91	6.92	38.44	7.12
0	-0.4	43.86	5.93	42.89	6.12	41.67	6.32	40.99	6.44	40.45	6.51	38.97	6.72
5	4.5	47.10	5.72	46.05	5.90	44.73	6.09	44.00	6.20	43.43	6.29	41.83	6.48
10	9	51.02	5.90	49.89	6.08	48.45	6.28	47.67	6.39	47.04	6.48	45.31	6.67
17	15	56.51	6.14	55.26	6.34	53.67	6.53	52.80	6.65	52.10	6.75	50.20	6.94
20	19	57.28	6.10	56.02	6.29	54.40	6.49	53.52	6.60	52.81	6.70	50.88	6.90
25	23	58.57	6.03	57.27	6.22	55.62	6.42	54.72	6.53	53.99	6.62	52.02	6.81
30	28	59.85	5.96	58.52	6.15	56.84	6.34	55.92	6.45	55.18	6.55	53.16	6.73
35	32	61.14	5.88	59.78	6.08	58.06	6.27	57.12	6.37	56.37	6.47	54.30	6.65
40	36	62.43	5.81	61.03	6.01	59.28	6.20	58.32	6.30	57.55	6.39	55.44	6.57
45	41	63.71	5.74	62.28	5.93	60.50	6.12	59.52	6.22	58.74	6.32	56.58	6.48
47	43	64.23	5.71	62.78	5.90	60.99	6.09	**60.00**	**6.19**	59.22	6.29	57.04	6.45
50	46	64.41	5.67	63.11	5.83	61.54	6.00	60.66	6.09	59.95	6.17	57.92	6.33
55	51	64.73	5.62	63.65	5.76	62.48	5.88	61.77	5.95	61.19	6.00	59.37	6.14
60	56	65.04	5.55	64.20	5.67	63.42	5.76	62.86	5.81	62.43	5.83	60.84	5.93
63	59	65.24	5.52	64.53	5.59	63.97	5.69	63.52	5.71	63.16	5.74	61.70	5.81
68	64	65.42	5.48	64.84	5.55	64.53	5.62	64.20	5.62	63.92	5.64	62.58	5.69

DB: Dry Bulb Temperature (°F) WB: Wet Bulb Temperature (°F) TC: Total Capacity (kBtu/h)

PI: Power Input (kW) (includes compressor, indoor fan motor and outdoor fan motor)

1. All capacities are net, evaporator fan motor heat is deducted.
2. Direct interpolation is permissible. ⃠ Do not extrapolate.

Capacity as rated: 0 ft. above sea level with 24.6 ft. of refrigerant piping. 0 ft. level difference between outdoor and indoor units.

Heating capacity rating obtained with air entering the indoor unit at 70ºF dry bulb (DB) and 60ºF wet bulb (WB), and outdoor ambient conditions of 47ºF dry bulb (DB) and 43ºF wet bulb (WB).

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Cooling / Heating Correction Factors

For Mid Static Ducted systems, calculate the equivalent length of the liquid line from the outdoor unit to the indoor unit. Also, determine the elevation difference of the indoor unit above or below the outdoor unit. Find corresponding cooling or heating capacity correction factors as shown below. Multiply the correction factors by the cooling or heating capacity obtained from the capacity table using design conditions. The result is the NET cooling or heating capacity.

Refrigerant Line Length Derates

For air-cooled systems, a capacity correction factor may have to be applied to account for the length of the system's refrigerant pipe. Rate of change in capacity due to increased piping lengths is shown below.

Table 43: Mid Static Ducted System Cooling and Heating Capacity Coefficient Factors.

Piping Length (ft.)		24.6	32.8	49.2	65.6	98.4	131.2	164.0	196.9	229.7	246
Cooling Capacity Coefficient Factor											
Rate of Capacity Change (%)	KUSXA181A	100	100	99	98.1	96.1	94.3	92.1	-	-	-
	KUSXA241A	100	100	99	98.1	96.1	94.3	92.1	-	-	-
	KUSXA301A	100	100	99	98.1	96.1	94.3	92.1	-	-	-
	KUSXA361A	100	98.8	97.5	96.3	93.8	91.3	88.8	86.3	83.8	82.5
	KUSXA421A	100	98.8	97.5	96.3	93.8	91.3	88.8	86.3	83.8	82.5
	KUSXA481A	100	98.8	97.5	96.3	93.8	91.3	88.8	86.3	83.8	82.5
Heating Capacity Coefficient Factor											
Rate of Capacity Change (%)	KUSXA181A	100	99.8	99.4	99	98.3	97.2	96.2	-	-	-
	KUSXA241A	100	99.8	99.4	99	98.3	97.2	96.2	-	-	-
	KUSXA301A	100	99.7	99.2	98.7	97.7	96.6	95.6	-	-	-
	KUSXA361A	100	99.7	98.4	97	96	94.9	93.9	92.9	91.8	91.3
	KUSXA421A	100	99.7	98.4	97	96	94.9	93.9	92.9	91.8	91.3
	KUSXA481A	100	99.7	98.4	97	96	94.9	93.9	92.9	91.8	91.3

Equivalent Piping Length for Piping Components

Table 44: Equivalent Piping Length for Elbows.

Component	Size (Inches)													
Elbow (ft.)	1/4	3/8	1/2	5/8	3/4	7/8	1	1-1/8	1-1/4	1-3/8	1-1/2	1-5/8	1-3/4	2-1/8
	0.5	0.6	0.7	0.8	1.2	1.3	1.5	1.6	1.8	2.0	2.1	2.3	2.5	2.8

Altitude Correction Factor

The impact of air density must be considered on systems installed at a significant altitude above sea level, therefore, locally accepted altitude correction factors must be applied.

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DEFROST CORRECTION FACTOR

Defrost Correction Factor for Heating Operation

The outdoor unit heating capacity may need to be adjusted for frost accumulation on air-cooled systems. If design day conditions are below the dewpoint of the surrounding air, frost may not be a problem and no correction factor is needed. In certain weather conditions, however, frost may form and accumulate on the air-cooled outdoor unit coil and impact the coils ability to transfer heat. If significant frost accumulates on the outdoor unit coil, a defrost algorithm will start automatically. The timing between defrost periods is determined by the system's ability to achieve a target head pressure value.

Capacity and AHRI ratings tables do not factor in capacity reduction when frost has accumulated on the condenser coil, nor during defrost operation.

Integrated heating capacity values can be obtained using the formula:

A = B x C

Where:

A = Integrated Heating Capacity.
B = Value found in the Capacity Table.
C = Correction Factor for Frost Accumulation Factor (from Table 45).

Table 45: Outdoor Unit Frost Accumulation Factor (Heating)[1].

Entering DB (ºF)	19.4	23.0	26.6	32.0	37.4	41.0	44.6
Derate factor	0.98	0.95	0.93	0.86	0.93	0.96	1.0

[1]At 85% outdoor air relative humidity.

The frost accumulation factor does not account for effects of snow accumulation restricting airflow through the outdoor unit coil.

There will be temporary reduction in capacity when frost / ice accumulates on the outside surface of the outdoor unit heat exchanger. The level of capacity reduction depends on a number of factors, for example, outdoor temperature (°F DB), relative humidity (RH), and the amount of frost present.

Check the Indoor and Outdoor Unit Selection(s)

Compare the corrected cooling and heating capacities to the load calculations. Is each capacity sufficient for the zone it serves?

For each indoor unit, the corrected capacity must be at least equal to the total of the cooling design load (plus ventilation load, if applicable) for the space(s) served by the indoor unit. For each indoor unit, the corrected capacity also must be at least equal to the total of the heating design load (plus ventilation load, if applicable) for the space(s) and / or thermal zones served by the indoor unit.

The outdoor unit selected must be large enough to offset the total cooling load for all spaces it serves (account for ventilation air cooling load if the ventilation air has not been pretreated to room neutral conditions). The outdoor unit must also be large enough to offset the total heating load for all spaces it serves.

If the corrected heating capacity ratio exceeds 100%, reselect the equipment, or change the system design by moving some of the load to another system.

System Sizing Check Formulas

1. Outdoor Unit Rated Capacity.

$Q_{odu(rated)}$ (From capacity tables).

2. Outdoor Unit Capacity at Ti, To Temperature.

$Q_{odu(Ti,\ To)}$ (From capacity tables).

3 Outdoor Unit Capacity Coefficient Factor.

$F_{(Ti,\ To)} = Q_{odu(Ti,\ To)} / Q_{odu(rated)}$

4. Piping Correction Factor (From Capacity Coefficient Factor Tables).

$F_{(length)}$ for each piping length

5. Individual Indoor Unit Combination Capacity.

$Q_{idu\ (combi)} = Q_{odu(rated)} \times Q_{idu(rated)} / Q_{idu(rated\text{-}total)}$

6. Individual Indoor Unit Actual Capacity.

$Q_{idu\ (actual)} = Q_{odu(combi)} \times F_{(Ti,\ To)} \times F_{(length,\ altitude)}$

Conclusions and Recommendations

- Understand the design safety factors.
- Reference load calculations for actual cooling and heating capacities (applies in 99% of applications – consider total load when latent load is greater than 30%).
- Verify that the sensible load of the zone is satisfied.
- Use caution when sizing to meet listed capacity specifications for the scheduled manufacturer's equipment.

If further system design assistance is needed, or you have a unique application you would like to discuss, contact your LG sales rep.

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APPLICATION GUIDELINES

Placement / Clearance Considerations for Indoor Units on page XX
Placement / Clearance Considerations for Outdoor Units on page XX
Installing Outdoor Units Indoors on page XX

PLACEMENT / CLEARANCE CONSIDERATIONS

Indoor Units

Selecting the Best Location for the Indoor Unit

NOTICE

Follow recommended best practices when choosing an indoor location for the single zone indoor unit.

Dos

Select a location for installing the indoor units that will meet the following conditions:

- *Place the unit where air circulation will not be blocked.*
- *Locate the indoor unit in a location that is level, with enough strength to bear the weight of the indoor unit(s), and where it can be easily connected to the outdoor unit.*
- Place the unit where drainage can be obtained easily and to minimize the length of the condensate drain piping; include space for drainage to ensure condensate flows properly out of the unit when it is in cooling mode.
- *Include enough space around the indoor unit so that it is accessible for maintenance and service purposes. Include enough space to be able to clean the filter.*
- *Place the unit in a location where electrical noise / electromagnetic waves will not impact operation. Maintain proper distances between the indoor units and electric wires, audio and visual appliances, breaker / circuit panels, etc.*
- *Place the unit where operating sound from the unit will not disturb occupants.*
- *Confirm that there is enough space for and between the indoor unit and any mounting hardware.*

⃠ Do Nots

- *No obstacles to air circulation around the unit; keep proper distances from ceilings, doorways, floor, walls, etc.*
- *The unit should not be installed near a heat or steam source, or where considerable amounts of oil, iron powder, or flour are used. (These materials may generate condensate, cause a reduction in heat exchanger efficiency, or the drain to malfunction. If this is a potential problem, install a ventilation fan large enough to vent out these materials.)*
- *Avoid installing the unit near high-frequency generators or near any equipment that generates an electromagnetic field (minimum 3-1/3 feet away).*

⚠ WARNING

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

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, certain components are at risk of being corroded. Appropriate anti-corrosion methods should be taken for the unit and all components.

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

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Installing in an Area Exposed to Unconditioned Air

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

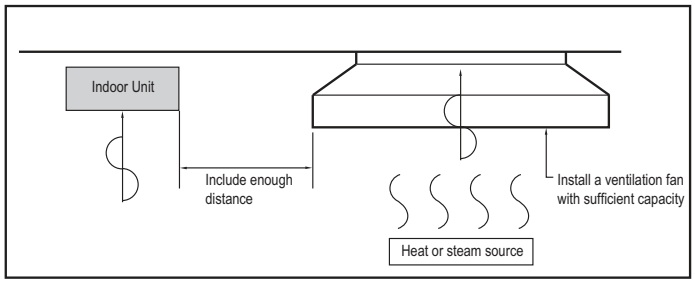
- Verify that carpet is or will be installed (carpet will increase the temperature by three degrees).
- Add insulation between the floor joists.
- Install radiant heat or another type of heating system to the floor.

Installing in an Area with High Humidity Levels

If the environment is prone to humidity levels of 80% or more (near the ocean, lakes, etc.) or where steam could collect in the plenum:

- Install additional insulation to the indoor unit (glass wool insulation >13/32 inches thick).
- Install additional insulation to the refrigerant piping (insulation >13/16 inches thick).
- Seal all gaps between the indoor unit and the ceiling tiles (make the area air tight) so that humidity does not transfer from the plenum to the conditioned space. Also, add a ceiling grille for ventilation.

Figure 21: Installing Near a Heat or Steam Source.



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PLACEMENT / CLEARANCE CONSIDERATIONS

Outdoor Units

Selecting the Best Location for the Outdoor Unit

⚠DANGER

- ⃠ *Do not install the unit in an area where combustible gas will generate, flow, stagnate, or leak. These conditions can cause a fire, resulting in bodily injury or death.*
- ⃠ *Do not install the unit in a location where acidic solution and spray (sulfur) are often used as it can cause bodily injury or death.*
- ⃠ *Do not use the unit in environments where oil, steam, or sulfuric gas are present as it can cause bodily injury or death.*

⚠WARNING

When deciding on a location to place the outdoor unit, be sure to choose an area where run-off from defrost will not accumulate and freeze on sidewalks or driveways, which will create unsafe conditions. Properly install and insulate any drain hoses to prevent the hose from freezing, cracking, leaking, and causing unsafe conditions from frozen condensate.

Install a fence to prevent pests from crawling into the unit or unauthorized individuals from accessing it. Pests and unauthorized individuals can damage internal components which can cause a fire, electric shock, physical injury or death. Follow the placement guidelines set forth in "Clearance Requirements".

Select a location for installing the outdoor unit that will meet the following conditions:

Dos

- *Where there is enough strength to bear the weight of the unit.*
- *A location that allows for optimum air flow and is easily accessible for inspection, maintenance, and service.*
- *Where piping between the outdoor unit and indoor unit is within allowable limits.*
- *Include space for drainage to ensure condensate flows properly out of the unit when it is in heating mode.* ⃠ *Avoid placing the outdoor unit in a low-lying area where water could accumulate.*
- *If the outdoor unit is installed in a highly humid environment (near an ocean, lake, etc.), ensure that the site is well-ventilated and has a lot of natural light (Example: Install on a rooftop).*

⃠ **Do Nots**

- *Where it will be subjected to direct thermal radiation from other heat sources, or an area that would expose the outdoor unit to heat or steam like discharge from boiler stacks, chimneys, steam relief ports, other air conditioning units, kitchen vents, plumbing vents, and other sources of extreme temperatures.*
- *Where high-frequency electrical noise / electromagnetic waves will affect operation.*
- *Where operating sound from the unit will disturb inhabitants of surrounding buildings.*
- *Where the unit will be exposed to direct, strong winds.*
- *Where the discharge of one outdoor unit will blow into the inlet side of an adjacent unit (when installing multiple outdoor units).*

NOTICE

The indoor unit may take longer to provide heat, or heating performance will be reduced in winter if the outdoor unit is installed:

1. *In a narrow, shady location.*
2. *Near a location that has a lot of ground moisture.*
3. *In a highly humid environment.*
4. *In an area in which condensate does not drain properly.*

Outdoor Unit Condensate Drain Piping

Outdoor unit requires condensate drain piping. Condensate drain pipe is constructed with materials approved by local code. See pages XX-XX for information in reference to outdoor unit placement.

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Planning for Snow and Ice

To ensure the outdoor unit operates properly, certain measures are required in locations where there is a possibility of heavy snowfall or severe windchill or cold:

1. Prepare for severe winter wind chills and heavy snowfall, even in areas of the country where these are unusual phenomena.
2. Position the outdoor unit so that its airflow fans are not buried by direct, heavy snowfall. If snow piles up and blocks the airflow, the system will malfunction.
3. Remove any snow that has accumulated four (4) inches or more on the top of the outdoor unit.
4. In climates that will experience significant snow buildup, mount the outdoor unit on a raised, field-provided platform or stand. The raised support platform must be high enough to allow the unit to remain above possible snow drifts, and must be higher than the maximum anticipated snowfall for the location.
5. Design the mounting base to prevent snow accumulation on the platform in front or back of the unit frame.
6. Provide a field fabricated snow protection hood to keep snow and ice and/or drifting snow from accumulating on the coil surfaces.
7. To prevent snow and heavy rain from entering the outdoor unit, install the condenser air inlets and outlets facing away from direct winds.
8. Consider tie-down requirements in case of high winds or where required by local codes.

⚠CAUTION

When deciding on a location to place the outdoor unit, be sure to choose an area where run-off from defrost will not accumulate and freeze on sidewalks or driveways, which will create unsafe conditions.

NOTICE

Choose an area where run-off from defrost mode will not accumulate and freeze on sidewalks or driveways. Properly install and insulate any drain hoses to prevent the hose from freezing, cracking, leaking, and damaging the outdoor unit.

Tie-Downs, Lightning Protection, and Wind Protection

Tie-Downs

- The strength of the roof must be checked before installing the outdoor units.
- The strength of the outdoor unit frames is adequate to be used with field-provided wind restraint tie-downs.
- If the installation site is prone to high winds or earthquakes, when installing on the wall or roof, securely anchor the mounting base using a field-provided tie-down configuration approved by a local professional engineer.
- The overall tie-down configuration must be approved by a local professional engineer.

NOTICE

Always refer to local code when using a wind restraint system.

Lightning Protection

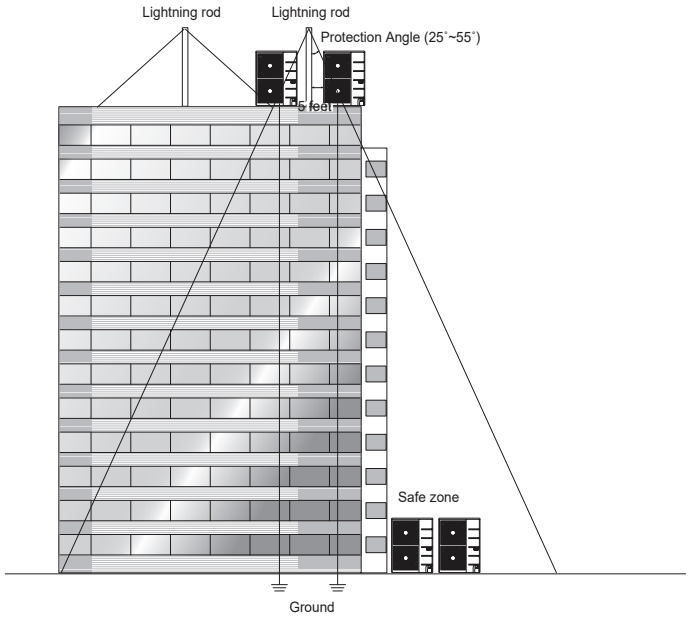
- To protect the outdoor unit from lightning, it must be placed within the specified lightning safety zone.

Table 46: Safety Zone Specifications.

Building Height (feet)	66	98	148	197
Protection Angle (˚)	55	45	35	25

- Power cable and communication cable must be installed five (5) feet away from lightning rod.
- A high-resistance ground system must be included to protect against induced lightning or indirect strike.

Figure 22: Lightning Protection Diagram (Outdoor Unit Appearances Differ According to Model).



NOTICE

If the building does not include lightning protection, the outdoor unit will be damaged from a lightning strike. Inform the customer of this possibility in advance.

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PLACEMENT / CLEARANCE CONSIDERATIONS

Outdoor Units

Oceanside Applications

Wind Protection

If the outdoor unit is placed on a roof, position it with the compressor end (no coil surface) in the direction of the prevailing wind as shown in the figure at right. In cooler climates, it may be beneficial to position the unit in direct sunlight to assist with defrost operations.

If the outdoor unit is not placed on a roof, place it on the leeward side of the building or in a location where the unit will not be exposed to constant wind.

If placement exposes the unit to constant wind activity, construct a wind break in front of the unit. Follow the placement guidelines set forth in “Clearance Requirements”.

Figure 23: Prevailing Wind Direction.

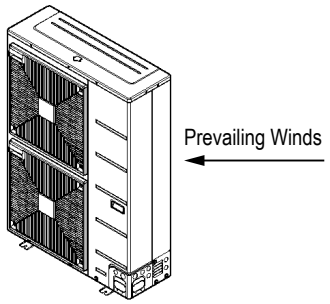
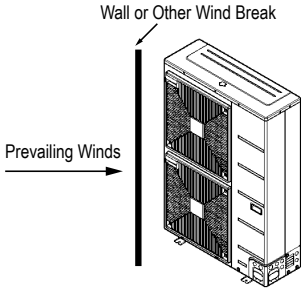


Figure 24: Leeward Side of the Building.



Figure 25: Wind Break.



Oceanside Application Precautions

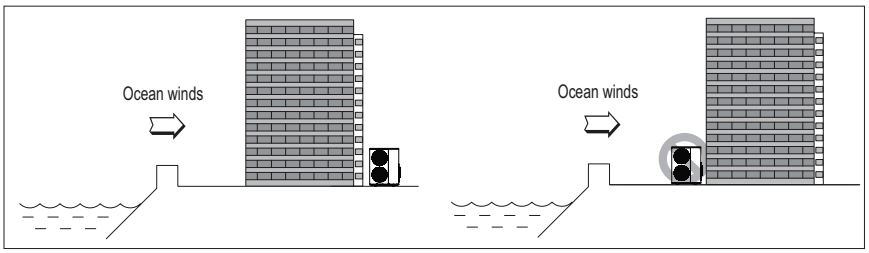
NOTICE

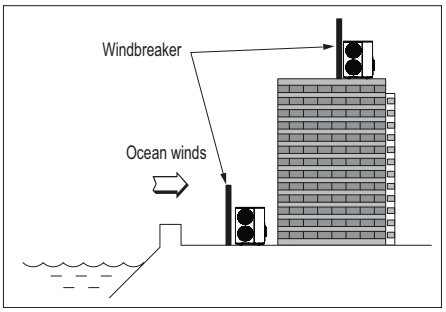
Ocean winds will cause corrosion, particularly on the condenser and evaporator fins, which, in turn could cause product malfunction or inefficient performance.

- ⃠ Avoid installing the outdoor unit where it would be directly exposed to ocean winds.
- Install the outdoor unit on the side of the building opposite from direct ocean winds.
- Select a location with good drainage.
- Periodically clean dust or salt particles off of the heat exchanger with water.

If the outdoor unit must be placed in a location where it would be subjected to direct ocean winds, install a concrete windbreak strong enough to block any winds. Windbreaker height and width must be more than 150% of the outdoor unit, and be installed at least 14 to 28 inches away from the outdoor unit to allow for airflow (depending on the location and outdoor unit size).

Figure 26: Oceanside Placement Using a Building as Shield, and Placement Using a Windbreak.





NOTICE

Additional anti-corrosion treatment may need to be applied to the outdoor unit at oceanside locations.

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Minimum Allowable Clearance and Service Access Requirements

Proper clearance for the outdoor unit coil is critical for proper unit operation. When installing the outdoor unit, consider service, inlet and outlet and minimum allowable space requirements as illustrated in the diagrams on the following pages.

- Include enough space for airflow and for service access. If installing multiple outdoor units, ⃠ avoid placing the units where the discharge of one unit will blow into the inlet side of an adjacent unit.
- If an awning is built over the unit to prevent direct sunlight or rain exposure, make sure that the discharge air of the outdoor unit isn't restricted.
- ⃠ No obstacles to air circulation around the unit; keep proper distances from ceilings, fences, floor, walls, etc. (Install a fence to prevent pests from damaging the unit or unauthorized individuals from accessing it.)

Minimum Clearance Requirements for Single Fan Outdoor Units

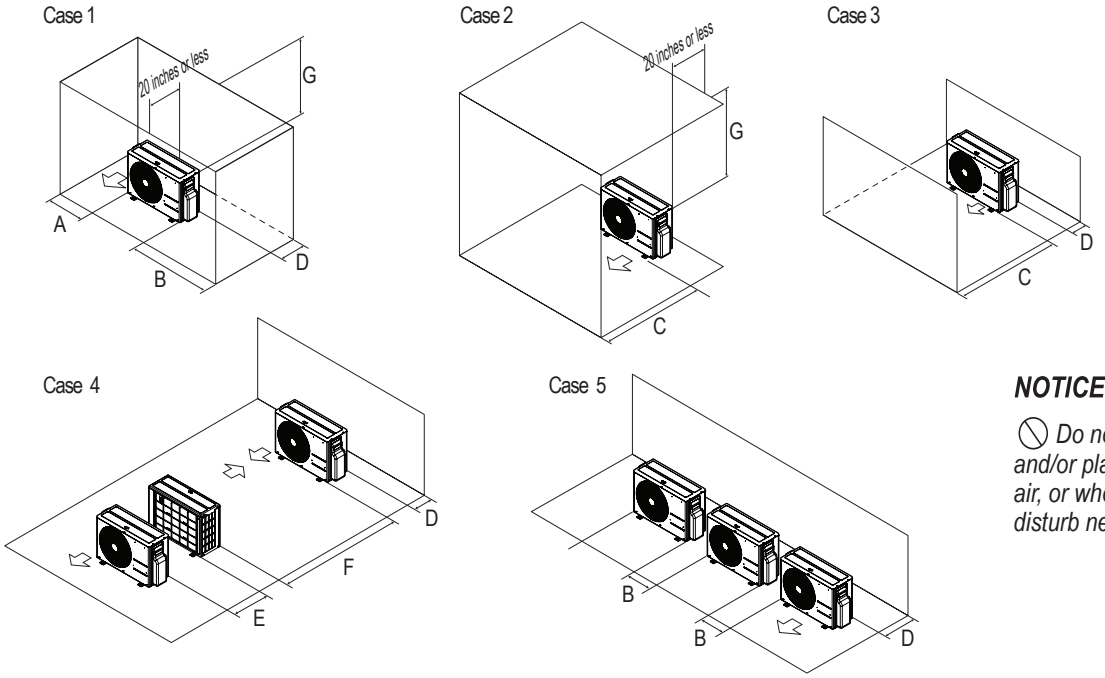
Specific clearance requirements in the diagram below are for single fan outdoor units. The figure below shows the overall minimum clearances that must be observed for safe operation and adequate airflow around the outdoor unit.

When placing the outdoor unit under an overhang, awning, sunroof or other "roof-like structure", observe the clearance requirements (as shown in Cases 1 and 2) for height in relation to the unit. To have successful service access to the outdoor unit, see the figure below for minimum spacing. When installing multiple outdoor units, see Cases 4 and 5 for correct spacing requirements.

NOTICE

If the outdoor unit is installed between standard and minimum clearances, capacity decreases approximately 10%.

Figure 27: Single Fan Outdoor Unit Service Access and Allowable Clearances Diagram.



NOTICE

⃠ *Do not place the unit where animals and/or plants will be in the path of the warm air, or where the warm air and/or noise will disturb neighbors.*

Table 47: Single Fan Outdoor Unit Service Access and Allowable Clearances Diagram Legend.

Unit: Inch		A	B	C	D	E	F	G
Case 1	Standard	12	24	-	12	-	-	-
	Minimum	4	10	-	4	-	-	40
Case 2	Standard	-	-	20	-	-	-	-
	Minimum	-	-	14	-	-	-	40
Case 3	Standard	-	-	20	12	-	-	-
	Minimum	-	-	14	4	-	-	-
Case 4	Standard	-	-	-	12	24	-	-
	Minimum	-	-	-	4	8	79	-
Case 5	Standard	-	24	-	12	-	-	-
	Minimum	-	10	-	4	-	-	-

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PLACEMENT / CLEARANCE CONSIDERATIONS

Outdoor Units

Minimum Allowable Clearance and Service Access Requirements

Proper clearance for the outdoor unit coil is critical for proper unit operation. When installing the outdoor unit, consider service, inlet and outlet and minimum allowable space requirements as illustrated in the diagrams on the following pages.

- Include enough space for airflow and for service access. If installing multiple outdoor units, ⃠ avoid placing the units where the discharge of one unit will blow into the inlet side of an adjacent unit.
- If an awning is built over the unit to prevent direct sunlight or rain exposure, make sure that the discharge air of the outdoor unit isn't restricted.
- ⃠ No obstacles to air circulation around the unit; keep proper distances from ceilings, fences, floor, walls, etc. (Install a fence to prevent pests from damaging the unit or unauthorized individuals from accessing it.)

Minimum Clearance Requirements for Single Fan Outdoor Units

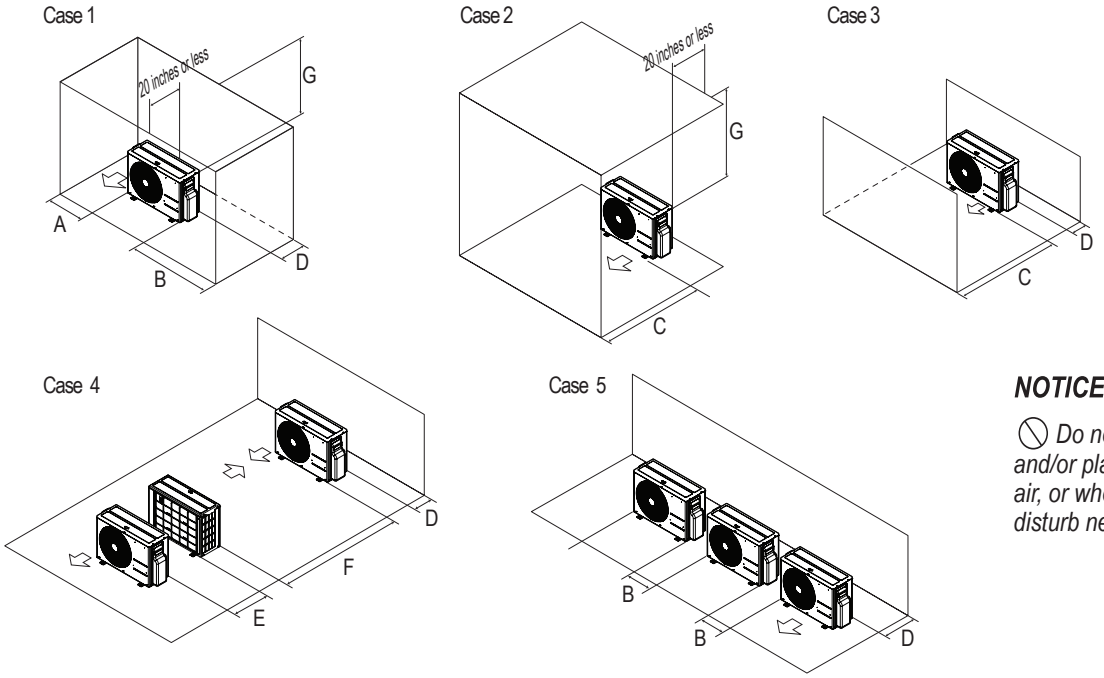
Specific clearance requirements in the diagram below are for single fan outdoor units. The figure below shows the overall minimum clearances that must be observed for safe operation and adequate airflow around the outdoor unit.

When placing the outdoor unit under an overhang, awning, sunroof or other "roof-like structure", observe the clearance requirements (as shown in Cases 1 and 2) for height in relation to the unit. To have successful service access to the outdoor unit, see the figure below for minimum spacing. When installing multiple outdoor units, see Cases 4 and 5 for correct spacing requirements.

NOTICE

If the outdoor unit is installed between standard and minimum clearances, capacity decreases approximately 10%.

Figure 28: Single Fan Outdoor Unit Service Access and Allowable Clearances Diagram.



NOTICE

⃠ *Do not place the unit where animals and/or plants will be in the path of the warm air, or where the warm air and/or noise will disturb neighbors.*

Table 48: Single Fan Outdoor Unit Service Access and Allowable Clearances Diagram Legend.

Unit: Inch		A	B	C	D	E	F	G
Case 1	Standard	12	24	-	12	-	-	-
	Minimum	4	10	-	4	-	-	40
Case 2	Standard	-	-	20	-	-	-	-
	Minimum	-	-	14	-	-	-	40
Case 3	Standard	-	-	20	12	-	-	-
	Minimum	-	-	14	4	-	-	-
Case 4	Standard	-	-	-	12	24	-	-
	Minimum	-	-	-	4	8	79	-
Case 5	Standard	-	24	-	12	-	-	-
	Minimum	-	10	-	4	-	-	-

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Minimum Clearance Requirements for Dual Fan Outdoor Units

Figures below and on the next page illustrate clearance requirements for various installation scenarios for dual fan outdoor units. Use the hot isle / cold isle approach when placing multiple units in close proximity to each other. Outdoor unit fans draw air from the back of the unit and discharges out the front. Place units back to back and face to face.

NOTICE

- *Installation clearances must comply with local building codes.*
- *All figures not to scale.*
- ⃠ *Never place multiple units facing back to front or front to back as shown immediately below here or high and low system pressure problems will occur.*

Figure 29: Improper Outdoor Unit Placement.

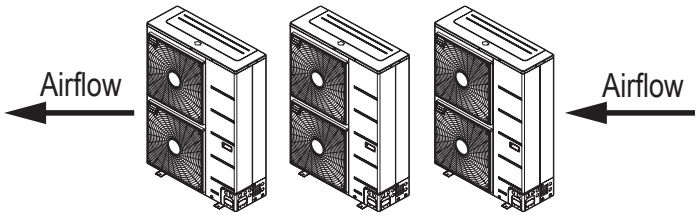
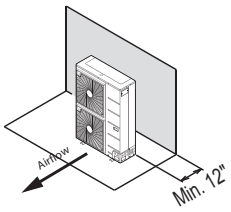
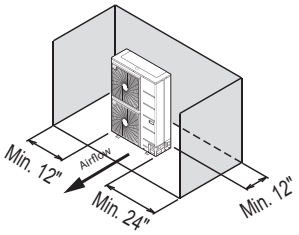


Figure 30: Proper Outdoor Unit Placement and Clearances When There Are Obstacles on the Suction Side.

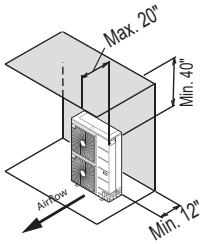
Single Unit—High Rear Wall



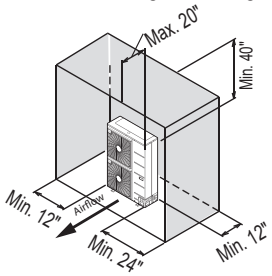
Single Unit—High Rear Wall with High Side Walls



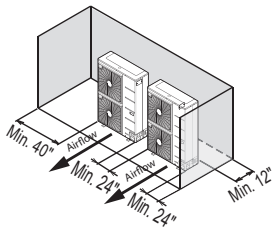
Single Unit—High Rear Wall with Building Overhang



Single Unit—High Rear and Side Walls with Building Overhang



Side by Side—High Rear and Side Walls



Side by Side—High Rear and Side Walls with Building Overhang

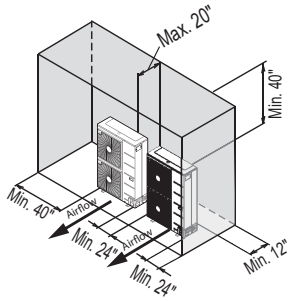
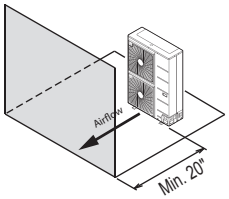
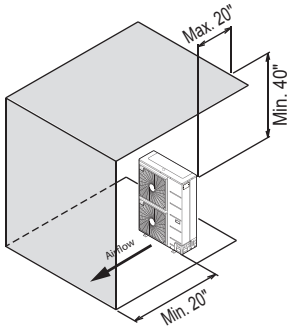


Figure 31: Proper Outdoor Unit Placement and Clearances When There Are Obstacles on the Discharge Side.

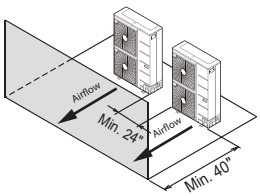
Single Unit—High Front Wall with No Side Walls



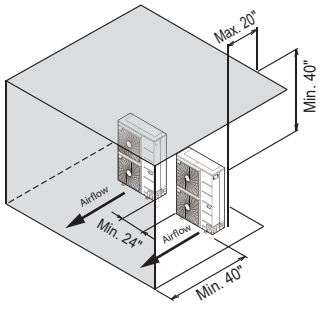
Single Unit—High Front Wall with Building Overhang and No Side Walls



Side by Side—High Front Wall with No Side Walls



Side by Side—High Front Wall with Building Overhang and No Side or Rear Walls



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PLACEMENT / CLEARANCE CONSIDERATIONS

Outdoor Units

Minimum Clearance Requirements for Dual Fan Outdoor Units, Continued.

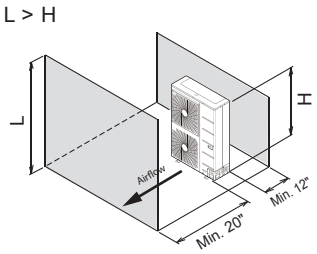
NOTICE

- *Installation clearances must comply with local building codes.*
- *All figures not to scale.*

Figure 32: Proper Outdoor Unit Placement and Clearances When There Are Obstacles on the Suction and the Discharge Sides.

When Obstacle Height of the Discharge Side is Higher than the Outdoor Unit.

Single Unit—High Rear and Front Walls with No Side Walls



Single Unit—High Rear and Front Walls with Building Overhang

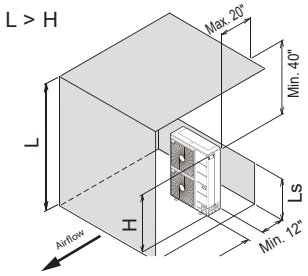


Table 49: H, A, and L Ratio.

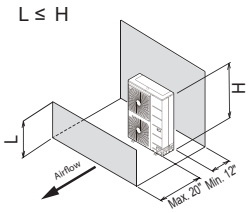
	Ls	A (Inches)
L ≤ H	0 < Ls ≤ 1/2 H	30
	1/2 H < Ls	40
H < L	Set Stand as: L ≤ H	

NOTICE

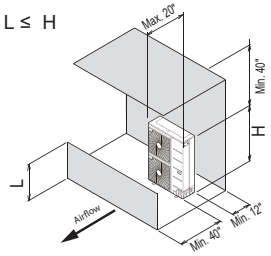
"L" must be lower than "H". If a stand is necessary, it must be made of solid material (not an open frame) to prevent the discharge air from short cycling.

Obstacle Height of Discharge Side Is Lower than the Outdoor Unit.

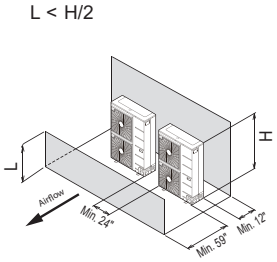
Single Unit—High Rear Wall and Low Front Wall with No Side Walls



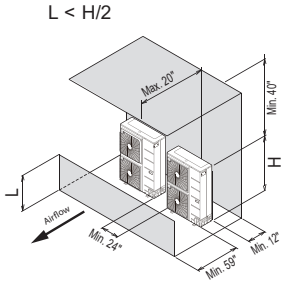
Single Unit—High Rear Wall and Low Front Wall with Building Overhang and No Side Walls



Side by Side—High Rear Wall and Low Front Wall with No Side Walls

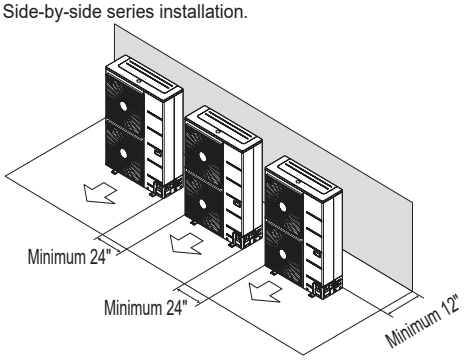


Side by Side—High Rear Wall and Low Front Wall with Building Overhang and No Side Walls

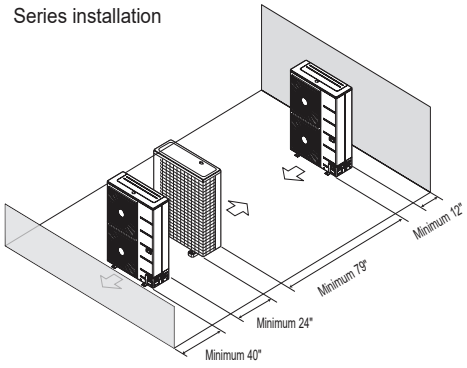


Series Installation

Side-by-side series installation.



Series installation



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Installing Outdoor Units Indoors

Single Zone outdoor units are engineered to be mounted outdoors and include technology designed to minimize the negative effects of winter weather's freezing rain, sleet, and snow. Some building projects, however, necessitate placing the HVAC outdoor units indoors:

- Lack of ground space.
- Lack of an appropriate outdoor location that meets system design requirements.
- When mounting on the roof is not an option due to a lack of roof space.
- Roof warranty will be voided if mechanical equipment is placed on the membrane.
- On retrofit projects, a former chiller / boiler / air handler equipment room, mechanical area, or penthouse already exists.
- To curtail the potential need for redundant zone heating devices such as wall-fin radiators or duct heaters.
- In extremely cold environments where there is a significant amount of run-time at temperatures well below freezing outside the outdoor unit ambient air temperature range published in this engineering manual.

Benefits of Installing Outdoor Units Indoors

- Shelters the outdoor unit from direct exposure to prevailing winds that decrease the heating capability of the outdoor unit.
- Protects equipment from freezing precipitation and / or potential ice build-up that could hinder unit operation.
- Maintains coil heat transfer efficiency by reducing the number of and shortening the cycle time for defrost operation.
- Easier maintenance and servicing during inclement weather.
- When mounted in a fully enclosed space, limiting the ambient air temperature will allow the Single Zone system designer to eliminate over-sizing.
- The outdoor unit to compensate for loss of capacity at low ambient temperatures.
- Will also curtail the need to provide inefficient redundant zone heating devices such as wall-fin radiators and second-stage ancillary heating devices.

Design Considerations Include:

- Enclosure types and elements such as louvers (see next page), rain hoods, dampers and controls, heating methods and sizing of heating devices.
- Heating strategies.
- Duct design.
- Condensate handling.

General Guidelines

- Follow ASHRAE 62.1 design guidelines.
- Depending on the project / application, a roof over the outdoor units in combination with a wind break will be all that is necessary.
- Consider the potential for snow accumulation near louvers / roof openings. Outside air intakes and discharge ducts / louvers must be engineered to clear anticipated snow accumulation levels by at least one (1) foot.
- In situations where operation is anticipated at temperatures lower than the product's minimum operating temperature, ancillary heat must be provided to heat the outdoor unit coils to ensure continuous compressor operation and heating.

It may be necessary to use a field-fabricated air guide to prevent discharge air from short-cycling back to the coil inlet.

- Consider the direction of prevailing winds and opening placement. If possible, locate inlet openings upwind of discharge openings and other exhaust outlets.
- When inlet and outlet openings are placed on the same wall, minimum distance between the two openings must be approximately three (3) feet (minimum distance varies significantly with variations in outlet opening face velocity).
- If roof-mounted ventilation openings are used, strategically locate the inlet ventilation opening(s) upwind of the outlet opening(s).
- Discharge and supply ductwork must be designed to avoid weather related long periods of water entrainment and the potential for microbial growth.

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INSTALLING OUTDOOR UNITS INDOORS

Provide a means to drain the condensate generated during heating mode and defrost cycle in addition to rainwater that infiltrates the inlet louver enclosed area.

- Install a field-provided drain pan under the outdoor units and provide a path to a nearby floor drain.
- If the ambient air temperature is expected to drop below 32°F in the enclosure, heat the bottom surface of the pan, drain line, and floor drain so that the condensate does not freeze before reaching the drain.

⚠CAUTION

When deciding on a location to place the outdoor unit, be sure to choose an area where run-off from defrost will not accumulate and freeze on walk-ways, which will create unsafe conditions.

Allow for ventilation intake and exhaust air based on maximum outdoor unit fan capacity.

- Select the size, type and orientation of architectural louvers with adequate "net free area" face velocity to ensure the total external static pressure from the outdoor unit fan does not exceed design limitations (see specification data tables).
- ⃠ No obstructions must be placed in front of the louver that could hamper the free flow (throw) of air.
- Roof top openings and / or discharge and supply louvers must be equipped with screens to prevent bird and insect infiltration.

NOTICE

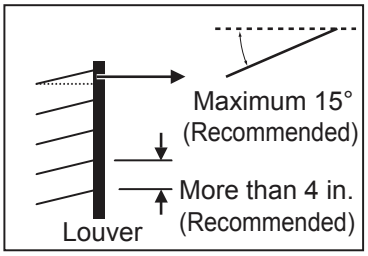
For louver recommendations, see below and on the next page.

As always, the best solution for each project balances acceptable heating performance (considering local weather conditions), capital costs, life cycle energy consumption, and limitations set forth by local building codes.

Louver Recommendations for Outdoor Unit Enclosure

1. Outdoor Unit Enclosure: Manual Door Open Type.
2. Louver Angle: No More Than 15° Horizontally.
3. Space Between Louvers: More than four (4) inches (Recommend).
4. Louver Shape: Wing or Plane Type.

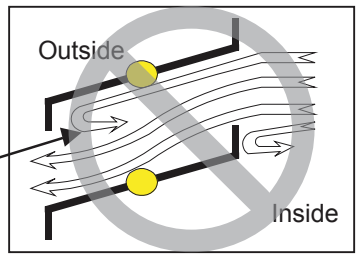
Figure 33: Louver Recommendations.



NOTICE

- Open Rate and Inlet must be taken into consideration when designing the louvered outdoor unit enclosure.
- ⃠ Do not use "S" type louvers.

Table 50: Using "S" Type Louvers.



NOTICE

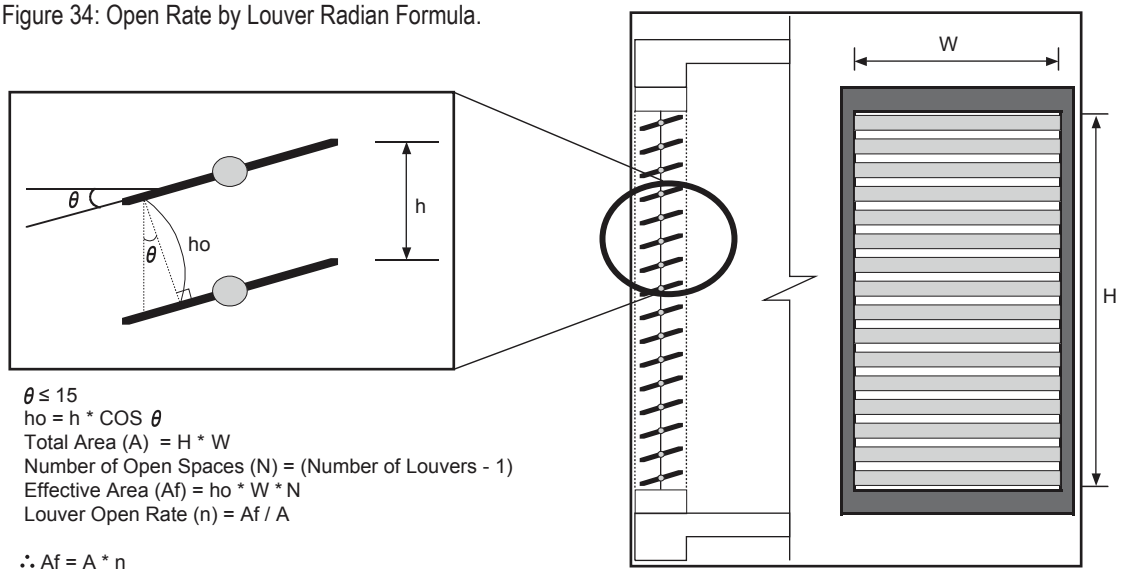
If the Louver Open Rate is Too Small

1. Noise can occur because of the increased air velocity passing through the louver blade.
2. Noise can occur from louver blade vibrations.
3. A drop in outdoor unit fan performance (excess static pressure can cause a drop in outdoor unit performance and heat exchanger efficiency).
4. If the louver open rate is too small or there is insufficient air flow exchange, the air conditioner might stop operating.

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Open Rate by Louver Radian

Figure 34: Open Rate by Louver Radian Formula.



$\theta \leq 15$
ho = h * COS θ
Total Area (A) = H * W
Number of Open Spaces (N) = (Number of Louvers - 1)
Effective Area (Af) = ho * W * N
Louver Open Rate (n) = Af / A

$\therefore$ Af = A * n

Effective Cross Section Area

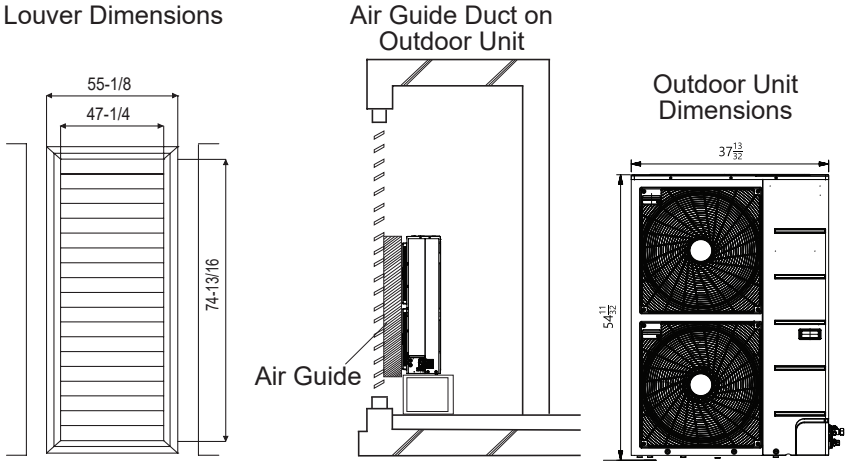
Confirming Air Flow Rate / Total Opening Rate

- Example: KUSXB481A (For illustrative purposes only).
- Discharge Airflow Rate: 3,884 ft.^{3}/min.
- Velocity of Outlet Air: 13.8 ft./s
- Velocity of Inlet Air: 7.1 ft./s
- Open Rate = 80% or More

  $$\text{Open Rate} = \frac{\text{Effective Face Area (Af)}}{\text{Total Face Area (A)}}$$

- Inlet airflow must match or exceed discharge airflow.
- Separate inlet airflow from discharge airflow to prevent recirculation.

Figure 35: Example of Installing Outdoor Unit Indoors.



Unit: Inch

Formula

- Total Louver Dimension (Excluding Frame) (A) = 3.9 feet x 6.2 feet = 24.2 ft.^{2}
- Area Blocked by Outdoor Unit (Discharge) (B) = 3.1 feet x 4.5 feet = 13.95 ft.^{2}
- Inlet Louver Dimension (A - B) = 10.25 ft.^{2}
- Equivalent Inlet Dimension (Open Rate 80%) = 10.25.^{2} x 0.8 = 8.2 ft.^{2}
- Equivalent Inlet Airflow = 8.2 ft.^{2} x 7.1 ft./s x 60 sec./min. = 3,493 ft.^{3}/min.
- Equivalent Inlet Airflow / Discharge Airflow = 3,493 ft.^{3}/min. / 3,884 ft.^{3}/min. = 89.9% (Within Allowable Limits)

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REFRIGERANT PIPING DESIGN

Refrigerant Flow Diagrams on page XX
Connection Limitations and System Layout on page XX
Additional Refrigerant Charge on page XX
Refrigerant Piping System Engineering on page XX

REFRIGERANT FLOW DIAGRAMS

Outdoor Units KUSXA181A, KUSXA241A, KUSXA301A, KUSXA361A

Figure 35: KUSXA181A, KUSXA241A, KUSXA301A, KUSXA361A Refrigerant Flow Diagram.

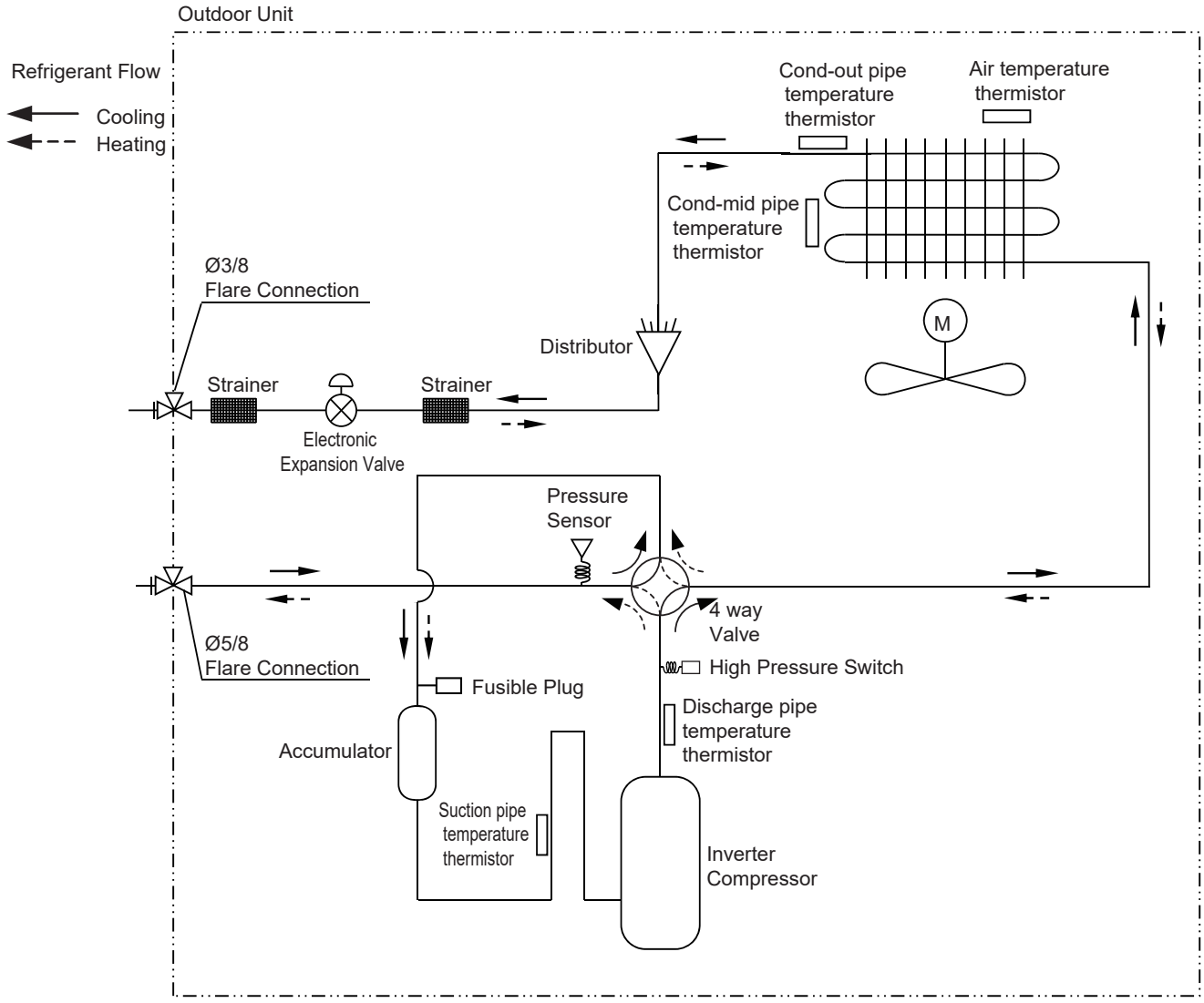


Table 50: KUSXA181A, KUSXA241A, KUSXA301A, KUSXA361A Mid Static Ducted Outdoor Unit Thermistor Details.

Description	PCB Connector
Discharge Pipe Temperature Thermistor	CN6_BK
Suction Pipe Temperature Thermistor	CN5_GN
Condenser Outlet Pipe Temperature Thermistor	CN7_VI
Air Temperature Thermistor	CN8_YL
Condenser Middle Pipe Temperature Thermistor	CN4_BR
Pressure Sensor	CN9_RD
Pressure Switch	CN_PRESS_SW

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Figure 36: KUSXA421A, KUSXA481A Refrigerant Flow Diagram.

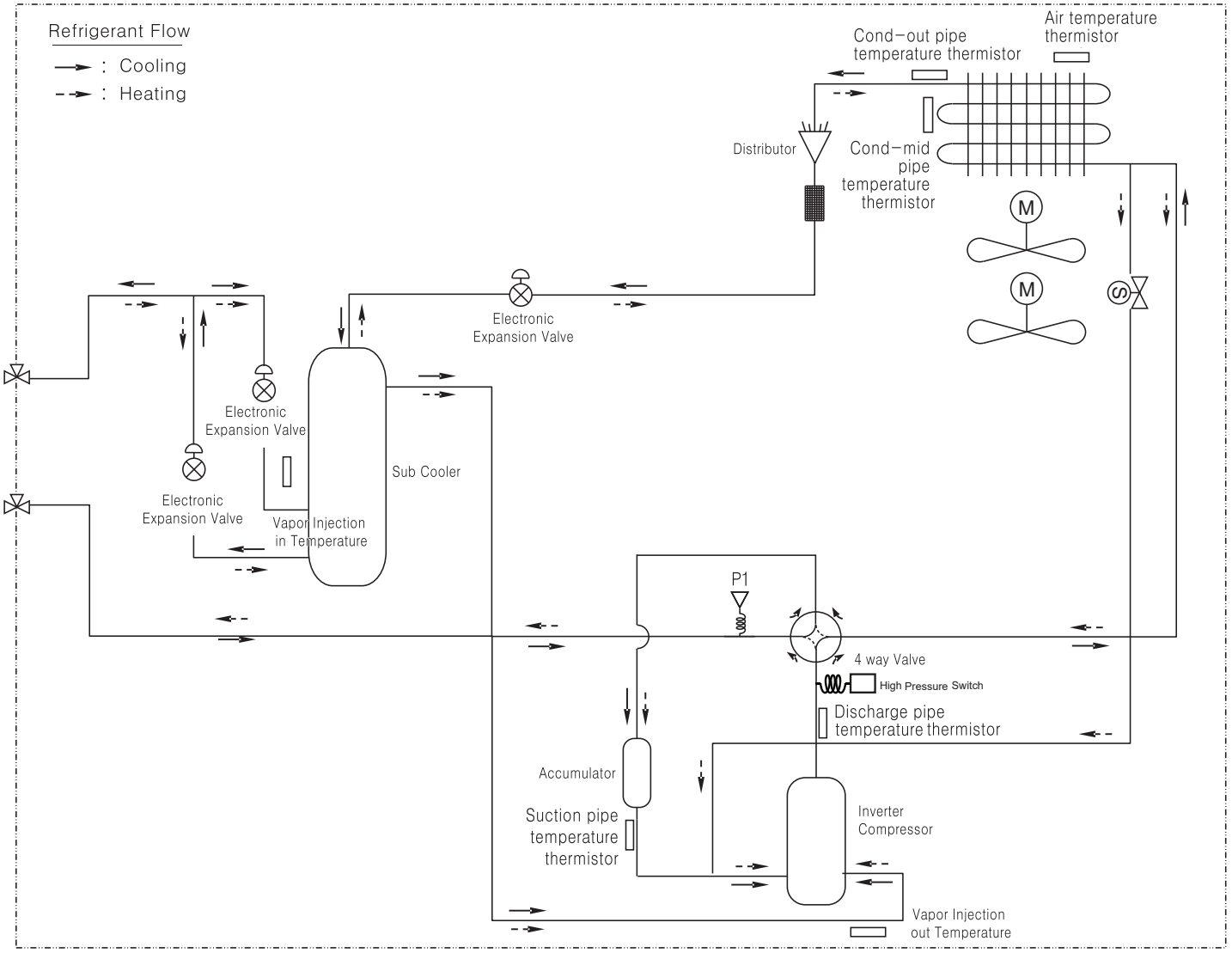


Table 51: KUSXA421A, KUSXA481A Mid Static Ducted Outdoor Unit Thermistor Details.

Description	PCB Connector
Discharge Pipe Temperature Thermistor	CN6_BK
Suction Pipe Temperature Thermistor	CN5_GN
Condenser Outlet Pipe Temperature Thermistor	CN7_VI
Air Temperature Thermistor	CN8_YL
Condenser Middle Pipe Temperature Thermistor	CN4_BR
Vapor Injection Inlet Temperature Thermistor	VI_In --> CN11_WH
Vapor Injection Outlet Temperature Thermistor	VI_Out --> CN12_BL
Pressure Sensor	CN9_RD
Pressure Switch	CN_PRESS_SW

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REFRIGERANT FLOW DIAGRAMS

Indoor Units KNUJB181A , KNUJB241A

Figure 37: KNUJB181A , KNUJB241A Mid-Static Ducted Indoor Unit Refrigerant Flow Diagram.

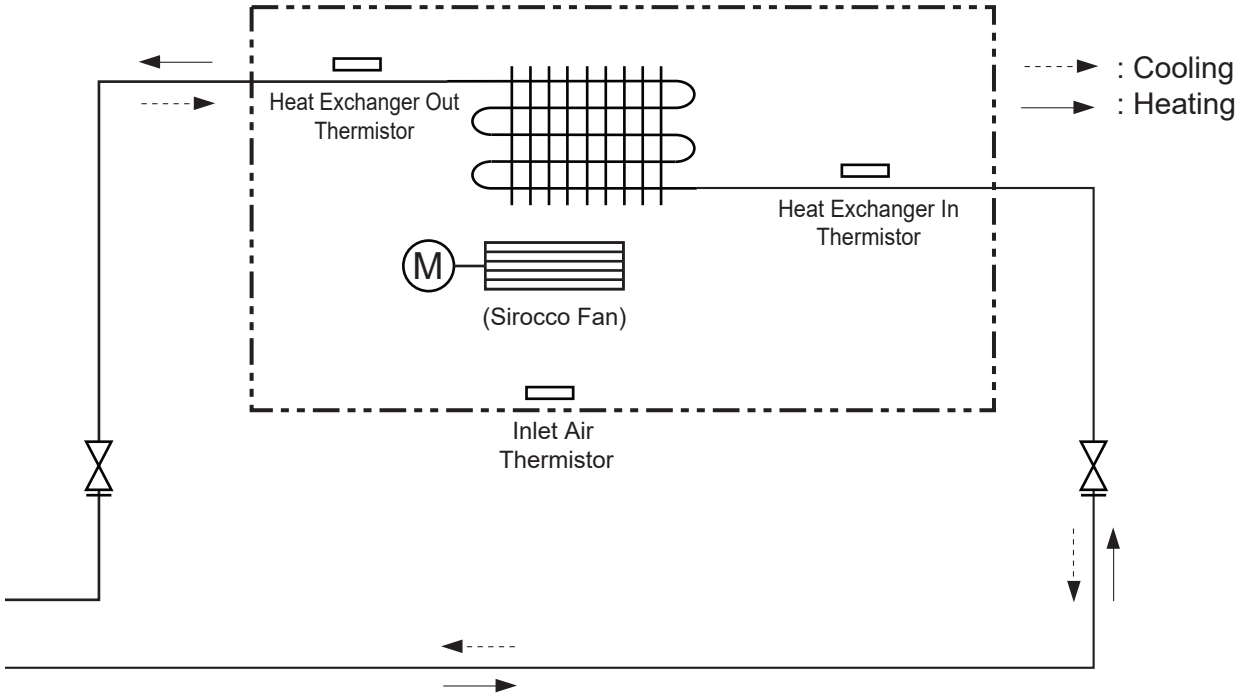


Table 52: KNUJB181A , KNUJB241A Mid-Static Ducted Indoor Unit Thermistor Details.

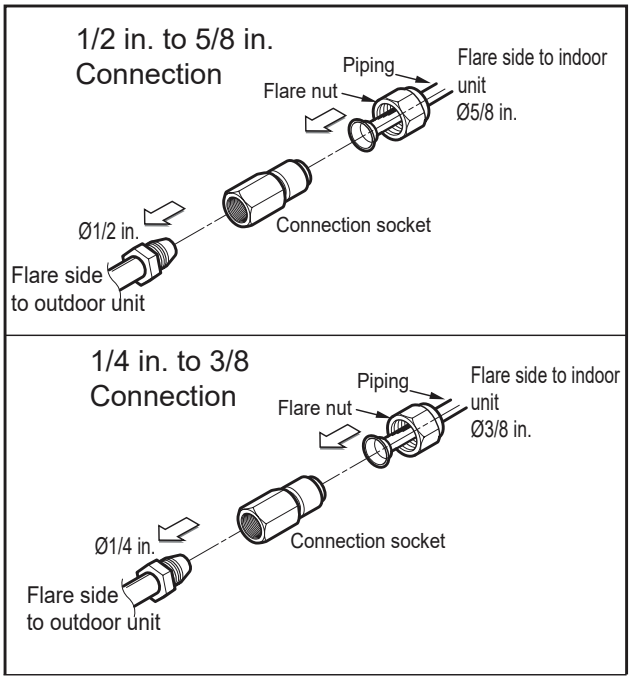
Description (Based on Cooling Mode)	PCB Connector
Inlet Air Temperature Thermistor	CN-ROOM
Heat Exchanger Inlet Temperature Thermistor	CN-PIPE / IN
Heat Exchanger Outlet Temperature Thermistor	CN-PIPE / OUT

Table 53: KNUJB181A , KNUJB241A Mid-Static Ducted Indoor Unit Refrigerant Piping and Connection Sizes.

Model No.	Piping Size		Connection Port Size	
	Liquid (inch)	Vapor (inch)	Liquid (inch)	Vapor (inch)
KNUJB181A*	3/8	5/8	1/4	1/2
KNUJB241A	3/8	5/8	3/8	5/8

**Refer to the image at right for* KNUJB181A *socket connections.*

Figure 38: KNUJB181A Mid-Static Ducted Indoor Unit Refrigerant Pipe Connections.



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Figure 39: KNUJB301A, KNUJB361A, KNSJB421A, KNSJB481A Mid-Static Ducted Indoor Unit Refrigerant Flow Diagram.

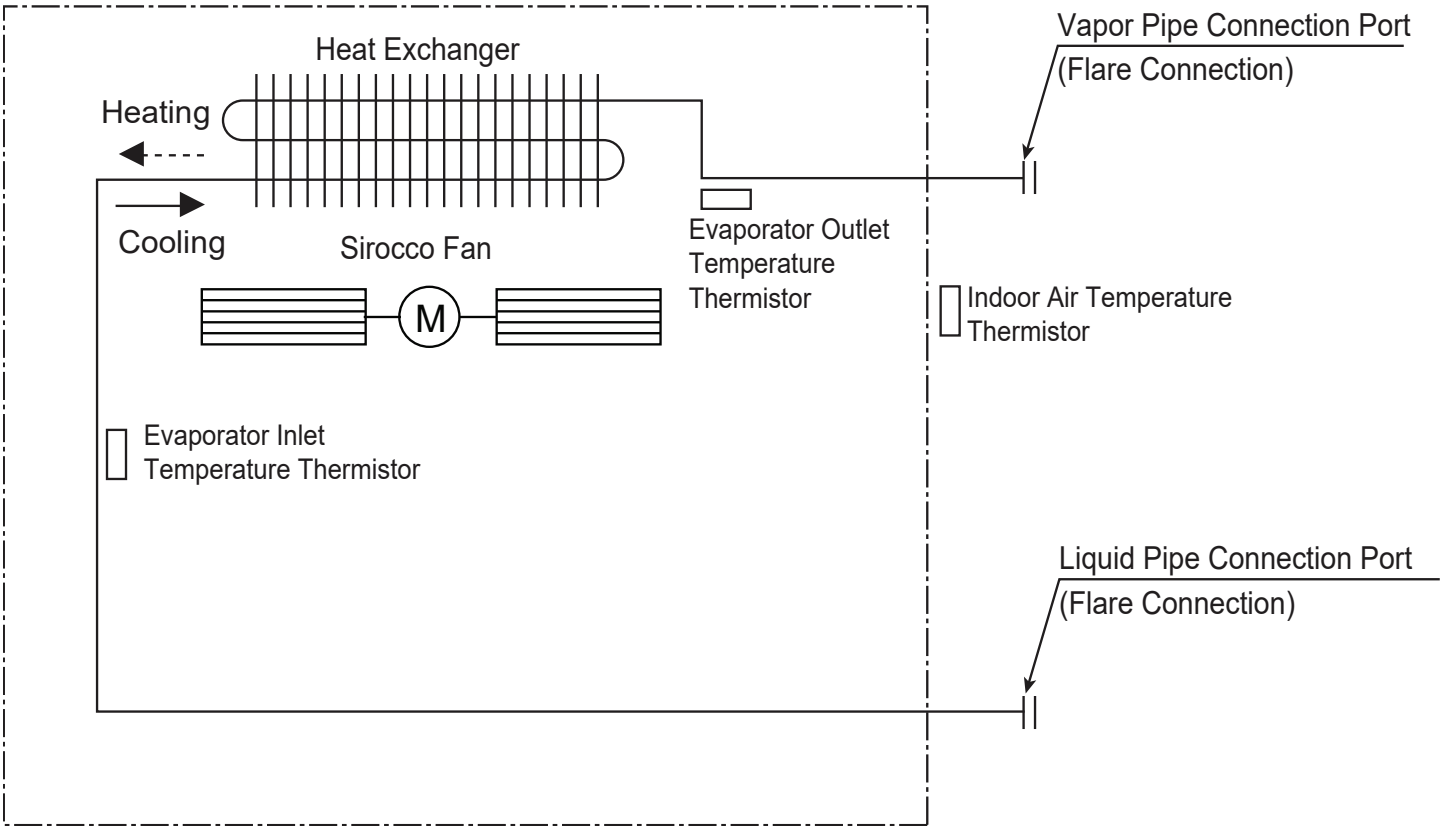


Table 54: KNUJB301A, KNUJB361A, KNSJB421A, KNSJB481A Mid Static Ducted Indoor Unit Thermistor Details.

Description (Based on Cooling Mode)	PCB Connector
Indoor Air Temperature Thermistor	CN-ROOM
Evaporator Inlet Temperature Thermistor	CN-PIPE / IN
Evaporator Outlet Temperature Thermistor	CN-PIPE / OUT

Table 55: KNUJB301A, KNUJB361A, KNSJB421A, KNSJB481A Mid Static Ducted Indoor Unit Refrigerant Pipe Connection Port Diameters.

Model No.	Vapor (inch)	Liquid (inch)
KNUJB301A, KNUJB361A, KNSJB421A, KNSJB481A	5/8	3/8

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CONNECTION LIMITATIONS / SYSTEM LAYOUT

NOTICE

Various tools are available to assist in properly designing LG R32 split systems. Refer to the "R32 Application Guide"; the "Simple Calculator for Capacity, Refrigerant Charge and ESP"; the "LG Air Conditioner Technical Solutions" (LATS) software program; and the local LG Sales Representative.

Connection Limitations

Single-zone systems consist of one outdoor unit and one indoor unit. One of the most critical elements of a single zone system is the refrigerant piping. If the connection piping is not within allowable limits, there will be reliability, performance, noise, and vibration issues. The table below lists pipe length limits that must be followed in the design of single zone refrigerant pipe systems. Refer to the figure for maximum length and elevation of piping.

NOTICE

Depending on system and proposed / installed pipe length, it may be required to calculate maximum refrigerant charge to determine if the system complies with applicable regulations / standards. For residential applications, a refrigerant charge less than 4.1 lbs. complies with ASHRAE 15.2 and does not require additional calculation/consideration of maximum refrigerant charge for release in a space.

Table 56: Single-Zone Mid Static Ducted Refrigerant Piping System Limitations.

System Model No.		KSUJA181A KSUJA241A KSUJA301A	KSUJA361A KSSJA421A KSSJA481A
Liquid Piping (in.)	Connection / Pipe Size	3/8 / 3/8	3/8 / 3/8
Vapor Piping (in.)	Connection / Pipe Size	5/8 / 5/8	5/8 / 5/8
Pipe Length (ELF = Equivalent Length of Pipe)	Standard length (no add'l refrigerant)	24.6 feet	24.6 feet
	Longest total equivalent piping length	164 feet	246 feet
	Shortest total equivalent piping length	16.4	16.4
	Distance between fittings and indoor or outdoor units	≥20 inches	≥20 inches
Elevation (All Elevation Limitations are Measured in Actual Feet)	If outdoor unit is above indoor unit	98.4 feet	98.4 feet
	If outdoor unit is below indoor unit	98.4 feet	98.4 feet
Additional Refrigerant Needed (oz. /ft.)		0.43	0.43

System Layout

Figure 40: Typical KSUJA181A, KSUJA241A System Layout.

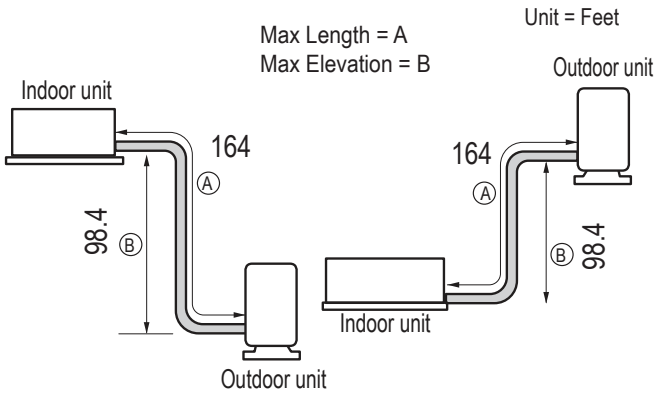
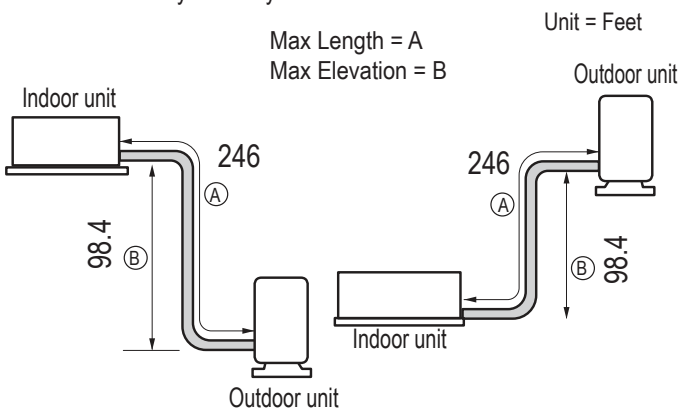


Figure 41: Typical KSUJA301A, KSUJA361A, KSSJA421A, and KSSJA481A System Layout.



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Additional Refrigerant Charge

Each outdoor unit is factory charged (nameplate charge) for the evaporator as well as a standard 24.6 foot line. Any time a line set is used longer then the standard 24.6 foot line set length, the refrigerant charge has to be adjusted.

The charge must be adjusted on 0.38 oz or 0.43 oz of R32 per foot based on how many feet of piping are added. The factory charge accommodates pipe lengths up to the standard length without requiring refrigerant removal.

See table below for information on the additional refrigerant charges necessary for longer piping lengths. Refer to the previous page for maximum piping length and elevation.

Table 57: Single Zone Mid Static Ducted Additional Refrigerant by Piping Length (oz.).

System Model No.	Refrigerant Piping Length (feet)																
	16.4	24.6	32.8	41	49.2	65.6	82	98.4	114.8	131.2	147.6	164	180.4	196.8	213.2	229.6	246
KSUJA181A	0	0	3.1	6.2	9.3	15.6	21.8	28.0	34.3	40.5	46.7	53.0	-	-	-	-	-
KSUJA241A	0	0	3.1	6.2	9.3	15.6	21.8	28.0	34.3	40.5	46.7	53.0	-	-	-	-	-
KSUJA301A	0	0	3.1	6.2	9.3	15.6	21.8	28.0	34.3	40.5	46.7	53.0	-	-	-	-	-
KSUJA361A	0	0	3.5	7.1	10.6	17.6	24.7	31.7	38.8	45.8	52.9	59.9	67.0	74.0	81.1	88.2	95.2
KSSJA421A	0	0	3.5	7.1	10.6	17.6	24.7	31.7	38.8	45.8	52.9	59.9	67.0	74.0	81.1	88.2	95.2
KSSJA481A	0	0	3.5	7.1	10.6	17.6	24.7	31.7	38.8	45.8	52.9	59.9	67.0	74.0	81.1	88.2	95.2

- *Values are in ounces (oz.).*
- *Capacity is based on standard length; maximum allowance length is based on reliability.*
- *Equivalent pipe length = actual pipe length + number of bends x 0.3.*
- *Calculation: X oz. = ([Refrigerant Piping Length] - [(Chargeless Length]) × Additional Refrigerant.*

Example:
A 50 foot line set is used: Additional 25.4 feet x 0.38 per foot = Add 9.6 of refrigerant.

NOTICE

If the unit charge is unknown, reclaim, evacuate, and weigh in the correct charge using the unit nameplate (capacity) charge adjusting for line sets longer than 246 feet. This will prevent any interruptions to unit operation and possible damage.

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Selecting Field-Supplied Copper Piping

NOTICE

Always follow local codes when selecting and installing copper pipe and piping system components.

Approved piping for use with LG Single Zone products will be marked “R32 RATED” along the length of the pipe. Piping wall thickness must meet local code requirements and be approved for a maximum operating pressure of 626 psi. When bending piping, try to keep the number of bends to a minimum, and use the largest radii possible to reduce the equivalent length of installed piping; also, bending radii greater than ten (10) piping diameters can minimize pressure drop. Be sure no traps or sags are present.

For Single Zone Systems

LG prefers the use of ACR copper piping rated at the system working pressure was used.

NOTICE

Always properly support the piping as per the instructions on page 86 .

Table 58: ACR Rated Copper Tubing Material.

Type	Seamless Phosphorous Deoxidized
Class	UNS C12200 DHP
Straight Lengths	H58 Temper
Coils	O60 Temper

Table 59: Piping Tube Thicknesses.

OD (in.)	1/4	3/8	1/2	5/8	3/4	7/8	1-1/8	1-3/8	1-5/8
Material	Rigid or Soft ACR Rated for R32			Rigid or Soft ACR Rated for R32					
Min. Bend Radius (in.)	0.563	0.9375	1.5	2.25	3.0	3.0	3.5	4.0	4.5
Min. Wall Thickness (in.)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.050

Table 60: ACR Copper Tubing Dimensions and Physical Characteristics[1-3].

Nominal Pipe Outside Diameter (in.)	**Actual Outside Diameter (in.)**	**Tempered (Hard Drawn)**			**Annealed (Soft)**		
		Nominal Wall Thickness (in.)	**Weight (lb. / ft.)**	**Cubic ft. per Linear ft.**	**Nominal Wall Thickness (in.)**	**Weight (lb. / ft.)**	**Cubic ft. per Linear ft.**
1/4	0.250	--	--	--	0.030	0.081	0.00020
3/8	0.375	0.030	0.126	0.00054	0.032	0.134	0.00053
1/2	0.500	0.035	0.198	0.00101	0.032	0.182	0.00103
5/8	0.625	0.040	0.285	0.00162	0.035	0.251	0.00168
3/4	0.750	0.042	0.362	0.00242	0.042	0.362	0.00242
7/8	0.875	0.045	0.455	0.00336	0.045	0.455	0.00336
1-1/8	1.125	0.050	0.655	0.00573	0.050	0.655	0.00573

[1]All dimensions provided are in accordance with ASTM B280 – Standard.
[2]Design pressure = 626 psig.
[3]The Copper Tube Handbook, 2010, Copper Development Association Inc., 260 Madison Avenue, New York, NY 10016.

NOTICE

- *Commercially available piping often contains dust and other materials. Always blow it clean with a dry inert gas.*
- *Prevent dust, water or other contaminants from entering the piping during installation.*

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Copper Expansion and Contraction

Under normal operating conditions, the vapor pipe temperature of a Single Zone System can vary as much as 280°F. With this large variance in pipe temperature, the designer must consider pipe expansion and contraction to avoid pipe and fitting fatigue failures.

Refrigerant pipe along with the insulation jacket form a cohesive unit that expands and contracts together. During system operation, thermal heat transfer occurs between the pipe and the surrounding insulation.

If the pipe is mounted in free air space, no natural restriction to movement is present if mounting clamps are properly spaced and installed. In extreme cases, the restrictive force of surface friction between insulating jackets could become so great that natural expansion ceases and the pipe is "fixed" in place. In this situation, opposing force caused by change in refrigerant fluid / vapor temperature can lead to pipe/fitting stress failure.

The refrigerant pipe support system must be engineered to allow free expansion to occur. When a segment of pipe is mounted between two fixed points, provisions must be provided to allow pipe expansion to naturally occur. The most common method is the inclusion of expansion Loop or U-bends. Each segment of pipe has a natural fixed point where no movement occurs. This fixed point is located at the center point of the segment assuming the entire pipe is insulated in a similar fashion. The natural fixed point of the pipe segment is typically where the expansion Loop or U-bend must be.

Linear pipe expansion can be calculated using the following formula:

$LE = C \times L \times (T_r - T_a) \times 12$

LE	=	Anticipated linear tubing expansion (in.)
C	=	Constant (For copper = 9.2×10^{-6} in./in.°F)
L	=	Length of pipe (ft.)
T_R	=	Refrigerant pipe temperature (°F)
T_a	=	Ambient air temperature (°F)
12	=	Inches to feet conversion (12 in./ft.)

1. From the "Linear Thermal Expansion of Copper Tubing in Inches" Table on the next page, find the row corresponding with the actual length of the straight pipe segment.
2. Estimate the minimum and maximum temperature of the pipe. In the column showing the minimum pipe temperature, look up the anticipated expansion distance. Do the same for the maximum pipe temperature.
3. Calculate the difference in the two expansion distance values. The result will be the anticipated change in pipe length.

General Example:

A system is installed and the design shows that there is a 100 foot straight segment of tubing between an indoor unit and the outdoor unit. In heating, this pipe transports hot gas vapor to the indoor units at 120°F. In cooling, the same tube is a suction line returning refrigerant vapor to the outdoor unit at 40°F. Look up the copper tubing expansion at each temperature and calculate the difference.

Vapor Line

Transporting Hot Vapor: 100 ft. pipe at 120°F = 1.40 in.
Transporting Suction Vapor: 100 ft. pipe at 40°F = 0.40 in.
Anticipated Change in Length: 1.40 in. – 0.40 in. = 1.00 in.

Liquid Line

The liquid temperature remains relatively the same temperature; only the direction of flow will reverse. Therefore, no significant change in length of the liquid line is anticipated.

When creating an expansion joint, the joint height must be a minimum of two times the joint width. Although different types of expansion arrangements are available, the data for correctly sizing an Expansion Loop is provided in the "Radii of Coiled Expansion Loops and Developed Lengths of Expansion Offsets" Table on the next page. Use soft copper with long radius bends on longer runs or long radius elbows for shorter pipe segments. Using the anticipated linear expansion (LE) distance calculated, look up the Expansion Loop or U-bend minimum design dimensions. If other types of expansion joints are chosen, design per ASTM B-88 Standards.

See table on next page for precalculated anticipated expansion for various pipe sizes and lengths of refrigerant tubing.

To find the anticipated expansion value:

1. From the table on the next page, find the row corresponding with the actual feet of the straight pipe segment.
2. Estimate the minimum and maximum temperature of the pipe.
3. In the column showing the minimum pipe temperature, look up the anticipated expansion distance corresponding to the segment length. Do the same for the maximum pipe temperature.
4. Calculate the difference in the two expansion distance values. The result will be the change in pipe length.

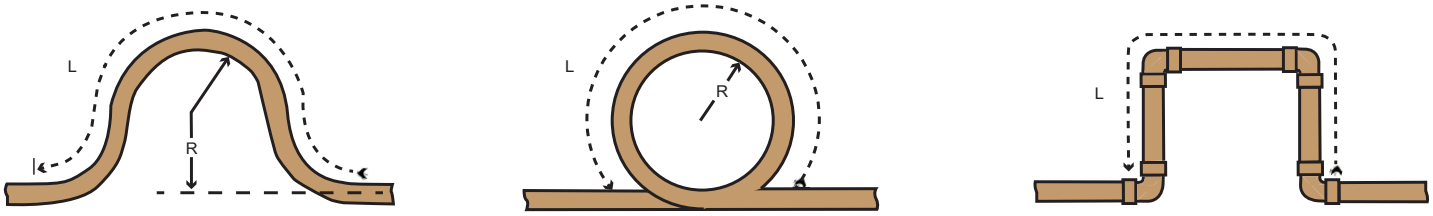
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Table 61: Linear Thermal Expansion of Copper Tubing in Inches.

Pipe Length[1]	Fluid Temperature °F																			
	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°	110°	115°	120°	125°	130°
10	0.04	0.04	0.05	0.06	0.06	0.07	0.08	0.08	0.09	0.09	0.10	0.10	0.11	0.11	0.11	0.12	0.13	0.14	0.15	0.15
20	0.08	0.08	0.10	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.22	0.23	0.26	0.28	0.29	0.30
30	0.12	0.12	0.15	0.18	0.20	0.21	0.23	0.24	0.26	0.27	0.29	0.30	0.32	0.33	0.32	0.35	0.39	0.42	0.44	0.45
40	0.16	0.16	0.20	0.24	0.26	0.28	0.30	0.32	0.34	0.36	0.38	0.40	0.42	0.44	0.43	0.46	0.52	0.56	0.58	0.60
50	0.20	0.20	0.25	0.30	0.33	0.35	0.38	0.40	0.43	0.45	0.48	0.50	0.53	0.55	0.54	0.58	0.65	0.70	0.73	0.75
60	0.24	0.24	0.30	0.36	0.39	0.42	0.45	0.48	0.51	0.54	0.57	0.60	0.63	0.66	0.65	0.69	0.78	0.84	0.87	0.90
70	0.28	0.28	0.35	0.42	0.46	0.49	0.53	0.56	0.60	0.63	0.67	0.70	0.74	0.77	0.76	0.81	0.91	0.98	1.02	1.05
80	0.32	0.32	0.40	0.48	0.52	0.56	0.60	0.64	0.68	0.72	0.76	0.80	0.84	0.88	0.86	0.92	1.04	1.12	1.16	1.20
90	0.36	0.36	0.45	0.54	0.59	0.63	0.68	0.72	0.77	0.81	0.86	0.90	0.95	0.99	0.97	1.04	1.17	1.26	1.31	1.35
100	0.40	0.40	0.50	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.08	1.15	1.30	1.40	1.45	1.50
120	0.48	0.48	0.60	0.72	0.78	0.84	0.90	0.96	1.02	1.08	1.14	1.20	1.26	1.32	1.30	1.38	1.56	1.68	1.74	1.80
140	0.56	0.56	0.70	0.84	0.91	0.98	1.05	1.12	1.19	1.26	1.33	1.40	1.47	1.54	1.51	1.61	1.82	1.96	2.03	2.10
160	0.64	0.64	0.80	0.96	1.04	1.12	1.20	1.28	1.36	1.44	1.52	1.60	1.68	1.76	1.73	1.84	2.08	2.24	2.32	2.40
180	0.72	0.72	0.90	1.08	1.17	1.26	1.35	1.44	1.53	1.62	1.71	1.80	1.89	1.98	1.94	2.07	2.34	2.52	2.61	2.70

[1]Pipe length baseline temperature = 0°F. "Expansion of Carbon, Copper and Stainless Steel Pipe," *The Engineers' Toolbox*, www.engineeringtoolbox.com.

Figure 42: Coiled Expansion Loops and Offsets (Plan View).



Large Tubing U-bend (>3/4 in.) Loop Small Tubing U-bend (<3/4 in.)

NOTICE

All expansion loops and offsets must be installed in the horizontal plane to prevent the possibility of trapping oil. Loops and offsets in vertical risers must also be installed in a horizontal plane.

Table 62: Radii of Coiled Expansion Loops and Developed Lengths of Expansion Offsets. (See also to the Copper Development Association Inc. *Publication A4015-14/19: Copper Tube Handbook* for additional information.)

Anticipated Linear Expansion (LE) (inches)		Nominal Tube Size (OD) inches			
		1/4	3/8	1/2	3/4
1/2	R[1]	6	7	8	9
	L[2]	38	44	50	59
1	R[1]	9	10	11	13
	L[2]	54	63	70	83
1-1/2	R[1]	11	12	14	16
	L[2]	66	77	86	101
2	R[1]	12	14	16	19
	L[2]	77	89	99	117
2-1/2	R[1]	14	16	18	21
	L[2]	86	99	111	131
3	R[1]	15	17	19	23
	L[2]	94	109	122	143
3-1/2	R[1]	16	19	21	25
	L[2]	102	117	131	155
4	R[1]	17	20	22	26
	L[2]	109	126	140	166

[1]R = Centerline Length of Pipe. [2]L = Centerline Minimum Radius (inches).

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REFRIGERANT PIPING SYSTEM ENGINEERING

Proper system operation depends on the installer using utmost care while assembling the piping system. The following pages are an overview of best practices when installing the refrigerant piping system.

NOTICE

LG Electronics U.S.A.,Inc., is not responsible for any piping calculations, refrigerant leaks, degradation of performance, any other potential problems or damages caused by the interconnecting piping, their joint connections, isolation valves, or introduced debris inside the piping system.

⃠ No Pipe Size Substitutions

Use only the pipe size selected by the information in this manual. Using a different size is prohibited and will result in a system malfunction or failure to work at all.

⃠ No In-line Refrigeration Components

Components such as oil traps, solenoid valves, filter-driers, sight glasses, tee fittings, and other after-market accessories are ⃠ not permitted on the refrigerant piping system between the outdoor units and the indoor units. LG Single Zone systems are provided with redundant systems that make sure oil is properly returned to the compressor. Sight-glasses and solenoid valves will cause vapor to form in the liquid stream. Over time, driers will deteriorate and introduce debris into the system. The designer and installer must verify the refrigerant piping system is free of traps, sagging pipes, sight glasses, filter driers, etc.

Field-Provided Isolation Ball Valves

LG maintains a neutral position on using isolation valves in LG HVAC refrigerant piping systems. LG does not endorse any manufacturer of isolation valves. It is recognized that installing isolation valves will simplify future maintenance requirements, and, if used, considerations must be taken including, but not limited to, the following:

- Pressure drops for any component used, including isolation valves, must be known in equivalent pipe length and calculated into the total and segment equivalent piping lengths and compared to product design limitations.
- In all cases, materials must be suitable for the application and any applicable codes, including, but not limited to, diameter and wall thickness continuity per ACR standards.

Failure to do so will cause significant performance degradation. Proper leak checks must be performed. Using isolation valves does not automatically void any LG product warranty, however, a limited warranty will be voided in whole or part if any field supplied accessory fail in any way that causes product failure.

Using Elbows

Field-supplied elbows are allowed if they are long radius and designed for use with R32 refrigerant. The designer and installer, however, must be cautious with the quantity and size of fittings used, and must account for the additional pressure losses in equivalent pipe length calculation for each branch. The equivalent pipe length of each elbow must be added to each pipe segment in the LATS program.

Pipe Bends

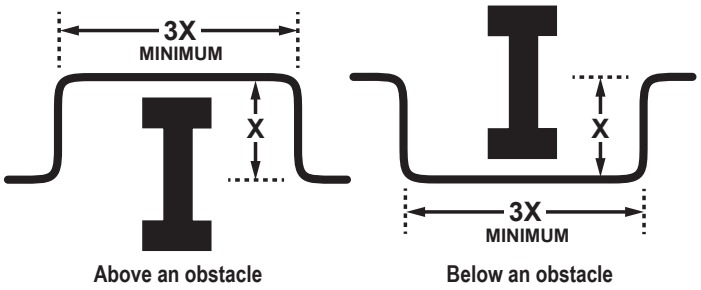
When bending soft copper, use long radius bends. Refer to the “Radii of Coiled Expansion Loops and Developed Lengths of Expansion Offsets” table on the previous page for minimum radius specifications.

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Obstacles

When an obstacle, such as an I-beam or concrete T, is in the path of the planned refrigerant pipe run, it is best practice to route the pipe over the obstacle. If adequate space is not available to route the insulated pipe over the obstacle, then route the pipe under the obstacle. In either case, it is imperative the length of the horizontal section of pipe above or below the obstacle be a minimum of three (3) times the longest vertical rise (or fall) at either end of the segment.

Figure 43: Installing Piping Above and Below an Obstacle.



Pipe Supports

A properly installed pipe system must be adequately supported to avoid pipe sagging. Sagging pipes become oil traps that lead to equipment malfunction.

Pipe supports must ⃠ never touch the pipe wall; supports must be installed outside (around) the primary pipe insulation jacket. Insulate the pipe first because pipe supports must be installed outside (around) the primary pipe insulation jacket. Clevis hangers must be used with shields between the hangers and insulation. Field provided pipe supports must be designed to meet local codes. If allowed by code, use fiber straps or split-ring hangers suspended from the ceiling on all-thread rods (fiber straps or split ring hangers can be used as long as they do not compress the pipe insulation). Place a second layer of insulation over the pipe insulation jacket to prevent chafing and compression of the primary insulation within the confines of the support pipe clamp.

A properly installed pipe system will have sufficient supports to avoid pipes from sagging during the life of the system. As necessary, place supports closer for segments where potential sagging could occur. Maximum spacing of pipe supports must meet local codes. If local codes do not specify pipe support spacing, pipe must be supported:

- Maximum of five (5) feet on center for straight segments of pipe up to 3/4 inches outside diameter size.
- Maximum of six (6) feet on center for pipe up to one (1) inch outside diameter size.
- Maximum of eight (8) feet on center for pipe up to two (2) inches outside diameter size.

Wherever the pipe changes direction, place a hanger within twelve (12) inches on one side and within twelve (12) to nineteen (19) inches of the bend on the other side.

Support piping at indoor unit(s) as shown.

Figure 44: Pipe Hanger Details.

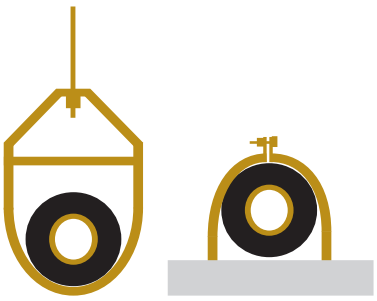


Figure 45: Typical Pipe Support Location—Change in Pipe Direction.

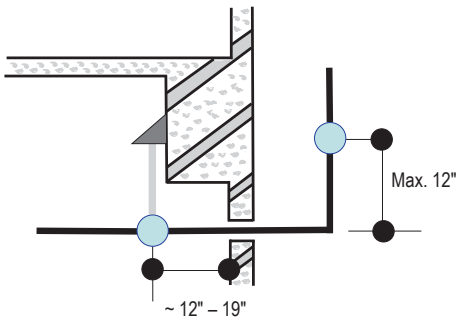
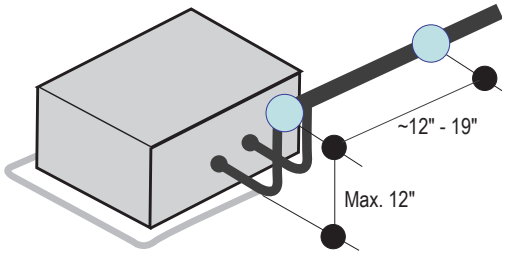


Figure 46: Pipe Support at Indoor Unit.



NOTICE

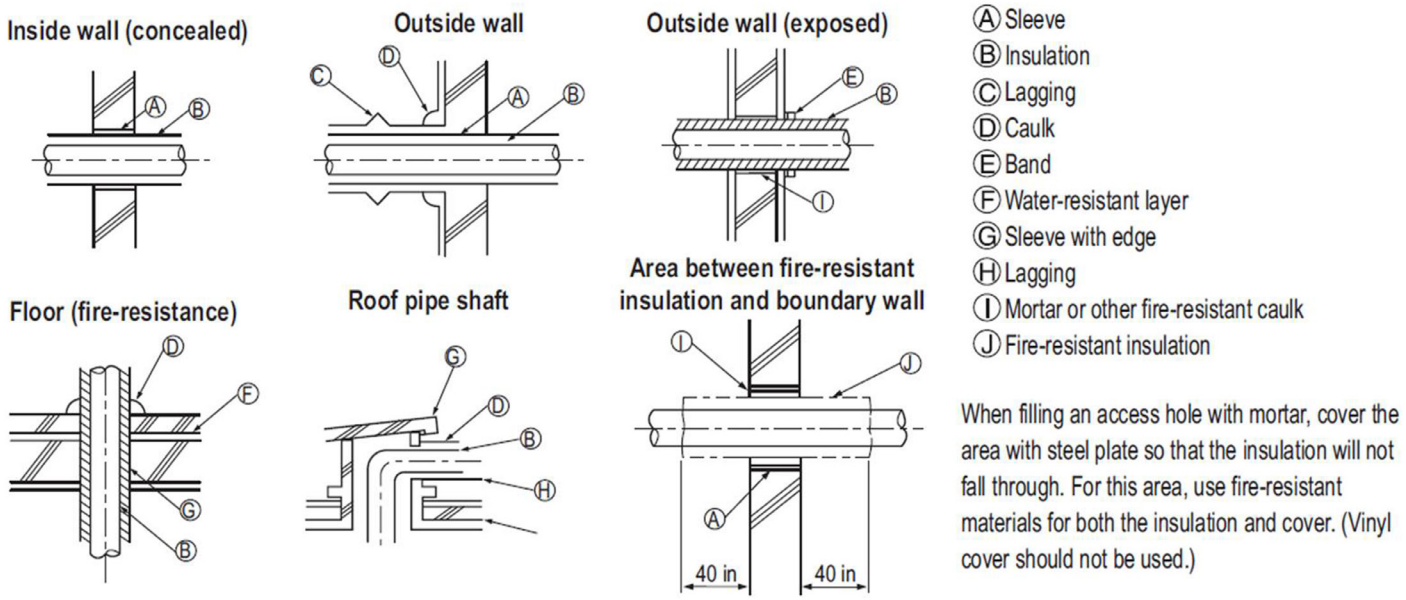
Use a 4" + long sheet curved sheet metal saddles between hanger bracket and insulation to promote linear expansion/contraction.

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Pipe Sleeves at Penetrations

LG recommends that all pipe penetrations through walls, floors, and pipes buried underground be properly insulated and routed through an appropriate wall sleeve of sufficient size to prevent compression of refrigerant pipe insulation and free movement of the pipe within the sleeve. Use 4"+ curved sheet metal saddles between the bottom surface of the pipe and the bottom surface of the penetration.

Figure 47: Pipe Sleeve Options.



NOTICE

Diameter of penetrations must be determined by pipe diameter plus the thickness of the insulation.

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ELECTRICAL

General Guidelines on page XX
Wiring Diagrams on page XX
Power Supply / Power Wiring on page XX
Communication / Connection Cable on page XX
Controllers on page XX

General Electrical Guidelines

⚠ WARNING

- *Separately wire the high and low voltage lines. There is a risk of electric shock, physical injury, or death.*
- *Use heat-proof electrical wire capable of withstanding temperatures up to 167°F to avoid wiring malfunction and electrical shock, which may cause physical injury or death.*
- *Power wiring and communication cables must be firmly attached to the terminals; connect the wiring so that the wires cannot be easily pulled out. Loose wiring may cause unit malfunction, the wires to burnout or the terminal to overheat and catch fire. There is a risk of electric shock, physical injury or death.*
- *Terminal screws will become loose during transport. Properly tighten the terminal connections during installation or risk electric shock, physical injury, or death.*
- *Use outdoor and waterproof connection cable rated up to 300V for the connection between the indoor and outdoor unit to avoid electrical shock, which may cause physical injury or death.*

NOTICE

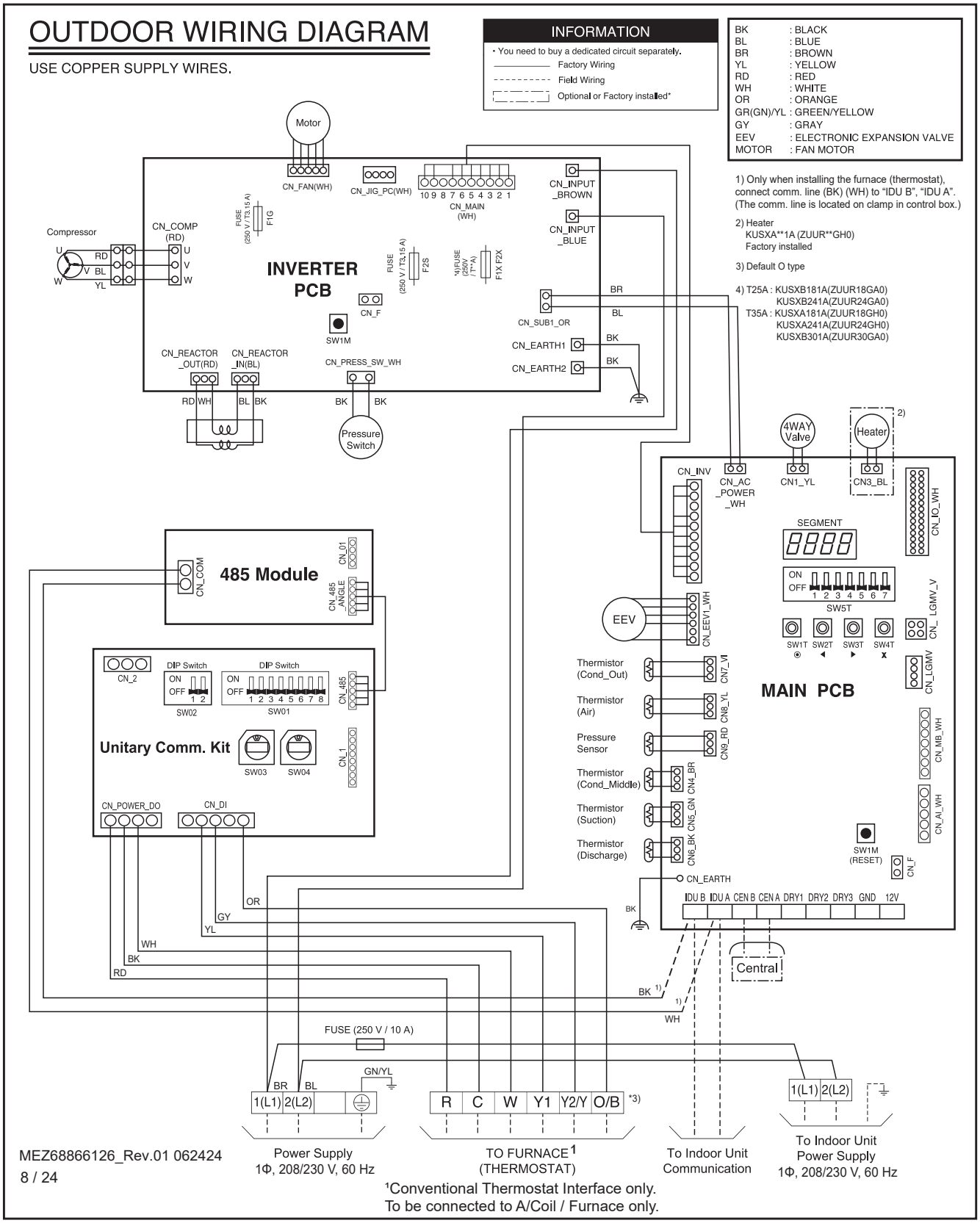
- *Separately wire the high and low voltage lines to avoid damage to units.*
- ⃠ *Do not install power wiring to the outdoor unit and the communication / connection (power) cable to the indoor unit in the same conduit. Use separate conduits.*
- *Local codes may require field-installed disconnect switches from outdoor unit to indoor unit.*
- *Use heat-proof electrical wire capable of withstanding temperatures up to 167°F to avoid damage to unit.*
- *Always use a circuit breaker or time delay fuse when connecting electrical wiring to the unit.*
- *Power wiring and communication cables must be firmly attached to the terminals. 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.*
- *Terminal screws will become loose during transport. Properly tighten the terminal connections during installation or risk equipment malfunction or property damage. There is a risk of equipment malfunction or property damage.*
- *Use outdoor and waterproof connection cable rated up to 300V for the connection between the indoor and outdoor unit to avoid damage to the unit.*
- *Comply with local codes while running wire from the indoor unit to the outdoor unit.*
- ⃠ *Do not allow wire to touch refrigerant piping, the compressor or any moving parts since it can lead to mechanical failure.*

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WIRING DIAGRAMS

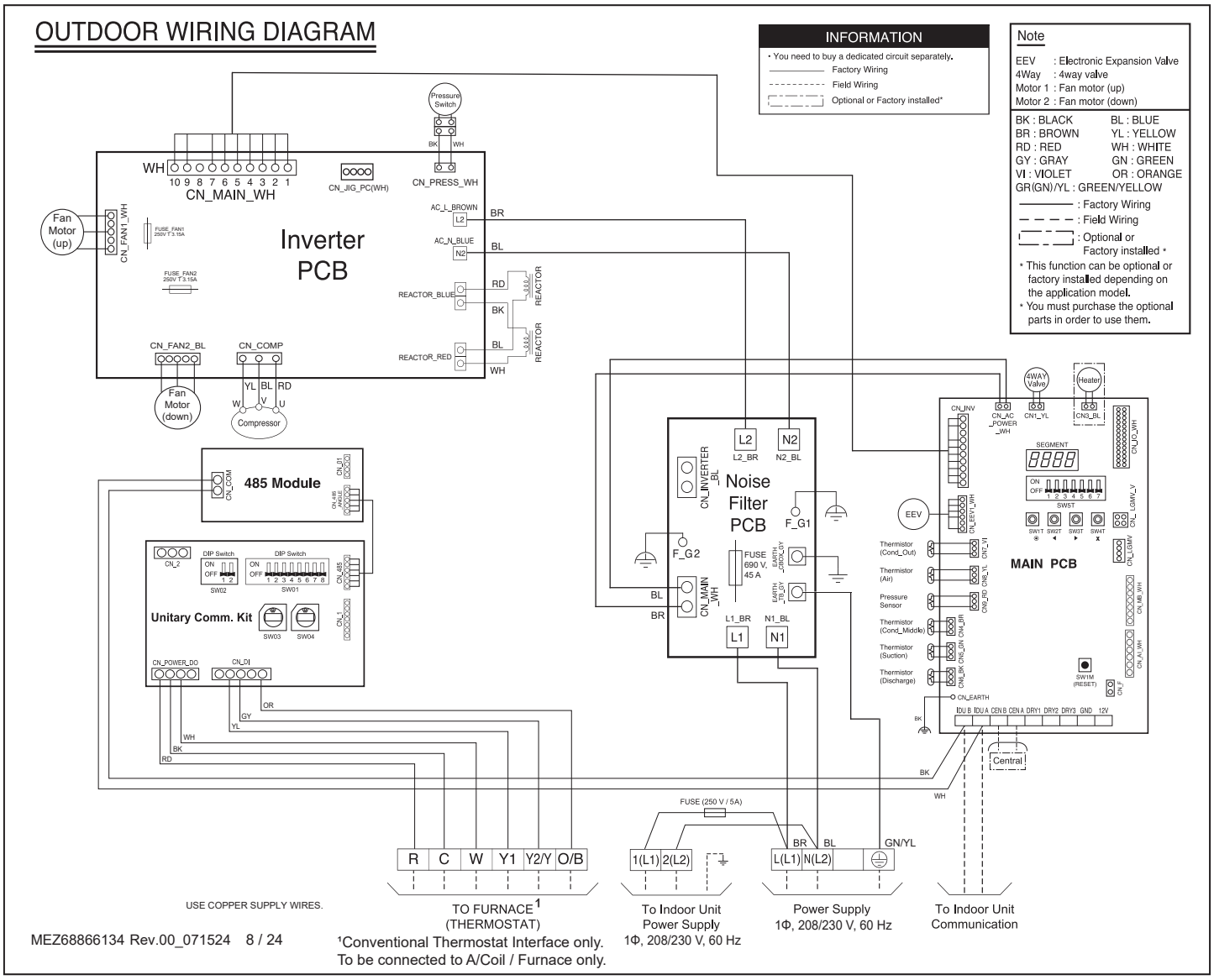
Outdoor Units KUSXA181A, KUSXA241A

Figure 50: KUSXA181A, KUSXA241A Outdoor Units Wiring Diagram.



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Figure 51: KUSXA301A, KUSXA361A Outdoor Units Wiring Diagram.

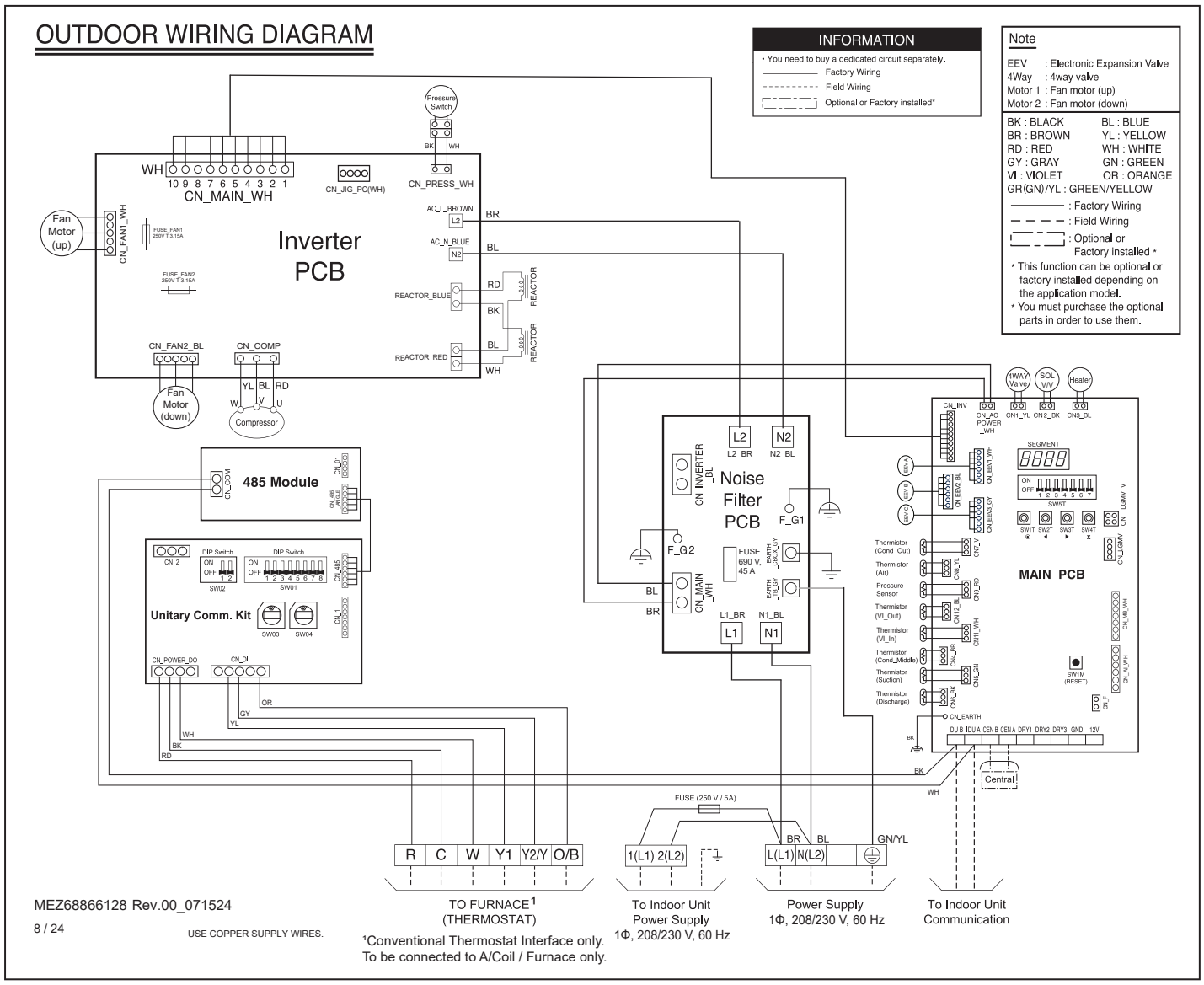


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WIRING DIAGRAMS

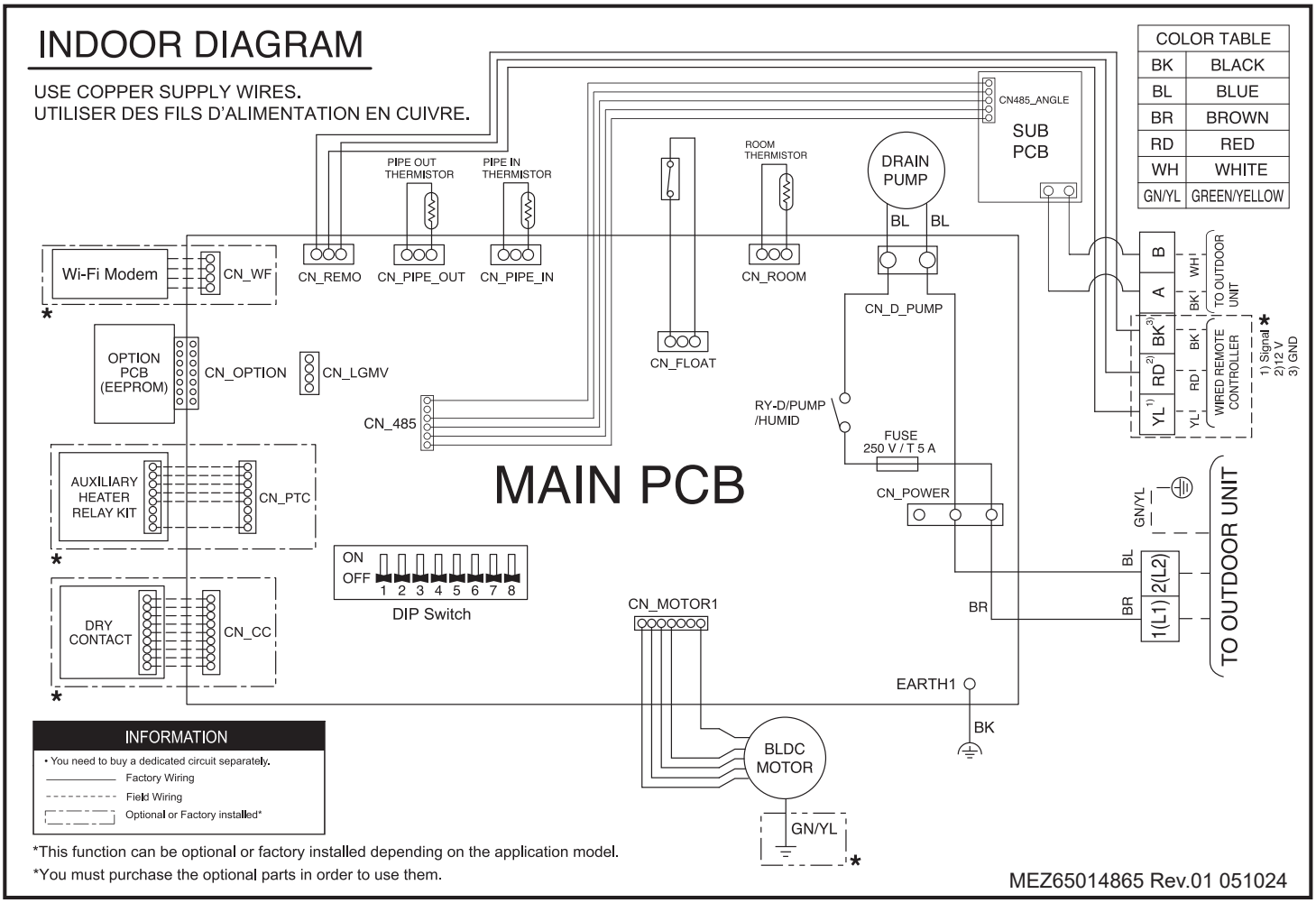
Outdoor Units KUSXA421A, KUSXA481A

Figure 52: KUSXA421A, KUSXA481A Outdoor Units Wiring Diagram.



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Figure 53: KNUJB181A , KNUJB241A Indoor Units Wiring Diagram.

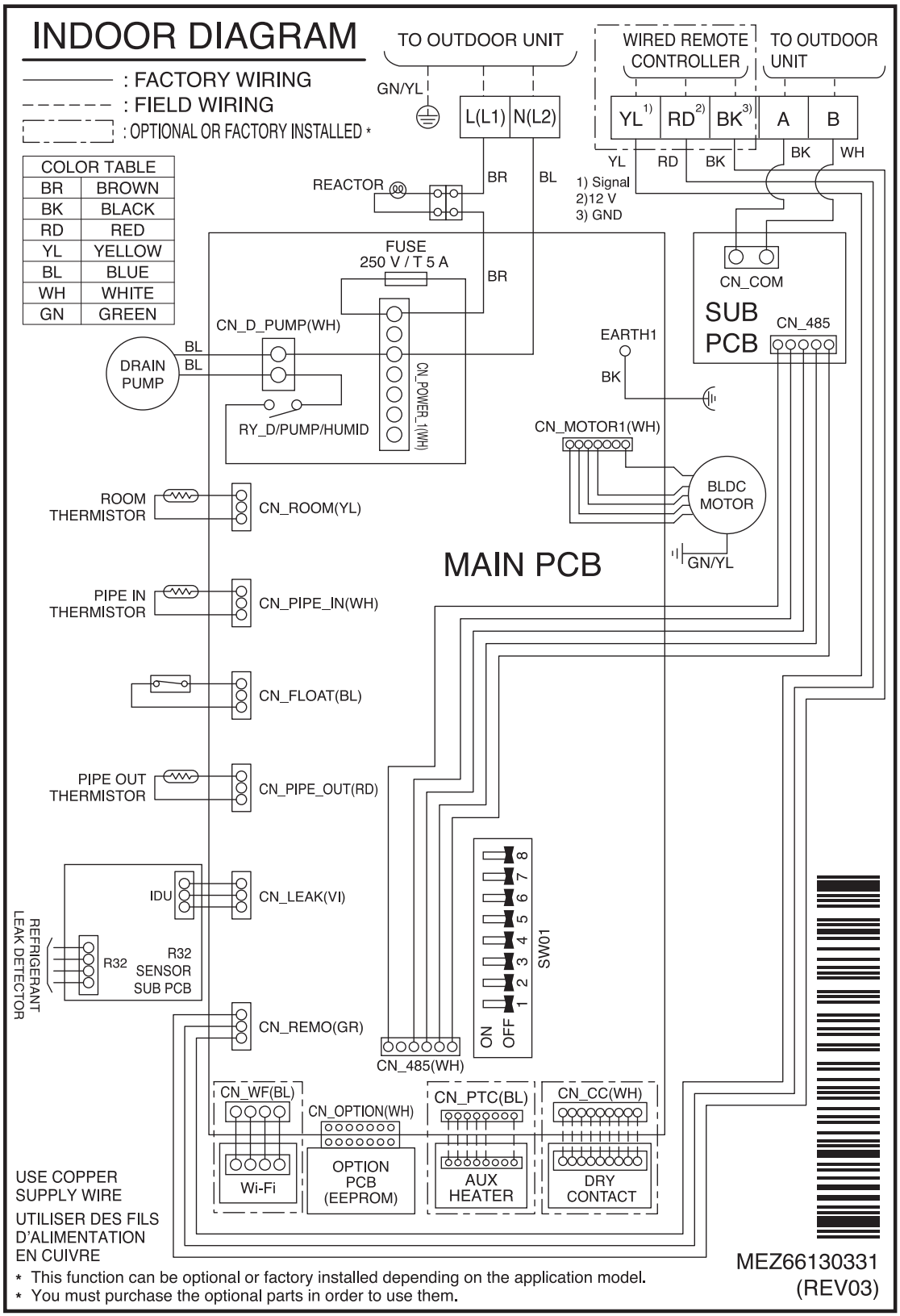


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WIRING DIAGRAMS

Indoor Units KNUJB301A,KNUJB361A, KNSJB421A, KNSJB481A

Figure 54: KNUJB301A,KNUJB361A, KNSJB421A, KNSJB481A Indoor Units Wiring Diagram.



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Figure 55: Indoor Unit Wiring Diagram Legend.

Terminal	Purpose	Function
CN-POWER	AC Power supply	Power line
CN-MOTOR1	Fan motor output	Motor output of BLDC
CN_OUT	Heater	Connection for heater
CN-D/PUMP	Drain pump output	AC output for drain pump
CN-FLOAT	Float switch input	Float switch sensing
CN-ZONE	Zone controller	Zone controller connection
CN-OPTION	Optional PCB EPROM	Option PCB connection
CN-EXT	External ON / OFF controller	External ON / OFF controller connection
CN-DISPLAY	Display	Display of indoor status
CN-CC	Dry contact	Contact connection
CN-PIPE/OUT (RD)	Discharge pipe sensor	Pipe out thermistor
CN-LEAK (VI)	Refrigerant leak detector	Refrigerant leak detector connection
CN-PIPE/IN (WH)	Suction pipe sensor	Pipe in thermistor
CN-REMO (GN)	Wired remote controller	Wired remote control connection
CN-ROOM (YL)	Room sensor	Room air thermistor
CN-DAMPER	Damper Controller	Damper connection
CN-AIRC	Air Cleaner	Air Cleaner connection
CN-WF	Wifi	Wifi Module connection
CN-PTC	Auxiliary Heater Relay Kit	Auxiliary Heater Relay Kit Second stage heat

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WIRING DIAGRAMS

Indoor Unit Model Number

Figure 56: Indoor Unit DIP Switch Settings.

DIP Switch	Function	Off	On	Description
SW1	COMMUNICATION	Off (default)	-	-
SW2	CYCLE	Off (default)	-	-
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.
SW5	CONTINUOUS FAN	Off	On	Selects continuous fan for ducted indoor units. 1. On: Indoor unit fan will always operate at a set fan speed, except when the system is off, or the outdoor unit is in defrost mode (when the outdoor unit is in defrost mode, the fan will operate at super low fan speed). 2. Off: Indoor unit fan speed can be changed by on / off.
SW6	HEATER INTERLOCK	Off	On	Selects heater interlock function for Vertical Air Handling units. 1. On: Automatic (heater will automatically operate during heating mode). 2. Off: Manual (heater needs to be manually turned on during heating mode).
SW7	Off			
SW8	Off			

NOTICE

To operate the indoor unit without Internal Electric Heater, Dip switch 1, 2, 6, 8 must be set OFF.

To operate the indoor unit with Internal Electric heater, Dip switch 6 must be set ON.

- SW6 ON: Automatic Heater operation: Heater operates automatically.
- SW6 OFF: Manual Heater operation: Owner's involvement is required for on/off operation.

If you operate the indoor unit with Internal Electric heater with Dip switch 5, note the following:

- SW5 ON: Fan operates continuously. During defrosting or oil return operation, uninterrupted heating can be attained, as a result of continuous heater and fan operation.
- SW5 OFF: Fan discontinuous operation. There would be reduction in heating capacity while defrosting or oil return operation.

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Power Supply / Power Wiring

- LG single zone systems operate at 1Ø, 208-230V, 60Hz; confirm power source specifications.
- Follow manufacturer's circuit diagrams displayed on the inside of the control box cover.
- 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.
- Power wiring to the outdoor unit(s) must be solid or stranded, and must comply with all National Electrical Code (NEC), UL, and local electrical codes.
- Power supply to the outdoor unit must be selected based on NEC and local codes. Maximum allowable voltage fluctuation ±10% or nameplate rated value. Confirm that the electrical capacity is sufficient.

A voltage drop will cause the following problems:

- Magnetic switch vibration, fuse breaks, or disturbance to the normal function of an overload protection device.
- Compressor will not receive the proper starting current. Any openings where the field wiring enters the cabinet must be completely sealed.
- Properly ground the outdoor unit and the indoor unit per National Electrical Code (NEC) and local codes.
- The indoor unit is powered by the outdoor unit. See the next page for communication / connection (power) cable specifications from the outdoor unit to the indoor unit.
- Ground wire must be longer than the common power / communication wires.
- Always match color codes of each wire and follow wiring diagram.

Figure 57: Circuit Breaker.

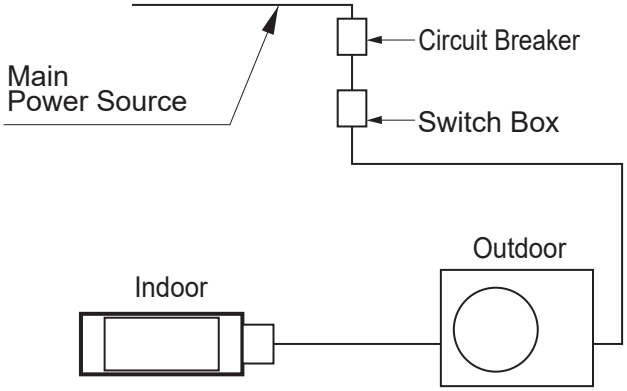


Figure 58: Power Wiring Example

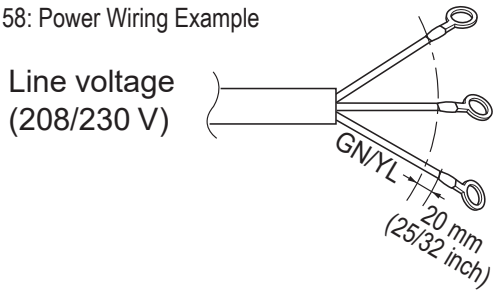
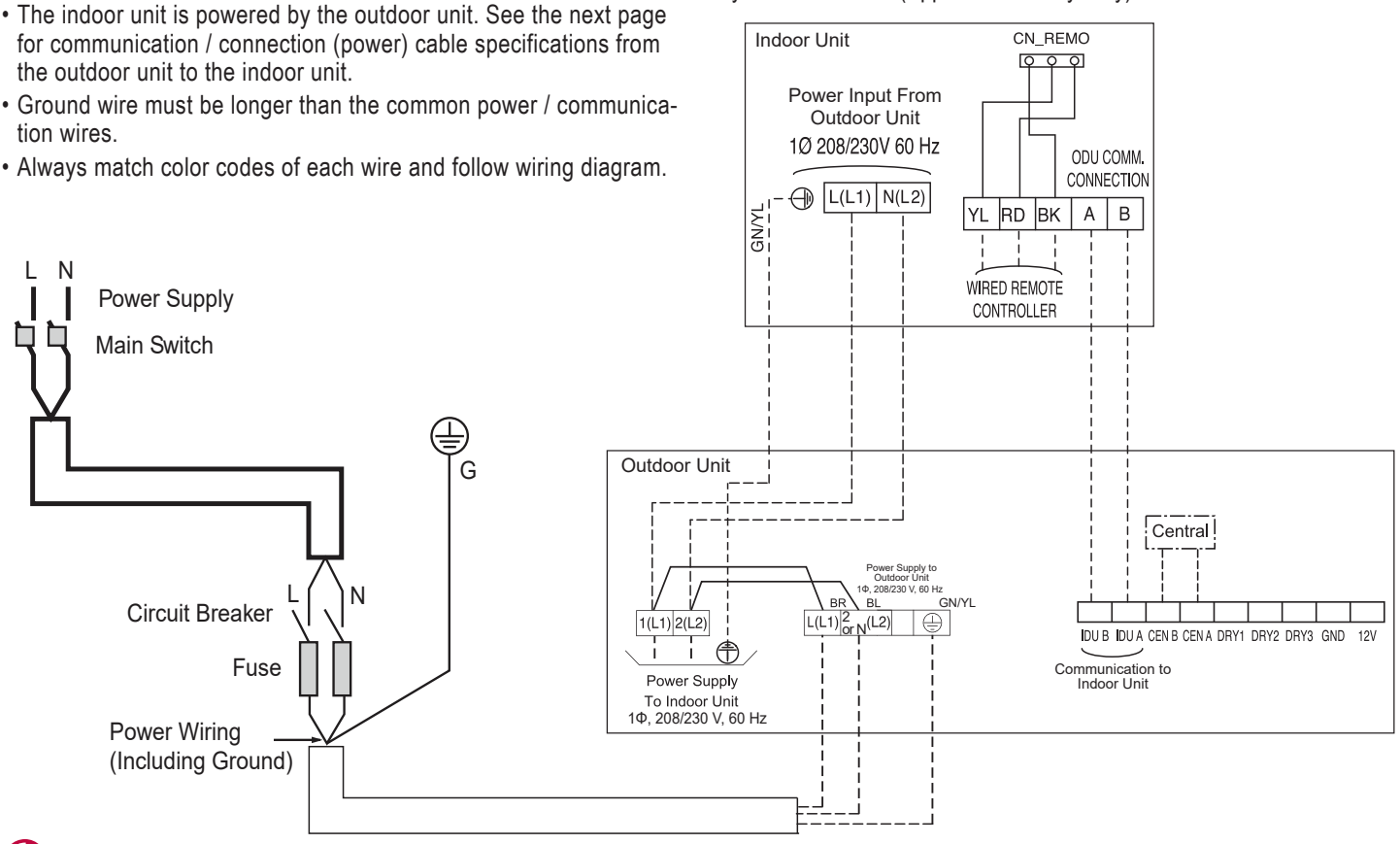


Figure 59: General Single Zone System Power / Communications System Schematic (Appearances May Vary)



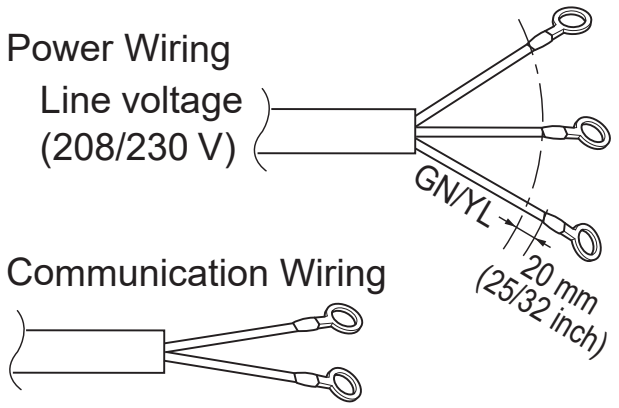
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COMMUNICATION / CONNECTION CABLE

Communication / Connection (Power) Cable Specifications from Outdoor Unit to Indoor Unit

- Power wiring from the single zone outdoor unit to the indoor unit must use a minimum of 14 AWG, three (3) conductor, stranded, shielded or unshielded (if shielded, must be grounded to the chassis of the outdoor unit only), and must comply with applicable local and national codes.
- Communication wiring from the single zone outdoor unit to the indoor unit must be a minimum of 18 AWG, two (2) conductor, stranded, shielded or unshielded (if shielded, must be grounded to the chassis of the outdoor unit only), and must comply with applicable local and national codes.
- Use of stranded, shielded or unshielded wire is allowed for lengths up to the published maximum pipe length, plus recommended slack at both ends.
- Insulation material as required by local code.
- Firmly attach the cable; provide slack but secure in a way to prevent external forces from being imparted on the terminal block.
- Wiring must be completed without splices.

Figure 60: Single Zone Outdoor Unit to Indoor Unit Wiring and Communications Cable Diagram.



⚠ WARNING

All power wiring and communication cable installation must be performed by trained service providers working in accordance with local, state, and National Electrical Code (NEC) / UL / ETL federal regulations related to electrical equipment and wiring, and following the manufacturer product diagrams, requirements, and instructions in this manual. Failure to do so will lead to electric shock which can cause physical injury or death.

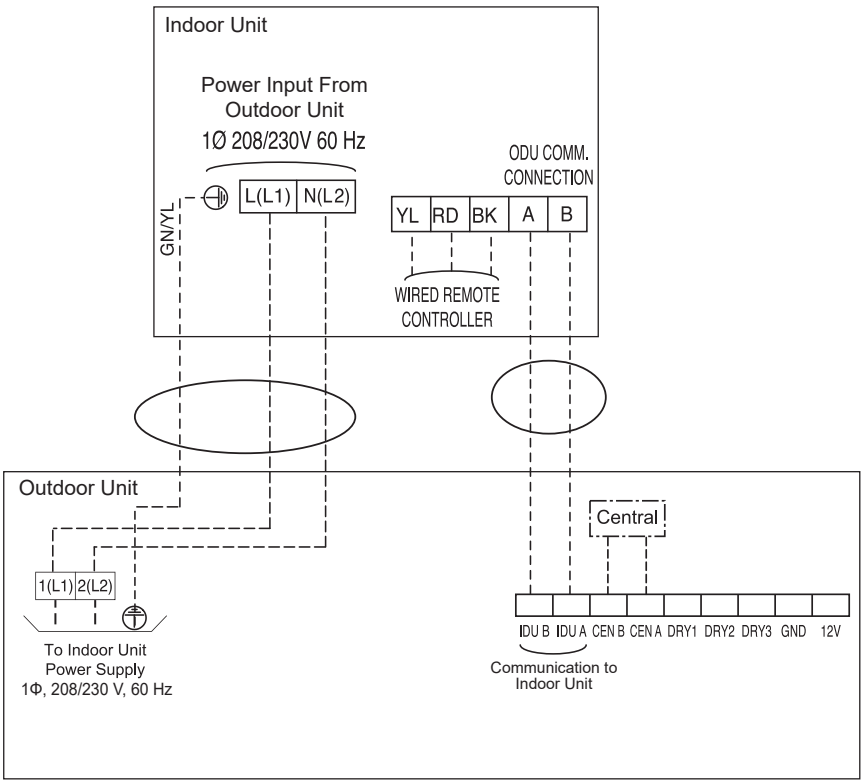
NOTICE

- *Always verify the communication cable is connected to a communications terminal on the Single Zone unit. ⃠ Never apply line voltage power to the communication cable connection. If contact is made, the PCBs will be damaged.*
- *The shield of the communications cable connecting the outdoor unit to the indoor unit must be grounded only to the outdoor unit frame.*
- *Tie the shield of each cable segment together using a wire nut at the indoor unit. Maintain polarity throughout the communication network.*
- *Position the incoming power to the outdoor unit away from the power / communications cables from the outdoor unit to the indoor unit.*
- *⃠ Never use a common multiple-core communications cable.*

NOTICE

- *Make sure the communications cable / power wiring from the outdoor unit to the indoor unit and the power wiring to the outdoor unit are separate, otherwise, the outdoor unit operation will be affected by electrical noise and will malfunction or fail.*
- *Use a conduit for the communications cable / power wiring from the outdoor unit to the indoor units.*

Figure 61: Single Zone Power / Communication System Diagram (Appearances May Vary).



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Controller Options

Optional LG-suppled wired and wireless controllers are available. See “Functions, Controls, Options”, or contact an LG representative for more information.

Figure 64: Typical Wireless Handheld Remote Controller..



Optional Wireless Handheld Remote Controller features:

- Requires an LG IR receiver
- Display Panel: Displays operation conditions.
- On / Off Buttons: Turns system operation on and off.
- Mode Button: Selects the operation mode: Cooling, Heating, Auto, Dry (Dehumidification), or Fan.
- Temp Up / Down Buttons: Adjusts the desired room temperature in the different modes.
- Fan Speed Button: Sets desired fan speed.
- Reset: Initializes the handheld remote control settings.

NOTICE

Each function will display on the LED for about three (3) seconds when the power is first cycled on.

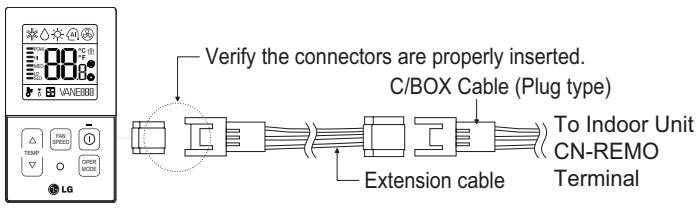
Wired Controller Connections

Optional controllers (see “Functions, Controls, Options”, or contact an LG representative for more information) can connect to the indoor unit in one of two different ways.

1. LG Wired Remote Extension Cable with Molex plug (PZCWRC1; sold separately) that connects to the CN-REMO terminal on the indoor unit PCB.

2. Field-supplied controller cable that connects to the indoor unit terminal block (must be at least UL2547 or UL1007, and at least FT-6 rated if local electric and building codes require plenum cable usage). Communication cable from indoor unit to remote controller(s) is to be 18 AWG, 3-conductor, twisted, stranded, unshielded. Wiring must comply with all applicable local and national codes.

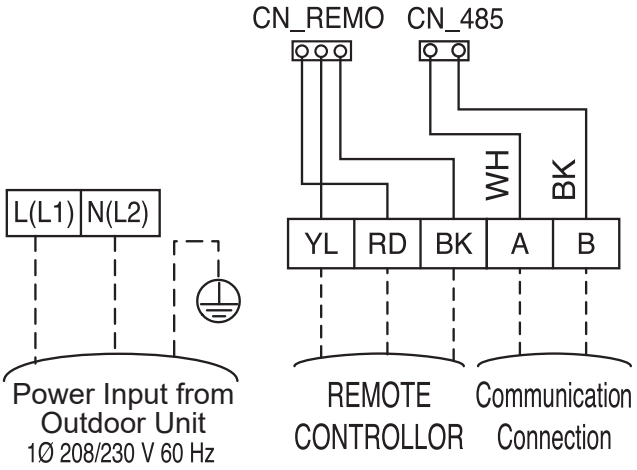
Figure 62: PZCWRC1 LG Wired Remote Extension Cable.



NOTICE

When using field-supplied controller cable, make sure to connect the yellow to yellow (communications wire), red to red (12V power wire), and black to black (ground wire) terminals from the remote controller to the indoor unit terminal blocks.

Figure 63: Wired Controller Connection (Example Only).



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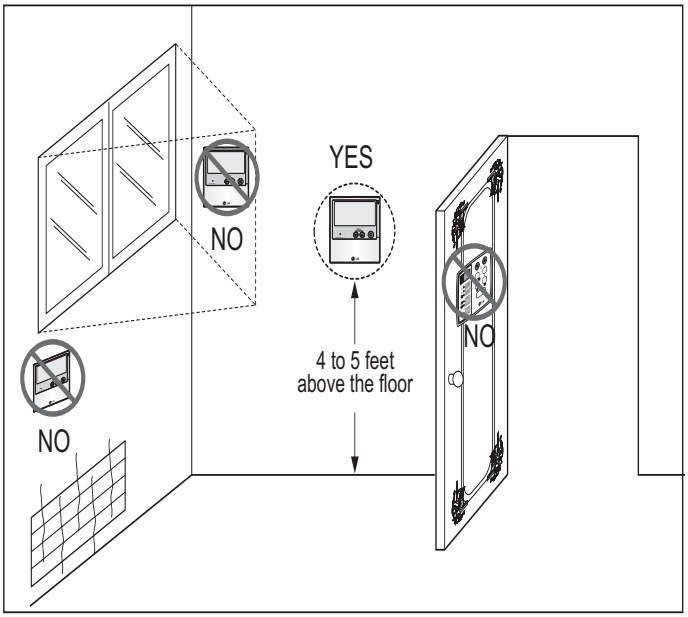
Wired Controller Placement

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 LED display can be read easily, in an area with good air circulation, and where it can detect an average room temperature.

⃠ Do not install the wired controller near or in:

- Drafts or dead spots behind doors and in corners.
- Hot or cold air from ducts.
- Radiant heat from the sun or appliances.
- Concealed pipes and chimneys.
- An area where temperatures are uncontrolled, such as an outside wall.

Figure 65: 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.

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LIMITED WARRANTY (USA)

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

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