

38MARB

Outdoor Unit Single Zone Ductless System
Sizes 06 to 36



Product Data



A220408

Fig. 1 — Sizes 06K - 36K

NOTE: Images are for illustration purposes **only**. Actual models may differ slightly.

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INDUSTRY LEADING FEATURES / BENEFITS

A PERFECT BALANCE BETWEEN BUDGET LIMITS, ENERGY SAVINGS AND COMFORT.

The **38MARB** series ductless systems are a matched combination of an outdoor condensing unit and an indoor fan coil unit connected only by refrigerant tubing and wires.

The ductless system permits creative solutions to design problems such as:

- Add-ons to current space (an office or family room addition)
- Special space requirements
- When changes in the load cannot be handled by the existing system
- When adding air conditioning to spaces that are heated by hydronic or electric heat and have no ductwork
- Historical renovations or any application where preserving the look of the original structure is essential.

The ideal compliment to your ducted system when it is impractical or prohibitively expensive to use ductwork.

The compact indoor fan coil units take up very little space in the room and do not obstruct windows. The fan coils are attractively styled to blend with most room decors. Advanced system components incorporate innovative technology to provide reliable cooling performance at low sound levels.

Inverter Technology

The inverter driven compressor is designed to run at various input power frequencies (Hz) which controls the compressor's motor speed.

Even Temperature – The control package, including the inverter, monitors the outdoor and indoor temperatures as they relate to the selected indoor set point and adjusts the compressor speed to match the load and keep the system operating continuously rather than cycling and creating temperature swings. This translates to higher comfort levels for the occupants.

Rapid Pull Down/Warm-Up – Comfort is increased by the inverter system's ability to ramp up the compressor speed enabling the system to reach the user selected room temperature set point quicker.

Humidity Control – Running the system for longer periods and continuously varying the compressor speed enhances the humidity control.

Individual Room Comfort

Maximum comfort is provided because each space can be controlled individually based on the usage pattern.

Low Sound Levels

When noise is a concern, ductless systems are the answer. The indoor units are whisper quiet. There are no compressors indoors, either in the conditioned space or directly over it, and there is none of the noise usually generated by air being forced through the ductwork.

When sound ordinances and proximity to neighbors demand quiet operation, the **38MARB** unit is the right choice. With the inverter technology, these units run at lower speeds most of the time resulting in reduced sound levels.

Inverter Technology – Enhanced Economical Operation

Ductless systems are inherently economical to operate. Individual rooms are heated or cooled only when required, and since the air is delivered directly to the space, there is no need to use additional energy to move the air in the ductwork. This economical operation is enhanced further when the inverter system output matches the load resulting in a more efficient system.

Easy-To-Use Controls

The systems have microprocessor-based controls to provide the ultimate in comfort and efficiency. The user friendly wired and wireless remote controls provide the interface between the user and the unit.

Secure Operation

If security is an issue, outdoor and indoor units are connected only by refrigerant piping and wiring to prevent intruders from crawling through ductwork or wall openings. In addition, since the **38MARB** can be installed close to an outside wall, coils are protected from vandals and severe weather.

Fast Installation

This compact ductless system is simple to install. Only wires and piping need to run between the indoor and outdoor units. These units are fast and easy to install ensuring minimal disruption to customers in homes or the workplace. This makes the **38MARB** systems the equipment of choice for retrofit applications.

Simple Servicing and Maintenance

Removing the top panel of the outdoor unit provides immediate access to the control compartment, providing the service technician access to the diagnostic LEDs to facilitate the troubleshooting process. In addition, the draw-thru design of the outdoor unit means that dirt accumulates on the outside surface of the coil. Coils can be cleaned quickly from the inside using a pressure hose and detergent.

On the indoor units, service and maintenance expense is reduced due to the permanent easy to clean filters. Also, error codes are displayed on the front panel to alert the user to certain system malfunctions.

Built-in Reliability

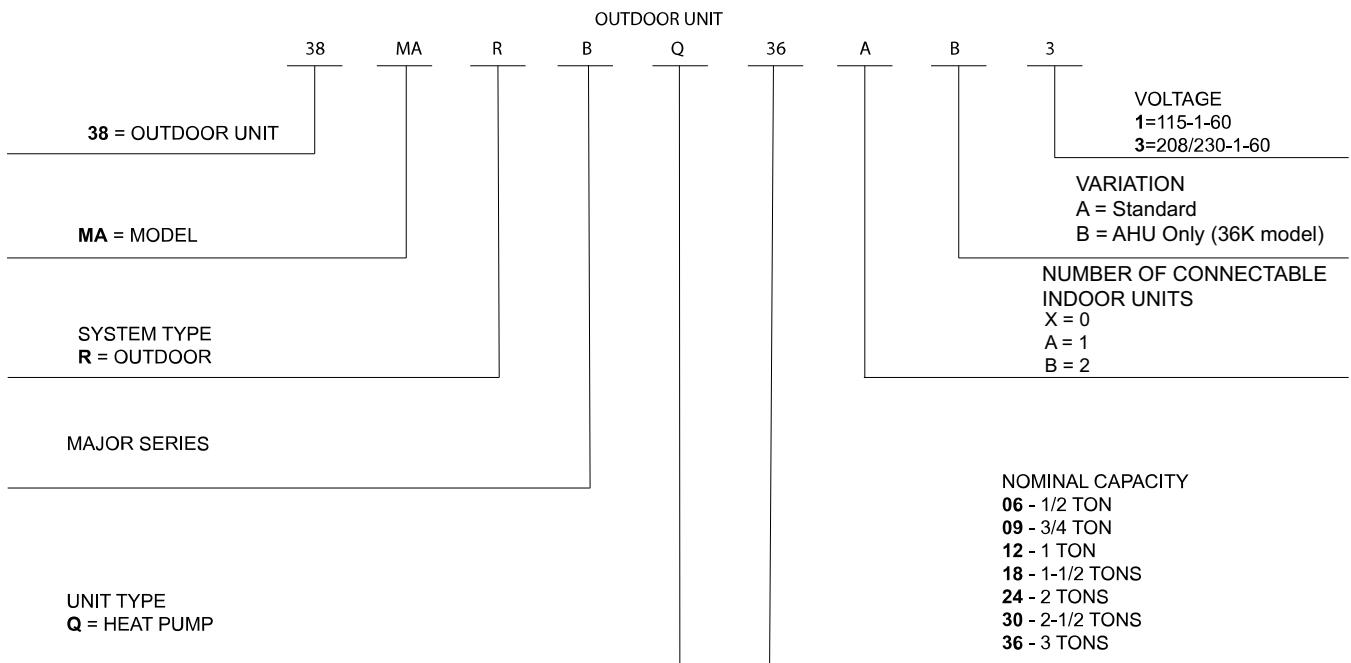
Ductless system indoor and outdoor units are designed to provide years of trouble-free operation. Both the indoor and outdoor units are well protected. Whenever the microprocessor detects abnormal conditions, the unit stops and an error code appears.

Inverter systems provide additional reliability due to the soft start. This refers to the ability of the inverter to start the compressor motor using reduced voltage and reduced current. This feature is beneficial from an electrical standpoint (eliminates current spikes) as well as an overall reliability standpoint due to reduced stress on all associated system components.

Agency Listings

All systems are listed with AHRI (Air conditioning, Heating, and Refrigeration Institute) and are UL certified per UL 60335-2-40 standard.

MODEL NUMBER NOMENCLATURE



A220411



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program. For verification of certification for individual products, go to www.ahridirectory.org.



A220412

STANDARD FEATURES AND ACCESSORIES

Ease Of Installation	
Low Voltage Controls	S
Comfort Features	
Microprocessor Controls	S
Auto Restart Function	S
Auto Changeover	S
Energy Saving Features	
Inverter Driven Compressor	S
46° F Heating Mode (Heating Setback)	S
Safety And Reliability	
3 Minute Time Delay For Compressor	S
High Compressor Discharge Temperature	S
Low Voltage Protection	S
Compressor Overload Protection	S
Compressor Over Current Protection	S
IPM Module Protection	S
Condenser High Temp Protection in Cooling Mode	S
Aluminum Hydrophilic pre-coated fins	S
Ease Of Service And Maintenance	
Diagnostics	S
Liquid Line Pressure Taps	S
Application Flexibility	
Crankcase Heater	S
Base pan Heater	S

Legend

- S - Standard
- A - Accessory

Accessories

Outdoor Unit Model Number	Base Pan Base Rubber Plugs RCD Part No.	Quantity per Unit
38MARBQ12AA1		
38MARBQ06AA3		
38MARBQ09AA3		
38MARBQ12AA3		
38MARBQ18AA3	12600801A00077	13
38MARBQ24AA3	12600801A00077	25
38MARBQ30AA3		
38MARBQ36AA3	12600801A00117	5
38MARBQ36AB3		

NOTE: The base pan is built in with multiple holes for proper draining during the defrost process. For applications where it is required to seal these holes, and re-direct the condensate drain, rubber plugs are available through RCD.

Outdoor Units

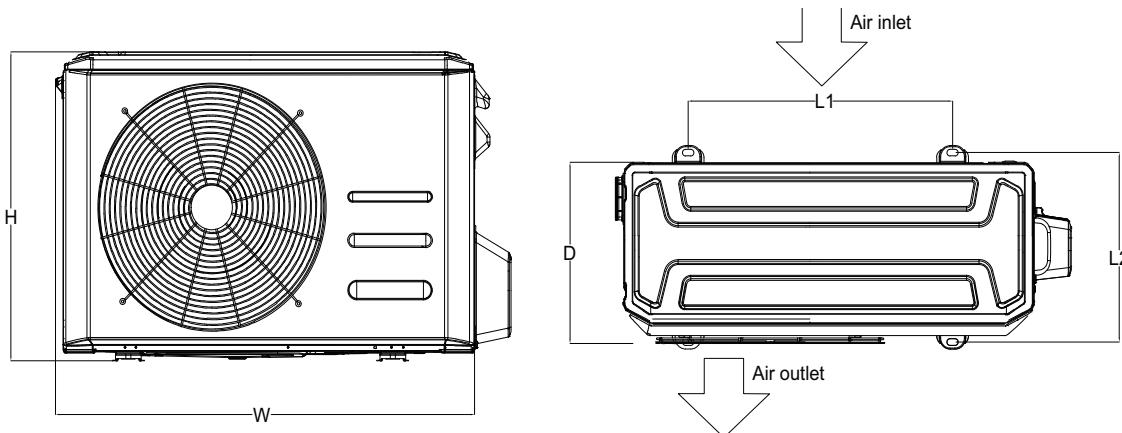
Crankcase Unit

The crankcase heater is standard on all unit sizes. Heater clamps must be placed around the compressor oil stump.

Base pan Heater

The base pan heater is standard on all unit sizes.

DIMENSIONS



A220414

Fig. 2 — Outdoor Unit

SYSTEM SIZE		12K	6K	9K	12K	18K	24K	30K	36K
		(115V)	(208/230V)	(208/230V)	(208/230V)	(208/230V)	(208/230V)	(208/230V)	(208/230V)
OUTDOOR UNIT									
Height (H)	in (mm)	21.85 (555)	21.85 (555)	21.81 (554)	21.81 (554)	26.50 (673)	31.89 (810)	31.89(810)	31.89 (810)
Width (W)	in (mm)	30.12 (765)	30.12 (765)	31.69 (805)	31.69 (805)	35.04 (890)	37.24 (946)	37.24(946)	37.24 (946)
Depth (D)	in (mm)	11.93 (303)	11.93 (303)	12.99 (330)	12.99 (330)	13.46 (342)	16.14 (410)	16.14(410)	16.14 (410)
Weight - Net	lbs. (kg)	66.80 (30.3)	63.71(28.9)	74.07 (33.6)	73.63 (33.4)	100.97 (45.8)	134.48 (61)	141.76(64.3)	150.13 (68.1) 155.42 (70.4)†
L1	in. (mm)	17.81 (452)	17.81 (452)	20.10 (511)	20.10 (511)	26.10 (663)	26.50 (673)	26.50 (673)	26.50 (673)
L2	in. (mm)	11.25 (286)	11.25 (286)	12.50 (317)	12.50 (317)	13.70 (347)	15.85 (403)	15.85 (403)	15.85 (403)
PACKAGING									
Height	in (mm)	24.02 (610)	24.02 (610)	24.21 (615)	24.21 (615)	29.13 (740)	34.84 (885)	34.84(885)	34.84 (885)
Width	in (mm)	34.92 (887)	34.92 (887)	36.02 (915)	36.02 (915)	39.17 (995)	42.91 (1090)	42.91(1090)	42.91 (1090)
Depth	in (mm)	13.27 (337)	13.27 (337)	14.57 (370)	14.57 (370)	15.67 (398)	19.69 (500)	19.69(500)	19.69 (500)
Weight - Gross	lbs. (kg)	72.31 (32.8)	69(31.3)	80.25 (36.4)	79.37 (36)	108.03 (49)	144.40 (65.5)	151.90(68.9)	158.95 (72.1) 166.23 (75.4)†
Carton Drawing No.	--	877*327*590	877*327*590	905*360*590	905*360*590	985*388*720	1075*485*86	1075*485*86	1075*485*86
Carton Material	--	Carton Box							
Material Thickness	in (mm)	0.197 (5)	0.197 (5)	0.197 (5)	0.197 (5)	0.197 (5)	0.295 (7.5)	0.295(7.5)	0.295 (7.5)

NOTE: † AHU only

DIMENSIONS (CONT)

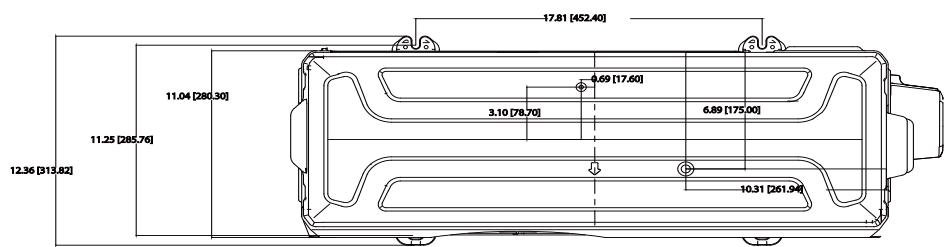
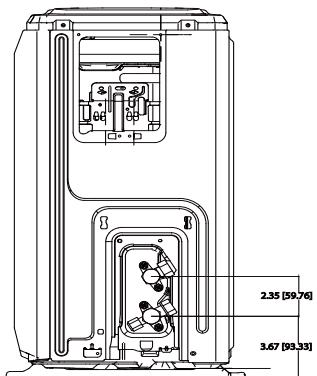
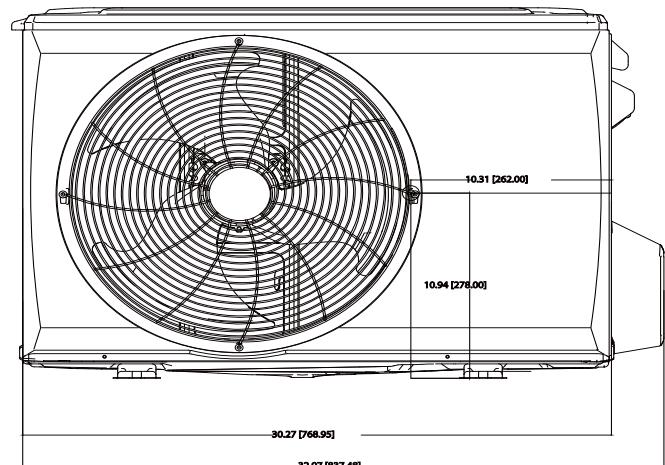
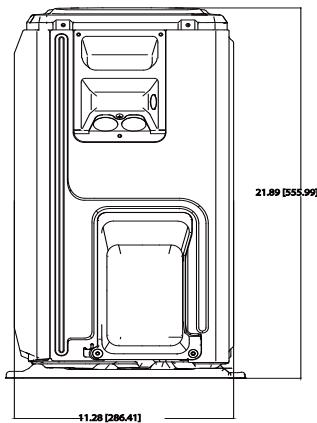


Fig. 3 —Dimension Sizes 12K (115V) and 6K (208/230V)

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DIMENSIONS (CONT)

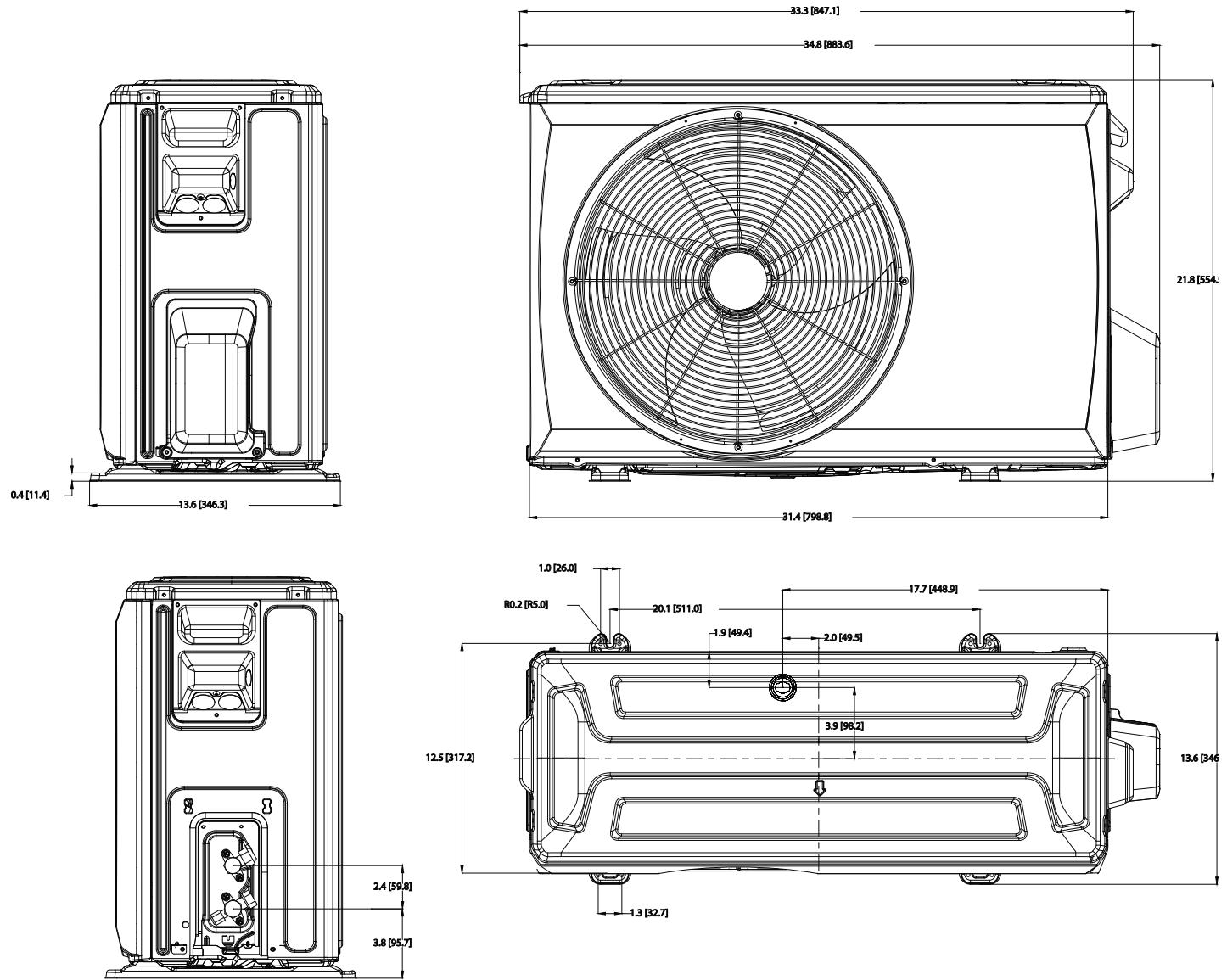


Fig. 4 —Dimension Sizes 09K-12K

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DIMENSIONS (CONT)

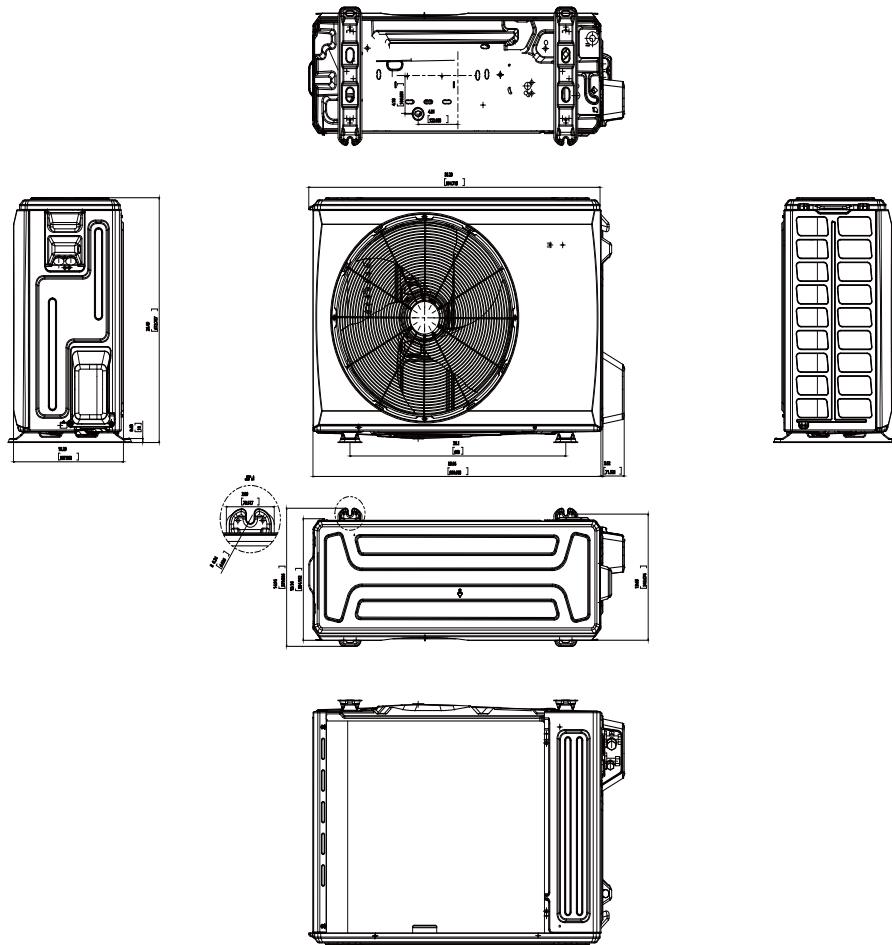


Fig. 5 —Dimension Size 18K

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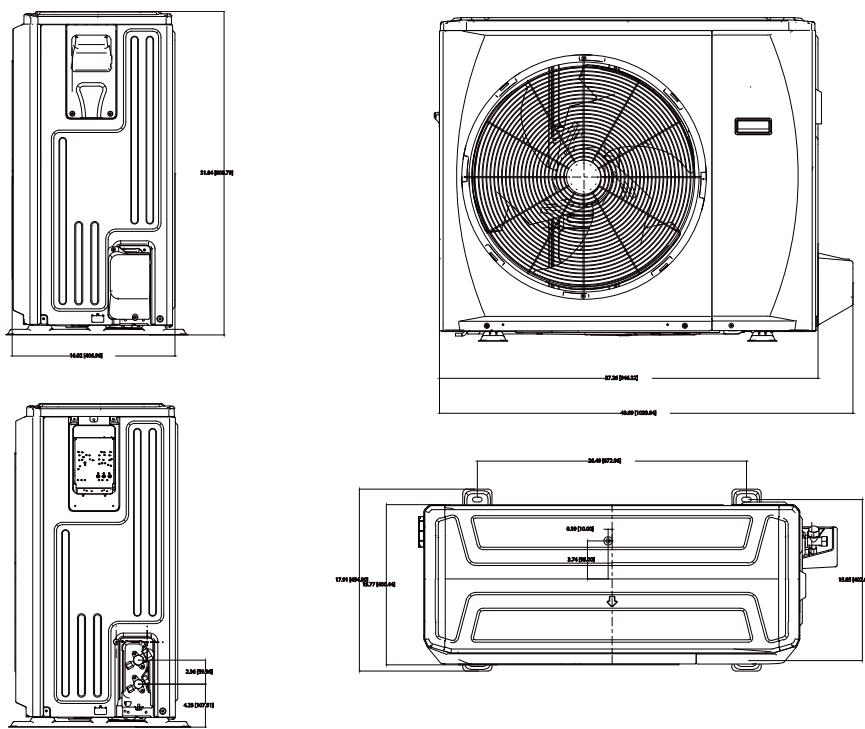


Fig. 6 —Dimension Sizes 24K, 30K, and 36K

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CLEARANCES

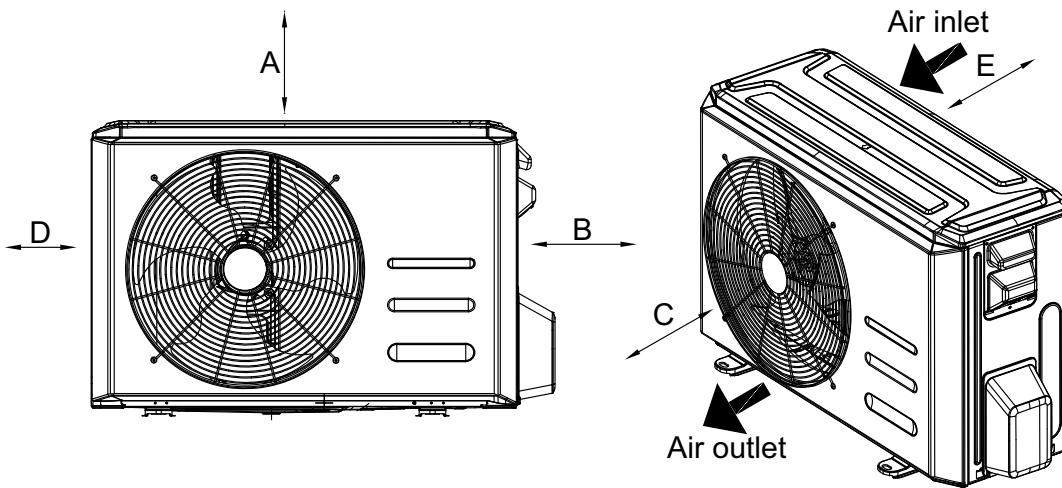


Fig. 7 —Clearances

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UNIT	MINIMUM VALUE in. (mm)
A	24 (610)
B	24 (610)
C	24 (610)
D	4 (101)
E	4 (101)

NOTE: The outdoor unit must be mounted at least 2in (50mm) above the maximum anticipated snow depth.

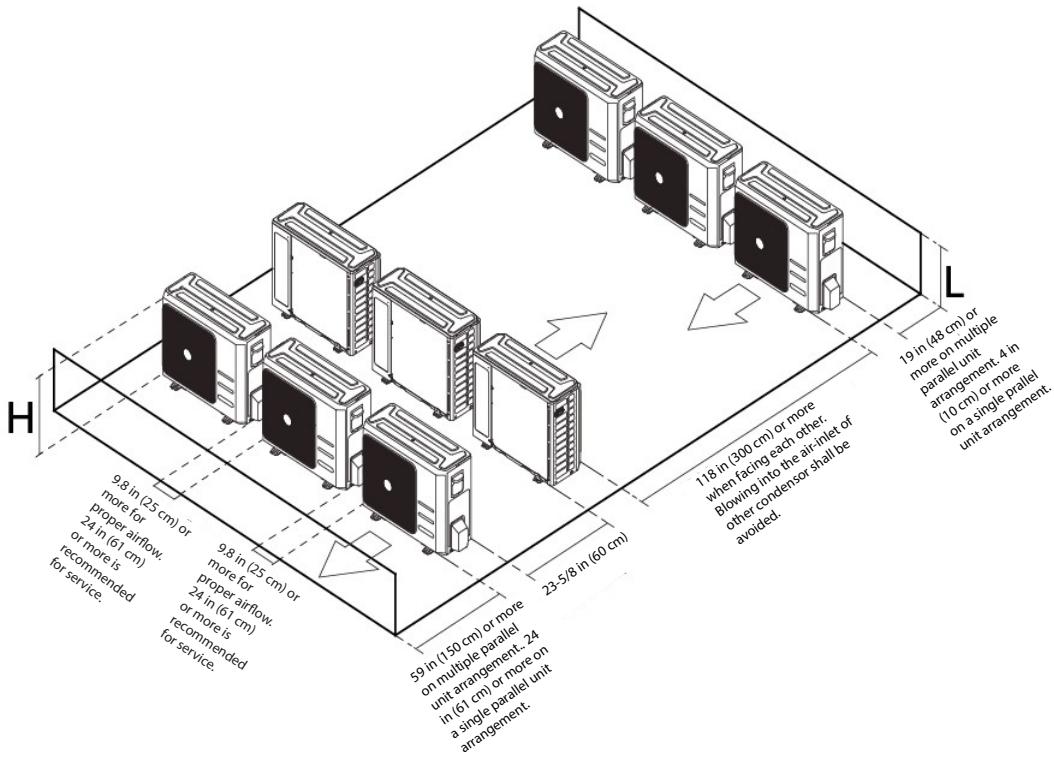


Fig. 8 —Clearances for multiple units

A220421

Mix Match Ducted

Mix Match Ducted 18K ODU	INDOOR MODEL		24K(208/230V)
	Energy Star		YES
	Cooling System Tons		1.5
	Cooling Rated Capacity	Btu/h	17,500
	Cooling Cap. Range Min - Max	Btu/h	6,500 ~ 22,500
	SEER		20.0
	EER		13.2
	Heating Rated Capacity (47°F)	Btu/h	19,000
	Heating Rated Capacity (17°F)	Btu/h	12,600
	Heating Maximum Capacity (17°F)	Btu/h	21,500
	Heating Maximum Capacity (5°F)	Btu/h	18,000
	Heating Cap. Range Min - Max	Btu/h	9,000 ~ 23,500
	HSPF		11.5
	COP (47°F)	W/W	3.71
	COP (17°F)	W/W	2.78
	COP (5°F)	W/W	1.80

Console

Console	INDOOR MODEL		12K(208/230V)	18K(208/230V)	24K(208/230V)
	Energy Star		YES	YES	NO
	Cooling System Tons		1.0	1.4	2.0
	Cooling Rated Capacity	Btu/h	12,000	17,000	24,000
	Cooling Cap. Range Min - Max	Btu/h	2,800 ~ 13,500	7,800 ~ 19,900	9,000 ~ 26,800
	SEER		23.0	20.2	20.2
	EER		13.0	12.5	11.5
	Heating Rated Capacity (47°F)	Btu/h	12,000	18,000	24,600
	Heating Rated Capacity (17°F)	Btu/h	8,400	12,000	14,500
	Heating Maximum Capacity (17°F)	Btu/h	13,100	20,700	26,661
	Heating Maximum Capacity (5°F)	Btu/h	12,100	16,000	24,894
	Heating Cap. Range Min - Max	Btu/h	2,350 ~ 15,700	8,600 ~ 21,500	12,500 ~ 30,500
	HSPF		11.5	10.6	11.6
	COP (47°F)	W/W	3.22	3.19	3.52
	COP (17°F)	W/W	2	1.8	2.7
	COP (5°F)	W/W	1.84	1.80	1.80

Air Handler

Air Handler	INDOOR MODEL		18K(208/230V)	24K(208/230V)	30K(208/230V)	36K(208/230V)‡
	Energy Star		YES	YES	NO	NO
	Cooling System Tons		1.5	1.9	2.5	3.0
	Cooling Rated Capacity	Btu/h	18,000	23,000	30,000	36,000
	Cooling Cap. Range Min - Max	Btu/h	6,8000 ~ 20,000	7,500 ~ 26,000	9,500 ~ 31,200	11,600 ~ 41,000
	SEER		20.0	21.0	19.0	17.0
	EER		12.5	12.5	11.1	8.8
	Heating Rated Capacity (47°F)	Btu/h	19,000	26,000	30,000	38,000
	Heating Rated Capacity (17°F)	Btu/h	12,000	16,200	19,200	25,600
	Heating Maximum Capacity (17°F)	Btu/h	18,500	23,400	19,600	25,600
	Heating Maximum Capacity (5°F)	Btu/h	18,000	23,000	18,000	20,500
	Heating Cap. Range Min - Max	Btu/h	5,800 ~ 21,000	5,600 ~ 29,000	12,000 ~ 32,000	9,200 ~ 43,000
	HSPF		10.0	11.6	10.0	11.3
	COP (47°F)	W/W	3.62	3.58	3.26	3.35
	COP (17°F)	W/W	2.34	2.80	2.60	2.62
	COP (5°F)	W/W	1.90	1.95	1.85	1.90

Note: ‡ AHU only

FV4C Fan Coil

	HEAT PUMP SYSTEM		12K	18K	24K	30K	36K
FV4C Fan Coil	Indoor Model		FV4CNF002L	FV4CNF002L	FV4CNF002L	FV4CN(B,F)003L	FV4CN(B,F)003L
	Energy Star		NO	NO	NO	NO	NO
	Cooling System Tons		1.0	1.5	1.9	2.4	3.0
	Cooling Rated Capacity	Btu/h	11,500	17,400	22,200	29,000	35,600
	Cooling Cap. Range Min - Max	Btu/h	7,800 ~ 15,700	14,100 ~ 21,400	11,100 ~ 26,400	14,100 ~ 32,400	13,700 ~ 41,500
	SEER		16.5	16.0	14.9	16.0	15.4
	EER		11.7	11.5	11.4	10.7	9.3
	Heating Rated Capacity (47°F)	Btu/h	11,500	17,100	24,400	29,400	3,700
	Heating Rated Capacity (17°F)	Btu/h	6,200	13,400	15,200	19,200	21,800
	Heating Cap. Range Min - Max	Btu/h	5,500 ~ 14,600	11,700 ~ 21,000	11,900 ~ 28,600	11,400 ~ 31,400	10,400 ~ 38,800
	HSPF		10.0	10.5	11.0	11.0	9.9
	COP (47°F)	W/W	3.65	3.65	3.85	3.25	3.10
	COP (17°F)	W/W	2.15	3.25	2.80	2.50	2.30

FMC-FMU Fan Coil

	HEAT PUMP SYSTEM		12K	18K	24K	30K	36K
FMC-FMU Fan Coil	Indoor Model		FM(C,U)4Z18**AL*	FM(C,U)4Z18**AL*	FM(C,U)4Z24**AL*	FM(C,U)4Z30**AL*	FM(C,U)4Z36**AL*
	Energy Star		NO	NO	NO	NO	NO
	Cooling System Tons		1.1	1.5	1.8	2.4	2.9
	Cooling Rated Capacity	Btu/h	13,000	18,500	22,000	28,800	34,600
	Cooling Capacity Range Min - Max	Btu/h	8,100 ~ 16,000	14,100 ~ 21,800	11,500 ~ 26,900	14,500 ~ 32,800	14,200 ~ 42,200
	SEER		17.0	19.0	15.5	17.5	15.5
	EER		11.6	12.2	12.0	10.7	10.1
	Heating Rated Capacity (47°F)	Btu/h	13,600	19,300	26,200	28,800	36,200
	Heating Rated Capacity (17°F)	Btu/h	7,200	15,000	16,100	19,200	20,200
	Heating Capacity Range Min - Max	Btu/h	5,600 ~ 14,600	11,700 ~ 21,000	11,800 ~ 28,600	11,100 ~ 31,400	10,500 ~ 39,500
	HSPF		10.0	11.5	10.0	12.5	9.0
	COP (47°F)	W/W	4.16	4.04	3.42	3.54	3.36
	COP (17°F)	W/W	2.52	3.40	2.28	2.76	2.44

59SC2 Furnaces

59SC2 Furnace	Indoor Model		59SC2D060E14**12				
	Energy Star		NO	NO	NO	NO	NO
	Cooling System Tons		1.1	1.6	1.9	2.4	2.9
	Cooling Rated Capacity	Btu/h	12,700	18,700	22,600	28,800	34,800
	Cooling Cap. Range Min - Max	Btu/h	7,900 ~ 15,700	14,000 ~ 21,900	11,500 ~ 27,800	14,400 ~ 32,800	13,700 ~ 42,200
	SEER		17.0	18.0	15.0	16.0	14.5
	EER		11.5	12.4	12.1	10.4	10.0
	Heating Rated Capacity (47°F)	Btu/h	13,500	18,800	26,000	28,600	35,200
	Heating Rated Capacity (17°F)	Btu/h	7,200	14,700	16,000	19,200	19,800
	Heating Cap. Range Min - Max	Btu/h	5,600 ~ 14,700	11,400 ~ 20,500	11,900 ~ 28,300	11,200 ~ 31,200	10,300 ~ 38,400
	HSPF		9.5	11.0	10.5	11.0	8.5
	COP (47°F)	W/W	4.18	3.88	3.86	3.42	3.22
	COP (17°F)	W/W	2.54	3.30	2.68	2.58	2.30

59SC5 Furnaces

59SC5 Furnace	Indoor Model		59SC5B060E14**12			
	Energy Star		NO	NO	NO	NO
	Cooling System Tons		1.1	1.5	1.9	2.4
	Cooling Rated Capacity	Btu/h	12,900	18,400	23,000	29,200
	Cooling Cap. Range Min - Max	Btu/h	8,000 ~ 15,800	14,000 ~ 21,700	11,600 ~ 28,300	14,300 ~ 33,300
	SEER		15.0	16.5	15.5	15.5
	EER		11.0	11.9	12.2	10.4
	Heating Rated Capacity (47°F)	Btu/h	13,700	19,100	26,200 1.957"	28,600
	Heating Rated Capacity (17°F)	Btu/h	7,300	14,900	16,000	19,300
	Heating Cap. Range Min - Max	Btu/h	5,800 ~ 14,900	11,700 ~ 20,800	11,900 ~ 28,600	11,300 ~ 31,200
	HSPF		9.0	10.5	11.0	11.0
	COP (47°F)	W/W	4.00	3.94	4.08	3.44
	COP (17°F)	W/W	2.40	3.26	2.88	2.62

59SU5 Furnaces

59SU5 Furnace	Indoor Model		59SU5A040E17**12			
	Energy Star		NO	NO	NO	NO
	Cooling System Tons		1.1	1.5	1.9	2.4
	Cooling Rated Capacity	Btu/h	12,600	18,500	22,600	28,200
	Cooling Cap. Range Min - Max	Btu/h	7,800 ~ 15,600	13,900 ~ 21,700	11,500 ~ 27,800	14,200 ~ 32,100
	SEER		17.0	18.0	15.5	16.5
	EER		11.4	12.3	12.1	10.5
	Heating Rated Capacity (47°F)	Btu/h	13,500	18,600	25,800	28,200
	Heating Rated Capacity (17°F)	Btu/h	7,200	14,600	15,700	19,000
	Heating Cap. Range Min - Max	Btu/h	5,600 ~ 14,700	11,300 ~ 20,300	11,800 ~ 28,100	10,900 ~ 30,700
	HSPF		9.5	11.0	11.0	11.5
	COP (47°F)	W/W	4.12	3.80	3.90	3.30
	COP (17°F)	W/W	2.52	3.26	2.72	2.56

59TP6 Furnaces

59TP6 Furnace	Indoor Model	59TP6B060V17**14				
	Energy Star		NO	NO	NO	NO
	Cooling System Tons		1.1	1.6	1.9	2.4
	Cooling Rated Capacity	Btu/h	12,700	18,800	22,200	28,400
	Cooling Cap. Range Min - Max	Btu/h	7,900 ~ 15,700	14,000 ~ 22,000	11,400 ~ 27,100	14,400 ~ 32,400
	SEER		16.5	18.0	15.5	16.5
	EER		11.3	12.4	12.0	10.4
	Heating Rated Capacity (47°F)	Btu/h	13,500	18,800	26,000	28,400
	Heating Rated Capacity (17°F)	Btu/h	7,200	14,700	15,800	19,100
	Heating Cap. Range Min - Max	Btu/h	5,600 ~ 14,700	11,500 ~ 20,500	11,800 ~ 28,300	11,000 ~ 31,000
	HSPF		9.0	11.0	11.0	11.5
	COP (47°F)	W/W	4.14	3.90	3.80	3.34
	COP (17°F)	W/W	2.52	3.26	2.70	2.58
						2.28

NOTE: See the current compatibility chart for complete list of outdoor unit and furnace/case coil match ups. For furnaces, actual performance values will vary +/-5% depending on the cased coil selected and installed.

APPLICATION DATA

Unit Selections

Select equipment that either matches or supports slightly more than the anticipated peak load. This provides better humidity control, fewer unit cycles, and less part-load operation.

For units used in spaces with high sensible loads, base equipment selection on unit sensible load, not on total anticipated load. Adjust for anticipated room wet bulb temperature to avoid undersizing the equipment.

Unit Mounting (Outdoor)

Refer to the unit's installation instructions for further details.

Unit leveling - For reliable operation, units should be level in all planes.

Clearance - Minimum clearance (see Fig. 7 — on page 9) must be provided for airflow. The condensing units are designed for free-flow application. Air inlets and outlets should not be restricted.

Unit location - A location which is convenient to installation and not exposed to strong winds. A location that can bear the weight of the outdoor unit and where the outdoor unit can be mounted in a level position.

Do not install the indoor or outdoor units in a location with special environmental conditions. For those applications, contact your sales representative.

System Operating Conditions

OPERATING RANGE MIN/MAX °F / °C

All sizes 6-36 (115V and 208/230V):

- Cooling: -22/130 (-30/55)
- Heating: -22/86 (-30/30)

NOTE: Without intervention, the unit may continue to run at temperatures outside of the specified operating temperatures. However, operation outside of the specified temperature range may result in decreased performance and may cause damage to the unit.

METERING DEVICES

The outdoor unit has an electronic expansion valve to manage the refrigerant flow of the connected fan coil.

DRAIN CONNECTIONS

Install drains to meet the local sanitation codes.

REFRIGERANT LINES

General refrigerant line sizing:

1. The outdoor units are shipped with a full charge of R410A refrigerant. All charges, line sizing, and capacities are based on runs of 25 ft. (7.6 m). For runs over 25 ft. (7.6 m), review "Long Line Applications:" on page 33 for the proper charge adjustments.
2. Refrigerant lines should not be buried in the ground. If it is necessary to bury the lines, do not bury more than 36-in (914 mm). Provide a minimum 6-in (152 mm) vertical rise to the service valves to prevent refrigerant migration.
3. Both lines must be insulated. Use a minimum of 1/2-in. (12.7 mm) thick insulation. Closed-cell insulation is recommended in all long-line applications.
4. Special consideration should be given to isolating the interconnecting tubing from the building structure. Isolate the tubing so vibration or noise is not transmitted into the structure.

Long Line Applications:

1. No change in line sizing is required.
2. Add refrigerant per the **Additional Charge Table**.

Additional Charge Table

UNIT SIZE	TOTAL LINE LENGTH ft (m)		ADDITIONAL CHARGE, oz/ft. ft (m)			
	Min	Max	10-25 (3-8)	>25-82 (8-25)	>82-98 (25-30)	>98-213 (30-65)
6	10 (3)	82 (25)	None	0.16		
9						
12						
18		98 (30)			0.16	
24		164 (50)				
30						
36		213 (65)				



CAUTION

When the outdoor unit is matched with a Multi-Family or Residential Fan Coil and due the need to braze the piping on the fan coil side it is **REQUIRED** to flow Nitrogen in the system while brazing the line set since a filter drier is not recommended to be used with these condensing units.

WIRING

All wires must be sized per NEC (National Electrical Code) or CEC (Canadian Electrical Code) and local codes. Use Electrical Data table MCA (minimum circuit amps) and MOCP (maximum over current protection) to correctly size the wires and the disconnect fuse or breakers respectively.

Recommended Connection Method for Power and Communication Wiring:

The main power is supplied to the outdoor unit. The field supplied 14/3 power/communication wiring, from the outdoor unit to the indoor unit, consists of four (4) wires and provides the power for the indoor unit. Two wires are high voltage AC power, one is communication wiring and the other is a ground wire. Wiring between indoor and outdoor unit is polarity sensitive. The use of BX wire is **NOT** recommended.

If installed in a high Electromagnetic field (EMF) area and communication issues exists, a 14/2 stranded shielded wire can be used to replace L2 and (S) between outdoor unit and indoor unit landing the shield onto ground in the outdoor unit only.



CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.



CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Be sure to comply with local codes while running wire from the indoor unit to the outdoor unit.

Every wire must be connected firmly. Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exist. Ensure all wiring is tightly connected.

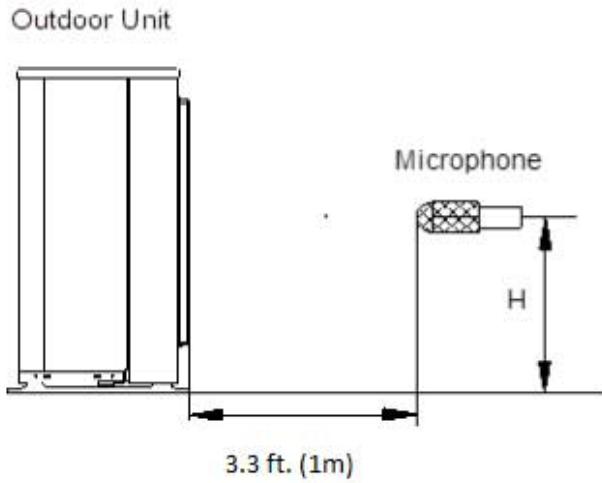
No wire should touch the refrigerant tubing, compressor or any moving parts.

Disconnecting means must be provided and shall be located within sight and readily accessible from the air conditioner.

NOTE: Matches with Multi-Family and Residential Fan Coils require separate power for the indoor and outdoor unit. A 24V interface kit is required for compatibility. Refer to the 24V Interface Kit Installation Manual.

Sound Pressure in Octave Bands

	Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
12 K (115 V)	Cooling dB(A)	58.5	55.9	58.1	51.1	46.0	41.4	34.8	28.6
	Heating dB(A)	58.8	57.4	57.4	53.6	47.3	43.5	37.2	31.9
	Indoor dB(A)	40.8	33.0	34.3	34.1	33.7	26.6	19.4	14.1
6K (208V)	Cooling dB(A)	57.5	53.2	56.9	49.6	45.2	41.4	36.5	31
	Heating dB(A)	57.3	53.2	58.4	51.2	46.1	43.6	38.5	34.9
	Indoor dB(A)	38.1	30.9	33.6	33.5	31.7	25.9	22.6	16.7
9K (208V)	Cooling dB(A)	53.1	51.2	52.6	49.5	40.1	36.5	29.1	26.3
	Heating dB(A)	57.6	55.0	52.3	50.1	45.5	42.2	36.8	30.0
	Indoor dB(A)	45.2	38.8	38.1	40.8	38.9	35.1	24.0	14.8
12K (208V)	Cooling dB(A)	54.4	55.4	51.6	52.6	42.1	37.9	31.5	30.1
	Heating dB(A)	63.7	59.9	55.4	52.2	48.7	45.1	39.1	34.8
	Indoor dB(A)	39.5	31.0	33.3	32.5	31.5	23.9	17.9	14.4
18K (208V)	Cooling dB(A)	56.5	60.8	56.2	53.3	51.8	46.0	38.1	33.2
	Heating dB(A)	58.8	63.5	57.9	54.3	51.7	45.0	38.9	31.2
	Indoor dB(A)	39.5	41.5	41.9	41.6	43.0	37.5	33.5	21.4
24K (208V)	Cooling dB(A)	68.3	69.2	62.9	56.3	54.6	50.4	46.5	41.3
	Heating dB(A)	65.9	68.6	65.3	58.7	57.5	53.8	48.5	44.5
	Indoor dB(A)	44.3	38.8	42.9	39.4	40.5	34.5	26.2	25.6
30K (208V)	Cooling dB(A)	62.4	58.3	56.8	55.4	51.4	45.5	42.5	35.1
	Heating dB(A)	62.5	58.4	57.5	54.6	52.4	48.4	45.0	38.7
	Indoor dB(A)	47.2	38.9	45.8	42.3	42.2	37.6	28.4	23.8
36K (208V)	Cooling dB(A)	56.8	61.8	61.4	54.4	50.7	45.3	43.2	37.1
	Heating dB(A)	58.4	65.0	62.9	57.0	54.9	50.5	46.9	42.3
	Indoor dB(A)	43.5	40.6	45.6	42.2	41.9	37.3	28.6	21.5

Outdoor Unit Sound Pressure Test Conditions**Fig. 9 —Outdoor Unit Sound Pressure Test**

NOTE: H=0.5 x Height of outdoor unit

	INDOOR CONDITION		OUTDOOR CONDITION	
	DB	WB	DB	WB
Cooling	80.6°F (27°C)	66.2°F (19°C)	95°F (35°C)	75.2°F (24°C)
Heating	68°F (20°C)	59°F (15°C)	44.6°F (7°C)	42.8°F (6°C)

ELECTRICAL DATA

SYSTEM SIZE	12 K	9K/6K	12K	18K	24K	30K	36K
V-Ph-Hz	115-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60
Power supply	3Wires: includes ground wire (Outdoor); 115V-1Ph-60Hz, 208/230V-1Ph-60Hz						
Interconnection to Indoor Unit	Yes						
Shielded Wire (Yes/No)	Yes						

*Permissible limits of the voltage range at which the unit will operate satisfactorily.

LEGEND

FLA - Full Load Amps
 MCA - Minimum Circuit Amps
 RLA - Rated Load Amps

Fan and Motor Specifications

SYSTEM SIZE		12K	6K	9K	12K	18K	24K	30K	36K
		(115 V)	(208/230 V)	(208/230 V)	(208/230 V)	(208/230 V)	(208/230 V)	(208/230 V)	(208/230 V)
Material	-	Acrylonitrile Styrene +20%GF							
Type	-	ZL-421*133*8-3KN	ZL-421*133*8-3KN	ZL-434*144*8-3KN	ZL-434*144*8-3KN	ZL-535*133*12-3KFN	ZL-560*139*12-3KN	ZL-560*139*12-3KN	ZL-560*139*12-3KN
Diameter	inch	16.58 (421)	16.58 (421)	17.09 (434)	17.09 (434)	21.06 (535)	22.05 (560)	22.05 (560)	22.05 (560)
Height	inch	5.24 (133)	5.24 (133)	5.67(144)	5.67(144)	5.24 (133)	5.47 (139)	5.47 (139)	5.47 (139)
Model	-	ZKFN-34-10-1	ZKFN-34-10-1	ZKFN-34-10-1	ZKFN-34-10-1	ZKFN-80-8-3	ZKFN-120-8-2	ZKFN-120-8-2	ZKFN-120-8-2
Volts	V	115	310	208/230	208/230	208/230	208/230	208/230	208/230
Phase		310	3	310	310	310	310	310	310
Hertz	Hz	3	60	3	3	3	3	3	3
FLA	A	0.4	0.4	0.4	0.4	0.76	0.5	1.0	1.35
Rated HP	HP	0.045	0.045	0.045	0.045	0.11	0.16	0.16	0.16
Output	W	34	34	34	34	80	120	120	120
Type	-	DC							
Insulation class	-	B	B	B	B	E	E	E	E
Safe class	-	IP24	IP24	IP24	IP24	IPX4	IPX4	IPX4	IPX4
Input	W	100.3	100.3	100.3	100.3	120	173	173	173
Range of current	Amps	0.823±10%	0.823±10%	0.823±10%	0.823±10%	1±20%	1.48±10%	1.39±10%	1.39±10%
Rated current	Amps	0.89	0.89	0.89	0.89	0.82	1.21	1.21	1.21
Capacitor	μF	NA							
Speed	rev/min	800/700/600	800/700/600	730/660/560	730/660/560	780/700/550	950/800/500	900/700/500	950/700/500 950/700/500+
Rated RPM	rev/min	800	800	730	730	780	950	900	950
Max. input	W	100.3	100.3	100.3	100.3	120.0	170.0	170.0	170.0

NOTE: ‡ Only Compatible with AHU

CONNECTION DIAGRAMS

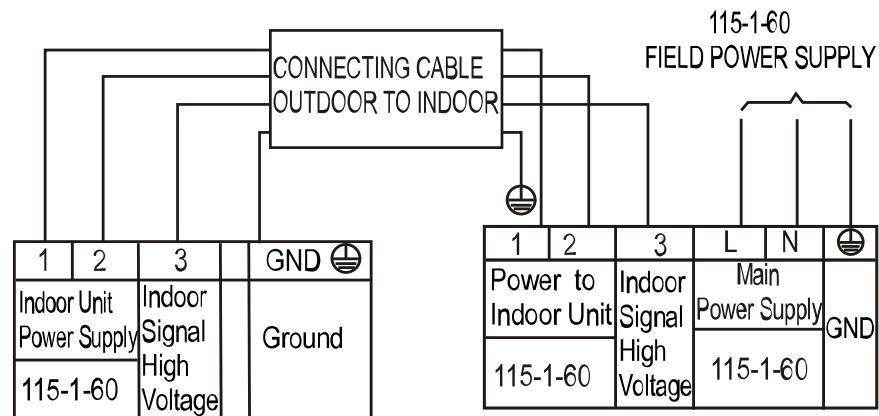


Fig. 10 —Connection Diagram 12K (115V)

A220424

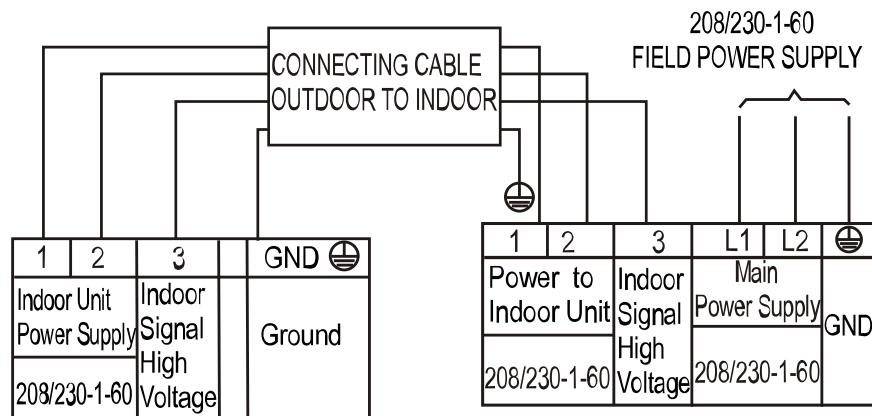


Fig. 11 —Connection Diagram Sizes 6K-36K (208/230-1-60V)

A220425

WIRING DIAGRAMS

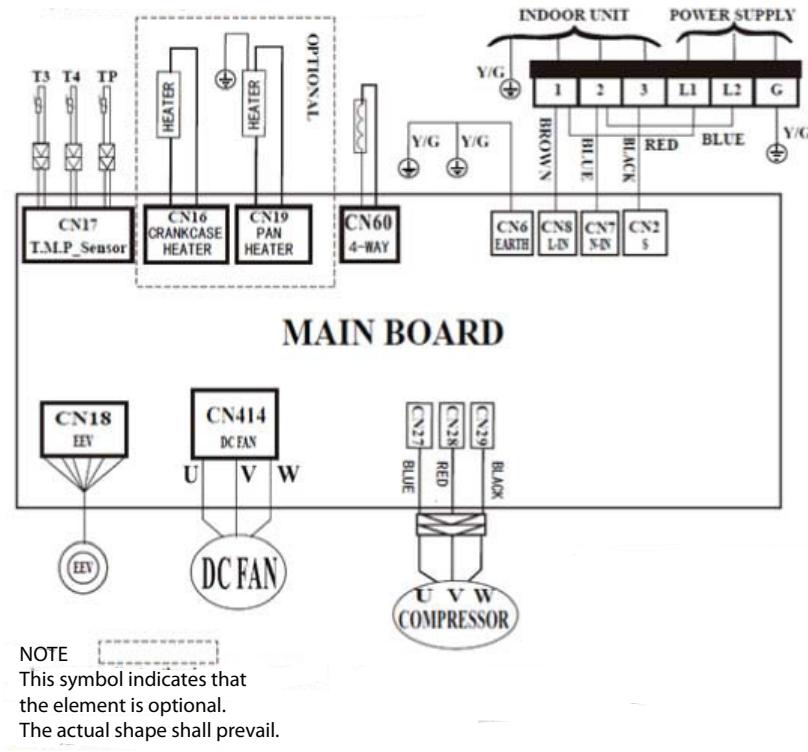


Fig. 12 —Wiring Diagram Size 12K (115V)

A220426

		CN 2/7/8	INPUT	230V	AC
	CN18	OUTPUT	0~12V	DC	
	CN414	OUTPUT	0~310V	AC	
	CN60	OUTPUT	230V	AC	
	CN17	OUTPUT	0~5V	DC	
T3	Condenser TEMP. Sensor	CN16	OUTPUT	230V	AC
T4	Ambient TEMP. Sensor	CN19	OUTPUT	230V	AC
TP	Discharge TEMP. Sensor	CN27/28/29	OUTPUT	0~310V	AC

WIRING DIAGRAMS (CONT)

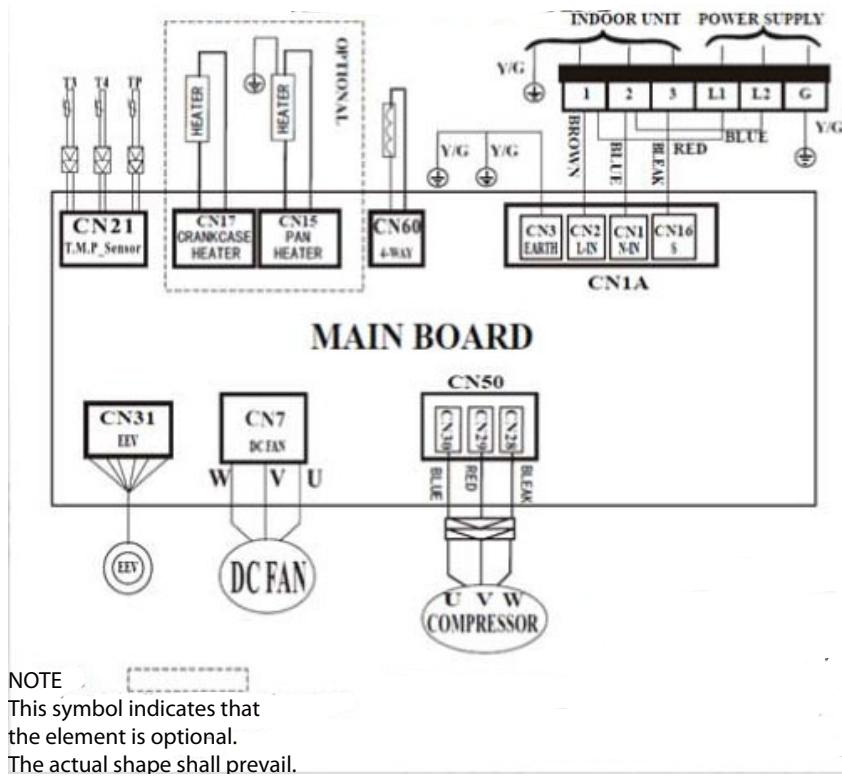
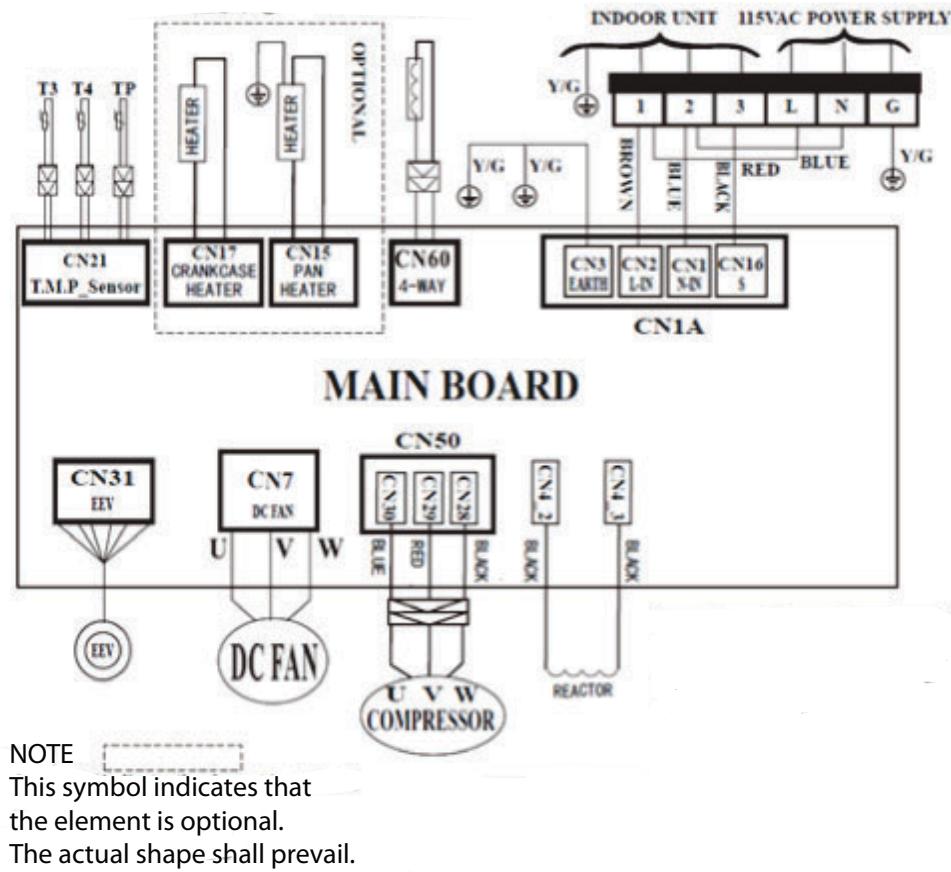


Fig. 13 — Wiring Diagram - Sizes 6-12K (208/230V)

A220427

		CNIA	INPUT	230V	AC
	CN31	OUTPUT	0~12V	DC	
	CN7	OUTPUT	0~310V	AC	
	CN60	OUTPUT	230V	AC	
	CN21	OUTPUT	0~5V	DC	
T3	Condenser TEMP. Sensor	CN15	OUTPUT	230V	AC
T4	Ambient TEMP. Sensor	CN17	OUTPUT	230V	AC
TP	Discharge TEMP. Sensor	CN30	OUTPUT	0~310V	AC

WIRING DIAGRAMS (CONTINUED)

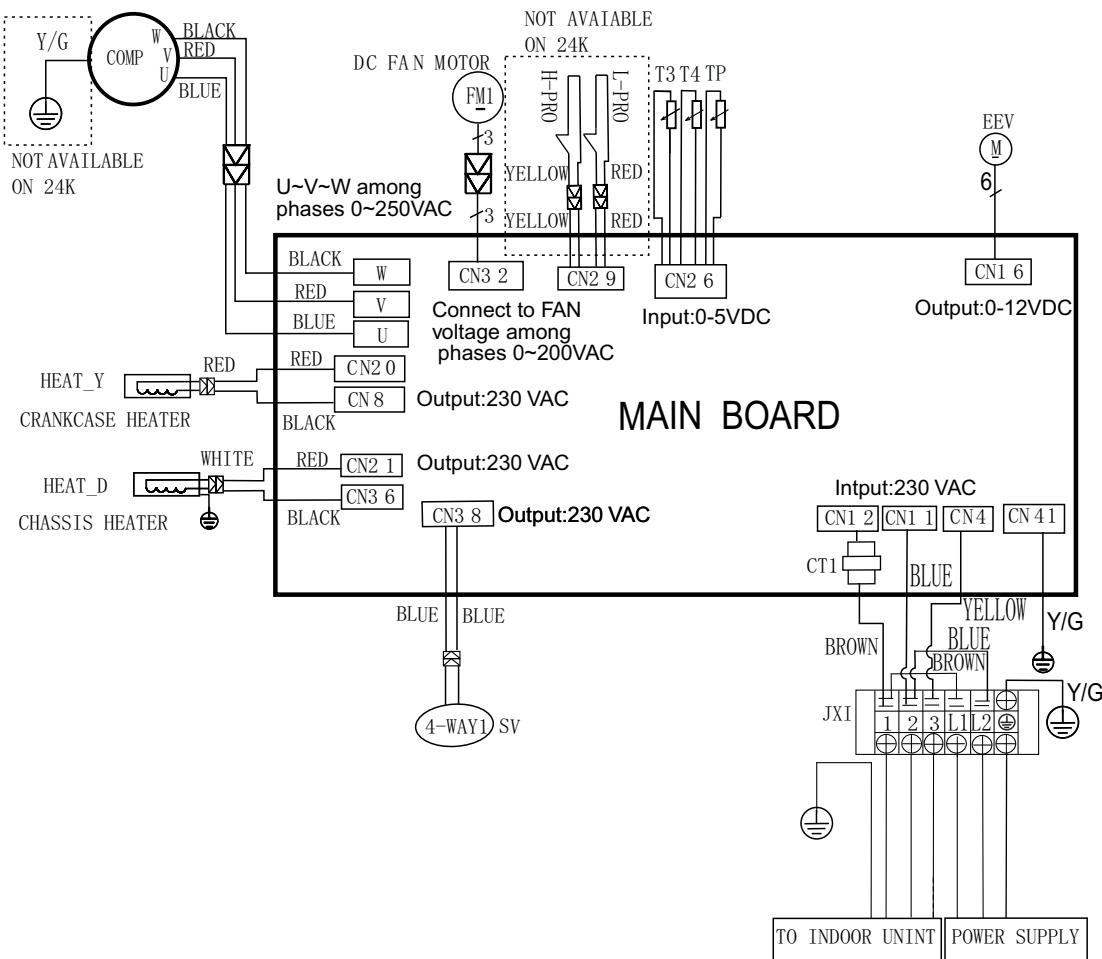


A220428

Fig. 14 — Wiring Diagram Size 18K (208/230V)

		CNIA	INPUT	115V	AC
		CN4_2/4_3	INPUT	115V	AC
		CN7	OUTPUT	0~310V	AC
		CN60	OUTPUT	115V	AC
		CN21	OUTPUT	0~5V	DC
T3	Condenser TEMP. Sensor	CN15	OUTPUT	115V	AC
T4	Ambient TEMP. Sensor	CN17	OUTPUT	115V	AC
TP	Discharge TEMP. Sensor	CN50	OUTPUT	0~310V	AC

WIRING DIAGRAMS (CONTINUED)



Notes:
COMPONENT IN DASH
LINE IS OPTIONAL
OR FIELD WIRING

Fig. 15 — Wiring Diagram Sizes 24-36K (208/230V)

A220429

CODE	PART NAME
JX1	TERMINAL BLOCK
COMP_TOP	COMP. TOP OLP TEMP. SENSOR
EEV	ELECTRIC EXPANSIVE VALVE
FM1	DC FAN MOTOR
COMP	COMPRESSOR
HEAT_Y	CRACKCASE HEATER
CT1	AC CURRENT DETECTOR
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
SV	REVERSE VALVE
TP	COMP. DISCHARGE TEMP. SENSOR
T3	COIL TEMP. SENSOR
T4	OUTDOOR AMBIENT TEMP. SENSOR
HEAT_D	CHASIS HEATER

Part 1 - GENERAL

1.01 System Description

1. Outdoor air-cooled split system compressor sections suitable for on-the-ground, rooftop, wall hung or balcony mounting. Units consist of a rotary compressor, an air-cooled coil, propeller-type draw-through outdoor fan, reversing valve (HP), accumulator (HP units), metering device(s), and a control box. Units discharge air horizontally as shown on the contract drawings. Units function as the outdoor component of an air-to-air heat pump system.
2. Units are to be used in a refrigeration circuit matched to ductless heat pump fan coil units.

1.02 Agency Listings

1. Unit construction complies with ANSI/ASHRAE 15, latest revision, and with the NEC.
2. Units are evaluated in accordance with UL standard 60335-2-40.
3. Units are listed in the CEC directory.
4. Unit cabinet is capable of withstanding 500-hour salt spray test per Federal Test Standard No. 141 (method 6061).
5. Air-cooled condenser coils are leak tested at 550 psig.

1.03 Delivery, Storage, And Handling

Units are shipped in one piece and are stored and handled per unit manufacturer's recommendations.

1.04 Warranty (For Inclusion By Specifying Engineer)

Part 2 - PRODUCTS

2.01 Equipment

A. General:

Factory assembled, single piece, air-cooled outdoor unit. Contained within the unit enclosure is all the factory wiring, piping, controls, and the compressor.

B. Unit Cabinet:

1. Unit cabinet is constructed of galvanized steel, bonderized and coated with a baked-enamel finish on the inside and outside.
2. Unit access panels are removable with minimal screws and provides full access to the compressor, fan, and control components.
3. The outdoor compartment is isolated and has an acoustic lining to assure quiet operation.

C. Fans:

1. Outdoor fans are the direct drive propeller type, and discharges air horizontally. Fans draw air through the outdoor coil.
2. Outdoor fan motors are totally enclosed, single phase motors with class E insulation and permanently lubricated ball bearings. The motor shall be protected by internal thermal overload protection.
3. The shaft has inherent corrosion resistance.
4. Fan blades are non-metallic and statically and dynamically balanced.
5. Outdoor fan openings are equipped with a PVC metal/mesh coated protection grille over the fan.

GUIDE SPECIFICATIONS

HORIZONTAL DISCHARGE OUTDOOR UNITS

Size Range: 1/2 to 3 Ton Nominal Cooling and Heating Capacity Model Number: **38MARB**

D. Compressor:

1. Compressor is the fully hermetic rotary type.
2. Compressor is equipped with an oil system, operating oil charge, and a motor.
3. Motor is NEMA rated class E, suitable for operation in a refrigerant atmosphere.
4. Compressor assembly is installed on rubber vibration isolators.

E. Outdoor Coil:

The coil is constructed of aluminum hydrophilic pre-coated fins mechanically bonded to seamless copper tubes, which are cleaned, dehydrated, and sealed.

F. Refrigeration Components:

Refrigerant circuit components include a brass external liquid line service valve with service gage port connections, a suction line service valve with a service gage connection port, service gage port connections on compressor suction and discharge lines with Schrader type fittings with brass caps, accumulator, reversing valve.

G. Controls and Safeties:

Operating controls and safeties are factory selected, assembled, and tested. The minimum control functions include the following:

1. Controls:
 - A time delay control sequence is provided standard through the fan coil board
 - Automatic outdoor fan motor protection.
2. Safeties:
 - System diagnostics
 - Compressor motor current and temperature overload protection
 - Outdoor fan failure protection.

H. Electrical Requirements:

1. Unit operates on single-phase, 60 Hz power at 115V for unit size 12 and 208/230V for unit sizes 06, 09, 12, 18, 24, 30, 36, and 36 (AHU Only) as specified.
2. Unit electrical power has a single point connection.
3. Unit Control voltage to the indoor fan coil is 0-15V DC.
4. All power and control wiring must be installed per NEC and all local electrical codes.

The unit has high and low voltage terminal block connections.