40MBCQ
Cassette Ductless System
Sizes 09 to 48

Carrier
turn to the experts

Product Data

NOTE: Image for illustration purposes only. Actual model may differ slightly.

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INDUSTRY LEADING FEATURES / BENEFITS

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

The 40MBCQ 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 in−ceiling cassette fan coils are ideal for retrofit or modernization projects where a false ceiling is available. This selection of fan coils permits inexpensive and 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. These 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.

LOW SOUND LEVELS

When noise is a concern, the 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 ductwork.

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. In addition, since outdoor units 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. A mounting bracket is standard with the indoor units and only wire and piping needs to run between indoor and outdoor units. These units are fast and easy to install ensuring minimal disruption to customers in the home or workplace. This makes the ductless systems the equipment of choice, especially in retrofit situations.

SIMPLE SERVICING AND MAINTENANCE

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

On all indoor units, service and maintenance expense is reduced due to easy−to−use cleanable filters. In addition, these cassette systems have extensive self−diagnostics to assist in troubleshooting.

BUILT − IN RELIABILITY

Ductless system indoor and outdoor units are designed to provide years of trouble−free operation.

The in−ceiling cassette units include protection against freeze−up and high evaporator temperatures on heat pumps.

The condensing units on heat pumps are protected by a three minute time delay before the compressor starts the over−current protection and the high temperature protection.

INDIVIDUAL ROOM COMFORT

Maximum comfort is provided because each space can be controlled individually based on usage pattern. The air sweep feature provided permits optimal room air mixing to eliminate hot and cold spots for occupant comfort. In addition, year−round comfort can be provided with heat pumps.

ECONOMICAL OPERATION

The ductless system design allows individual room heating or cooling when required. There is no need to run large supply−air fans or chilled water pumps to handle a few spaces with unique load patterns. In addition, because air is moved only in the space required, no energy is wasted moving air through ducts.

EASY−TO−USE CONTROLS

The in−ceiling cassette has microprocessor−based controls to provide the ultimate in comfort and efficiency. The user friendly wireless remote control provides the interface between user and the unit.

FACTORY INSTALLED CONDENSATE LIFT PUMP

Customizing these ductless systems to your application is easily accomplished. The factory installed condensate lift pump on the cassette fan coil unit provides installation flexibility.

OPTIONAL WIRED CONTROLLER

AGENCY LISTINGS

All systems are listed with AHRI (Air Conditioning, Heating & Refrigeration Institute), and ETL.

MODEL NUMBER NOMENCLATURE

INDOOR UNIT

40 MB C Q 09 – – – 3

40 = FAN COIL UNIT

MB = MODEL

INDOOR FAN COIL TYPE
C = CASSETTE

SYSTEM TYPE
Q = HEAT PUMP

NOMINAL CAPACITY
09 – 3/4 TON
12 – 1 TON
18 – 1–1/2 TONS
24 – 2 TONS
36 – 3 TONS
48 – 4 TONS

VOLTAGE
3 = 208/230–1–60

NOT USED

NOT USED

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.

STANDARD FEATURES AND ACCESSORIES

Ease Of Installation	
Mounting Brackets	S
Low Voltage Controls	S
Comfort Features	
Microprocessor Controls	S
Wired Remote Control	A
Wireless Remote Control	S
Wi−Fi Remote Control	A
Automatic Horizontal Air Sweep	S
Air Direction Control	S
Auto Restart Function	S
Cold Blow Protection On Heat Pumps	S
Freeze Protection Mode On Heat Pumps	S
Turbo Mode	S
Silence Mode	S
Auto Changeover On Heat Pumps	S
Follow Me	S
Energy Saving Features	
Sleep Mode	S
Stop/Start Timer	S
46°F Heating Mode (Heating Setback)	S
Safety And Reliability	
Indoor Coil Freeze Protection	S
Indoor Coil High Temp Protection in Heating Mode	S
Aluminum Golden Hydrophilic pre−coated fins	S
Ease Of Service And Maintenance	
Cleanable Filters	S
Diagnostics	S
Liquid Line Pressure Taps	S
Condensate Drain Adaptor	S
Application Flexibility	
Condensate Lift Pump	S

Legend
S Standard
A Accessory

ACCESSORIES

ORDERING NO.	DESCRIPTION	FOR MODELS
KSACN0101AAA	Wired Remote Control with Timer Function	Sizes 09 - 18
KSACN0501AAA	Wired Remote Control 7 day Programmable	All Sizes
40MBCQ01XXX3	Grille/Ceiling Panel 2ft x 2 ft	Sizes 09 − 18
40MBCQ02XXX3	Grille/Ceiling Panel 3ft x 3 ft	Sizes 24 − 48
KSAIF0401AAA	Wi−Fi Kit	All sizes
53DS−900−−−089	Insulated 25’ Line Set − 1/4” x 3/8”	Size 09
53DS−900−−−008	Insulated 25’ Line Set − 1/4“ x 1/2”	Sizes 12, 18

INDOOR UNIT ACCESSORIES

Grille

To maximize shipping efficiency, the grille for the in−ceiling cassette is set up as an accessory.

NOTE: Grille is required.

DIMENSIONS

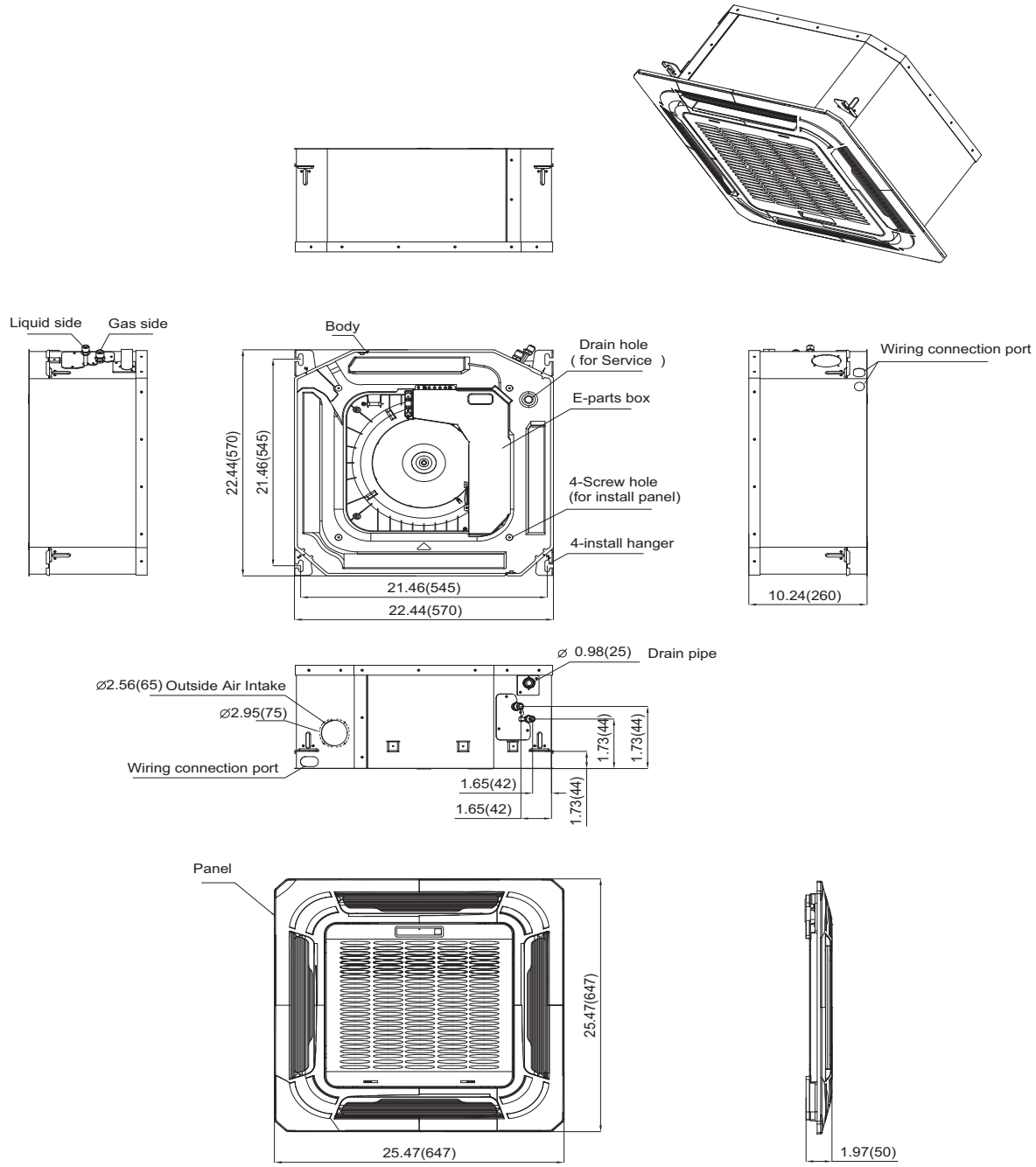
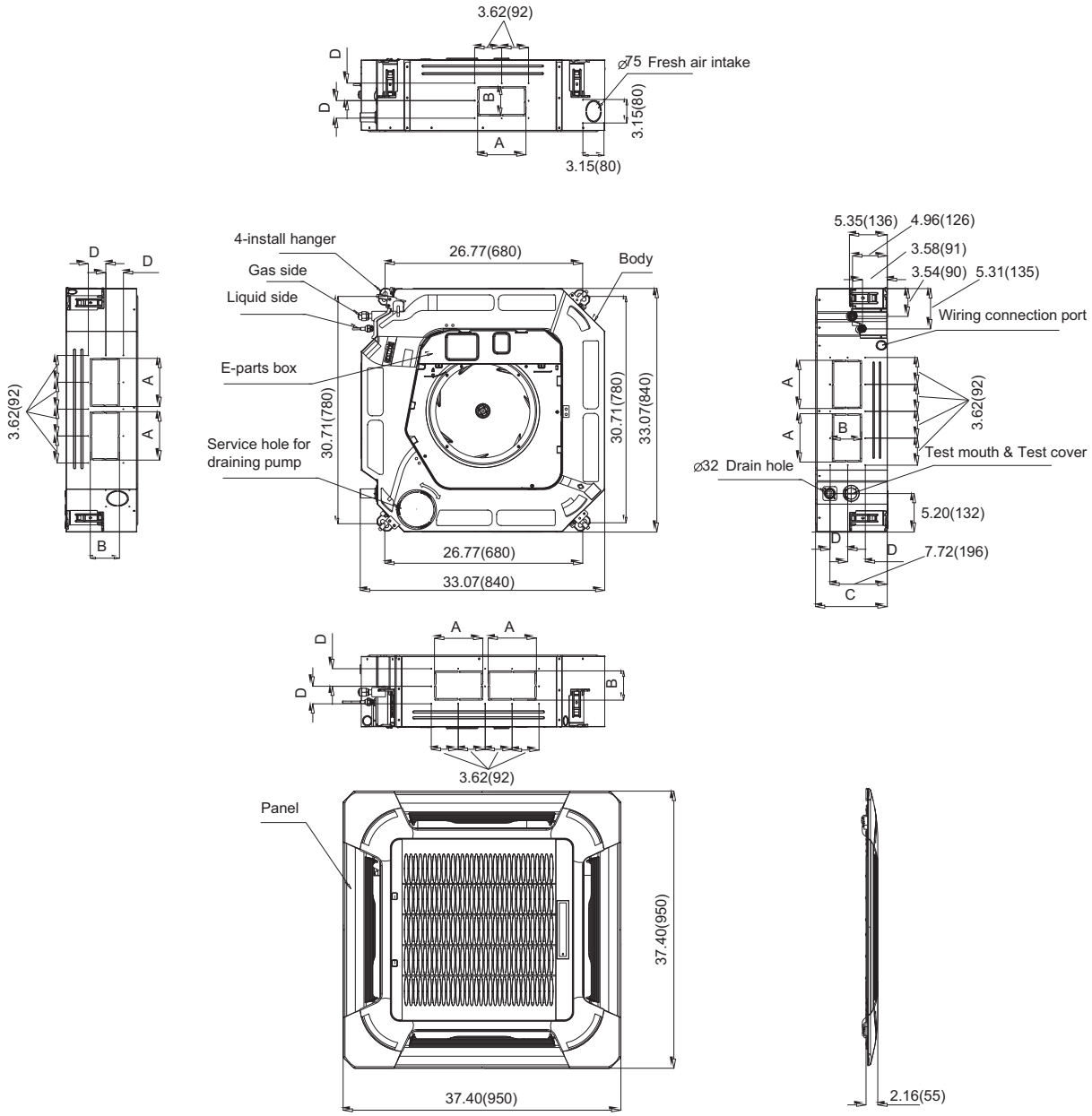


Fig. 1 – Indoor Unit (Sizes 9−18)

UNIT SIZE		9K		12K		18K		24K		36K		48K	
		Body	Panel	Body	Panel	Body	Panel	Body	Panel	Body	Panel	Body	Panel
DIMENSIONS													
Height	in (mm)	10.24 (260)	1.97 (50)	10.24 (260)	1.97 (50)	10.24 (260)	1.97 (50)	8.07 (205)	2.17 (55)	9.65 (245)	2.17 (55)	11.3 (287)	2.17 (55)
Width	In (mm)	22.44 (570)	25.47 (647)	22.44 (570)	25.47 (647)	22.44 (570)	25.47 (647)	33.07 (840)	37.4 (950)	33.07 (840)	37.4 (950)	33.07 (840)	37.4 (950)
Depth	In (mm)	22.44 (570)	25.47 (647)	22.44 (570)	25.47 (647)	22.44 (570)	25.47 (647)	33.07 (840)	37.4 (950)	33.07 (840)	37.4 (950)	33.07 (840)	37.4 (950)
PACKAGING													
Height	In (mm)	11.42 (290)	4.84 (123)	11.42 (290)	4.84 (123)	11.42 (290)	4.84 (123)	8.54 (217)	3.54 (90)	10.12 (257)	3.54 (90)	11.5 (292)	3.54 (90)
Width	In (mm)	25.79 (655)	28.15 (715)	25.79 (655)	28.15 (715)	25.79 (655)	28.15 (715)	35.43 (900)	40.75 (1035)	35.43 (900)	40.75 (1035)	35.43 (900)	40.75 (1035)
Depth	In (mm)	25.79 (655)	28.15 (715)	25.79 (655)	28.15 (715)	25.79 (655)	28.15 (715)	35.43 (900)	40.75 (1035)	35.43 (900)	40.75 (1035)	35.43 (900)	40.75 (1035)
Weight-Gross	Lbs (kg)	41.88 (19)	9.92 (4.5)	41.88 (19)	9.92 (4.5)	46.3 (21)	9.92 (4.5)	54.23 (24.6)	17.64 (8)	66.14 (30)	17.64 (8)	72.53 (32.9)	17.64 (8)
Weight-Net		35.27 (16)	5.51 (2.5)	35.27 (16)	5.51 (2.5)	39.68 (18)	5.51 (2.5)	46.3 (21)	11.02 (5)	58.2 (26.4)	11.02 (5)	63.27 (28.7)	11.02 (5)

DIMENSIONS − (CONT)



Capacity (Btu/h)		A	B	C	D
24K	mm	160	75	205	50
	inch	6.30	2.95	8.07	1.97
36K	mm	160	95	245	60
	inch	6.30	3.74	9.65	2.36
48K	mm	160	95	287	60
	inch	6.30	3.74	11.30	2.36

Fig. 2 – Indoor Unit (Sizes 24−48)

CLEARANCES

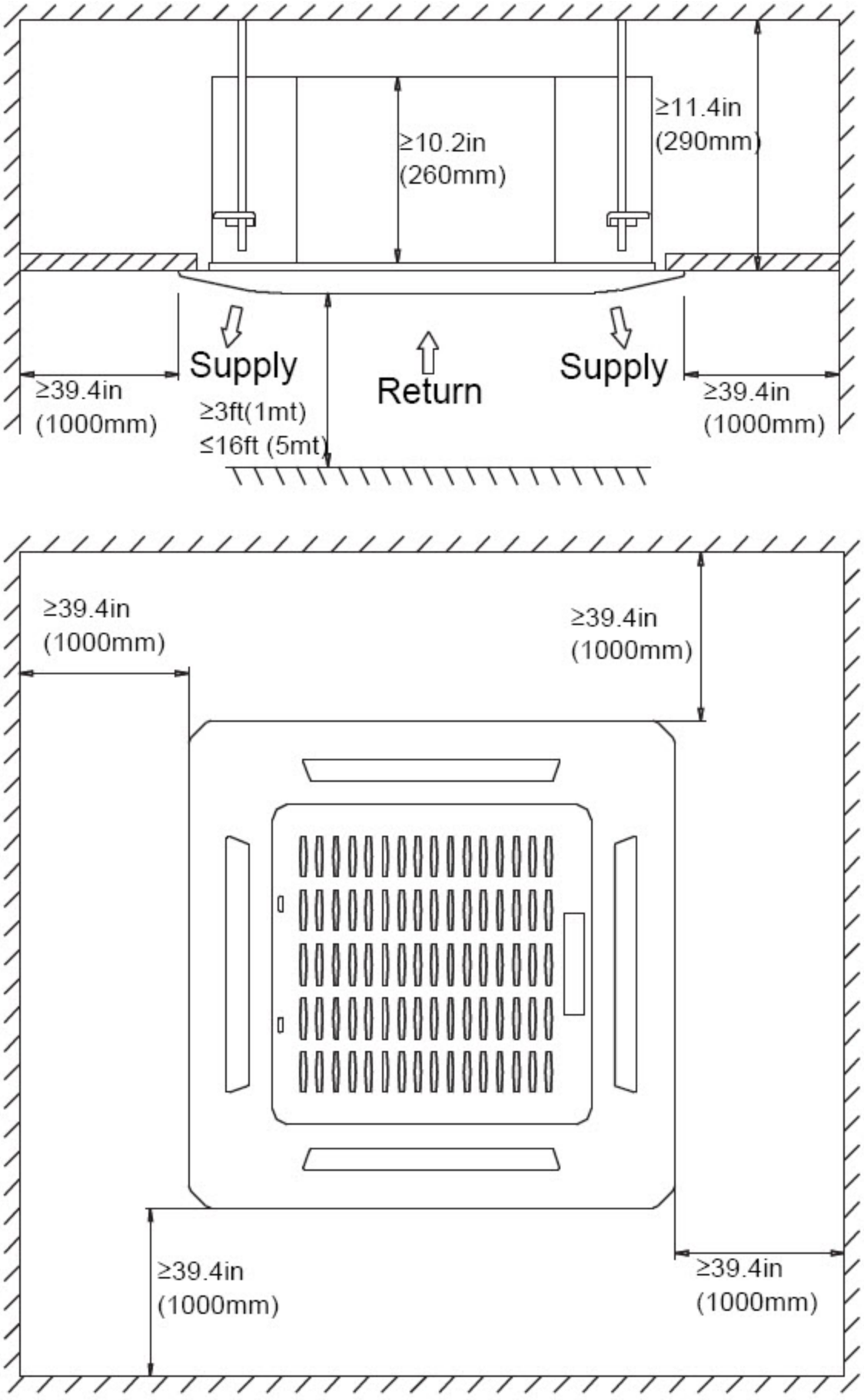


Fig. 3 – Indoor Unit Clearance

SPECIFICATIONS

Heat Pump								
System	Size		9	12	18	24	36	48
	Indoor Model		40MBCQ09−−−3	40MBCQ12−−−3	40MBCQ18−−−3	40MBCQ24−−−3	40MBCQ36−−−3	40MBCQ48−−−3
Electrical	Voltage, Phase, Cycle	V/Ph/Hz	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		Indoor unit powered from outdoor unit				Indoor unit powered from outdoor unit	
	MCA	A.	0.2	0.2	0.2	0.3	0.8	1.6
Controls	Wireless Remote Controller (°F/°C Convertible)		Standard	Standard	Standard	Standard	Standard	Standard
	Wired Remote Controller (°F/°C Convertible)		Optional	Optional	Optional	Optional	Standard	Standard
Operating Range	Cooling Indoor DB Min −Max	° F (° C)	63~90 (17~32)	63~90 (17~32)	63~90 (17~32)	62~90 (17~32)	63~90 (17~32)	63~90 (17~32)
	Heating Indoor DB Min −Max	° F (° C)	32~86 (0~30)	32~86 (0~30)	32~86 (0~30)	32~86 (0~30)	32~86 (0~30)	32~86 (0~30)
Piping	Pipe Connection Size − Liquid	in (mm)	1/4 (6.35)	1/4 (6.35)	1/4 (6.35)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)
	Pipe Connection Size − Suction	in (mm)	3/8 (9.52)	1/2 (12.7)	1/2 (12.7)	5/8 (16)	5/8 (16)	5/8 (16)
Indoor Coil	Face Area	Sq. Ft.	3.1	3.1	3.1	3.6	4.6	5.2
	No. Rows		1	2	2	2	3	3
	Fins per inch		19	19	19	18	18	18
	Circuits		2	4	4	8	10	10
Indoor	Body Unit Width	in (mm)	22.44 (570)	22.44 (570)	22.44 (570)	33.07 (840)	33.07 (840)	33.07 (840)
	Body Unit Height	in (mm)	10.24 (260)	10.24 (260)	10.24 (260)	8.07 (205)	9.65 (245)	11.3 (287)
	Body Unit Depth	in (mm)	22.44 (570)	22.44 (570)	22.44 (570)	33.07 (840)	33.07 (840)	33.07 (840)
	Body Net Weight	lbs (kg)	35.27 (16)	35.27 (16)	39.68 (18)	46.3 (21)	58.2 (26.4)	63.27 (28.7)
	Panel Unit Width	in (mm)	25.47 (647)	25.47 (647)	25.47 (647)	37.4 (950)	37.4 (950)	37.4 (950)
	Panel Unit Height	in (mm)	1.97 (50)	1.97 (50)	1.97 (50)	2.17 (55)	2.17 (55)	2.17 (55)
	Panel Unit Depth	in (mm)	25.47 (647)	25.47 (647)	25.47 (647)	37.4 (950)	37.4 (950)	37.4 (950)
	Panel Net Weight	lbs (kg)	5.51 (2.5)	5.51 (2.5)	5.51 (2.5)	11.02 (5)	11.02 (5)	11.02 (5)
	Number of Fan Speeds		3	3	3	3	3	3
	Airflow (lowest to highest)	CFM	260/320/380	280/340/400	290/350/420	625/761/878	809/958/1095	853/1030/1177
	Sound Pressure (lowest to highest)	dB(A)	34/39/44	36/39/42	46/48/50	47/50/52	49/52/55	49/52/55
	Air throw Data	ft (m)	23 (7)	23 (7)	30 (9)	30 (9)	30 (9)	30 (9)
	Moisture removal	Pint/h (L/h)	1.58 (0.75)	2.88 (1.366)	4.26 (2.02)	5.22 (2.47)	8.53 (4.04)	13.5 (6.39)
	Field Drain Pipe Size O.D.	in (mm)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)

NOTE: Performance may vary based on the compatible outdoor units. See respective pages for performance data.

COMPATIBILITY

Indoor Unit	**40MBCQ09−−−3**	**40MBCQ12−−−3**	**40MBCQ18−−−3**	**40MBCQ24−−−3**	**40MBCQ36−−−3**	**40MBCQ48−−−3**
Outdoor Unit Single Zone	3MAQB09R−−3	38MAQB12R−−3	38MAQB18R−−3	38MAQB24R−−3	38MBRQ36A−−3	38MBRQ48A−−3
Outdoor Unit Multi−zone	3MGRQ18B−−3					
	3MGRQ24C−−3					
	3MGRQ30D−−3					
	3MGRQ36D−−3					
	3MGRQ48E−−3					

NOTE: Backward compatible with 38MAQ Single Zone and 38MGQ Multi−zone Systems.

APPLICATION DATA

UNIT SELECTION

Select equipment to either match or handle slightly less 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 the unit sensible load, not on the total anticipated load. Adjust for anticipated room wet bulb temperature to avoid undersizing the equipment.

UNIT MOUNTING (INDOOR)

Refer to unit Installation Instructions for further details.

Unit leveling − For reliable operation, units should be level in all planes. Align and level the unit by adjusting the nuts and lock−nuts on the threaded hangers.

Clearance − A minimum of 12 inches (304.8 mm) of clearance is required in the false ceiling.

Unit location − Placing the unit in the center of the room provides the best air circulation and comfort. The unit return and discharge should not be obstructed by anything which may cause unit short cycling or air recirculation.

Installation Template − Fan coil units are supplied with a cardboard template to help match the position of the hangers, refrigerant lines, condensate drain pipe and power supply cable.

UNIT MOUNTING (OUTDOOR)

Refer to the unit's Installation Instructions for further details.

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

SUPPORT

Adequate support must be provided to support the weight of all fan coils. Refer to the *Physical Data* section for fan coil weights, and the base unit dimensional drawings for the location of the mounting brackets.

SYSTEM OPERATING CONDITIONS

OPERATING RANGE Min / Max °F (°C)		
	Cooling	**Heating**
Indoor DB	63 / 90 (17 / 32)	32 / 86 (0 / 30)
Indoor WB	59 / 84 (15 / 29)	

DRAIN CONNECTIONS

Install drains to meet local sanitation codes. The in−ceiling cassette is supplied with a condensate lift pump that is capable of lifting the water 29.5in (750mm) above the top of the unit. A downward sloped condensate drain pipe can be used to dispose of water.

REFRIGERANT LINES

General refrigerant line sizing:

1. The outdoor units are shipped with a full charge of R410A refrigerant.
2. Refrigerant lines should not be buried in the ground. If it is necessary to bury the lines, not more than 36−in (914 mm) should be buried. 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 interconnecting tubing from the building structure. Isolate the tubing so that vibration or noise is not transmitted into the structure.

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 stranded wire with ground with a 600 volt insulation rating, power/communication wiring from the outdoor unit to indoor unit consists of four (4) wires and provides the power for the indoor unit. Two wires are line voltage AC power, one is communication wiring (S) 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.

Wires should be sized based on NEC and local codes.

⚠ 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.

Connecting cable with conduit shall be routed through the hole in the conduit panel.

CONTROL SYSTEM

The indoor unit is equipped with a microprocessor control to perform two functions:

1. Provide safety for the system
2. Control the system and provide optimum levels of comfort and efficiency.

The main microprocessor is located on the control board of the fan coil unit (outdoor units have a microprocessor too) with thermistors located in the fan coil air inlet and on the indoor coil. Heat pump units have a thermistor on the outdoor coil. These thermistors monitor the system operation to maintain the unit within acceptable parameters and control the operating mode.

WIRELESS REMOTE CONTROL

Fig. 4 – Wireless Remote Control

1. A wireless remote control is supplied for system operation of all in−ceiling cassette units.
2. Each battery operated wireless (infrared) remote control may be used to control more than one unit.

WIRED REMOTE CONTROL (OPTIONAL)

Part Numbers (P/N):

- **KSACN0101AAA (Timer Function)**
- **KSACN0501AAA (7 Day Programmable)**

1. Optional wired remote controller used for system operation of all in−ceiling cassette units.
2. Kit includes a wired remote controller and a connecting cable.

NOTE: Extension wire available through RCD (KSACN0101AAA Part Number: 17401204001601; KSACN0501AAA Part Number: 17401204000769).

3. Connect the wire terminal between the remote controller and the indoor unit.
4. Display in °F or °C and temperature increments every 1°F or every 1°C.

Fig. 5 – KSACN0101AAA (Timer Function)

Fig. 6 – KSACN0501AAA (7 Day Programmable)

AIR FLOW DATA

SYSTEM SIZE		9K	12K	18K	24K	36K	48K
		(208/230)	(208/230)	(208/230)	(208/230)	(208/230)	(208/230)
INDOOR (CFM)	HIGH	353	350	562	878	1095	1177
	MEDIUM	306	296	485	761	958	1030
	LOW	270	253	439	625	809	853

AIR THROW DATA

UNIT CAPACITY	MAX. APROXIMATE AIR THROW ft. (m)	APROXIMATE AIR THROW RANGE ft. (m)
9K	23 (7)	11 (3.5) ~ 23 (7)
12K	23 (7)	11 (3.5) ~ 23 (7)
18K	30 (9)	13 (4) ~ 30 (9)
24K	30 (9)	13 (4) ~ 30 (9)
36K	30 (9)	13 (4) ~ 30 (9)
48K	30 (9)	13 (4) ~ 30 (9)

SOUND PRESSURE

SYSTEM SIZE		9K	12K	18K	24K	36K	48K
Cooling Operation Indoor Sound Pressure	dBa (L/M/H)	33/35/38	27/34/42	33/40/46.5	47/50/52	49/52/55	49/52/55
Heating Operation Indoor Sound Pressure	dBa (L/M/H)	31/34/37	27/34/41	32/39/45	45.7/48.8/51.2	49.5/52/54.2	49.3/52.8/55.8

SOUND PRESSURE TESTING METHOD

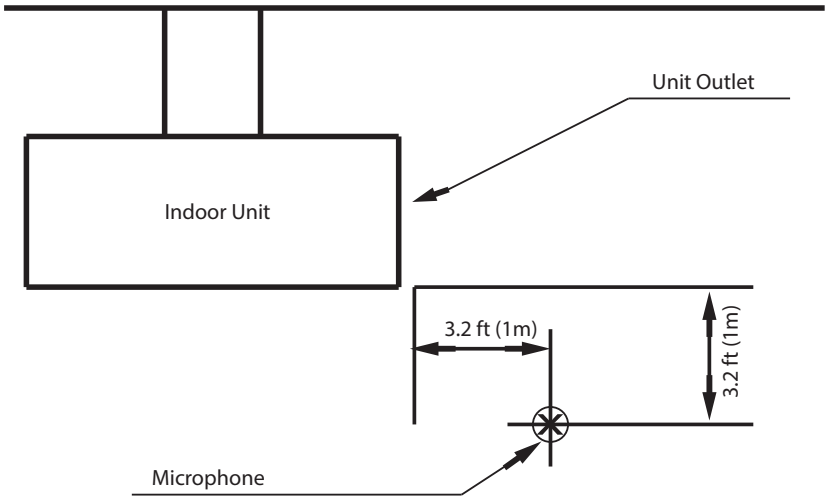


Fig. 7 – Sound Pressure Testing Method

FAN AND MOTOR SPECIFICATIONS

SYSTEM SIZE			9K	12K	18K	24K	36K	48K
Indoor Fan	Material		ABS	ABS	ABS	ABS	ABS	ABS
	Type		LX–322*147.5*12–7N	LX–322*147.5*12–7N	LX–322*147.5*12–7N	LX–460*128*12–7N	LX–476*160*12–7N	LX–476*170*12–7N
	Diameter	inch	12.7	12.7	12.7	460	476	476
	Height	inch	5.8	5.8	5.8	128	160	170
Indoor Fan Motor	Model		WZDK46–38G	WZDK46–38G	WZDK46–38G	ZKFP–42–8–1	ZKFP–124–8–2	ZKFN–170–8–1
	Volts	V	208/230	208/230	208/230	208/230	208/230	208/230
	Type		DC	DC	DC	DC	DC	DC
	Phase		3	3	3	1	1	1
	FLA		0.146	0.146	0.146	2.0	1.5	1.6
	Insulation Class		E	E	E	E	E	E
	Safe Class		IPX0	IPX0	IPX0	IPX0	IPX0	IPX0
	Input	W	45	45	45	58	141	232
	Output	W	46	46	46	42	124	170
	Range of Current	Amps	0.146±10%	0.146±10%	0.146±10%	0.332±10%	0.8±10%	1.6±10%
	Rated Current	Amps	0.146	0.146	0.146	0.332	0.8	1.6
	Capacitor	μF	N/A					
Indoor Fan Motor	Rated HP	HP	0.061	0.061	0.061	0.057	0.169	0.231
	Speed	rev/min	600/520/460	680/580/500	730/630/570	600/520/450	720/630/560	900/800/700
	Rated RPM	rev/min	960	960	960	790	910	950
	Max. Input	W	45	45	45	103	246	270

WIRING DIAGRAMS

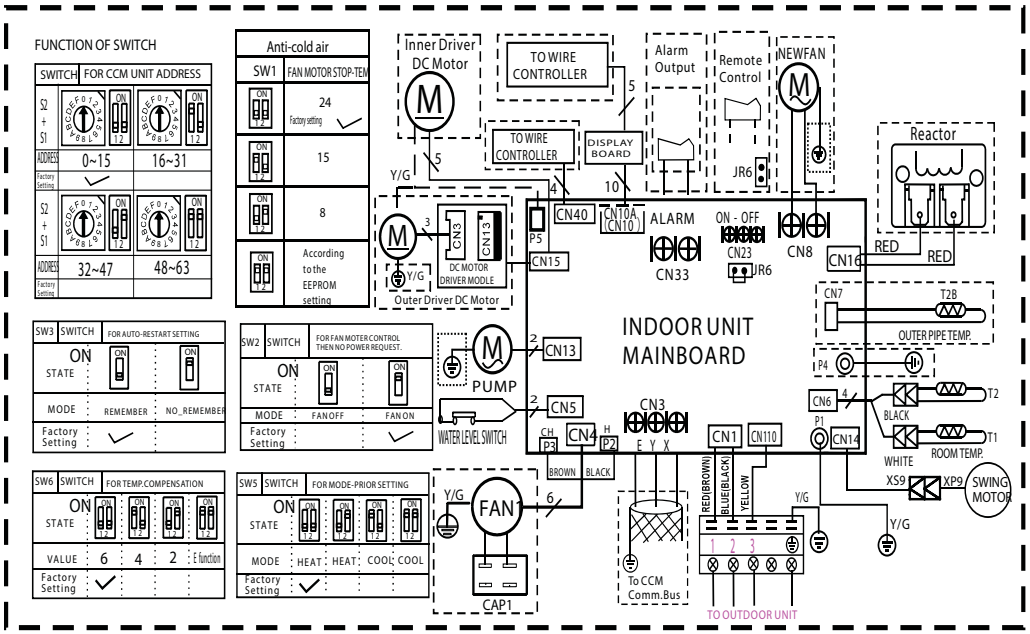


Fig. 8 – Wiring Diagram (Sizes 9K−24K)

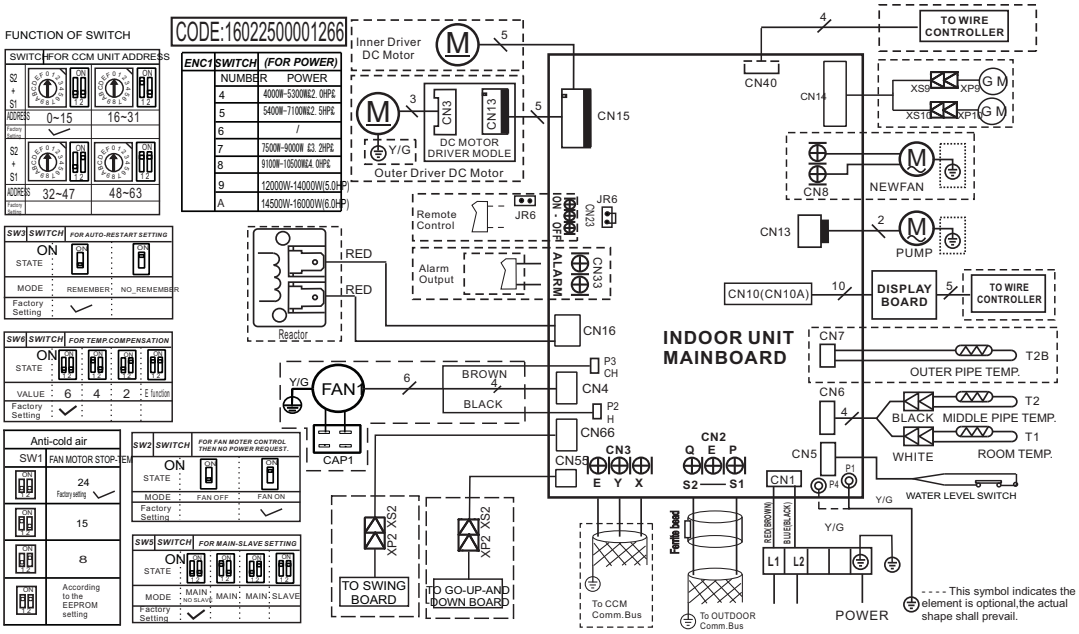


Fig. 9 – Wiring Diagram (Size 36K−48K)

INDOOR UNIT	
CODE	**PART NAME**
CN1	Input: 230VAC High voltage Connection of the terminal
CN3	Output: 0−5VDC Connection of the CCM
P1	Output: 0V Connection of the earth
CN5	Output: 1−5VDC Connection of the Water level switch
CN6	Output: 5VDC Connection of the Room and Pipe temperature
CN10A	Output: 12VDC Connection of the Display board
CN13	Output: 220VAC High voltage Connection of the Pump
CN14	Output: 12VDC Connection of the Swing motor
CN15	Output: 320VDC High voltage Connection of the DC Fan
CN16	Output: 320VDC High voltage Connection of the Reactor
CN23	Output: 1−12VDC Connection of the Remote switch
CN33	Output: 0V Connection of the Alarm
CN40	Output: 12VDC Connection of the Wire controller
CN110	Output: 24VDC between Pin2 of CN1 connection of the S signal

GUIDE SPECIFICATIONS

INDOOR IN−CEILING CASSETTE DUCTLESS UNITS

Size Range: 3/4 to 4 Ton Nominal Cooling and Heating Capacity
Model Number: 40MBCQ

PART 1 − GENERAL

1.01 System Description

Indoor, in−ceiling cassette, direct−expansion fan coils are matched with a heat pump outdoor unit.

1.02 Agency Listings

Unit are rated per AHRI Standards 210/240 and listed in the AHRI directory as a matched system.

1.03 Delivery, Storage, And Handling

Units are stored and handled per the unit manufacturer's recommendations.

1.04 Warranty (For Inclusion By Specifying Engineer)

PART 2 − PRODUCTS

2.01 Equipment

A. General:

Indoor, direct−expansion, ceiling−mounted fan coil. Unit is complete with a cooling/heating coil, fan, fan motor, piping connectors, electrical controls, microprocessor control system, and an integral temperature sensing.

B. Unit Cabinet: Cabinet is constructed of zinc−coated steel. Fully insulated discharge and inlet grilles are attractively styled, high−impact polystyrene. Grille has hinges and can be opened to obtain access to the cleanable filters, indoor fan motor and control box.

C. FANS:

1. The fan is a centrifugal direct−drive blower type with an air intake in the center of the unit and a discharge at the perimeter. An automatic, motor−driven vertical air sweep is provided standard. Automatic motor−driven louvers are provided standard and are adjustable for a 2, 3 or 4−way discharge.
2. The air sweep operation is user selectable.

D. Coil:

The coil is a copper tube with aluminum fins and galvanized steel tube sheets. Fins are bonded to the tubes by mechanical expansion and specially golden hydrophilic pre−coated for enhanced wet−ability. A drip pan under the coil has a factory installed condensate lift pump and a drain connection for a hose attachment to remove condensate.

E. Motors:

Motors are open drip−proof, permanently lubricated ball bearing with inherent overload protection. Fan motors are 7−speed.

F. Controls:

Controls consist of a microprocessor−based control system which controls the space temperature, determines the optimum fan speed, and runs self diagnostics. The temperature control range is 62°F to 86°F (17°C to 30°C) in increments of 1°F or 1°C, and has a 46°F Heating Mode (Heating Setback). The wireless remote controller, has the ability to act as the temperature sensing location for room comfort.

The unit shall have the following functions as a minimum:

1. An automatic restart after a power failure at the same operating conditions as at failure.
2. A timer function to provide a minimum 24−hour timer cycle for the system's Auto Start/Stop.
3. Temperature−sensing controls sense the return air temperature.
4. Indoor coil freeze protection.
5. Wireless infrared remote control to enter set points and operating conditions.
6. Automatic air sweep control to provide on or off activation of air sweep louvers.
7. Dehumidification mode which provides increased latent removal capability by modulating system operation and set point temperature.
8. A fan−only operation to provide room air circulation when no cooling is required.
9. Diagnostics to provide continuous checks of the unit operation and warn of possible malfunctions. Any error messages are displayed at the unit.
10. The fan speed control is user−selectable: high, medium, low, or microprocessor controlled automatic operation during all operating modes.
11. Automatic heating−to−cooling changeover in the heat pump mode. Control includes deadband to prevent rapid mode cycling between heating and cooling.
12. Indoor coil high temperature protection is provided to detect excessive indoor discharge temperature when unit is in the heat pump mode.

G. Filters:

The unit has a filter track with factory−supplied cleanable filters.

H. Electrical Requirements:

The indoor fan motor operates on 208−230V on model sizes 09−48, as specified. Power is supplied from the outdoor unit.

I. Operating Characteristics:

The 40MBCQ system has a minimum SEER (Seasonal Energy Efficiency Ratio) and HSPF at AHRI conditions, as listed on the specifications table.

J. Refrigerant Lines:

All units should have refrigerant lines that can be oriented to connect from the left, right or back of unit. Both refrigerant lines must be insulated.

 . Edition Date: 04/18

Catalog No: 40MBCQ—02PD

Replaces: 40MBCQ—01PD

40MBFQ
Console Ductless System
Sizes 12 to 58

Carrier
turn to the experts

Product Data

Fig. 1 — Size 12K

Fig. 2 — Sizes 18K-58K

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 40MBFQ series ductless system are a matched combination of an outdoor condensing unit and an indoor fan coil unit connected only by refrigerant tubing and wires.

The fan coil can be mounted on the floor, against the wall on all the sizes 12-58 and mounted on the ceiling on the sizes 18-58. This selection of fan coils 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.

LOW SOUND LEVELS

When noise is a concern, the 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 ductwork.

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. In addition, since outdoor units 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. A mounting bracket is standard with the indoor units and only wire and piping need to be run between the indoor and outdoor units. These units are fast and easy to install ensuring minimal disruption to customers in the home or workplace. This makes the ductless systems the equipment of choice, especially in retrofit situations.

SIMPLE SERVICING AND MAINTENANCE

Removing the top panel on the outdoor units provides immediate access to the control compartment, providing a service technician access to check the unit's operation. In addition, the draw-thru design of the outdoor section 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 all indoor units, service and maintenance expense is reduced due to easy-to-use cleanable filters. In addition, these console systems have extensive self-diagnostics to assist in troubleshooting.

BUILT-IN RELIABILITY

Ductless system indoor and outdoor units are designed to provide years of trouble-free operation.

The console indoor units include protection against freeze-up and high evaporator temperatures on heat pumps.

The condensing units on heat pumps are protected by a three minute time delay before the compressor starts the over-current protection and the high temperature protection.

INDIVIDUAL ROOM COMFORT

Maximum comfort is provided because each space can be controlled individually based on usage pattern. The air sweep feature provided permits optimal room air mixing to eliminate hot and cold spots for occupant comfort. In addition, year-round comfort can be provided with heat pumps.

ECONOMICAL OPERATION

The ductless system design allows individual room heating or cooling when required. There is no need to run large supply-air fans or chilled water pumps to handle a few spaces with unique load patterns. In addition, because air is moved only in the space required, no energy is wasted moving air through ducts.

EASY-TO-USE CONTROLS

The console units have microprocessor-based controls to provide the ultimate in comfort and efficiency. The user friendly wireless remote control provides the interface between user and the unit.

ACCESSORIES

Customizing these ductless systems to your application is easily accomplished.

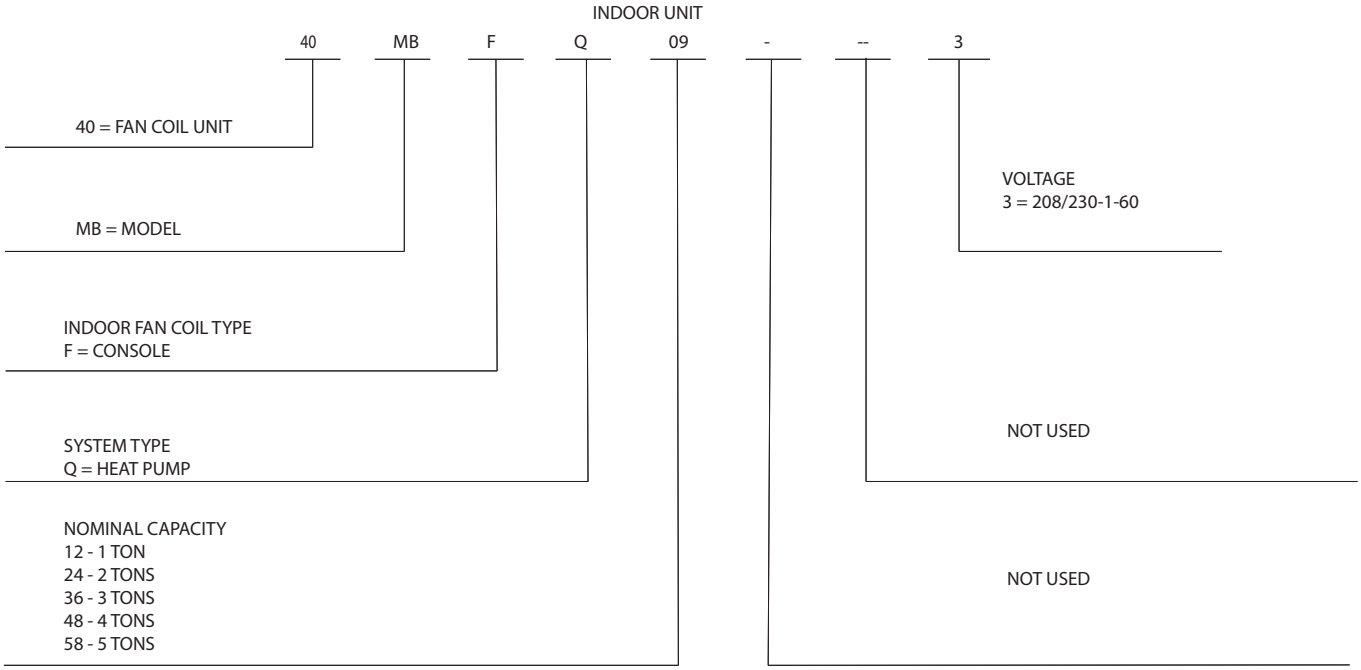
Adding a condensate pump accessory to the console fan coil provides installation flexibility.

OPTIONAL WIRED CONTROLLER

AGENCY LISTINGS

All systems are listed with AHRI (Air Conditioning, Heating & Refrigeration Institute), and ETL.

MODEL NUMBER NOMENCLATURE



AHRI CERTIFIED
www.ahridirectory.org

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.

INTERTEK ETL LISTED C US

STANDARD FEATURES AND ACCESSORIES

Ease Of Installation	
Mounting Brackets	S
Low Voltage Controls	S
Floor Mounting Installation (Sizes 12 - 58)	S
Ceiling Installation (Sizes 18 - 58)	S
Comfort Features	
Microprocessor Controls	S
Wired Remote Control	A
Wireless Remote Control	S
Wi-Fi Remote Control (Sizes 18 - 58 Only)	A
Automatic Up-Down Air Sweep	S
Air Direction Control	S
Auto Restart Function	S
Cold Blow Protection On Heat Pumps	S
Freeze Protection Mode On Heat Pumps	S
Turbo Mode	S
Silence Mode	S
Auto Changeover On Heat Pumps	S
Follow Me	S
Energy Saving Features	
Sleep Mode	S
Stop/Start Timer	S
46° F Heating Mode (Heating Setback)	S
Safety And Reliability	
Indoor Coil Freeze Protection	S
Aluminum Hydrophilic pre-coated fins	S
Indoor Coil High Temp Protection in Heating Mode	S
Ease Of Service And Maintenance	
Cleanable Filters	S
Diagnostics	S
Liquid Line Pressure Taps	S
Application Flexibility	
Condensate Pumps	A

Legend

S - Standard
A - Accessory

Accessories

ORDERING NO.	DESCRIPTION	FOR MODELS
53DS-900---118	Condensate Pump (230v)	All Sizes
KSACN0101AAA	Wired Remote Control	All Sizes
KSACN0401AAA	Wired Remote Control 7 Day Programmable compatible with indoor units starting with serial number 0217V10001	Size 12
KSACN0501AAA	Wired Remote Control 7 Day Programmable	Sizes 18 - 58
KSAIF0401AAA	Wi-Fi Kit	Sizes 18 - 58 Only
KSAIC0301230	24V Interface Kit 208/230V	All Sizes*
53DS-900---008	Insulated 25’ Line Set - 1/4“x 1/2”	Sizes 12 and 18

NOTE: 24V Interface compatible with all the sizes except sizes 12 and 58. Starting with Serial Number 1419V10001 the sizes 12 and 58 are shipped with the compatible control board.

Indoor Units

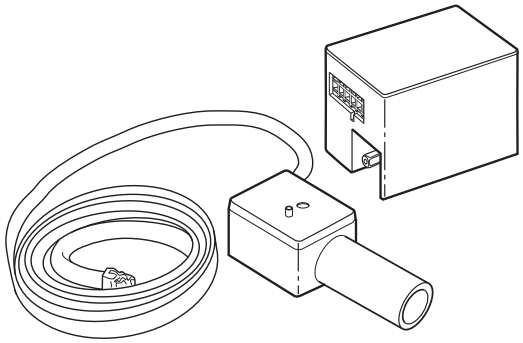
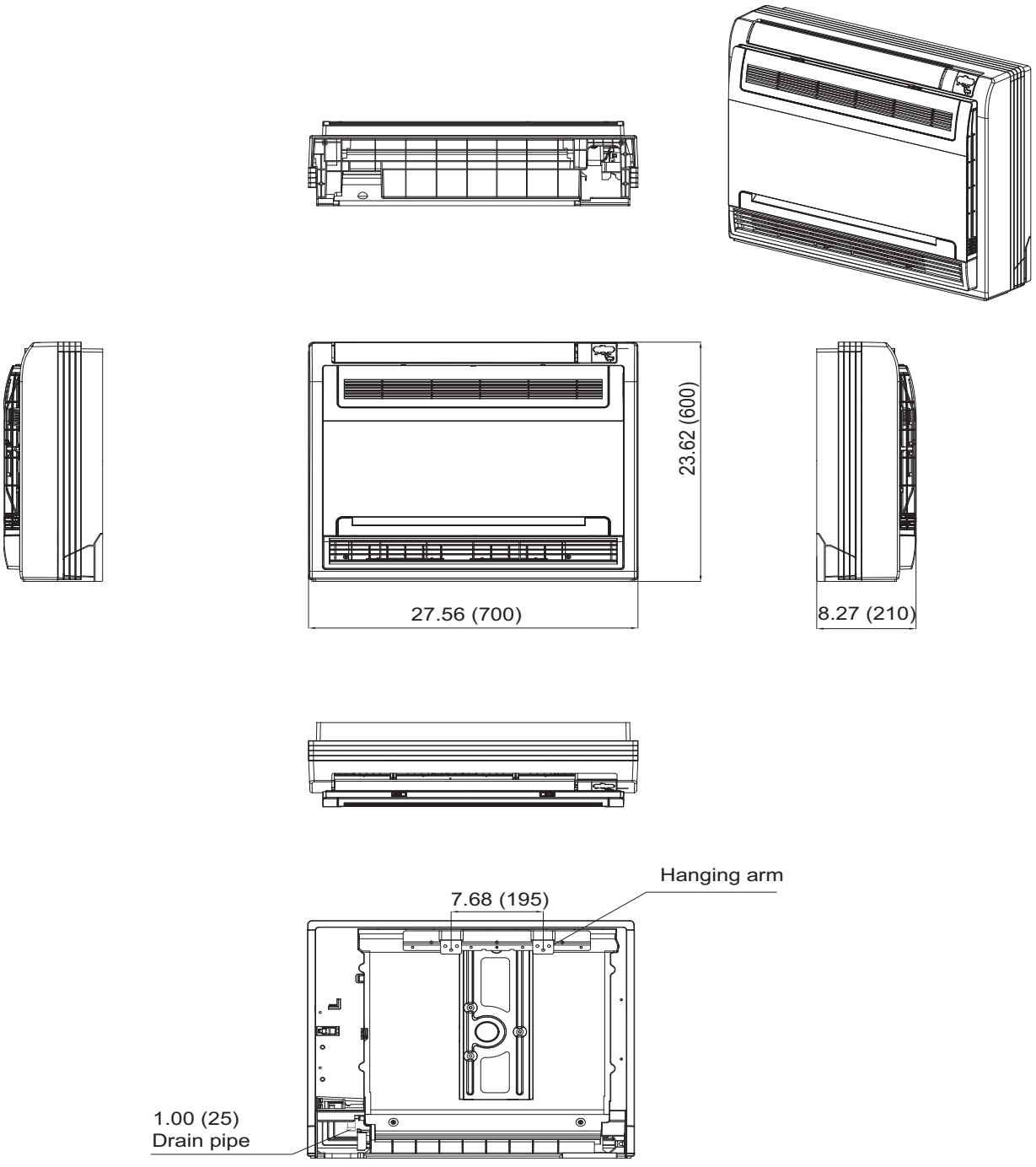


Fig. 3 — Condensate Pump Accessory

On the console fan coils, the condensate pump has a lift capability of 12 ft. (3.6 m) on the discharge side with the pump mounted in the fan coil or 6 ft. (1.8 m) on the suction side if the pump is remote mounted.

The pump is recommended when an adequate drain line pitch cannot be provided, or when the condensate must move up to exit.

DIMENSIONS



Unit: in (mm)

Fig. 4 — Indoor Unit 12K

UNIT SIZE		12K
DEPTH	IN (MM)	8.27 (210)
WIDTH	IN (MM)	27.56 (700)
HEIGHT	IN (MM)	23.62 (600)
WEIGHT-NET	LB (KG.)	32.41 (14.7)

DIMENSIONS (CONT)

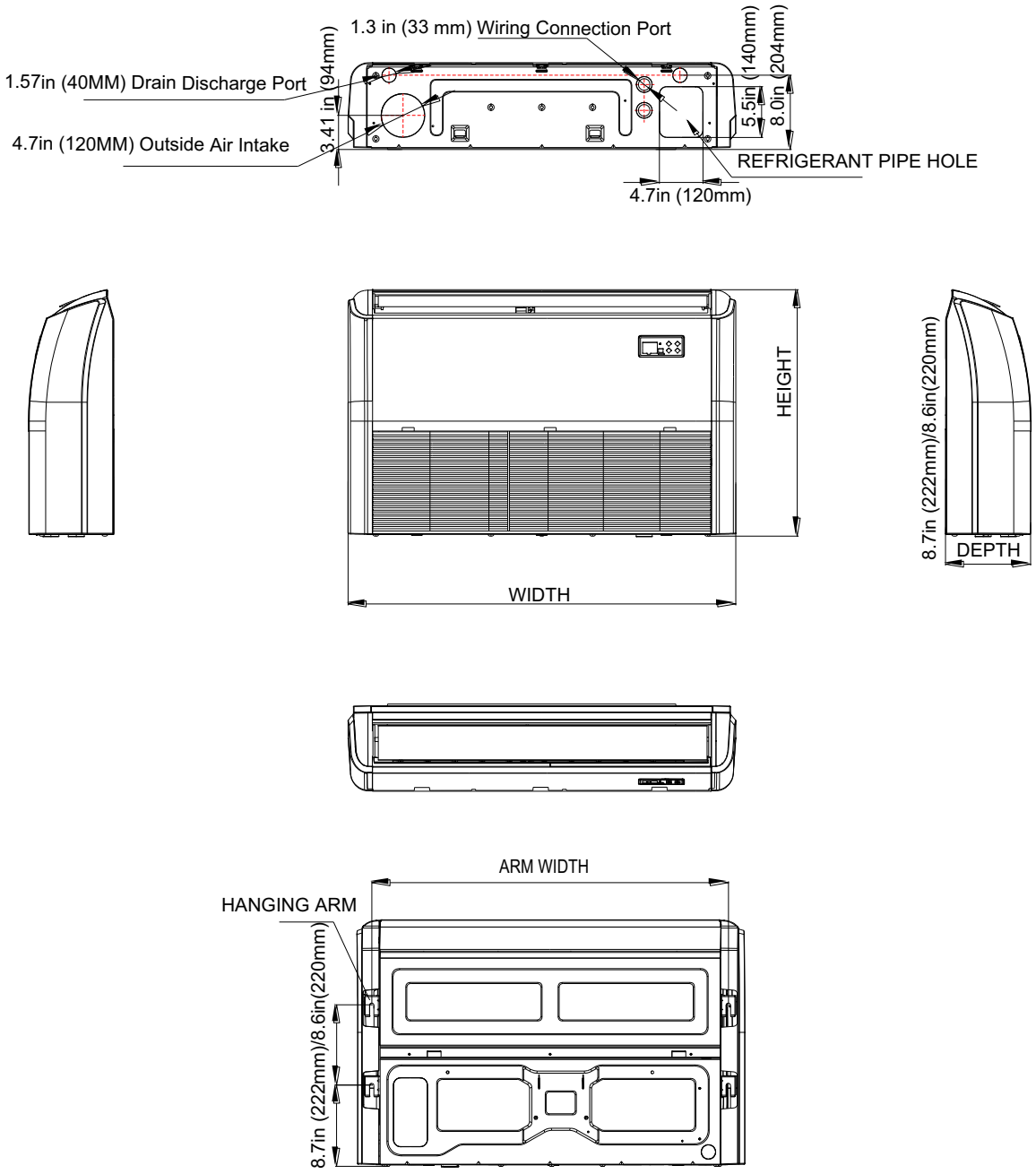


Fig. 5 — Indoor Unit Sizes 18K-58K

UNIT SIZE		18K	24K	36K	48K	58K
HEIGHT	in (mm)	9.25 (235)	9.25 (235)	9.25 (235)	9.25 (235)	9.25 (235)
WIDTH	in (mm)	42.05 (1068)	42.05 (1068)	50.59 (1285)	64.96 (1650)	64.96 (1650)
DEPTH	in (mm)	26.57 (675)	26.57 (675)	26.57 (675)	26.57 (675)	26.57 (675)
WEIGHT- NET	lbs (kg)	55.12 (25)	58.42 (26.5)	69 (31.3)	83.78 (38)	110 (50)
ARM WIDTH	in (mm)	38.7in (983mm)	38.7in (983mm)	47.2in (1200mm)	62in (1565mm)	62in (1565mm)

CLEARANCES

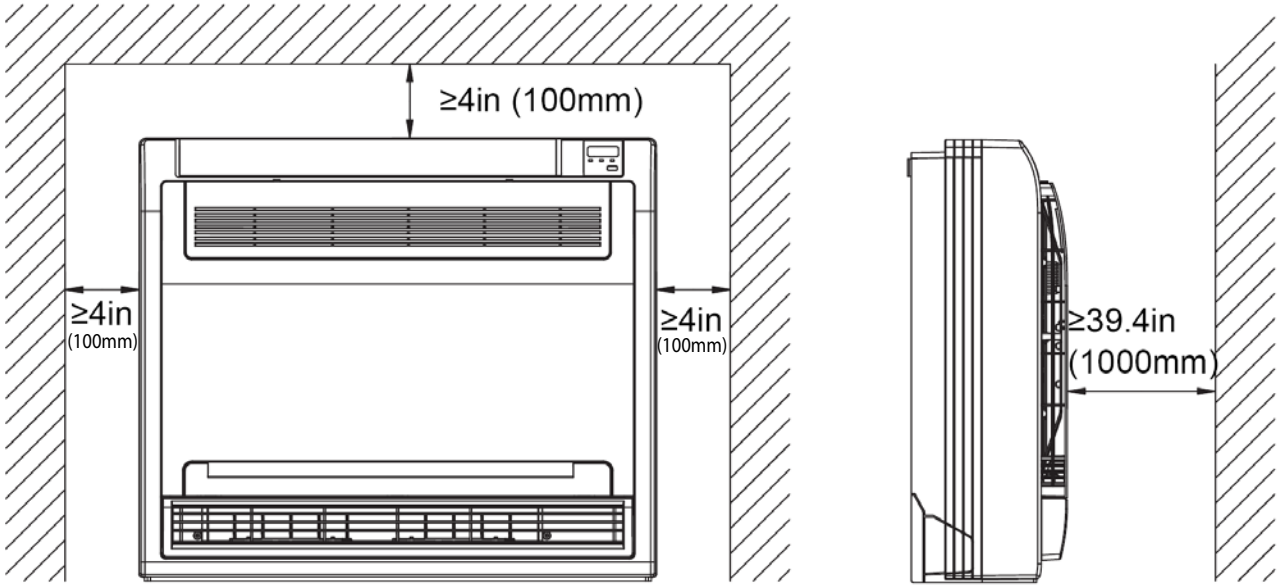


Fig. 6 — Clearance for 12K

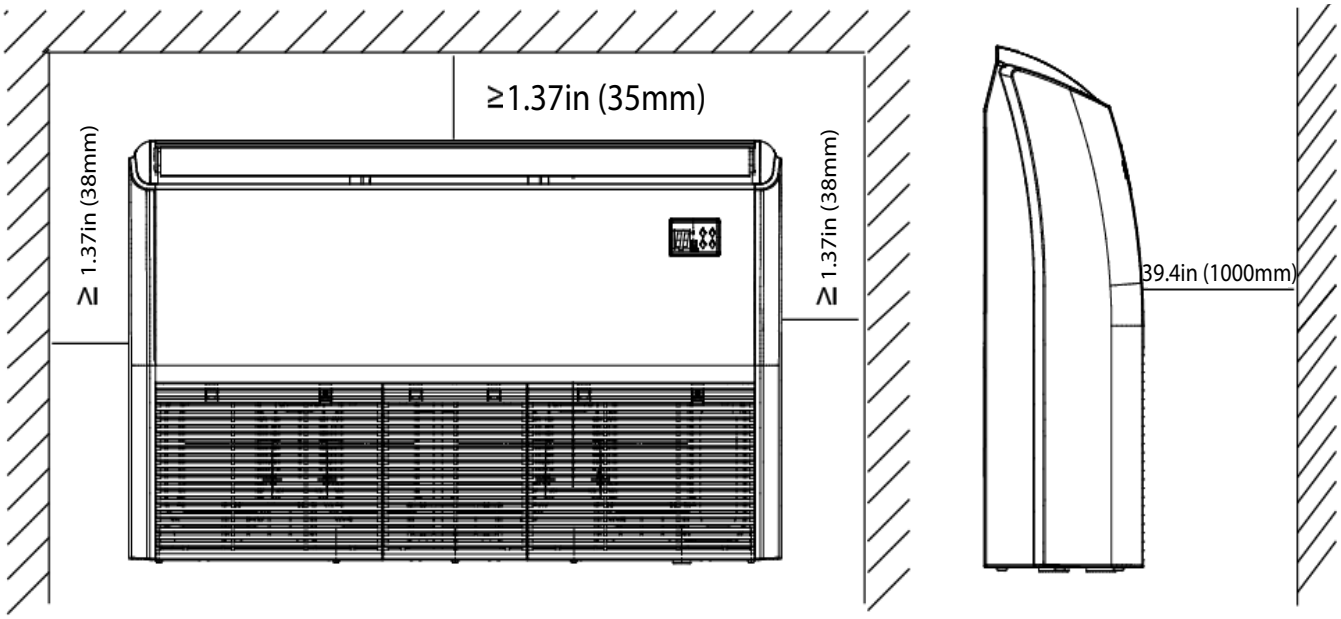


Fig. 7 — Clearance for 18K-24K

SPECIFICATIONS

HEAT PUMP								
SYSTEM	**SIZE**		**12**	**18**	**24**	**36**	**48**	**58**
	Indoor Model		**40MBFQ12---3**	**40MBFQ18---3**	**40MBFQ24---3**	**40MBFQ36---3**	**40MBFQ48---3**	**40MBFQ58---3**
Electrical	Voltage, Phase, Cycle	V/Ph/Hz	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	Indoor unit powered from outdoor unit						
	MCA	A.	0.29	1.0	1.0	1.23	0.85	1.48
Controls	Wireless Remote Controller (°F/°C Convertible)		Standard	Standard	Standard	Standard	Standard	Standard
	Wired Remote Controller (°F/°C Convertible)		Optional	Optional	Optional	Optional	Optional	Optional
Operat-ing Range	Cooling Indoor DB Min - Max	°F (°C)	63~90 (17~32)	63~90 (17~32)	63~90 (17~32)	63~90 (17~32)	63~90 (17~32)	63~90 (17~32)
	Heating Indoor DB Min - Max	°F(°C)	32~86 (0~30)	32~86 (0~30)	32~86 (0~30)	32~86 (0~30)	32~86 (0~30)	32~86 (0~30)
Piping	Pipe Connection Size - Liquid	in (mm)	1/4 (6.35)	1/4 (6.35)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)
	Pipe Connection Size - Suction	in (mm)	1/2 (12.7)	1/2 (12.7)	5/8 (16)	5/8 (16)	5/8 (16)	3/4 (19)
Indoor Coil	Face Area (sq. ft)	Sq. Ft.	2.1	2.1	2.5	3.2	4.1	8.1
	No. Rows		2	2	3	3	3	4
	Fins per inch		19	19	19	19	19	19
	Circuits		2	2	7	9	8	12
Indoor	Unit Width	in (mm)	27.56 (700)	42.05 (1068)	42.05 (1068)	50.59 (1285)	64.96 (1650)	64.96 (1650)
	Unit Height	in (mm)	23.62 (600)	26.57 (675)	26.57 (675)	9.25 (235)	9.25 (235)	9.25 (235)
	Unit Depth	in (mm)	8.27 (210)	9.25 (235)	9.25 (235)	26.57 (675)	26.57 (675)	26.57 (675)
	Net Weight	lbs (kg)	32.41 (14.7)	55.12 (25)	58.42 (26.5)	69 (31.3)	83.78 (38)	110 (50)
	No. of Fan Speeds		3	3	3	3	3	3
	Airflow (lowest to highest)	CFM	220/250/280	420/485/550	600/710/760	638/917/1037	1000/1120/1350	796/1029/1385
	Sound Pressure (lowest to highest)	dB(A)	34/41/45	39/44/47	46/50/52	43/49/54	52/54/57	46/49/55
	Air Throw Data	ft (m)	23 (7)	26 (8)	26 (8)	33 (10)	39 (12)	39 (12)
	Moisture Removal	Pint/h (L/h)	2.64 (1.25)	2.96 (1.4)	4.44 (2.1)	8.03 (3.8)	12.05 (5.7)	12.47 (5.9)
	Field Drain Pipe Size O.D.	in (mm)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)

*Performance may vary based on the compatible outdoor units. See the respective pages for performance data.

COMPATIBILITY

INDOOR UNIT	**40MBFQ12---3**	**40MBFQ18---3**	**40MBFQ24---3**	**40MBFQ36---3**	**40MBFQ48---3**	**40MBFQ58---3**
OUTDOOR UNIT SINGLE ZONE	38MAQB12R--3	38MAQB18R--3	38MAQB24R--3	38MBRQ36A--3	38MBRQ48A--3	38MBRQ58A--3
OUTDOOR UNIT MULTI-ZONE	38MGRQ18B--3					
	38MGRQ24C--3					
	38MGRQ30D--3					
	38MGRQ36D--3					
	38MGRQ48E--3					

NOTE: Backward compatible with 38MAQ, 38MBQ single zone and 38MGQ multi-zone systems

APPLICATION DATA

Unit Selection

Select equipment to either match or is slightly less 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 equipment.

Unit Mounting (Indoor)

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

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

Clearance - Provide adequate clearance for airflow (see figures 6 and 7).

Unit location - Select a location which provides the best air circulation for the room.

These units should be positioned on the floor, against the wall for the best air circulation. The unit return and discharge should not be obstructed by furniture, curtains, or anything which may cause unit short cycling or air recirculation. Place the unit in the middle of the selected wall (if possible). Use an outside wall, if available, to make piping easier, and place the unit so it faces the normal location of room occupants.

Unit Mounting (Outdoor)

Refer to the unit's Installation Instructions for further details.

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

Mounting Template

Refer to the unit's Installation Instructions for further details.

The fan coil units are furnished with mounting to mark the location of the wiring, and refrigeration line hole locations.

Support

Adequate support must be provided to support the weight of all the fan coils. Refer to "DIMENSIONS" on page 5 and "SPECIFICATIONS" on page 8 for the fan coil weights, and the base unit dimensional drawings for the mounting brackets location.

System Operating Conditions

OPERATING RANGE MIN/MAX °F (°C)		
	COOLING	HEATING
INDOOR DB	63 / 90 (17 / 32)	32 / 86 (0 / 30)
INDOOR WB	59 / 84 (15 / 29)	

NOTE: Reference the Product Installation Instructions for more information.

Drain Connections

Install drains to meet the local sanitation codes. If adequate gravity drainage cannot be provided, the unit should be equipped with an accessory condensate pump. The console fan coil unit condensate pumps have a maximum lift of 10' (3.05 m).

For the drain sizes, see "SPECIFICATIONS" on page 8.

NOTE: Console fan coil units have internal condensate traps. A trap is not required.

Refrigerant Lines

General Refrigerant Line Sizing:

1. The outdoor units are shipped with a full charge of R410A refrigerant.
2. Refrigerant lines should not be buried in the ground. If it is necessary to bury the lines, not more than 36-in (914 mm) should be buried. 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 that vibration or noise is not transmitted into the structure.

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 stranded wire with ground with a 600 volt insulation rating, power/ communication wiring from the outdoor unit to indoor unit consists of four (4) wires and provides the power for the indoor unit. Two wires are line voltage AC power, one is communication wiring (S) 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.

Wires should be sized based on NEC and local codes.

⚠ 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.

Connecting cable with conduit shall be routed through the hole in the conduit panel.

CONTROL SYSTEM

The unit is equipped with a microprocessor control to perform two functions:

1. Provide safety for the system
2. Control the system and provide optimum levels of comfort and efficiency.

The main microprocessor is located on the control board of the fan coil unit (outdoor units have a microprocessor too) with thermistors located in the fan coil air inlet and on the indoor coil.

Heat pump units have a thermistor on the outdoor coil. These thermistors monitor the system operation to maintain the unit within acceptable parameters and control the operating mode.

Wireless Remote Control

Fig. 8 — Wireless remote control

1. A wireless remote control is supplied for system operation for system operation of all console units.
2. Each battery operated wireless (infrared) remote control may be used to control more than one unit.

Wired Remote Control (OPTIONAL)

- •KSACN0101AAA (All Sizes)
- •KSACN0401AAA (Size 12)
- •KSACN0501AAA (Sizes 18-58)

1. Optional wired remote controller used for system operation of all console units.
2. Kit includes a wired remote controller and a connecting cable.

NOTE: Extension wire available through RCD (KSACN0101AAA Part Number: 17401204001601; KSACN0401AAA & KSACN0501AAA Part Number: 17401204000769)

3. Connect the wire terminal between the remote controller and the indoor unit.
4. Display in °F or °C and temperature increments every 1°F or every 1°C.

Fig. 9 — KSACN0101AAA (Timer Function)

Fig. 10 — KSACN0401AAA & KSACN0501AAA (7 Day Programmable)

24 INTERFACE

KSAIC0301230 for 208-230V models

Allows the Ductless System to be controlled using a Third Party Thermostat

NOTE: 24V Interface compatible with all the sizes except sizes 12 and 58. Starting with Serial Number 1419V10001 the sizes 12 and 58 are shipped with the compatible control board.

AIRFLOW DATA

SYSTEM SIZE		12K	18K	24K	36K	48K	58K
INDOOR (CFM)	HIGH	280	550	760	1,037	1,350	1,385
	MEDIUM	250	485	710	917	1,120	1,029
	LOW	220	420	600	638	1,000	796

SOUND PRESSURE

SYSTEM SIZE		12K	18K	24K	36K	48K	58K
COOLING OPERATION INDOOR SOUND PRESSURE	dBa (L/M/H)	34/41/45	39/44/47	46/50/52	43/49/54	52/54/57	46/49/55
HEATING OPERATION INDOOR SOUND PRESSURE	dBa (L/M/H)	34/41/45	37.8/41.3/44.4	41.4/46.1/50.2	43.3/46.5/49.6	42.3/49.6/53.4	38/44/51

SOUND PRESSURE TESTING METHOD

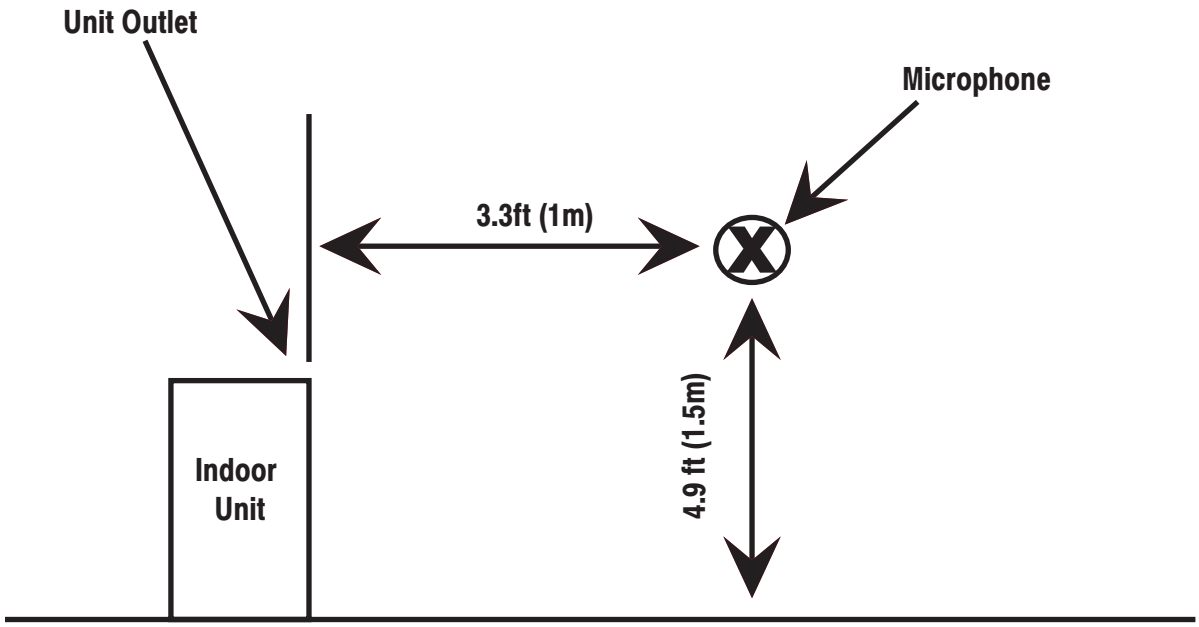


Fig. 11 — Sound Pressure Testing Method

ELECTRICAL DATA

CONSOLE SIZE		12K	18K	24K	36K	48K	58K
		(208/230V)	(208/230V)	(208/230V)	(208/230V)	(208/230V)	(208/230V)
FLA		0.21	1.11	1.11	1.36	0.94	1.2
INPUT	W	66.6	100	100	130	98	210
RATED HP	HP	0.027	0.075	0.075	0.156	0.122	0.218

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

LEGEND

FLA - Full Load Amps

FAN AND MOTOR SPECIFICATIONS

SYSTEM SIZE			12K	18K	24K	36K	48K	58K
			(208-230V)	(208-230V)	(208-230V)	(208-230V)	(208-230V)	(208-230V)
INDOOR FAN	material		AS	ABS	ABS	ABS	ABS	ABS
	Type		LX-370*80* 8-7JN	LX-154*162* 12-41J	LX-154*162* 12-41J	LX-154*162* 12-41J	LX-154*162* 12-41J	LX-154*162* 12-41J
	Diameter	inch	14.6	0.51 (154)	0.51 (154)	0.51 (154)	0.51 (154)	0.51 (154)
	Height	inch	3.15	0.53 (162)	0.53 (162)	0.53 (162)	0.53 (162)	0.53 (162)
INDOOR FAN MOTOR	Model		RD-280-20-8A	ZKFN-55-8-1	ZKFN-55-8-1	ZKFN-115-8-1	ZKFN-90-8-1	ZKFN-160-8-1-2
	Type		DC	DC	DC	DC	DC	DC
	Phase		3	3	3	3	3	3
	FLA		0.21	1.11	1.11	1.36	0.94	1.2
	Insulation class		E	E	E	E	E	E
	Safe class		IPX0	IPX0	IPX0	IPX0	IPX0	IPX0
	Input	W	66.6	100	100	130	98	210
	Output	W	20	55	55	115	90*	160
	Range of current	Amps	0.21±10%	1±10%	1±10%	1.23±10%	0.85±10%	1.48±10%
	Rated current	Amps	0.21	1	1	1.23	0.85	1.48
	Rated HP	HP	0.027	0.075	0.075	0.156	0.122	0.218
	Speed	rev/min	730/680/580/520	950/850/750	950/850/750	1300/1150/800	1320/1200/1120	1350/1050/850
	Rated RPM	rev/min	1062	1300	1300	1350	1350	1350
	Max. input	W	66.6	130	130	150	98	155

WIRING DIAGRAMS

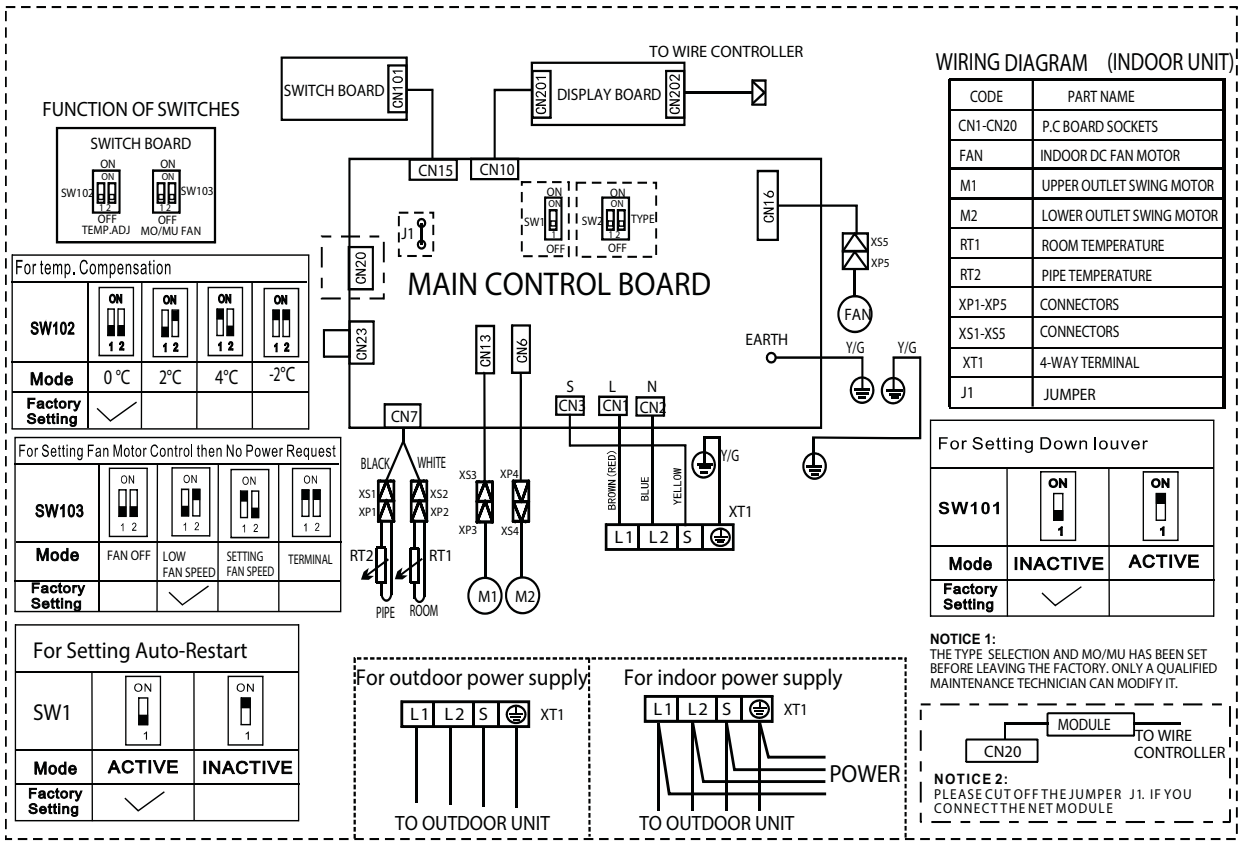


Fig. 12 — Wiring Diagram Size 12

Indoor Unit Control Board

CODE	PART NAME
CN1	Input: 230VAC High voltage Connection of the terminal
CN2	Input: 230VAC High voltage Connection of the terminal
CN3	Output: 24VDC Between CN2 Connection of the S signal
CN6	Output: 12VDC Connection of the Lower outlet swing motor
CN7	Output: 5VDC Connection of the Room and Pipe temperature
CN10	Output: 12VDC Connection of the Display board
CN13	Output: 12VDC Connection of the Upper outlet swing motor
CN15	Output: 1-5VDC Connection of the Switch board
CN16	Output: 320VDC Connection of the Fan high voltage
CN20	Output: 5VDC Connection of the Net module
CN23	Output: 1-12VDC Connection of the Remote switch

WIRING DIAGRAMS (CONT)

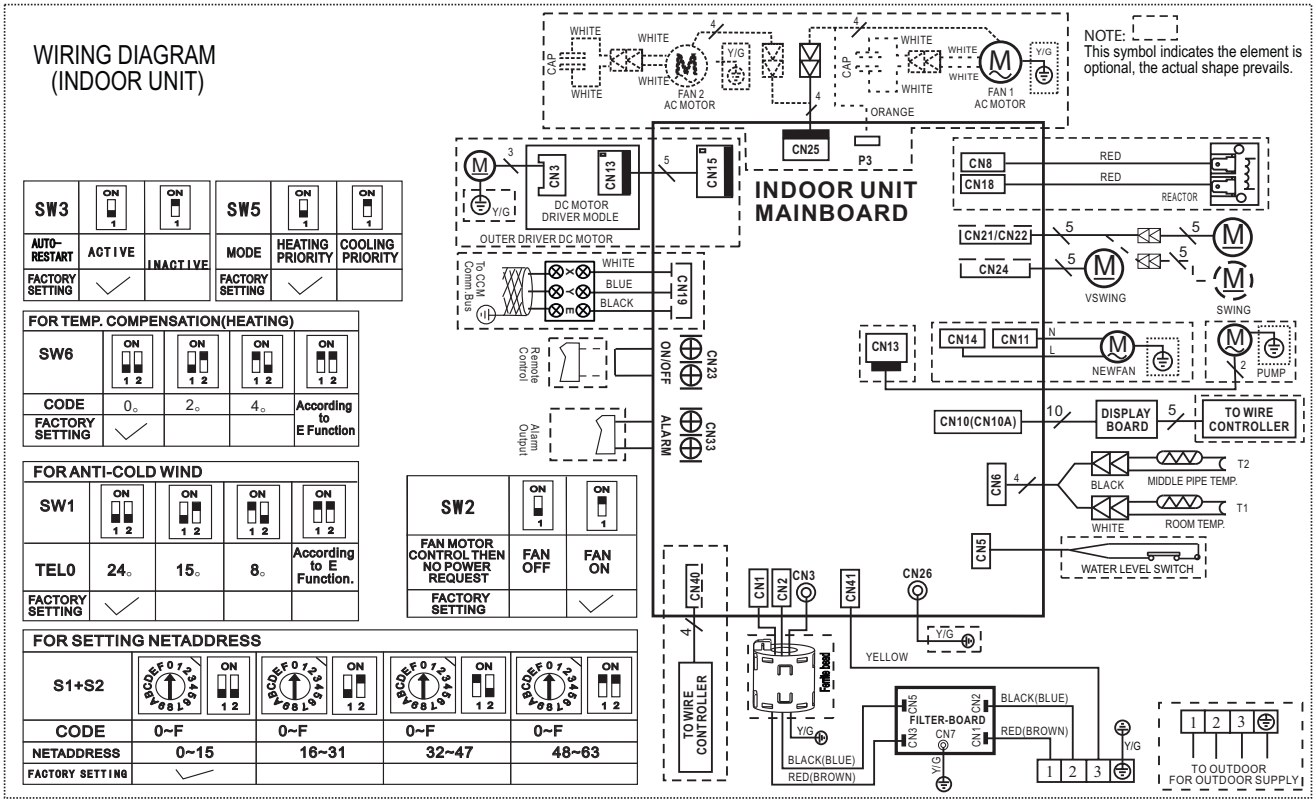


Fig. 13 — Wiring Diagram - Sizes 18K and 24K

Indoor Unit Control Board

INDOOR UNIT	
CODE	**PART NAME**
CN1	Input: 230VAC High voltage connection of the terminal
CN2	Input: 230VAC High voltage connection of the terminal
CN3/CN26	Output: 0VDC Connection of the earth
CN5	Output: 0-5VDC Connection of the water level switch
CN6	Output: 5VDC Connection of the room and pipe temperature
CN8/CN18	Output: 320VDC High voltage connection of the reactor
CN10 (CN10A)	Output: 12VDC Connection of the display board
CN11/CN14	Output: 230VAC High voltage connection of the new fan
CN13	Output: 220VAC High voltage connection of the pump
CN15	Output: 320VDC High voltage connection of the fan board
CN19	Output: 5VDC Connection of the CCM
CN21/CN22	Output 12VDC connection to the swing motor
CN23	Output: 1-12VDC Connection of the remote switch
CN24	Output 12VDC connection to the swing motor
CN33	Output 0V connection of the alarm
CN40	Output 12VDC connection of the wire controller
CN41	Output 24VDC between CN2 connection of the S signal

WIRING DIAGRAMS (CONT)

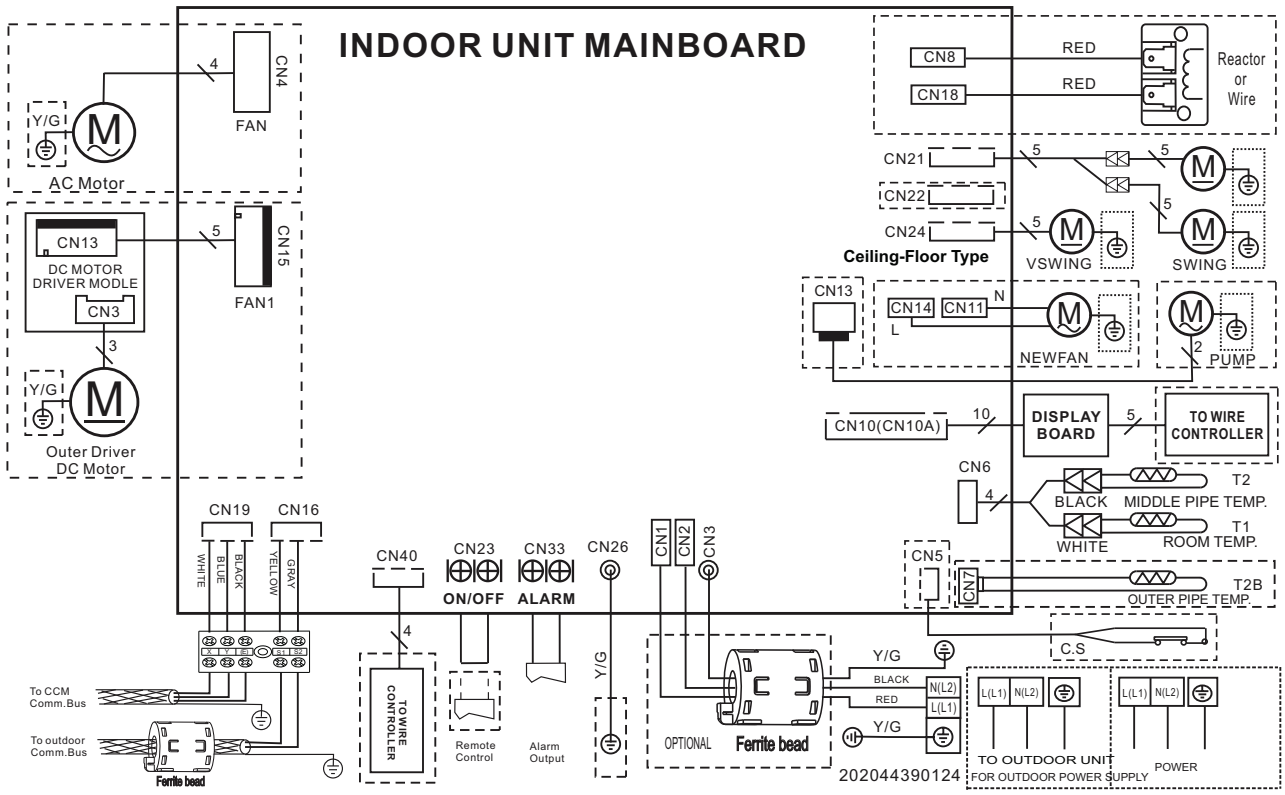


Fig. 14 — Wiring Diagram - Size 36K

Indoor Unit Control Board

INDOOR UNIT	
CODE	**PART NAME**
CN1	Input: 230VAC High voltage connection of the terminal
CN2	Input: 230VAC High voltage connection of the terminal
CN3/CN26	Output: 0VDC Connection of the earth
CN5	Output: 0-5VDC Connection of the water level switch
CN6	Output: 5VDC Connection of the room and pipe temperature
CN8/CN18	Output: 320VDC High voltage connection of the reactor
CN10 (CN10A)	Output: 12VDC Connection of the display board
CN11/CN14	Output: 230VAC High voltage connection of the new fan
CN13	Output: 220VAC High voltage connection of the pump
CN15	Output: 320VDC High voltage connection of the fan board
CN19	Output: 5VDC Connection of the CCM
CN21/CN22	Output 12VDC connection to the swing motor
CN23	Output: 1-12VDC Connection of the remote switch
CN24	Output 12VDC connection to the swing motor
CN28	Output 24VDC between CN2 connection of the S signal
CN33	Output 0V connection of the alarm
CN40	Output 12VDC connection of the wire controller

WIRING DIAGRAMS (CONT)

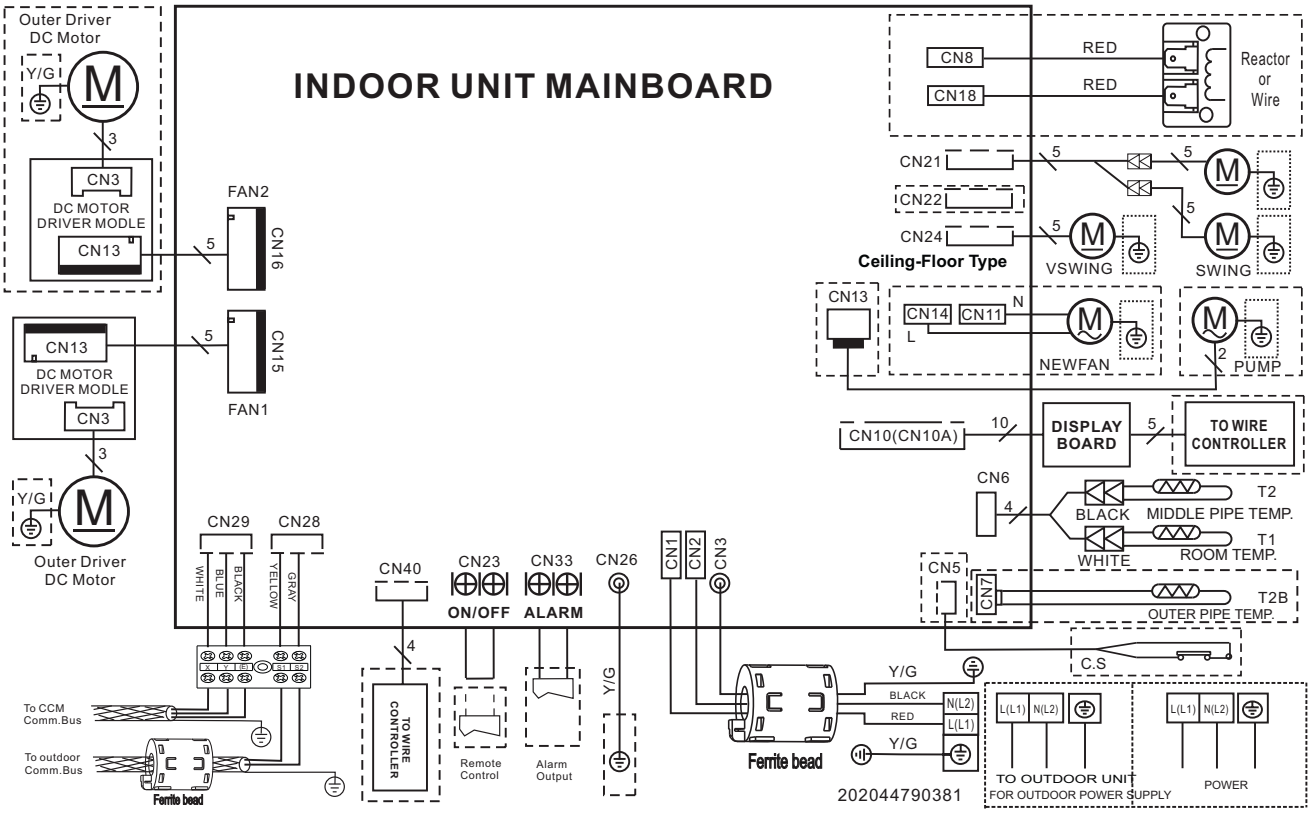


Fig. 15 — Wiring Diagram - Size 48K

Indoor Unit Control Board

INDOOR UNIT	
CODE	**PART NAME**
CN1	Input: 230VAC High voltage connection of the terminal
CN2	Input: 230VAC High voltage connection of the terminal
CN3/CN26	Output: 0VDC Connection of the earth
CN5	Output: 0-5VDC Connection of the water level switch
CN6	Output: 5VDC Connection of the room and pipe temperature
CN7	Output 5VDC connection of the indoor coil outlet temperature sensor T2B
CN8/CN18	Output: 320VDC High voltage connection of the reactor
CN10 (CN10A)	Output: 12VDC Connection of the display board
CN11/CN14	Output: 230VAC High voltage connection of the new fan
CN13	Output: 220VAC High voltage connection of the pump
CN15/CN16	Output: 320VDC High voltage connection of the fan board
CN21/CN22	Output 12VDC connection to the swing motor
CN23	Output: 1-12VDC Connection of the remote switch
CN24	Output 12VDC connection to the swing motor
CN29	Output: 5VDC Connection of the CCM
CN33	Output 0V connection of the alarm
CN40	Output 12VDC connection of the wire controller
CN41	Output 24VDC between CN2 connection of the S signal

WIRING DIAGRAMS (CONT)

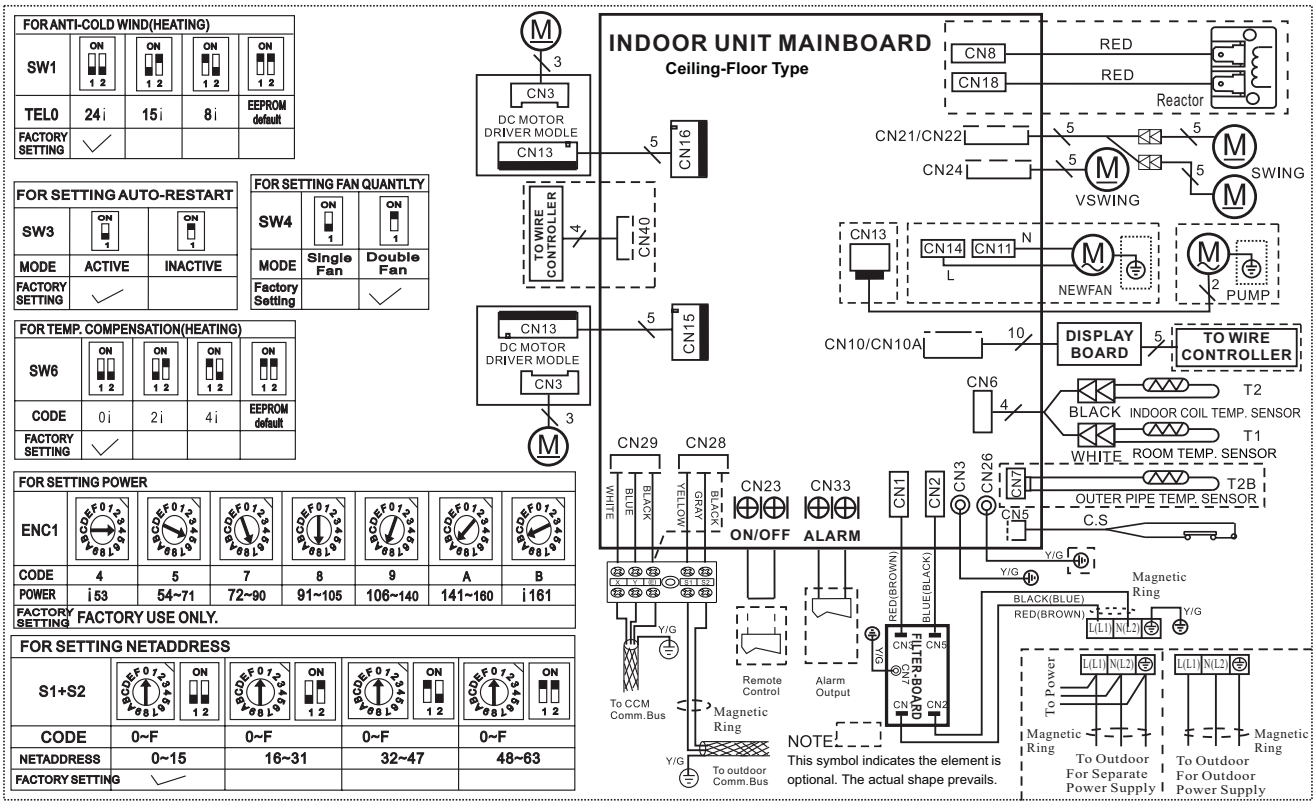


Fig. 16 — Wiring Diagram - Size 58K

Indoor Unit Control Board

INDOOR UNIT	
CODE	**PART NAME**
CN1	Input: 230VAC High voltage connection of the terminal
CN2	Input: 230VAC High voltage connection of the terminal
CN3/CN26	Output: 0VDC Connection of the earth
CN5	Output: 0-5VDC Connection of the water level switch
CN6	Output: 5VDC Connection of the room and pipe temperature
CN7	Output 5VDC connection of the indoor coil outlet temperature sensor T2B
CN8/CN18	Output: 320VDC High voltage connection of the reactor
CN10 (CN10A)	Output: 12VDC Connection of the display board
CN11/CN14	Output: 230VAC High voltage connection of the new fan
CN13	Output: 220VAC High voltage connection of the pump
CN15/CN16	Output: 320VDC High voltage connection of the fan board
CN21/CN22	Output 12VDC connection to the swing motor
CN23	Output: 1-12VDC Connection of the remote switch
CN24	Output 12VDC connection to the swing motor
CN28	Output 24VDC between CN2 connection of the S signal
CN29	Output: 5VDC Connection of the CCM
CN33	Output 0V connection of the alarm
CN40	Output 12VDC connection of the wire controller

GUIDE SPECIFICATIONS
INDOOR CONSOLE DUCTLESS UNITS

Size Range: 1 to 5 Ton Nominal Cooling and Heating Capacity Model Number:40MBFQ

Part 1 - GENERAL

1.01 System Description

Indoor console, direct-expansion fan coils are matched with a cooling only or heat pump outdoor unit.

1.02 Agency Listings

Unit is rated per AHRI Standards 210/240 and listed in the AHRI directory as a matched system.

1.03 Delivery, Storage, And Handling

Units are stored and handled per the unit manufacturer's recommendations.

1.04 Warranty (For Inclusion By Specifying Engineer)

Part 2 - PRODUCTS

2.01 Equipment

A. General:
Indoor, direct-expansion, floor-mounted fan coil. Unit is complete with a cooling/heating coil, fan, fan motor, piping connectors, electrical controls, microprocessor control system, and integral temperature sensing. Unit is furnished with an integral mounting bracket and mounting hardware.

B. Unit Cabinet:
Cabinet discharge and inlet grilles are attractively styled, high-impact polystyrene. Cabinet is fully insulated for improved thermal and acoustic performance.

C. Fans:

1. Fan is the tangential direct-drive blower type with an air intake in the center of the unit and discharge at the top and bottom front. An automatic, motor-driven vertical air sweep is provided standard.
2. Air sweep operation is user selectable. The vertical sweep may be adjusted (using the remote control) and the horizontal air direction may be set manually.

D. Coil:
Coil is a copper tube with aluminum fins and galvanized steel tube sheets. Fins are bonded to the tubes by mechanical expansion and specially hydrophilic pre-coated for enhanced wet-ability. A drip pan under the coil has a drain connection for hose attachment to remove condensate. The condensate pan has an internal trap.

E. Motors:
The motors have an open drip-proof, permanently lubricated ball bearing with inherent overload protection. The fan motors are 4-speed.

F. Controls:
Controls consist of a microprocessor-based control system which controls the space temperature, determines the optimum fan speed, and runs self diagnostics. The temperature control ranges from 62°F to 86°F (17°C to 30°C) in increments of 1°F or 1°C, and have 46°F Heating Mode
(Heating Setback). The wireless remote controller has the ability to act as the temperature sensing location for room comfort.

The unit has the following functions as a minimum:

1. An automatic restart after power failure at the same operating conditions as at failure.
2. A timer function to provide a minimum 24-hour timer cycle for system Auto Start/Stop.
3. Temperature-sensing controls to sense the return air temperature.
4. Indoor coil freeze protection.
5. Wireless infrared remote control to enter set points and operating conditions.
6. Automatic air sweep control to provide on or off activation of air sweep louvers.
7. Dehumidification mode to provide increased latent removal capability by modulating system operation and set point temperature.
8. Fan-only operation to provide room air circulation when no cooling is required.
9. Diagnostics to conduct continuous checks of unit operation and warn of possible malfunctions. Error messages appear on the unit.
10. Fan speed control is user-selectable: high, medium, low, or microprocessor controlled automatic operation during all operating modes.
11. Automatic heating-to-cooling changeover in heat pump mode. Control includes a deadband to prevent rapid mode cycling between heating and cooling.
12. Indoor coil high temperature protection is provided to detect excessive indoor discharge temperature when the unit is in heat pump mode.

G. Filters:
Unit has a filter track with factory-supplied cleanable filters.

H. Electrical Requirements:
Indoor fan motor to operate on 208-230V as specified. Power is supplied from the outdoor unit.

I. Operating Characteristics:
The 40MBFQ system has a minimum SEER (Seasonal Energy Efficiency Ratio) and HSPF at AHRI conditions, as listed on the specifications table.

J. Refrigerant Lines:
All units should have refrigerant lines that can be oriented to connect from the left, right or back of unit. Both refrigerant lines need to be insulated.

K. Special Features (Field Installed):

Condensate Pump:
The condensate pump removes condensate from the drain pan when gravity drainage cannot be used. The pump is designed for quiet operation. The pump consists of two parts: an internal reservoir/sensor assembly, and a remote sound-shielded pump assembly. A liquid level sensor in the reservoir stops the cooling operation if the liquid level in the reservoir is unacceptable.

 Replaces: 40MBFQ-02PD

40MBDQ
Ducted Slim Ductless System
Sizes 09 to 58

Carrier

Product Data

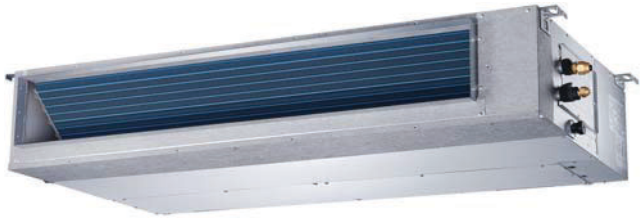


Fig. 1 — Sizes 09K - 48K

NOTE: The 09K-48K unit can be mounted vertically as well as horizontally.

Fig. 2 — Size 58K

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 **40MBDQ** series ducted slim 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 fan coil is mounted in the ceiling.

This selection of fan coils 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
- Historical renovations or any application where preserving the look of the original structure is essential.

These compact indoor fan coil units take up very little space above the ceiling. Advanced system components incorporate innovative technology to provide reliable cooling performance at low sound levels.

LOW SOUND LEVELS

When noise is a concern, the ductless split 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 ductwork.

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 the ductwork. In addition, since outdoor units 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. A mounting bracket and duct work is needed for the indoor units, and only wire and piping need run between the indoor and outdoor units. These units are fast and easy to install ensuring minimal disruption to customers in the home or workplace. This makes the ducted style ductless systems the equipment of choice, especially in retrofit situations.

SIMPLE SERVICING AND MAINTENANCE

Removing the top panel on the outdoor units provides immediate access to the control compartment, providing a service technician access to check unit operation. In addition, the draw-thru design of the outdoor section 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 all indoor units, service and maintenance expense is reduced due to easy accessible service panels. In addition, these ducted systems have extensive self-diagnostics to assist in troubleshooting.

BUILT-IN RELIABILITY

Ducted style ductless system indoor and outdoor units are designed to provide years of trouble-free operation.

The ducted indoor units include protection against freeze-up and high evaporator temperatures on heat pumps.

The condensing units on the heat pumps are protected by a three minute delay that provides over-current protection and high temperature protection prior to the start of the compressor.

INDIVIDUAL ROOM COMFORT

Maximum comfort is provided because each space can be controlled individually based on the usage pattern. The provided air sweep feature permits optimal room air mixing to eliminate hot and cold spots for occupant comfort. In addition, year-round comfort can be provided with heat pumps.

ECONOMICAL OPERATION

The ducted style ductless system design allows individual or multi-room heating or cooling when required. There is no need to run large supply-air fans or chilled water pumps to handle a few spaces with unique load patterns.

EASY-TO-USE CONTROLS

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

BUILT-IN CONDENSATE LIFT PUMP

Factory installed condensate lift pump on the ducted fan coil provides installation flexibility.

VERTICAL OR HORIZONTAL INSTALLATION

Designed for maximum installation flexibility. The secondary drain (built-in) allows the unit to be mounted vertically allowing either a floor or ceiling-concealed installation depending on existing conditions (sizes 09K-48K only).

OPTIONAL WIRED CONTROLLER

Timer Function

STANDARD WIRED CONTROLLER

7 Day Programmable

SMART PHONE CONTROL (OPTIONAL)

The unit can be controlled via a smart phone with the addition of the Wi-Fi® Kit KSAIF0401AAA (sold separately).

24V INTERFACE (OPTIONAL)

The 24V Interface allows users to control the ductless system with a third party thermostat.

AGENCY LISTINGS

All systems are listed with AHRI (Air Conditioning, Heating & Refrigeration Institute), and ETL.

MODEL NUMBER NOMENCLATURE

INDOOR UNIT

40	MB	D	Q	09	-	--	3

40 = FAN COIL UNIT

MB = MODEL

INDOOR FAN COIL TYPE
D = DUCTED SLIM

SYSTEM TYPE
Q = HEAT PUMP

NOMINAL CAPACITY
09 - 3/4 TON
12 - 1 TON
24 - 2 TONS
36 - 3 TONS
48 - 4 TONS
58 - 5 TONS

NOT USED

NOT USED

VOLTAGE
3 = 208/230-1-60

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.

STANDARD FEATURES AND ACCESSORIES

Ease Of Installation	
Mounting Brackets	S
Low Voltage Controls	S
Comfort Features	
Rear or Bottom Return (Bottom Return only sizes 09K-48K)	S
Vertical (Up flow) or horizontal installation (Vertical only sizes 09K-48K)	S
Microprocessor Controls	S
Wired Remote Controller (7 Day Programmable KSACN0501AAA)	S
Wireless Remote Controller	S
Auto Restart Function	S
Cold Blow Protection on Heat Pumps	S
Freeze Protection Mode on Heat Pumps	S
Turbo Mode	S
Auto Changeover on Heat Pumps	S
Follow Me (Sense Temperature at remote)	S
Energy Saving Features	
Outside Air Intake	S
Sleep Mode	S
Stop/Start Timer	S
46° F Heating Mode (Heating Setback)	S
Safety And Reliability	
Indoor Coil Freeze Protection	S
Aluminum Hydrophilic pre-coated fins	S
Indoor Coil High Temp Protection in Heating Mode	S
Ease Of Service And Maintenance	
Cleanable Filters	S
Diagnostics	S
Liquid Line Pressure Taps	S
Application Flexibility	
External Condensate Lift Pump shipped with the unit (sizes 09K-18K)	S
Built-in Condensate Lift Pump (sizes 24K-58K)	S

Legend

S - Standard
A - Accessory

ACCESSORIES

ORDERING NO.	DESCRIPTION	FOR MODELS
KSACN0101AAA	Optional Wired Remote Controller with Timer Function	All Sizes
KSAIF0401AAA	Wi-Fi Kit	All Sizes
40VM900009	Optional Return Temperature Button Sensor - sold separately	All Sizes

HORIZONTAL OR VERTICAL (UP FLOW) INSTALLATION

Designed for maximum installation flexibility. The secondary drain (built-in) allows the unit to be mounted horizontally (sizes 09K-58K) or vertically (up flow) (sizes 09K-48K).

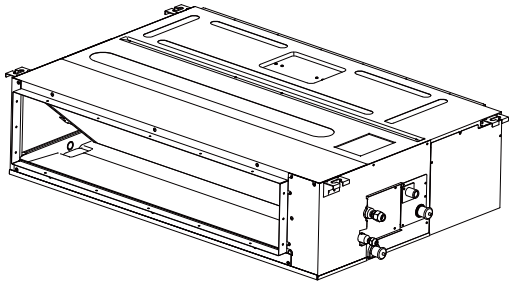


Fig. 3 — Unit mounted horizontally

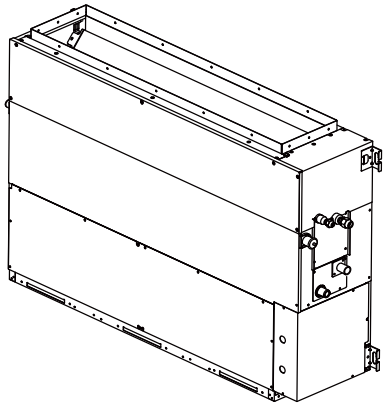


Fig. 4 — Unit mounted vertically (upflow)

DIMENSIONS

		OUTLINE DIMENSIONS				AIR OUTLET OPENING SIZE				AIR INLET OPENING SIZE			HANGER BRACKERS		REFRIGERANT PIPE LOCATIONS				OPERATING WEIGHT LB (KG)
SIZE	UNIT	A	B	C	D	E	F	G	H	I	J	K	L	M	H1	H2	W1	W2	
9	In.	27.6	7.9	19.9	17.7	5.4	21.1	1.2	6	23.6	7.3	2	29.2	14.2	3.3	5.5	3.3	3.3	40
	mm	700	200	506	450	137	537	30	152	599	186	50	741	360	84	140	84	84	18.1
12	In.	27.6	7.9	19.9	17.7	5.4	21.1	1.2	6	23.6	7.3	2	29.2	14.2	3.3	5.5	3.3	3.3	40
	mm	700	200	506	450	137	537	30	152	599	186	50	741	360	84	140	84	84	18.1
18	In.	34.65	8.27	26.54	23.62	5.51	27.80	1.97	5.35	30.79	7.48	1.57	36.22	20	3.07	5.83	3.46	4.41	54
	mm	880	210	674	600	140	706	50	136	782	190	40	920	508	78	148	88	112	24.5
24	In.	43.31	9.8	30.47	27.56	5.51	36.46	1.97	6.89	39.41	8.98	0.2	44.88	23.54	3.15	5.91	5.12	6.1	87
	mm	1100	249	774	700	140	926	50	175	1001	228	5	1140	598	80	150	130	155	39.4
36	In.	53.54	9.8	30.47	27.56	5.51	46.69	1.97	6.89	49.65	8.98	0.2	55.12	23.54	3.15	5.91	5.12	6.1	106
	mm	1360	249	774	700	140	1186	50	175	1261	228	5	1400	598	80	150	130	155	48.3
48	In.	47.24	11.81	34.41	31.5	4.84	41.1	1.97	8.94	43.35	11.02	0.2	48.82	27.44	3.15	5.91	7.28	8.27	120
	mm	1200	300	874	800	123	1044	50	227	1101	280	5	1240	697	80	150	185	210	54.3
58	In.	55.12	17.32	33.78	30.31	4.17	46.81	1.1	15.16	46.54	11.02	1.57	56.57	27.56	8.15	10.75	5.67	5.67	163
	mm	1400	440	858	770	106	1189	28	385	1182	280	40	1437	700	207	273	144	144	74

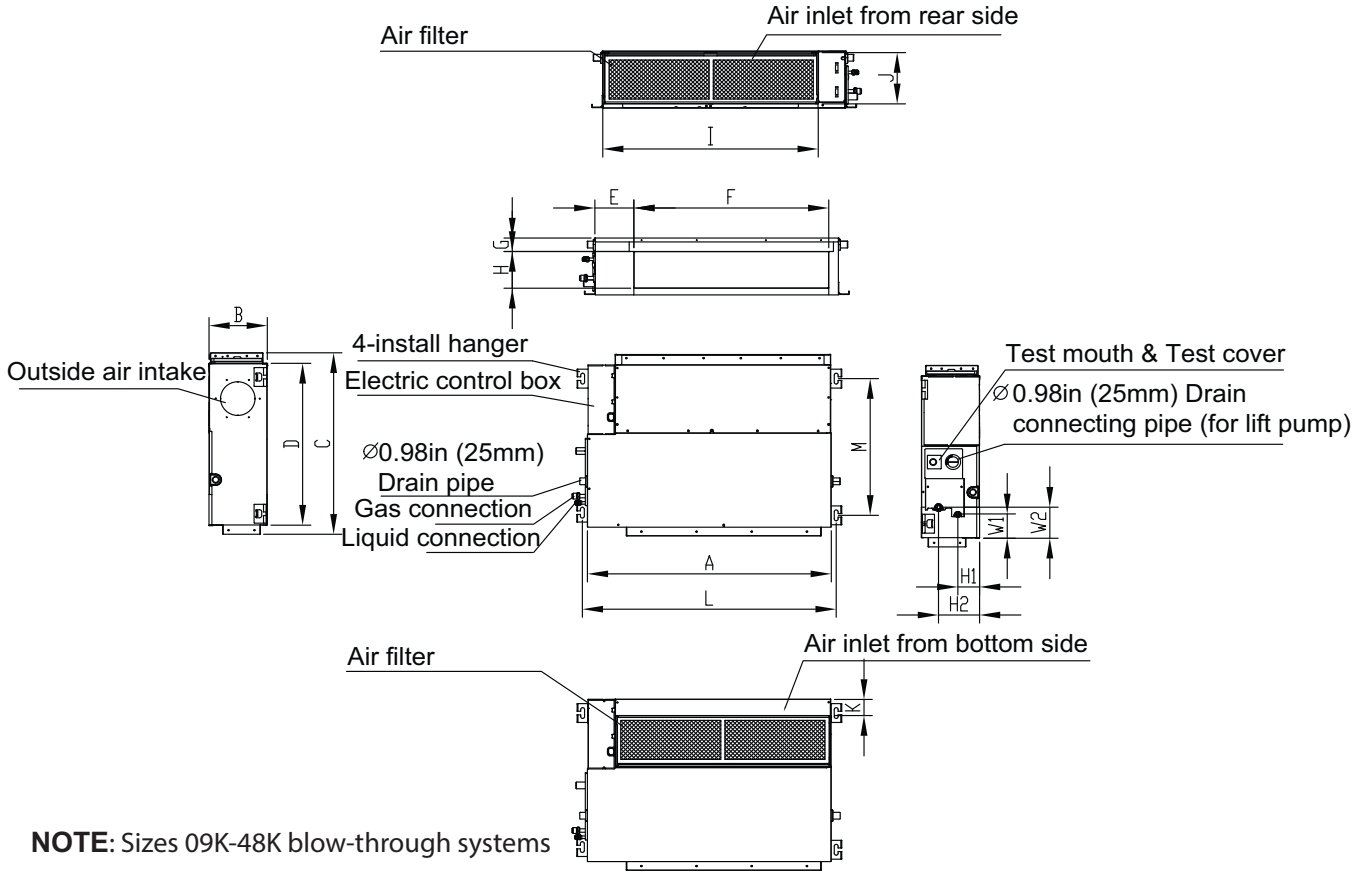
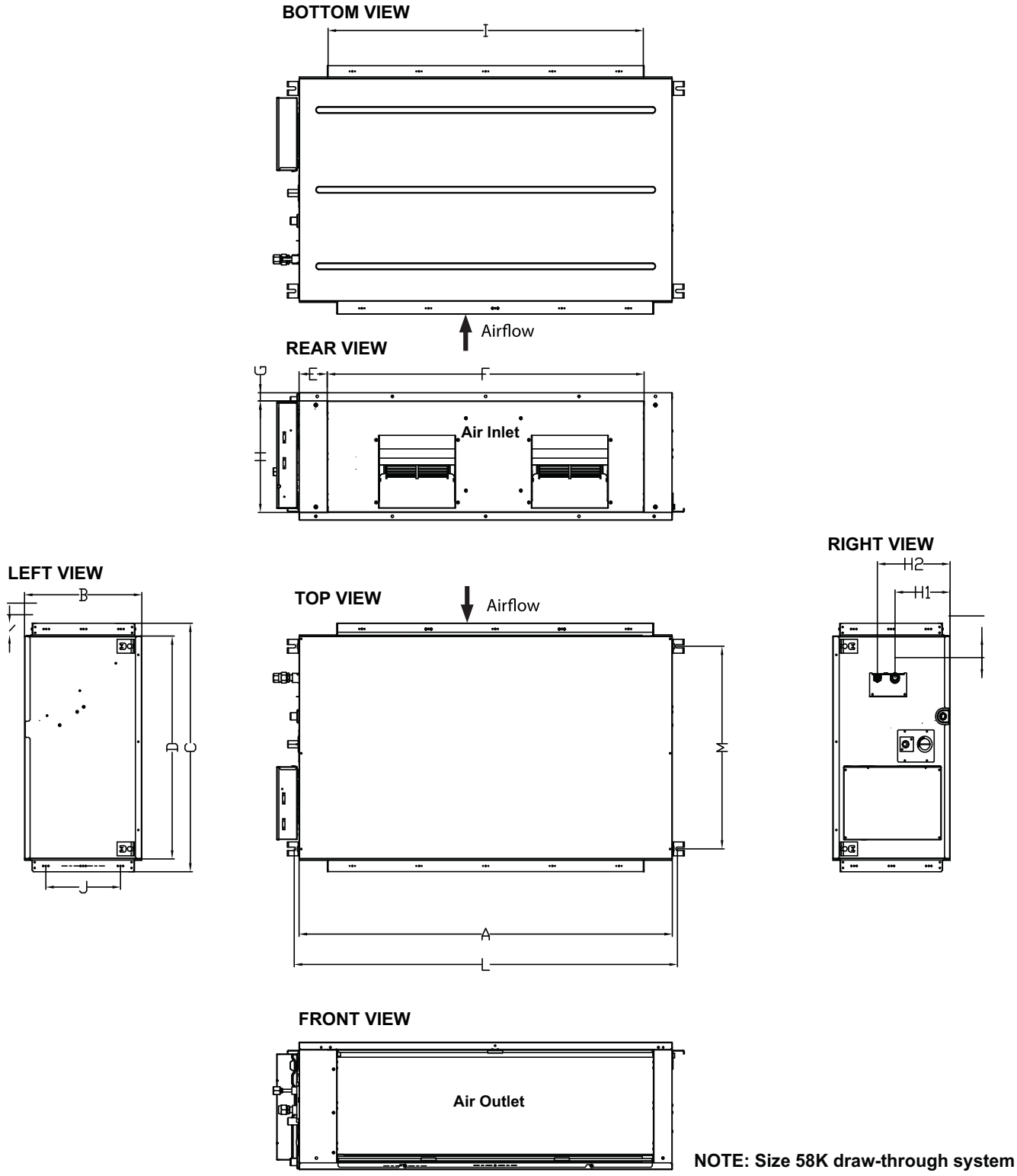


Fig. 5 — Indoor Unit Sizes 9K - 48K

DIMENSIONS (CONT)



NOTE: Size 58K draw-through system

Fig. 6 — Indoor Unit Size 58K

INSTALLATION CLEARANCES HORIZONTAL INSTALLATIONS

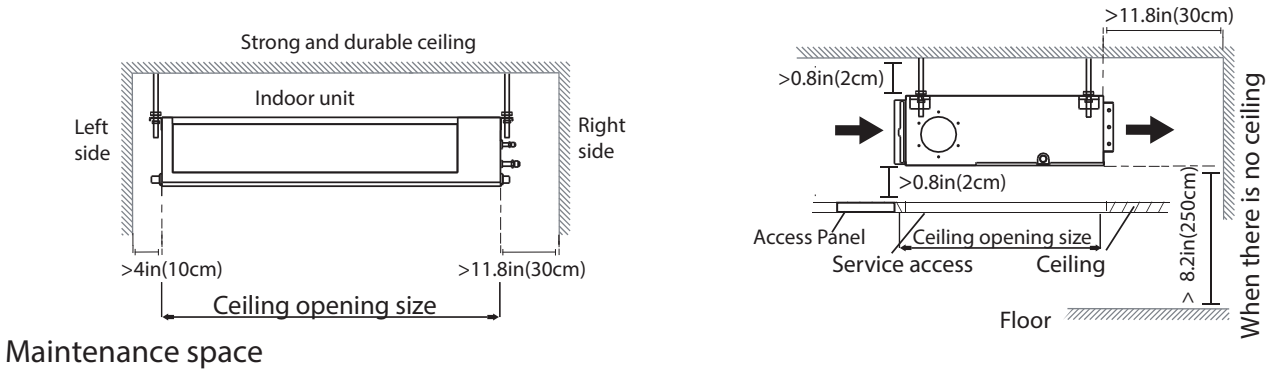


Fig. 7 — Installation Clearances

MAINTENANCE CLEARANCES

Maintenance clearances provide access for system inspections.

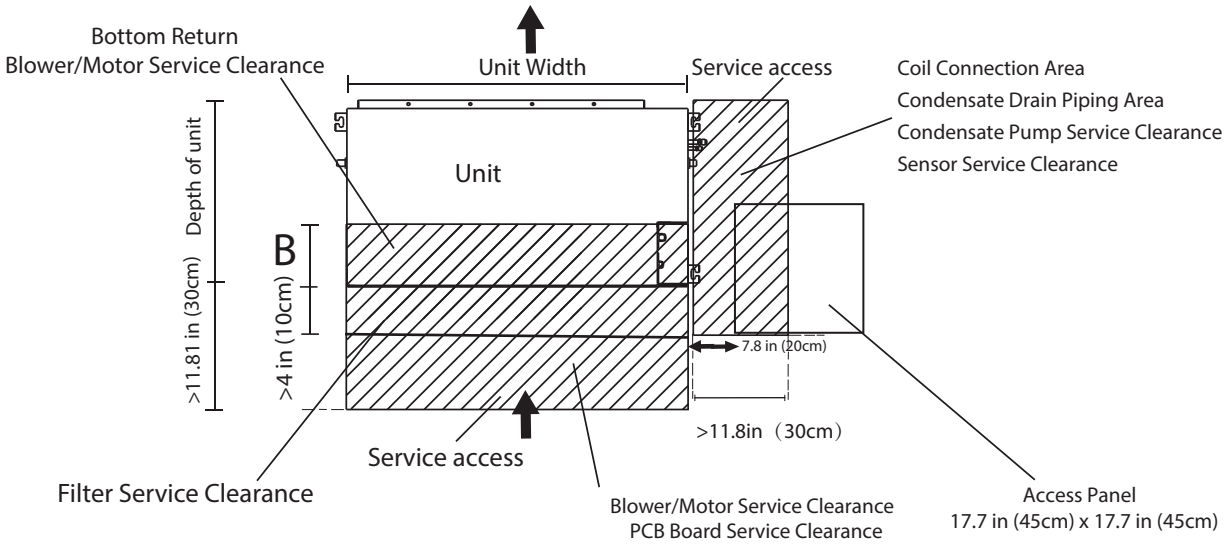


Fig. 8 — Maintenance Clearance

CAPACITY (KBTU)	B
9K	11.81in.(30cm)
12K	11.81in.(30cm)
18K	11.81in.(30cm)
24K	11.81in.(30cm)
36K	11.81in.(30cm)
48K	15.75in.(40cm)
58K	15.75in.(40cm)

NOTE: If installed above a fixed ceiling, utilize a ceiling access panel the length and width of the unit, otherwise the blower components and/or the entire unit cannot be removed.

If a single access panel is desired, the minimum dimensions should be:

- **Single Access Panel Width:** The width of the unit plus 2-inches on both sides
- **Single Access Panel Length:** The length of the unit plus 18-inches on the connection end and 2-inches on the opposite end.

SPECIFICATIONS

HEAT PUMP									
SYSTEM	**SIZE**		**09K**	**12K**	**18K**	**24K**	**36K**	**48K**	**58K**
	Indoor Model		**40MBDQ09---3**	**40MBDQ12---3**	**40MBDQ18---3**	**40MBDQ24---3**	**40MBDQ36---3**	**40MBDQ48---3**	**40MBDQ58---3**
ELECTRICAL	**Voltage, Phase, Cycle**	V/Ph/Hz	208/230-1-60						
	Power Supply		Indoor unit powered from outdoor unit						
	MCA	A.	1.11	1.11	1.2	1.2	2.45	3.2	3.65
CONTROLS	**Wireless Remote Controller (°F/°C Convertible)**		Standard						
	Wired Remote Controller (°F/°C Convertible)		Standard						
OPERATING RANGE	**Cooling Indoor DB Min - Max**	°F (°C)	63~90 (17~32)	63~90 (17~32)	63~90 (17~32)	63~90 (17~32)	63~90 (17~32)	63~90 (17~32)	63~90 (17~32)
	Heating Indoor DB Min - Max	°F (°C)	32~86 (0~30)	32~86 (0~30)	32~86 (0~30)	32~86 (0~30)	32~86 (0~30)	32~86 (0~30)	32~86 (0~30)
PIPING	**Pipe Connection Size - Liquid**	in (mm)	1/4 (6.35)	1/4 (6.35)	1/4 (6.35)	3/8(9.52)	3/8(9.52)	3/8(9.52)	3/8(9.52)
	Pipe Connection Size - Suction	in (mm)	3/8 (9.52)	1/2 (12.7)	1/2 (12.7)	5/8(16)	5/8(16)	5/8(16)	3/4(19)
INDOOR COIL	**Face Area**	Sq.Ft.	1.2	1.2	1.9	2.9	3.7	4.2	5.9
	No. Rows		3	3	3	3	4	4	4
	Fins per inch		18	18	16	16	16	16	16
	Circuits		3	3	4	7	7	8	9
INDOOR	**Unit Width**	in (mm)	27.559 (700)	27.559 (700)	34.65 (880)	43.31 (1100)	53.54 (1360)	47.24 (1200)	55.12 (1400)
	Unit Height	in (mm)	7.874 (200)	7.874 (200)	8.27 (210)	9.8 (249)	9.8 (249)	11.81 (300)	11.81 (300)
	Unit Depth	in (mm)	19.92 (506)	19.92 (506)	26.54 (674)	30.47 (774)	30.47 (774)	34.41 (874)	33.78 (858)
	Net Weight	lbs (kg)	43.56 (19.8)	43.56 (19.8)	54 (24.5)	86.86 (39.4)	106.48 (48.3)	119.71 (54.3)	163 (74)
	Fan Speeds		3	3	3	3	3	3	3
	Airflow (lowest to highest)	CFM	180/228/337	211/295/397	365/453/557	553/689/955	803/964/1,233	1,150/1,348/1,576	1,579/1,931/2,481
	Sound Pressure (lowest to highest)	db(A)	30/34/38	35/37/38	35/37/39	35.5/40/44	38.5/42/45.5	46/49.5/50.5	51/54/57
	Max Static Pressure	In.WG.	0.2	0.2	0.40	0.64	0.64	0.64	0.80
	Field Drain Pipe Size O.D.	in (mm)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)	1 (25.4)

*Performance may vary based on the outdoor unit matched to. See the compatible outdoor units product data for Performance Data.

COMPATIBILITY

Unit Size	**40MBDQ09---3**	**40MBDQ12---3**	**40MBDQ18---3**	**40MBDQ24---3**	**40MBDQ36---3**	**40MBDQ48---3**	**40MBDQ58---3**
Outdoor Unit Single Zone	**38MAQB09R--3**	**38MAQB12R--3**	**38MAQB18R--3**	**38MAQB24R--3**	**38MBRQ36A--3**	**38MBRQ48A--3**	**38MBRQ58A--3**
Outdoor Unit Multi- Zone	38MGRQ18B--3						
	38MGRQ24C--3						
	38MGRQ30D--3						
	38MGRQ36D--3						
	38MGRQ48E--3						

NOTE: Backward compatible with single zone systems 38MAQ sizes 09K-24K, 38MBQ sizes 36K-48K and multi-zone systems 38MGQ.

APPLICATION DATA

UNIT SELECTION

Select equipment to either match or that can handle slightly less 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 a total anticipated load. Adjust for anticipated room wet bulb temperature to avoid undersizing equipment.

UNIT MOUNTING (INDOOR)

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

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

Clearance - Provide adequate clearance for airflow (see figures 5 and 6).

Unit location - Select a location which provides the best air circulation for the room.

These units should be positioned as accessible as possible above the ceiling. The unit return and discharge should not be obstructed by furniture, curtains, or anything which may cause unit short cycling or air recirculation.

Duct the unit in the middle of the selected wall (if possible). Duct towards an outside wall, if available, to make piping easier, and position the unit so it faces the normal location of room occupants.

UNIT MOUNTING (OUTDOOR)

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

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

Mounting Template

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

SUPPORT

Adequate support must be provided to support the weight of all fan coils. Refer to the "SPECIFICATIONS" on page 8 for fan coil weights. Refer to "DIMENSIONS" on page 5 for the base unit dimensional drawings which contain the location of the mounting brackets.

SYSTEM OPERATING CONDITIONS

OPERATING RANGE MIN/MAX °F (°C)		
	Cooling	**Heating**
Indoor DB	63 / 90 (17 / 32)	32 / 86 (0 / 30)
Indoor WB	59 / 84 (15 / 29)	

NOTE: Reference the unit's installation instructions for more information.

DRAIN CONNECTIONS

Install the drains in compliance with the local sanitation codes. The standard ducted fan coil unit condensate lift pump has a maximum lift of 29.5 in. (750mm).

WIRING

Size all wires per the NEC (National Electrical Code) or CEC (Canadian Electrical Code) and local codes. Use the electrical data from the outdoor unit (MCA - minimum circuit amps and MOCP - maximum over current protection), to correctly size the wires and the disconnect fuse or breakers respectively.

SIZES 09-24 RECOMMENDED CONNECTION METHOD FOR POWER AND COMMUNICATION WIRING

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.

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

Wiring Sizes 09-24

CABLE	CABLE SIZE	REMARKS
Connection Cable	14AWG	3 wire + Ground 1Φ 208/230 V (Stranded wire is recommended)

SIZES 36-58 RECOMMENDED CONNECTION METHOD FOR POWER AND COMMUNICATION WIRING

Power and Communication Wiring: The main power is supplied to the outdoor unit. The field supplied power wiring from the outdoor unit to the indoor unit consists of three (3) wires and provides the power for the indoor unit. Two wires are high voltage AC power and one is a ground wire. To minimize voltage drop, the factory recommended wire size is 14/2 stranded with a ground.

Communication Wiring: A separate shielded stranded copper conductor only, with a 600 volt rating and double insulated copper wire, must be used as the communication wire from the outdoor unit to the indoor unit.

Please use a separate shielded 16GA stranded control wire.

Wiring Sizes 36-58

CABLE	CABLE SIZE	REMARKS
Power Connection Cable	14AWG	2 wire + Ground 1Φ 208/230V
Communication Cable	16AWG	2 wire stranded shielded control wire

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation. Wires should be sized based on NEC and local codes.

⚠ 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 must be located within sight and readily accessible from the system. Connecting cable with conduit must be routed through the hole in the conduit panel.

CONTROL SYSTEM

The indoor unit is equipped with a microprocessor control to perform two functions:

1. Provide safety for the system
2. Control the system and provide optimum levels of comfort and efficiency.

The main microprocessor is located on the control board of the fan coil unit (outdoor units have a microprocessor also) with thermistors located in the fan coil air inlet and on the indoor coil. Heat pump units have a thermistor on the outdoor coil. These thermistors monitor the system's operation to keep the unit within acceptable parameters and control the operating mode.

WIRELESS REMOTE CONTROLLER

1. A wireless remote controller is supplied for system operation of all ducted units.
2. Each battery operated wireless (infrared) remote controller may be used to control more than one unit.

Fig. 9 — Wireless Remote Controller

WIRED REMOTE CONTROLLER

- P/N KSACN0101AAA (optional available as an accessory)
- P/N KSACN0501AAA (included with the Unit)

1. Wired remote controller used for system operation of all ducted units.
2. Kit includes a wired remote controller and a connecting cable.

NOTE: Extension wire available through **RCD (KSACN0101AAA Part Number: 17401204001601**; **KSACN0501AAA Part Number: 17401204000769**).

3. Connect the wire terminal between the remote controller and the indoor unit.
4. Display in °F or °C and temperature increments every 1°F or every 1°C.

Fig. 10 — KSACN0101AAA (Timer Function)

Fig. 11 — KSACN0501AAA (7 Day Programmable)

24 INTERFACE (OPTIONAL)

Allows the ductless system to be controlled using a third party thermostat **P/N KSAIC0301230** (option available as an accessory).

SMART PHONE CONTROL (OPTIONAL)

A Wi-Fi® Kit, used for system operation of all ducted units through a smart phone (**P/N KSAIF0401AAA**), is available (option available as an accessory).

AIR FLOW DATA

SYSTEM SIZE		9K	12K	18K	24K	36K	48K	58K
Indoor (CFM)	High	337	397	557	955	1,233	1,576	2,481
	Medium	228	295	453	689	964	1,348	1,931
	Low	180	211	365	553	803	1,150	1,579

SOUND PRESSURE

SYSTEM SIZE		9K (208/230V)	12K (208/230V)	18K (208/230V)	24K (208/230V)	36K (208/230V)	48K (208/230V)	58K (208/230V)
Cooling Operation Indoor Sound Pressure	dBa at (High/ Med/Low CFM)	38/34/30	39/37/35	39/37/35	44/40/35.5	45.5/42/38.5	50.5/49.5/46	58.3/57.3/53.9/51.2
Heating Operation Indoor Sound Pressure	dBa at (High/ Med/Low CFM)	39/35/31	37/36/34	37/36/34	41.9/39.2/36.7	45.4/43/39.4	50.1/48.5/45.3	56.9/56.9/53.7/50.6

SOUND PRESSURE TESTING METHOD

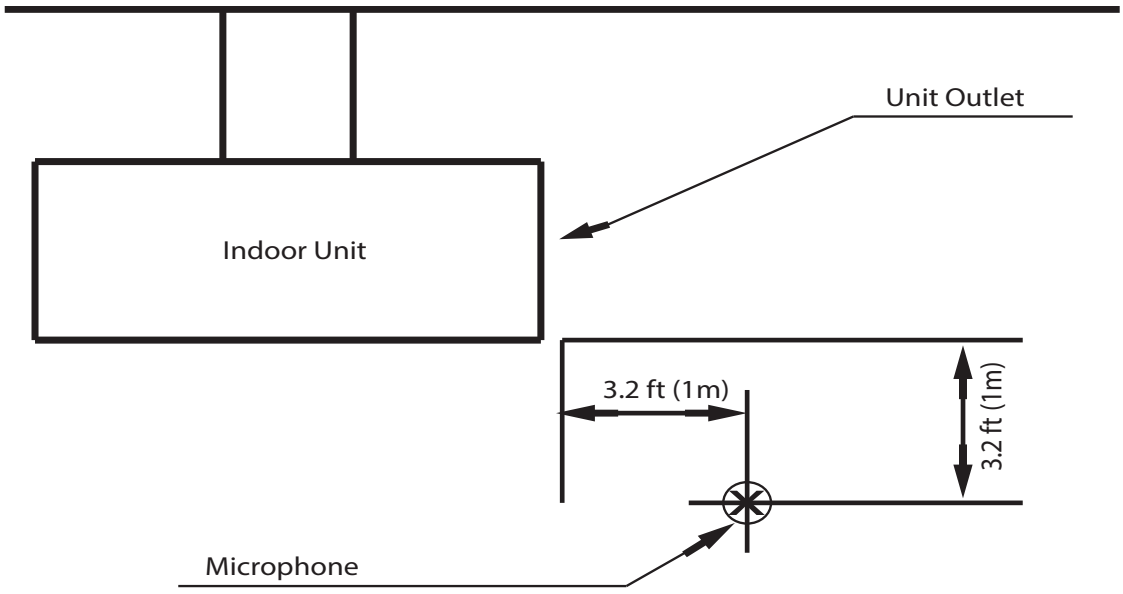


Fig. 12 — Sound Pressure Testing Method

SOUND POWER

SYSTEM SIZE		9K (208/230V)	12K (208/230V)	18K (208/230V)	24K (208/230V)	36K (208/230V)	48K (208/230V)	58K (208/230V)
Cooling Operation Indoor Sound Power	dBA (@ High CFM)	55.4	59.5	64	66.9	69.6	70.4	76.2
Heating Operation Indoor Sound Power	dBA (@ High CFM)	60.2	63.3	62.6	68.2	70.8	71.6	74.1
Cooling Operation Indoor Sound Power (Turbo Mode)	dBA (@ High CFM)	54.4	58.5	63	65.9	68.6	69.4	75.2
Heating Operation Indoor Sound Power (Turbo Mode)	dBA (@ High CFM)	59.2	62.3	61.6	67.2	69.8	70.6	73.1

FAN AND MOTOR SPECIFICATIONS

DUCTED			9K (208/230V)	12K (208/230V)	18K (208/230V)	24K (208/230V)	36K (208/230V)	48K (208/230V)	58K (208/230V)
Indoor Fan	**Material**		**Plastic**	**Plastic**	**Metal**	**Metal**	**Metal**	**Metal**	**Metal**
	Type		LX-154*158* 15-41J	LX-154*158* 15-41J	FLBJ-150*158* 12-41	FLBJ-200*198* 12-46	FLBJ-200*266* 12.7-46	FLBJ-230*264* 12.7-40	FLBJ-227*234* 12.7-43
	Diameter	**inch**	5.9	5.9	6.06 inch	7.87 inch	7.87 inch	9.06 inch	8.94
	Height	**inch**	5.9	5.9	6.22 inch	7.80 inch	10.47 inch	10.39 inch	9.21
Indoor Fan Motor	**Model**		ZKFN-55-8-22	ZKFN-55-8-22	ZKFN-160-8-1-2	ZKFN-160-8-1-2	ZKFN-300-8-1	ZKFN-560-8-1-1	ZKFN-700-8-1
	Volts	**V**	208/230	208/230	208/230	208/230	208/230	208/230	208/230
	Type		DC	DC	DC	DC	DC	DC	DC
	Phase		3	3	3	3	3	3	3
	FLA		1.11	1.11	1.65	1.65	2.45	4.1	3.65
	Insulation class		E	E	E	E	E	E	B
	Safe class		IPX0	IPX0	IPX0	IPX0	IPX0	IPX0	IPX0
	Input	**W**	130	130	200	200	420	560	1000
	Output	**W**	55	55	160	160	300	560	700
	Range of current	**Amps**	1±10%	1±10%	1.2±10%	1.2±10%	2.45±10%	3.2±10%	3.65±10%
	Rated current	**Amps**	1.11	1.11	1.2	1.2	2.45	3.2	3.65
	Rated HP	**HP**	0.18	0.18	0.27	0.27	0.56	0.75	0.952
	Speed	**rev/min**	1100-1350	1100-1350	850/700/450	880/820/690	1130/1050/990	890/820/840	1060/910/790
	Rated RPM	**rev/min**	1350	1350	1300	1300	1280	1020	1060
	Max. input	**W**	130	130	160	160	420	560	1000

SETTING STATIC PRESSURE OR AUTOMATIC AIRFLOW

The indoor ducted units can be programmed for different static pressures settings or airflows; the factory default setting is SP1. Use the following steps to set the static pressure or Automatic Airflow using the Wired Remote Controller or the Wireless Remote Controller according to the installation conditions.

WHEN USING THE KSACN0501AAA WIRED CONTROLLER:

- The external static pressure can be manually changed to the fan curves SP2, SP3, SP4.
- Choose the Automatic Airflow **"AF"** adjustment function to automatically identify the static pressure and regulate the airflow amount.

Follow these instructions to configure:

1. Ensure the test run is done with a dry coil. If the coil is not dry, run the unit for 2 hours in the **FAN ONLY** mode to dry the coil.
2. Check that both the power supply wiring and the duct installation have been completed. Ensure the dampers are properly positioned. Check that the air filter is properly attached to the unit's air return side passage.
3. If there is more than one air inlet and/or outlet, adjust the dampers so that the airflow rate of each air inlet and outlet conforms to the designed airflow rate. Ensure the unit is in **FAN ONLY** mode. Press and set the Airflow Adjustment **"AF"** on the remote controller to adjust the airflow rate from **H** to **L**. Turn the indoor unit **OFF** with the Wired Controller.
4. Set the parameters for airflow adjustment.

   When the system is **OFF**, perform the following steps:

   a. Press and hold **COPY** for approximately 4 seconds
   b. Press "+" or "-" to scroll through the menu to select either **SP** or **AF**.

NOTE: T1, T2, T2b, T3, T4 are sub-menus for thermistors. **DO NOT** select to set the external static pressure.

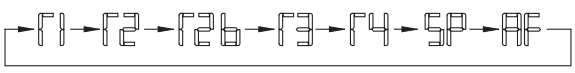


Fig. 13 — Wired Controller Menu Selection

1. If setting the external static pressure manually, select **SP** and press **CONFIRM**. Select the **SP** number (SP1, SP2, SP3, SP4 − see Table "FAN PERFORMANCES AT VARYING STATIC PRESSURES" on page 14 and curves (Figs. 15 through 21)). Power down the unit to lock in the selection.
2. If choosing the **AUTOMATIC AIRFLOW ADJUSTMENT** function, select **AF** and press **CONFIRM**. The system starts the fan for the **AUTOMATIC AIRFLOW ADJUSTMENT**. The **ON** indicator flashes when the fan runs during the **AUTOMATIC AIRFLOW ADJUSTMENT**. After 3 to 6 minutes, the system stops operating once the **AUTOMATIC AIRFLOW ADJUSTMENT** is complete.

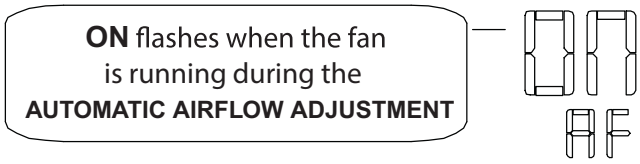


Fig. 14 — Automatic Airflow ON signal

NOTE: The external static pressure can also be selected using the wireless remote controller (RG57F3(B)/BGEFU1), included with the indoor unit, by pointing it toward the indoor unit's Infrared Receiver typically located inside the control box. Refer to the wireless remote controller service manual for further instructions.

⚠ CAUTION

Do not use the **AUTOMATIC AIRFLOW ADJUSTMENT** with the remote control if using booster fans, an outdoor air processing unit, or a HRV via duct.

If the ductwork or static pressure have been changed, reset the **AUTOMATIC AIRFLOW ADJUSTMENT** following steps 3 and 4.

WHEN USING THE 24V INTERFACE KSAIC**

The wireless remote controller, wired controllers KSACN** and Wi-Fi kits are disabled. Since a wired controller is required to setup the static pressure of the indoor ducted units, the 24V interface must be temporarily bypassed using the steps below:

1. Turn off the power to the unit
2. On the 24V interface, disconnect the plugs from the CN11 (to Outdoor) and CN12 (to Indoor) connections.
3. Sizes:
   a. **For sizes 9K-24K only:** Add a jumper between the indoor S terminal to the outdoor S terminal.
   b. **For sizes 36K-58K only:** Disconnect S1 and S2 from the 24V interface (CN8 and CN9) and splice together **S1** from outdoor to **S1** from indoor and **S2** from outdoor to **S2** from indoor.
4. Connect the Wired Controller (KSACN0501AAA) and follow the external static pressure setup.
5. Once the static pressure is adjusted, disconnect the wired controller
6. **Sizes**:
   a. **For sizes 9K-24K only:** Remove the S jumper from the terminal block.
   b. **For sizes 36K-58K only:** Remove the splice and reconnect **S1** and **S2** back to the 24V interface accordingly.
7. Reconnect the plugs back to CN11 (to outdoor) and CN12 (to indoor) accordingly.
8. Restore power to the unit.

NOTE: When a system is using the 24V interface, the indoor unit's fan speed defaults to **AUTO** with the indoor unit's default logic.

FAN PERFORMANCES AT VARYING STATIC PRESSURES

		STATIC PRESSURE AT RATED POINT				STATIC PRESSURE RANGE
Size	Units	SP1	SP2	SP3	SP4	
9	In. WG	0.068	0.104	0.128	0.176	0~0.20
	Pa	17	26	32	44	(0~50)
12	In. WG	0.064	0.10	0.136	0.20	0~0.20
	Pa	16	25	34	50	(0~50)
18	In. WG	0.096	0.168	0.288	0.392	0~0.40
	Pa	24	42	72	98	(0~100)
24	In. WG	0.10	0.216	0.336	0.528	0~0.64
	Pa	25	54	84	132	(0~160)
36	In. WG	0.168	0.312	0.48	0.62	0~0.64
	Pa	42	78	120	155	(0~160)
48	In. WG	0.18	0.404	0.616	0.64	0~0.64
	Pa	45	101	154	160	(0~160)
58	In. WG	0.296	0.416	0.584	0.8	0~0.80
	Pa	74	104	146	200	(0~200)
Factory Setting		√				

AIRFLOW AT RATED POINT

SYSTEM SIZE		**9**	**12**	**18**	**24**	**36**	**48**	**58**
High	CFM	337	397	557	955	1,233	1,576	2,481
Medium	CFM	228	295	453	689	964	1,348	1,931
Low	CFM	180	211	365	553	803	1,150	1,579

FAN PERFORMANCES AT VARYING STATIC PRESSURES (CONT)

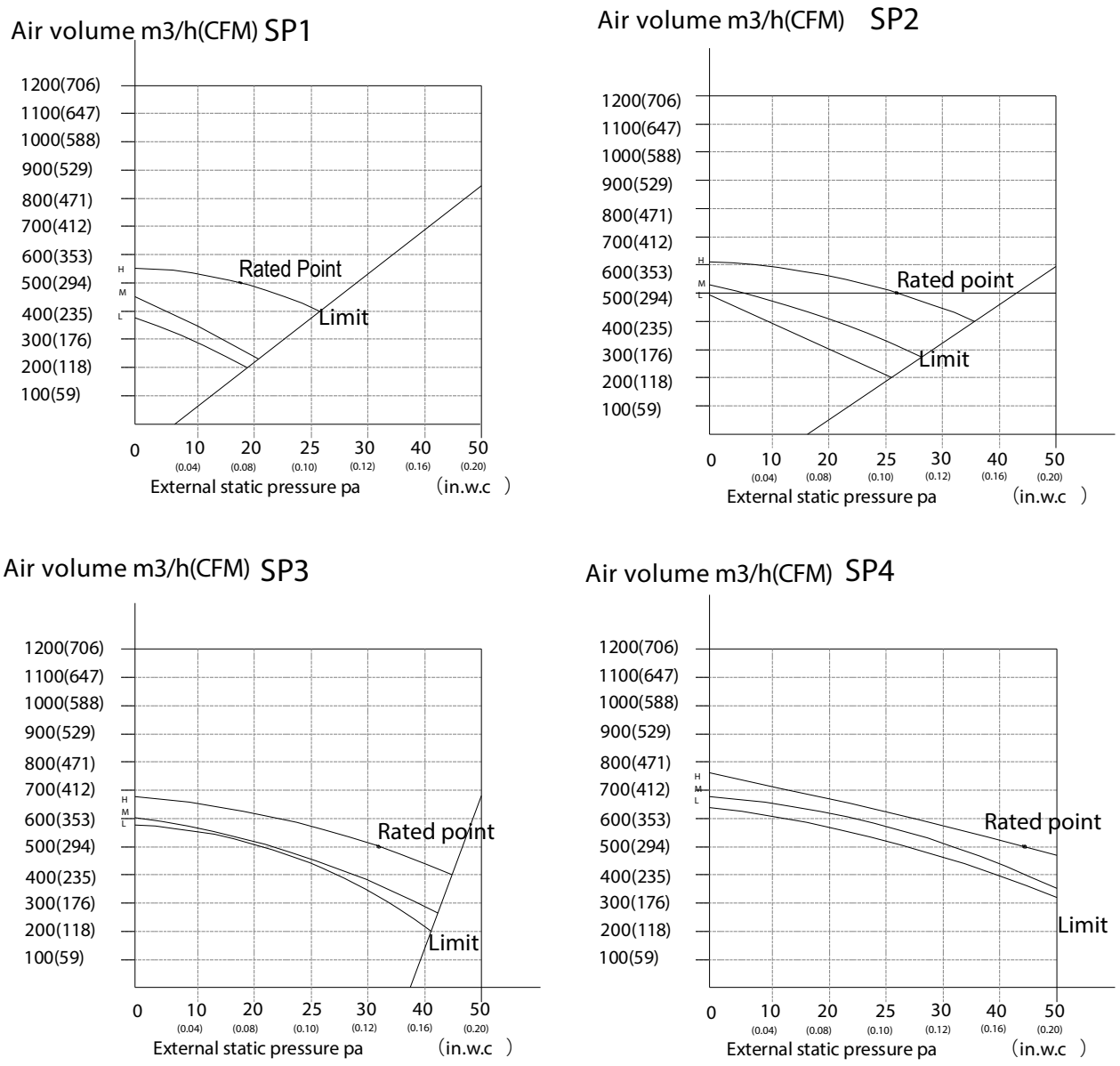


Fig. 15 — Size 9

FAN PERFORMANCES AT VARYING STATIC PRESSURES (CONT)

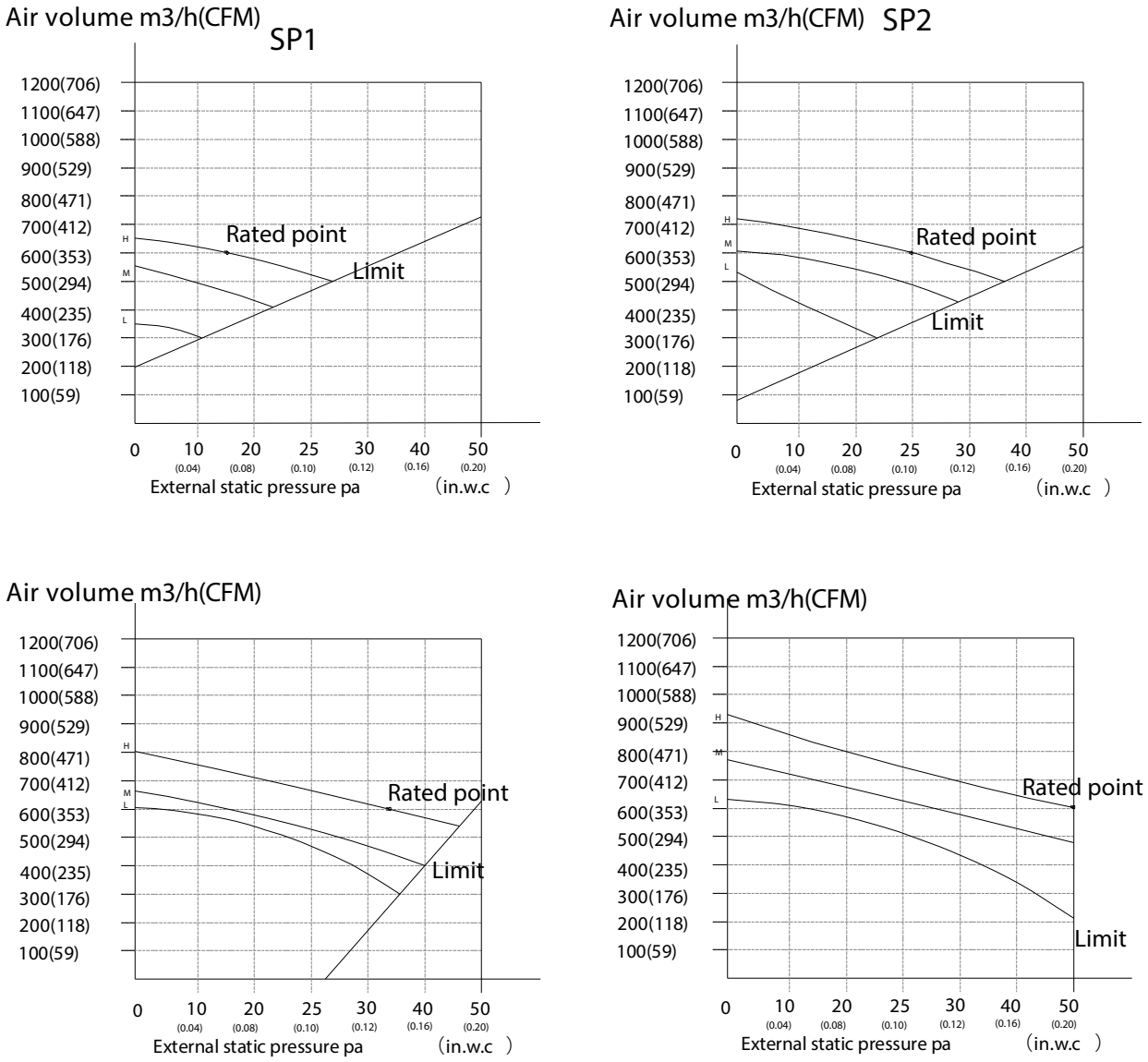


Fig. 16 — Size 12

FAN PERFORMANCES AT VARYING STATIC PRESSURES (CONT)

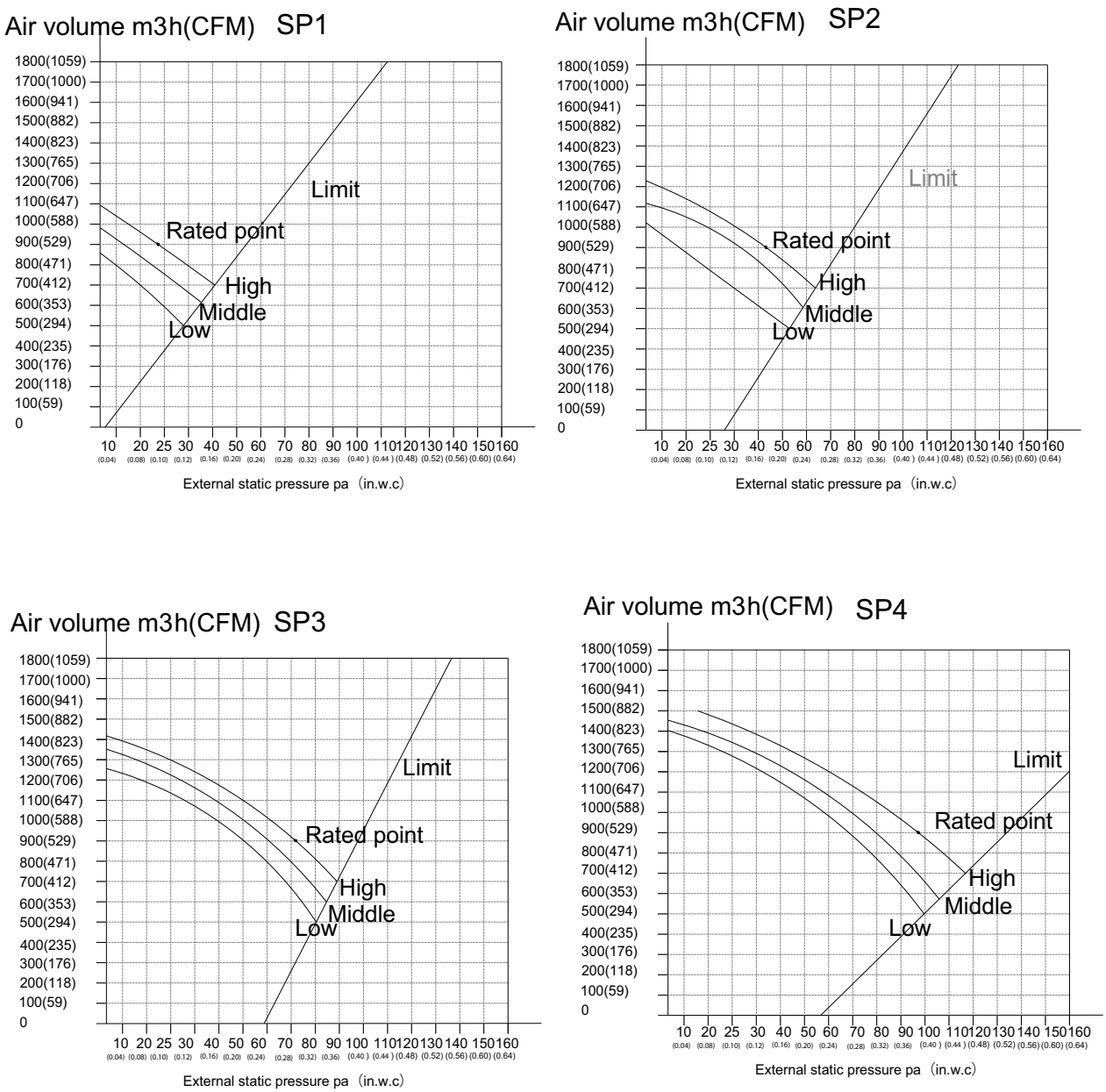


Fig. 17 — Size 18

FAN PERFORMANCES AT VARYING STATIC PRESSURES (CONT)

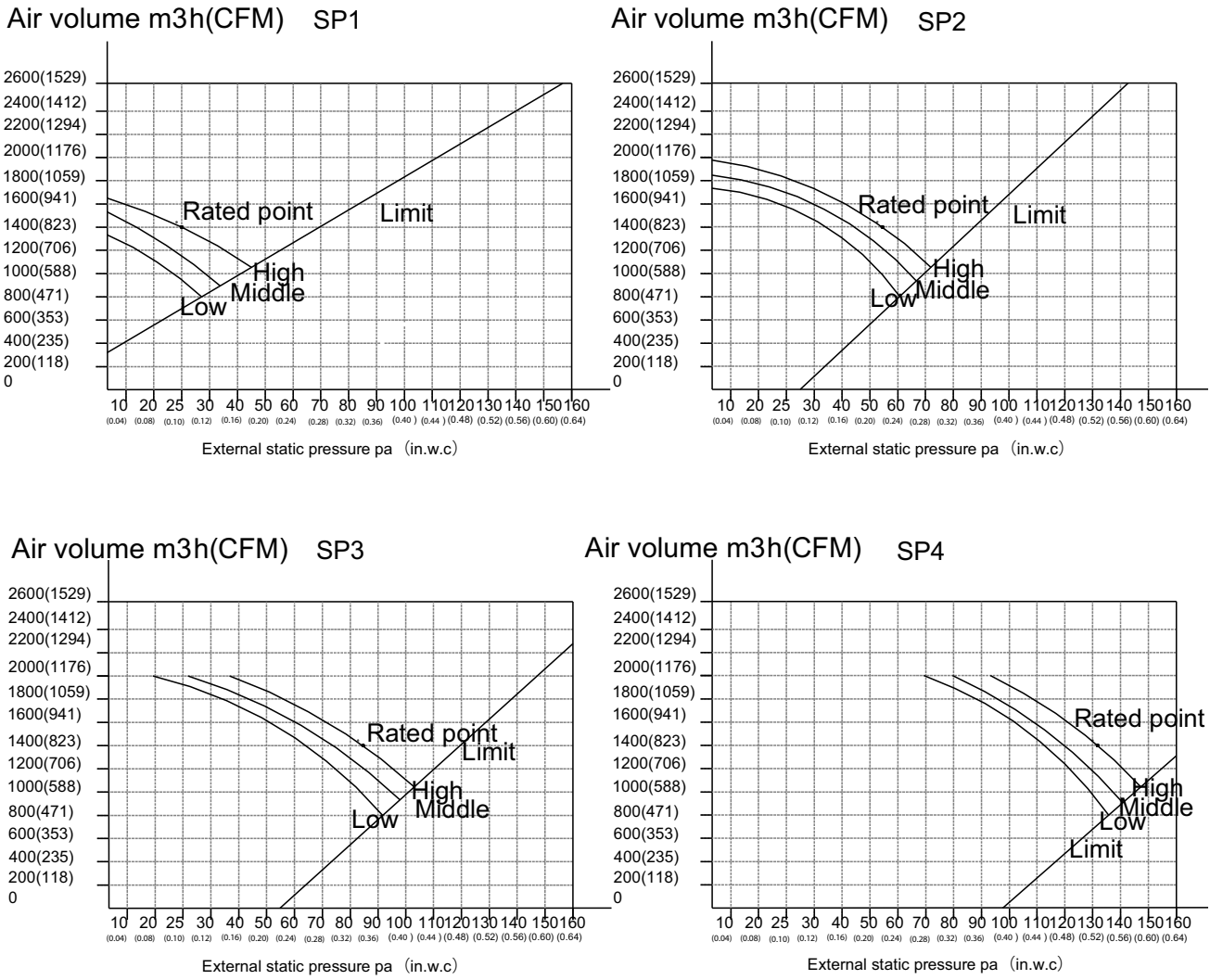


Fig. 18 — Size 24

FAN PERFORMANCES AT VARYING STATIC PRESSURES (CONT)

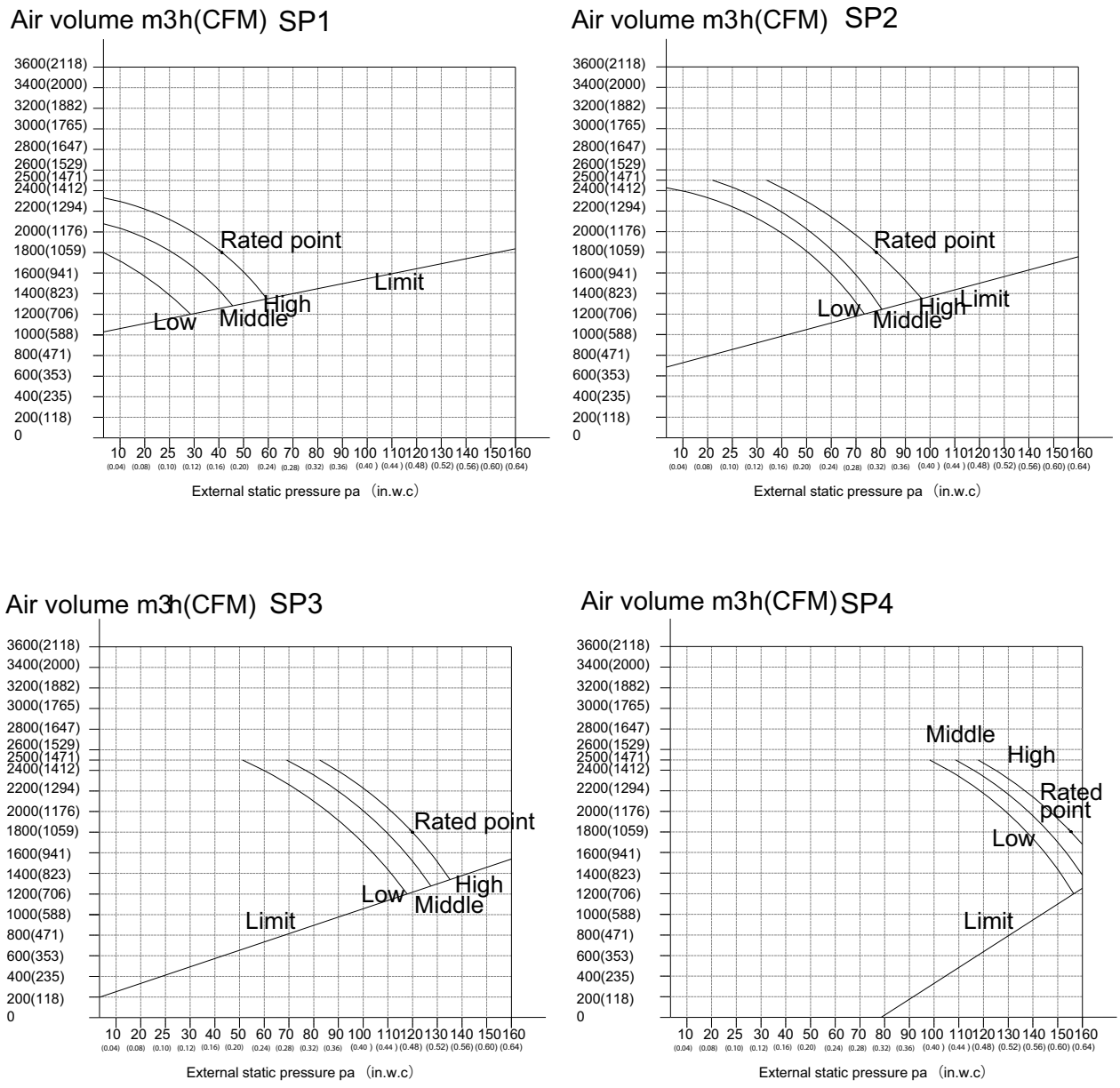
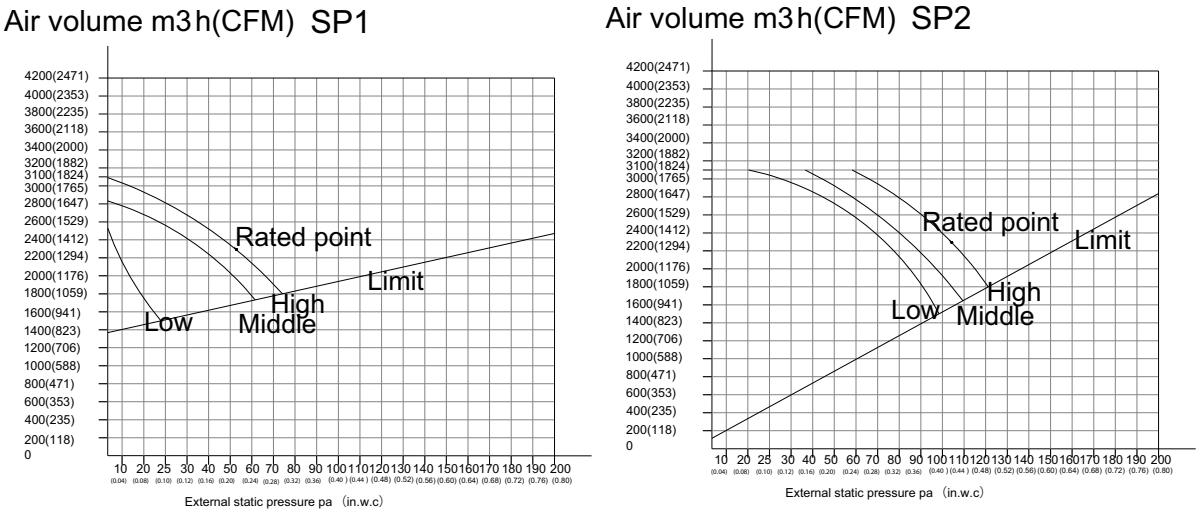


Fig. 19 — Size 36

FAN PERFORMANCES AT VARYING STATIC PRESSURES (CONT)



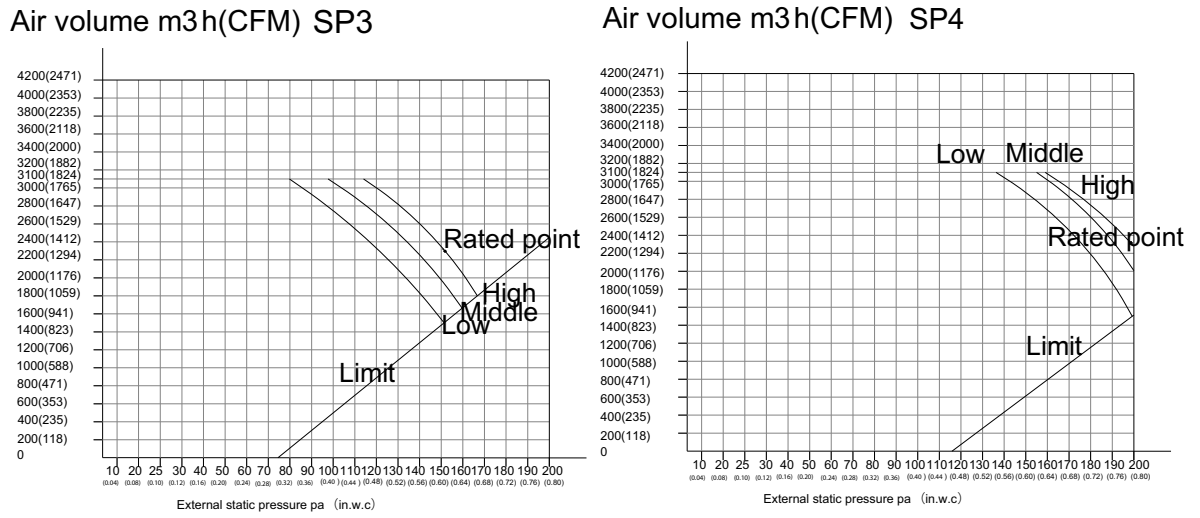


Fig. 20 — Size 48

FAN PERFORMANCES AT VARYING STATIC PRESSURES (CONT)

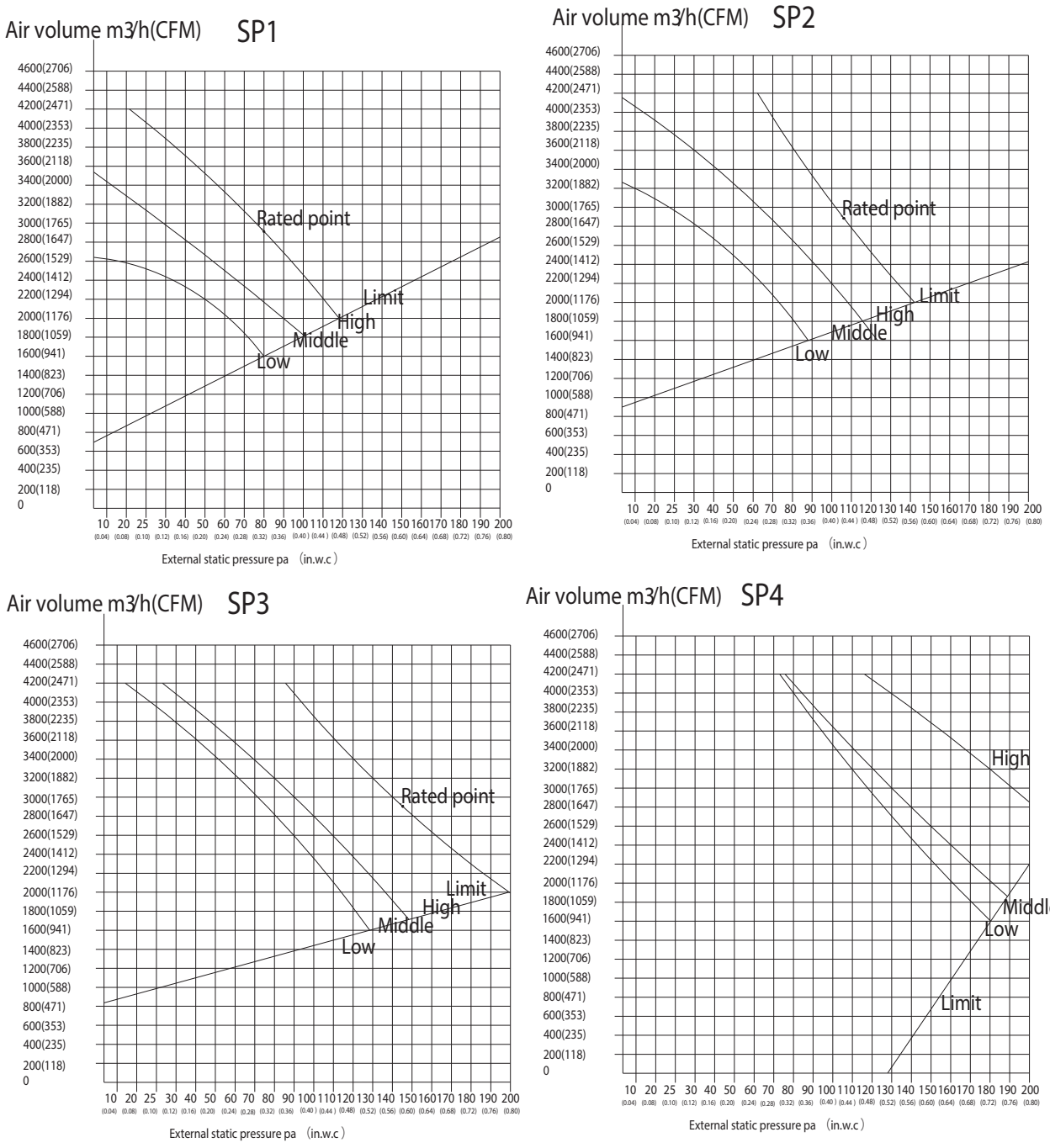


Fig. 21 — Size 58

WIRING DIAGRAMS

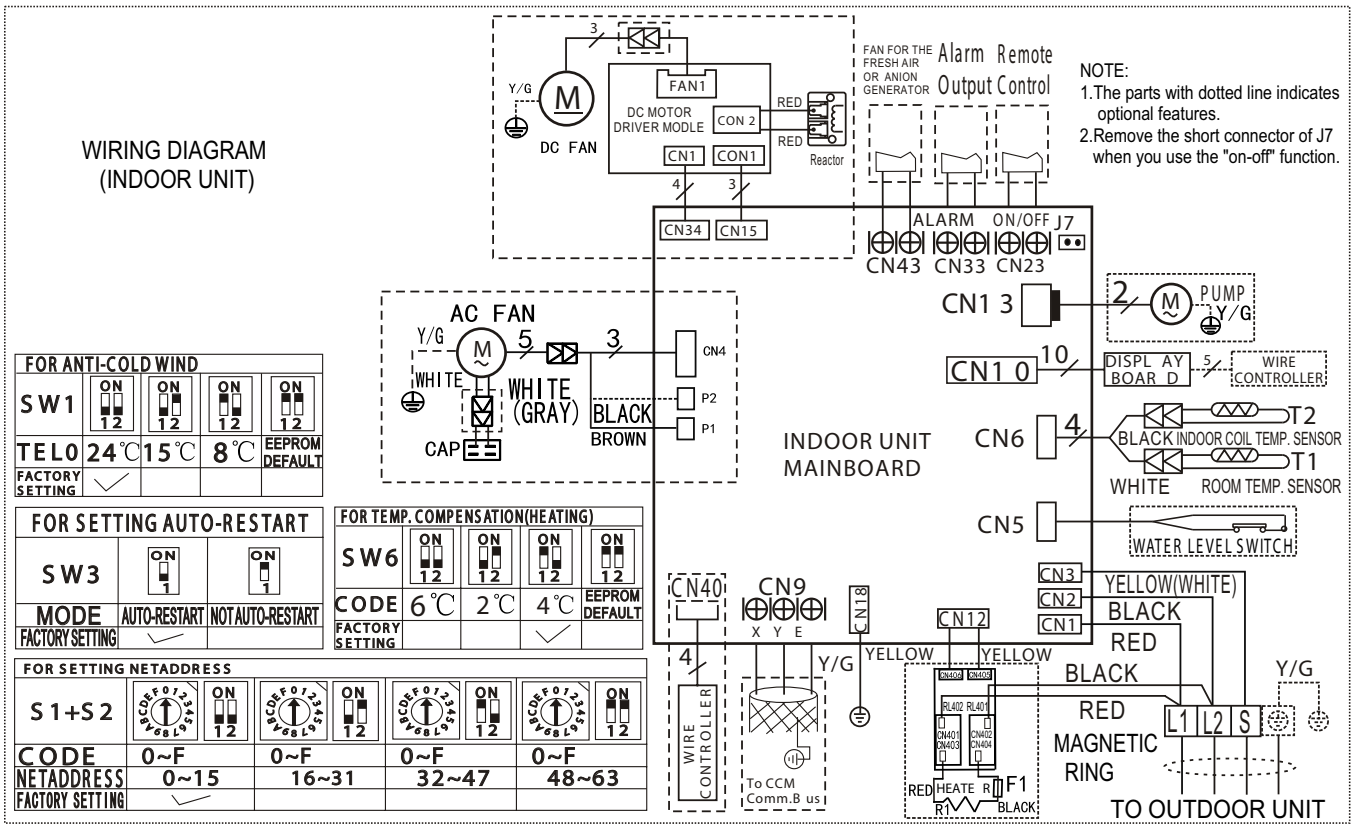


Fig. 22 — Wiring Diagram Sizes 9K - 24K

INDOOR UNIT	
CODE	**PART NAME**
CN1	Input: 230VAC High Voltage Connection of the terminal
CN2	Input: 230VAC High Voltage Connection of the terminal
CN3/CN26	Output: 0V Connection to the earth
CN5	Output: 0-5VDC Connection of the water level switch
CN6	Output: 5VDC Connection of the room and pipe temperature
CN8/CN18	Output: 320VDC High Voltage Connection of the reactor
CN9	Output: 5VDC Connection of the CCM
CN10(CN10A)	Output: 12VDC Connection of the display board
CN12	Output: 220VAC High Voltage Connection of the electrical heater
CN13	Output: 220VAC High Voltage Connection of the pump
CN15	Output: 320VDC High Voltage Connection of the fan board
CN23	Output 1 - 12VDC Connection of the remote switch
CN33	Output: 0V Connection of the alarm
CN40	Output: 12VDC Connection of the wire controller
CN43	Output: 220VAC High Voltage Connection of the fresh air suction fan

WIRING DIAGRAMS (CONT)

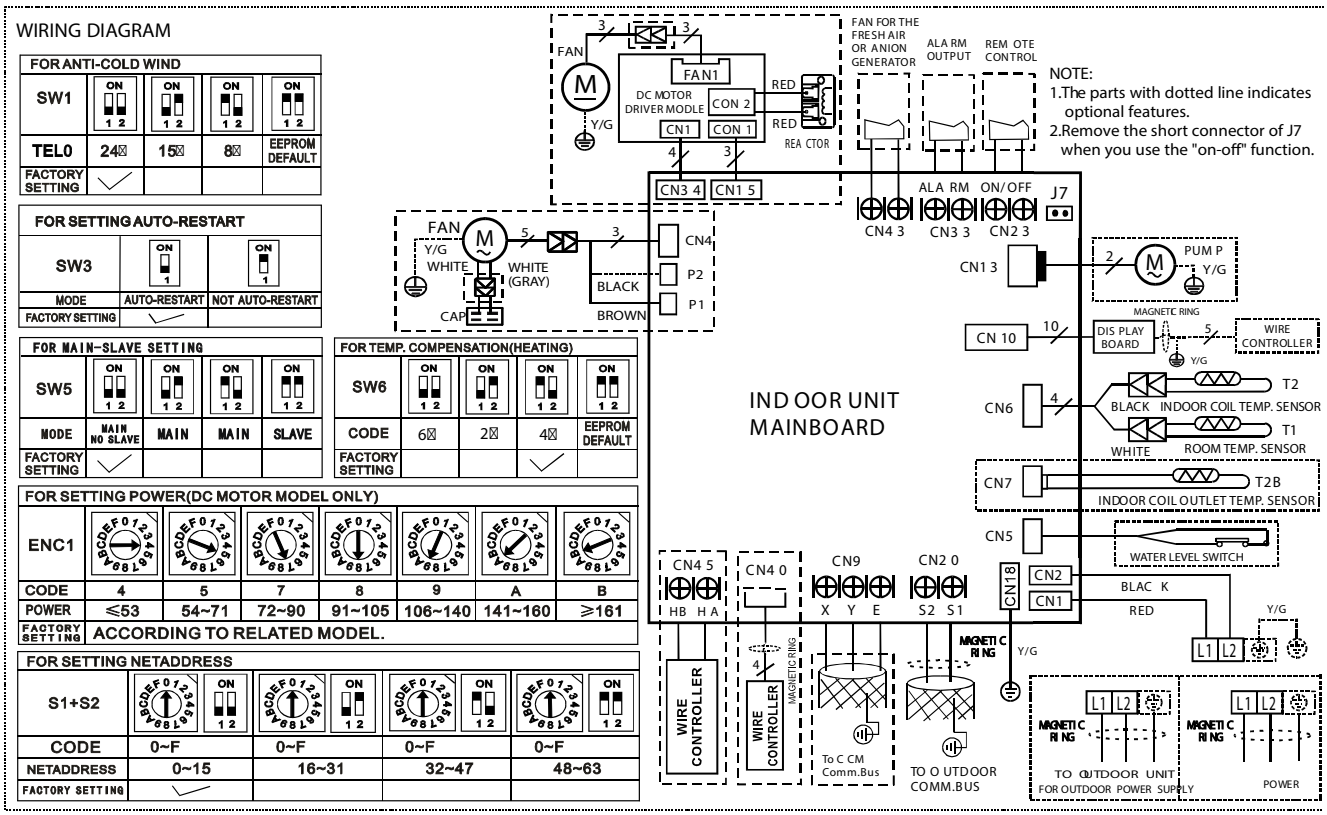


Fig. 23 — Wiring Diagram Sizes 36K - 48K

INDOOR UNIT	
CODE	**PART NAME**
CN1	Input: 230VAC High Voltage Connection of the terminal
CN2	Input: 230VAC High Voltage Connection of the terminal
CN5	Output: 0-5VDC Connection of the water level switch
CN6	Output: 5VDC Connection of the room and pipe temperature
CN8/CN18	Output: 320VDC High Voltage Connection of the reactor
CN9	Output: 5VDC Connection of the CCM
CN10(CN10A)	Output: 12VDC Connection of the display board
CN13	Output: 220VAC High Voltage Connection of the pump
CN15	Output: 320VDC High Voltage Connection of the fan board
CN23	Output 1 - 12VDC Connection of the remote switch
CN33	Output: 0V Connection of the alarm
CN40	Output: 12VDC Connection of the wire controller
CN43	Output: 220VAC High Voltage Connection of the fresh air suction fan

WIRING DIAGRAMS (CONT)

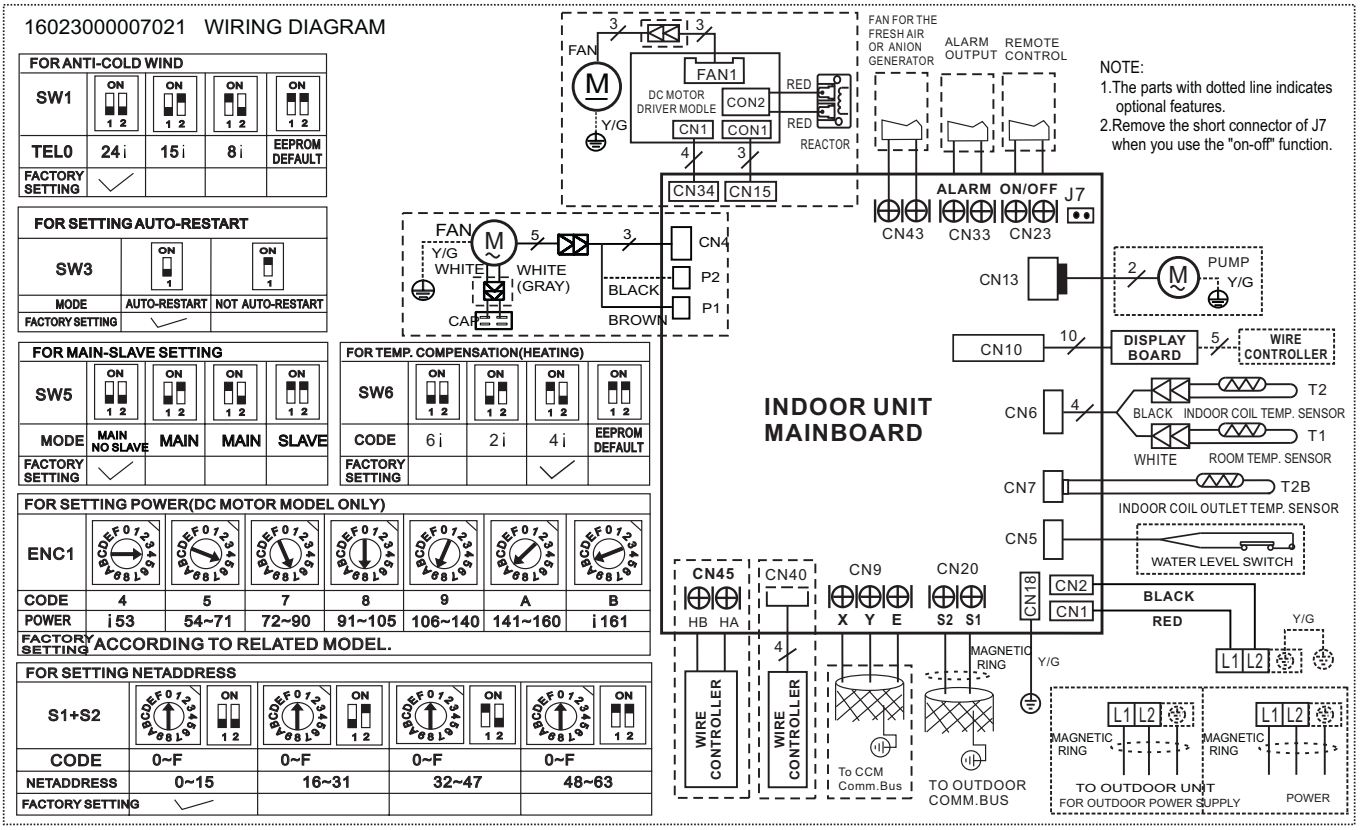


Fig. 24 — Wiring Diagram Size 58K

INDOOR UNIT	
CODE	**PART NAME**
CN1	Input: 230VAC High Voltage Connection of the terminal
CN2	Input: 230VAC High Voltage Connection of the terminal
CN3/CN26	Output: 0V Connection of the earth
CN5	Output: 0-5VDC Connection of the water level switch
CN6	Output: 5VDC Connection of the room and pipe temperature
CN7	Output: 5VDC Connection of the indoor coil outlet temperature sensor T2B
CN8/CN18	Output: 320VDC High Voltage Connection of the reactor
CN9	Output: 5VDC Connection of the CCM
CN10(CN10A)	Output: 12VDC Connection of the display board
CN13	Output: 220VAC High Voltage Connection of the pump
CN15	Output: 320VDC High Voltage Connection of the fan board
CN23	Output 1 - 12VDC Connection of the remote switch
CN33	Output: 0V Connection of the alarm
CN20	Output: 24VDC between CN2 Connection of the S signal
CN41	Output: 24VDC between CN2 Connection of the S signal
CN43	Output: 220VAC High Voltage Connection of the fresh air suction fan

Part 1 - GENERAL

1.01 System Description

Indoor, slim ducted, direct-expansion fan coils are matched with a heat pump outdoor unit.

1.02 Agency Listings

Unit is rated per AHRI Standards 210/240 and listed in the AHRI directory as a matched system.

1.03 Delivery, Storage, And Handling

Units are stored and handled per the unit manufacturer's recommendations.

1.04 Warranty (For Inclusion By Specifying Engineer)

Part 2 - PRODUCTS

2.01 Equipment

A. General:
Indoor, direct-expansion, ceiling-mounted fan coil. The unit is complete with cooling/heating coil, fan, fan motor, piping connectors, electrical controls, microprocessor control system, and integral temperature sensing.

B. Unit Cabinet:
Unit cabinet is constructed of galvanized steel. The cabinet is fully insulated for improved thermal and acoustic performance.

C. Fans:
The fan is the tangential direct-drive blower type with air intake at the rear or bottom of the unit and discharge at the front.

D. Coil:
The coil is a copper tube with aluminum fins and galvanized steel tube sheets. The fins are bonded to the tubes by mechanical expansion and specially hydrophilic pre-coated for enhanced wet-ability. A drip pan under the coil has a factory installed condensate pump and drain connection for hose attachment to remove condensate.

E. Motors:
The motors have an open drip-proof, permanently lubricated ball bearing with inherent overload protection. Fan motors are 3-speed.

F. Controls:
The controls consist of a microprocessor-based control system which controls the space temperature, determines optimum fan speed, and runs self diagnostics. The temperature control range is 62°F to 86°F (17°C to 30°C) in increments of 1°F or 1°C, and has a 46°F **HEATING** mode (**HEATING** setback). The wireless remote controller can serve as the temperature sensing location for room comfort.

The unit has the following functions (at a minimum):

1. An automatic restart, after a power failure, which sets the unit back to the same operating conditions it operated under at time of failure.
2. A timer function to provide a minimum 24−hour timer cycle for system Auto Start/Stop.
3. Temperature−sensing controls sense return air temperature.
4. Indoor coil freeze protection.
5. Wireless infrared remote controller to enter set points and operating conditions.
6. **DEHUMIDIFICATION** mode provides increased latent removal capability by modulating system operation and set point temperature.
7. **FAN−ONLY** operation to provide room air circulation when cooling is not required.
8. Diagnostics provide continuous checks of unit operation and warns of possible malfunctions. Error messages appear on the unit.
9. The fan speed control is user−selectable: high, medium, low, or microprocessor controlled automatic operation during all operating modes.
10. Automatic heating−to−cooling changeover in the **HEAT** pump mode. The control includes deadband to prevent rapid mode cycling between heating and cooling.
11. Indoor coil high temperature protection is provided to detect an excessive indoor discharge temperature when the unit is in the **HEAT** pump mode.

G. Electrical Requirements:
The indoor fan motor operates on 208-230V. Power is supplied from the outdoor unit.

H. Operating Characteristics:
The 40MBDQ system has a minimum SEER (Seasonal Energy Efficiency Ratio) and HSPF at AHRI conditions, as listed on the specifications table.

I. Refrigerant Lines:
All units have refrigerant lines that can be oriented to connect from the side of the unit. Both refrigerant lines must be insulated.

2020 Carrier Corporation • 3300 Riverwood Parkway Atlanta GA, 30339 Edition Date: 04/20 Catalog No. 40MBDQ-04PD

 Replaces: 40MBDQ-03PD

38MBR
Outdoor Unit Single Zone Ductless System
Sizes 36 to 58

Carrier
turn to the experts

Product Data

Fig. 1 – Size 36

Fig. 2 – Sizes 48 and 58

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 38MBR 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 style ductless 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 38MBR 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 38MBR 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 38MBR 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 ETL certified per UL 1995 standard.

MODEL NUMBER NOMENCLATURE

OUTDOOR UNIT

38	MB	R	Q	36	A	– –	3

38 = OUTDOOR UNIT

MB = MODEL

UNIT TYPE:
R = OUTDOOR UNIT

SYSTEM TYPE:
Q = HEAT PUMP

NOMINAL CAPACITY
36 – 3 TONS
48 – 4 TONS
58 – 5 TONS

VOLTAGE
3 = 208/230–1–60

NOT USED

MAXIMUM NUMBER OF FAN COIL UNITS THAT CAN BE CONNECTED TO THE OUTDOOR UNIT

A = 1:1

AHRI CERTIFIED™ www.ahridirectory.org

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.

INTERTEK ETL LISTED C US

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
Over Current Protection For Compressor	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 Per Unit	Base Pan Base Rubber Plugs RCD Part Number	Quantity
38MBRQ36A−−3	12600801A00117	**5**
38MBRQ48A−−3	12600801A00118	**5**
38MBRQ58A−−3	12600801A00118	**5**

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

OUTDOOR UNITS

Crankcase Heater

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

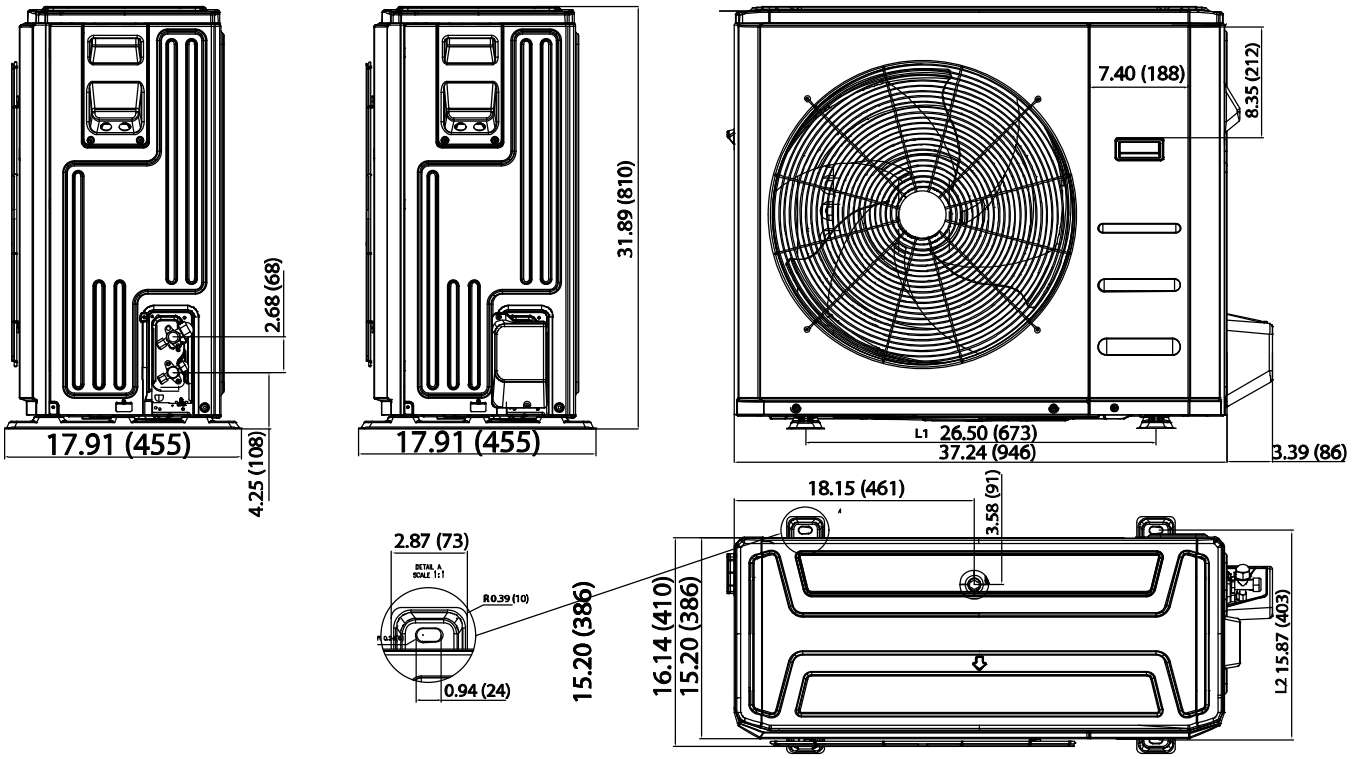


Fig. 3 – Size 36K

UNIT SIZE	WIDTH in (mm)	DEPTH in (mm)	HEIGHT in (mm)	L1 in (mm)	L2 in (mm)	OPERATING WEIGHT lb (kg)
36K	37.24 (946)	16.14 (410)	31.89 (810)	26.50 (673)	15.87 (403)	148.59 (67.4)

DIMENSIONS − (CONT)

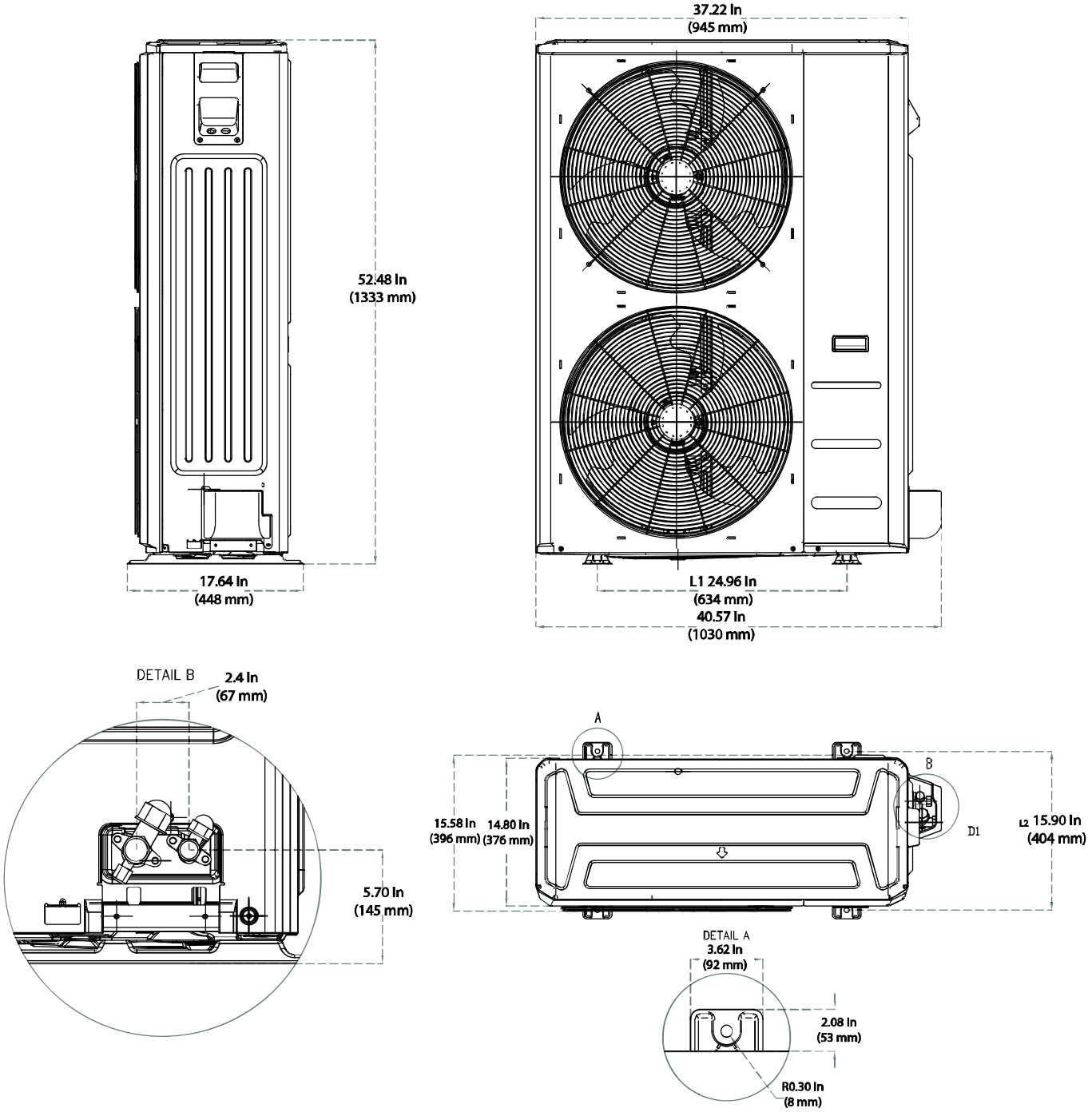


Fig. 4 – Sizes 48K−58K

UNIT SIZE	WIDTH in (mm)	DEPTH in (mm)	HEIGHT in (mm)	L1 in (mm)	L2 in (mm)	OPERATING WEIGHT lb (kg)
48K	37.22 (945)	15.58 (396)	52.48 (1333)	24.96 (634)	15.90 (404)	217.4 (98.6)
58K	37.22 (945)	15.58 (396)	52.48 (1333)	24.96 (634)	15.90 (404)	225.09 (102.1)

CLEARANCES

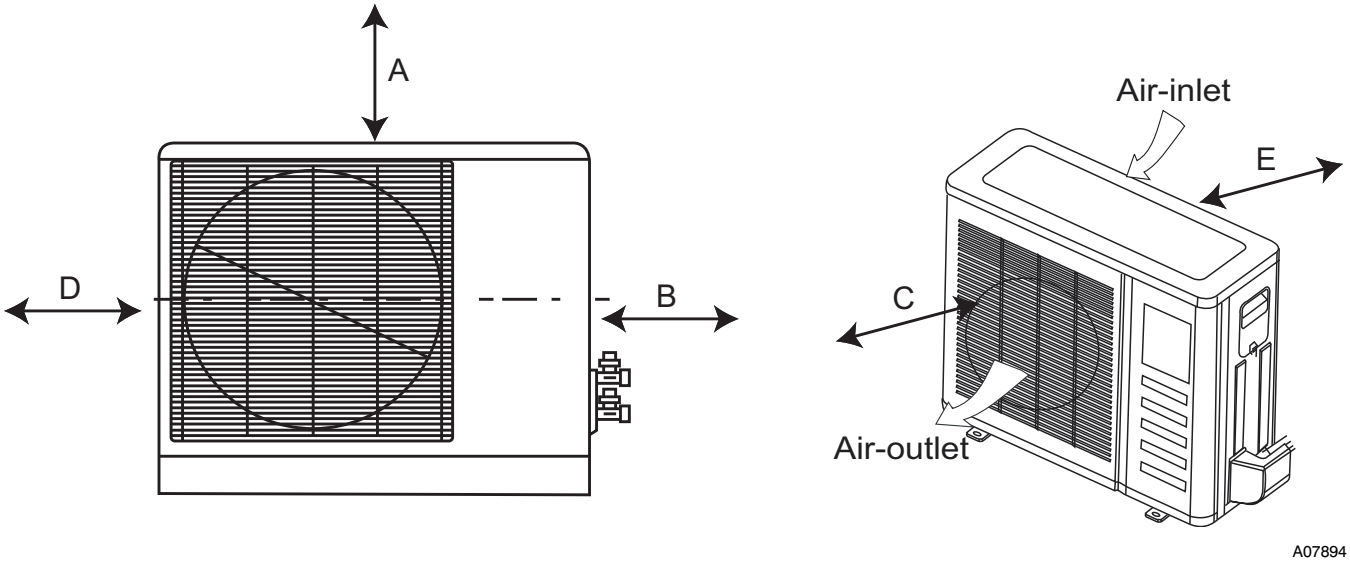


Fig. 5 – Outdoor Unit Clearance

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

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

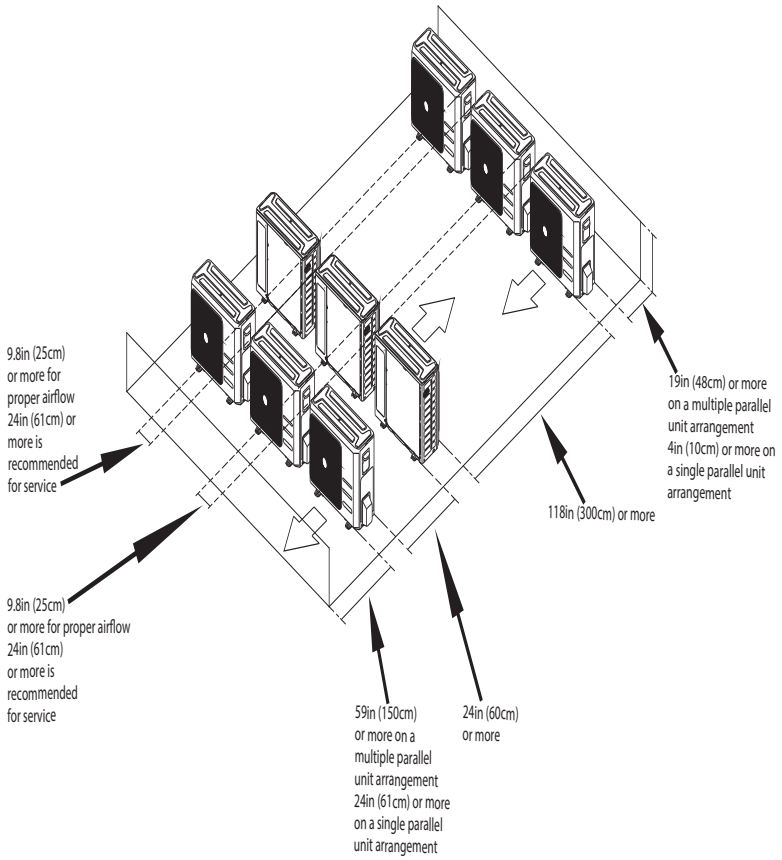


Fig. 6 – Clearances for multiple units

SPECIFICATIONS − OUTDOOR HEAT PUMP

System	**Size**		**36**	**48**	**58**
	Outdoor Model		38MBRQ36A−−3	38MBRQ48A−−3	38MBRQ58A−−3
Electrical	Voltage, Phase, Cycle	V/Ph/Hz	208/230−1−60	208/230−1−60	208/230−1−60
	MCA	A.	30	35	35
	MOCP − Fuse Rating	A.	50	50	50
Operating Range	Cooling Outdoor DB Min − Max	° F (° C)	−13~122 (−25~50)	−13~122 (−25~50)	−13~122 (−25~50)
	Heating Outdoor DB Min − Max	° F (° C)	−22~86 (−30~30)	−22~86 (−30~30)	−22~86 (−30~30)
Piping	Total Piping Length	ft (m)	213 (65)	213 (65)	213 (65)
	Piping Lift*	ft (m)	98 (30)	98 (30)	98 (30)
	Pipe Connection Size − Liquid	in (mm)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)
	Pipe Connection Size − Suction	in (mm)	5/8 (16)	5/8 (16)	3/4 (19)
Refrigerant	Type		R410A	R410A	R410A
	Charge	lbs (kg)	6.72 (3.05)	9.26 (4.2)	10.19 (4.62)
	Metering Device		EEV	EEV	EEV
Outdoor Coil	Face Area	Sq. Ft.	8.0	13.6	13.3
	No. Rows		2	2	3
	Fins per inch		18	18	18
	Circuits		4	8	14
Compressor	Type		Rotary Inverter	Rotary Inverter	Rotary Inverter
	Model		ATF310D43UMT	ATQ420D1UMU	ATQ420D1UMU
	Oil Type		ESTER OIL VG74	ESTER OIL VG74	ESTER OIL VG74
	Oil Charge	Fl. Oz.	28.2	39.5	39.5
	Rated Current	RLA	8.9	11.9	11.9
Outdoor	Unit Width	in (mm)	37.24 (946)	37.48 (952)	37.48 (952)
	Unit Height	in (mm)	31.89 (810)	52.48 (1333)	52.48 (1333)
	Unit Depth	in (mm)	16.14 (410)	16.34 (415)	16.34 (415)
	Net Weight	lbs (kg)	148.59 (67.4)	217.4 (98.6)	225.09 (102.1)
	Airflow	CFM	2,130	4,500	4,415
	Sound Pressure	dB(A)	63.0	62.5	64.0

* Condensing unit above or below indoor unit

COMPATIBILITY

INDOOR UNIT		**OUTDOOR UNIT**		
		38MBRQ36A−−3	38MBRQ48A−−3	38MBRQ58A−−3
Cassette	40MBCQ36−−−3	•		
	40MBCQ48−−−3		•	
Ducted	40MBDQ36−−−3	•		
	40MBDQ48−−−3		•	
	40MBDQ58−−−3			•
Console	40MBFQ36−−−3	•		
	40MBFQ48−−−3		•	
	40MBFQ58−−−3			•

NOTE: Backward compatible with 40MBQB*D Ducted Systems.

PERFORMANCE − CASSETTE

Cassette	Indoor Model		40MBCQ36−−−3	40MBCQ48−−−3
	Energy Star		NO	NO
	Cooling System Tons		3.0	4.0
	Cooling Rated Capacity	Btu/h	36,000	48,000
	Cooling Cap. Range Min − Max	Btu/h	8,500~38,000	9,000~50,000
	SEER		17.5	16.8
	EER		9	9.5
	Heating Rated Capacity (47°F)	Btu/h	38,000	50,000
	Heating Rated Capacity (17°F)	Btu/h	25,200	35,000
	Heating Capacity (5°F)	Btu/h	25,300	34,000
	Heating Cap. Range Min − Max	Btu/h	9,500~50,000	10,000~55,000
	HSPF		10.5	11.0
	COP (47°F)	W/W	3	3.6
	COP (17°F)	W/W	2.46	2.62
	COP (5°F)	W/W	1.71	1.84

PERFORMANCE − DUCTED

Ducted	Indoor Model		40MBDQ36−−−3	40MBDQ48−−−3	40MBDQ58−−−3
	Energy Star		NO	NO	NO
	Cooling System Tons		3.0	4.0	4.8
	Cooling Rated Capacity	Btu/h	36,000	48,000	57,000
	Cooling Cap. Range Min − Max	Btu/h	8,500~38,000	9,000~50,000	18,000−58,000
	SEER		16.5	17.4	18
	EER		9	9.2	10
	Heating Rated Capacity (47°F)	Btu/h	40,000	49,500	62,000
	Heating Rated Capacity (17°F)	Btu/h	27,600	33,400	37,600
	Heating Capacity (5°F)	Btu/h	25,300	34,000	35,000
	Heating Cap. Range Min − Max	Btu/h	9,500~50,000	10,000~55,000	12,000−63,000
	HSPF		11.5	10.3	9.0
	COP (47°F)	W/W	3	3.6	3.6
	COP (17°F)	W/W	2.46	2.62	2.62
	COP (5°F)	W/W	1.71	1.84	1.91

PERFORMANCE − CONSOLE

Console	Indoor Model		40MBFQ36−−−3	40MBFQ48−−−3	40MBFQ58−−−3
	Energy Star		NO	NO	NO
	Cooling System Tons		3.0	4.0	4.5
	Cooling Rated Capacity	Btu/h	36,000	48,000	54,000
	Cooling Cap. Range Min − Max	Btu/h	8,500~38,000	9,000~50,000	18,000−58,000
	SEER		16	17.8	18
	EER		8	9.3	9.8
	Heating Rated Capacity (47°F)	Btu/h	38,000	50,000	60,000
	Heating Rated Capacity (17°F)	Btu/h	25,400	35,000	39,000
	Heating Capacity (5°F)	Btu/h	25,300	34,000	35,000
	Heating Cap. Range Min − Max	Btu/h	9,500~50,000	10,000~55,000	12,000−63,000
	HSPF		10.0	11.0	10.5
	COP (47°F)	W/W	3	3.6	3.6
	COP (17°F)	W/W	2.46	2.62	2.62
	COP (5°F)	W/W	1.71	1.84	1.91

COOLING PERFORMANCE DATA − CASSETTE

Model	Cooling			Outdoor Conditions (DB)											
	Indoor Conditions DB			−13F (−25C)	−4F (−20C)	0F (−17C)	5F (−15C)	17F (−8C)	47F (8C)	77F (25C)	86F (30C)	95F (35C)	104F (40C)	113F (45C)	122F (50C)
	DB	WB													
36 (208−230V)	69.8F (21C)	59F (15C)	TC	39.08	40.29	35.08	34.44	32.06	28.95	30.14	29.87	27.33	23.40	16.86	13.93
			SC	27.46	28.31	25.68	25.22	23.52	22.41	22.67	22.56	21.49	19.54	16.56	11.95
			Input	3.29	3.43	2.00	1.74	1.69	1.46	2.58	3.48	3.62	3.20	2.37	1.99
	75.2F (24C)	62.6F (17C)	TC	41.21	42.49	46.07	45.00	46.84	30.64	32.44	32.20	29.49	25.16	18.30	15.50
			SC	28.88	29.77	31.29	31.56	33.58	23.90	24.31	24.18	23.12	21.09	18.02	13.73
			Input	3.55	3.70	3.09	3.31	3.46	1.49	2.62	6.52	3.70	3.26	2.39	2.00
	80.6F (27C)	66.2F (19C)	TC	48.57	50.07	48.72	47.41	49.52	32.60	34.99	34.89	36.86	27.18	19.91	16.96
			SC	32.38	33.38	32.61	32.08	46.29	25.38	25.84	25.78	26.73	22.62	19.45	15.37
			Input	2.98	3.11	3.29	3.29	3.48	1.52	2.67	3.35	3.78	3.31	2.41	1.98
	89.6F (32C)	73.4F (23C)	TC	52.85	54.49	53.63	52.23	53.96	38.45	40.82	39.88	38.41	31.62	22.96	18.45
			SC	32.46	33.46	33.06	32.71	50.56	27.12	27.35	26.98	27.50	24.13	21.04	18.29
			Input	3.49	3.64	3.73	3.45	3.53	2.70	2.77	3.59	3.95	3.43	2.43	2.55
48 (208−230V)	69.8F (21C)	59F (15C)	TC	42.19	43.49	46.27	46.56	53.19	51.17	47.34	44.97	41.93	31.32	25.08	19.83
			SC	30.78	31.73	33.05	33.13	36.38	35.26	33.36	32.30	30.79	25.81	22.88	19.49
			Input	3.15	3.28	3.46	3.51	3.20	3.64	4.74	5.10	5.21	3.63	3.33	3.15
	75.2F (24C)	62.6F (17C)	TC	44.51	45.89	48.82	49.65	56.96	52.38	49.37	48.10	45.14	33.86	28.26	21.92
			SC	32.19	33.18	34.57	34.98	38.40	36.28	34.09	34.19	32.73	27.80	25.27	21.48
			Input	3.30	3.44	3.62	3.64	3.35	3.55	4.70	5.16	5.29	3.66	3.37	3.18
	80.6F (27C)	66.2F (19C)	TC	47.66	49.13	52.27	54.00	60.60	53.28	51.14	50.11	48.44	37.42	27.46	27.12
			SC	33.74	34.78	36.23	37.15	60.58	36.77	35.86	35.40	34.27	31.58	25.66	26.42
			Input	3.43	3.57	3.76	3.76	3.48	3.55	4.77	5.21	5.35	3.68	3.41	3.78
	89.6F (32C)	73.4F (23C)	TC	53.00	54.64	58.13	60.55	66.57	62.30	52.17	51.79	49.13	36.21	34.64	31.87
			SC	33.61	34.65	36.09	37.99	40.18	38.52	34.43	34.34	31.75	29.68	22.74	28.46
			Input	3.42	3.56	3.74	3.98	3.69	4.06	4.80	5.27	5.52	3.16	1.51	3.85

LEGEND
DB − Dry Bulb
WB − Wet Bulb
TC − Total Net Capacity (1000 Btu/hour)
SC − Sensible Capacity (1000 Btu/hour)
Input − Total Power (kW)

HEATING PERFORMANCE DATA − CASSETTE

Model	Heating			Outdoor Conditions (DB)											
	Indoor Conditions DB			−22F (−30C)	−13F (−25C)	−4F (−20C)	0F (−17C)	5F (−15C)	17F (−8C)	19.4F (−7C)	24.8F (−4C)	32F (0C)	39.2F (4C)	44.6F (7C)	53.6F (12C)
36 (208−230V)	59F (15C)		TC	14.51	18.12	21.60	25.47	25.96	29.58	27.92	32.37	34.88	37.44	39.89	40.33
			Input	3.15	3.26	3.34	3.37	3.39	3.32	3.08	3.36	3.39	3.07	3.05	2.72
			COP	1.35	1.63	1.89	2.21	2.25	2.61	2.66	2.82	3.01	3.58	3.83	4.34
	64.4F (18C)		TC	15.43	19.25	22.71	22.15	25.66	29.93	30.97	33.18	35.60	36.37	40.98	39.05
			Input	2.94	3.11	3.36	3.15	3.43	3.52	3.32	3.43	3.45	3.20	3.27	2.84
			COP	1.54	1.82	1.98	2.06	2.19	2.49	2.74	2.83	3.02	3.33	3.68	4.03
	69F (20.5C)		TC	15.20	19.11	22.39	23.90	25.19	30.49	30.39	33.04	34.70	36.23	40.14	38.20
			Input	2.94	3.22	3.47	3.59	3.53	3.56	3.42	3.57	3.56	3.34	3.38	2.94
			COP	1.52	1.74	1.89	1.95	2.09	2.51	2.60	2.71	2.86	3.18	3.48	3.81
	71.6F (22C)		TC	12.24	14.74	17.76	19.64	20.81	25.76	26.93	29.90	32.62	36.64	39.90	38.00
			Input	2.25	2.41	2.58	2.68	2.75	2.89	2.96	3.10	3.25	3.46	3.47	3.09
			COP	1.59	1.79	2.02	2.15	2.21	2.61	2.67	2.82	2.95	3.10	3.37	3.60
48 (208−230V)	59F (15C)		TC	20.68	26.76	33.02	28.15	39.50	46.28	46.40	49.18	56.48	61.03	57.65	57.16
			Input	5.01	5.15	5.13	4.43	5.37	5.45	5.21	5.82	5.4	5.48	4.93	4.2
			COP	1.21	1.52	1.89	1.86	2.16	2.49	2.61	2.48	3.07	3.26	3.43	3.99
	64.4F (18C)		TC	21.03	27.27	32.23	35.93	37.90	47.55	46.77	49.71	55.46	60.17	56.59	55.71
			Input	5	5.14	5.29	5.56	5.47	5.61	5.31	5.72	5.62	5.7	5.16	4.39
			COP	1.23	1.56	1.79	1.9	2.03	2.48	2.58	2.55	2.89	3.09	3.21	3.72
	69F (20.5C)		TC	21.36	27.76	31.52	35.38	36.91	45.68	45.87	50.60	54.40	58.94	56.11	54.67
			Input	4.90	5.01	5.52	5.75	5.68	5.68	5.46	5.56	5.81	5.89	5.39	4.55
			COP	1.28	1.63	1.67	1.80	1.90	2.36	2.46	2.67	2.74	2.93	3.05	3.52
	71.6F (22C)		TC	20.98	27.07	31.53	34.80	36.40	45.13	44.36	51.88	53.86	56.93	55.91	60.26
			Input	4.91	5.01	5.56	5.89	5.72	5.85	5.48	5.37	5.94	5.89	5.53	4.99
			COP	1.25	1.58	1.66	1.73	1.86	2.26	2.37	2.83	2.66	2.83	2.96	3.54

LEGEND
DB − Dry Bulb
WB − Wet Bulb
TC − Total Net Capacity (1000 Btu/hour)
Input − Total Power (kW)
COP − W/W

COOLING PERFORMANCE DATA − DUCTED

Model	Cooling			Outdoor Conditions (DB)											
	Indoor Conditions DB			−13F (−25C)	−4F (−20C)	0F (−17C)	5F (−15C)	17F (−8C)	47F (8C)	77F (25C)	86F (30C)	95F (35C)	104F (40C)	113F (45C)	122F (50C)
	DB	WB													
36 (208−230V)	69.8F (21C)	59F (15C)	TC	38.54	39.73	34.59	33.96	31.62	28.55	29.72	29.46	26.95	23.08	16.63	13.74
			SC	27.08	27.92	25.32	24.87	23.19	22.10	22.36	22.25	21.19	19.27	16.33	11.78
			Input	3.34	3.48	2.03	1.77	1.72	1.48	2.62	3.54	3.68	3.25	2.41	2.02
	75.2F (24C)	62.6F (17C)	TC	40.64	41.90	45.43	44.38	46.19	30.22	31.99	31.75	29.08	24.81	18.05	15.29
			SC	28.48	29.36	30.86	31.12	33.12	23.57	23.97	23.85	22.80	20.80	17.77	13.54
			Input	3.61	3.76	3.14	3.36	3.51	1.51	2.66	6.62	3.76	3.31	2.43	2.03
	80.6F (27C)	66.2F (19C)	TC	47.90	49.38	48.05	46.75	48.83	32.15	34.51	34.41	36.35	26.80	19.63	16.73
			SC	31.93	32.92	32.16	31.64	45.65	25.03	25.48	25.42	26.36	22.31	19.18	15.16
			Input	3.03	3.16	3.34	3.34	3.54	1.54	2.71	3.40	3.84	3.36	2.45	2.01
	89.6F (32C)	73.4F (23C)	TC	52.12	53.74	52.89	51.51	53.21	37.92	40.26	39.33	37.88	31.18	22.64	18.19
			SC	32.01	33.00	32.60	32.26	49.86	26.74	26.97	26.61	27.12	23.80	20.75	18.04
			Input	3.55	3.70	3.79	3.50	3.59	2.74	2.81	3.65	4.01	3.48	2.47	2.59
48 (208−230V)	69.8F (21C)	59F (15C)	TC	42.19	43.49	46.27	46.56	53.19	51.17	47.34	44.97	41.93	31.32	25.08	19.83
			SC	30.78	31.73	33.05	33.13	36.38	35.26	33.36	32.30	30.79	25.81	22.88	19.49
			Input	3.15	3.28	3.46	3.51	3.20	3.64	4.74	5.10	5.21	3.63	3.33	3.15
	75.2F (24C)	62.6F (17C)	TC	44.51	45.89	48.82	49.65	56.96	52.38	49.37	48.10	45.14	33.86	28.26	21.92
			SC	32.19	33.18	34.57	34.98	38.40	36.28	34.09	34.19	32.73	27.80	25.27	21.48
			Input	3.30	3.44	3.62	3.64	3.35	3.55	4.70	5.16	5.29	3.66	3.37	3.18
	80.6F (27C)	66.2F (19C)	TC	47.66	49.13	52.27	54.00	60.60	53.28	51.14	50.11	48.44	37.42	27.46	27.12
			SC	33.74	34.78	36.23	37.15	60.58	36.77	35.86	35.40	34.27	31.58	25.66	26.42
			Input	3.43	3.57	3.76	3.76	3.48	3.55	4.77	5.21	5.35	3.68	3.41	3.78
	89.6F (32C)	73.4F (23C)	TC	53.00	54.64	58.13	60.55	66.57	62.30	52.17	51.79	49.13	36.21	34.64	31.87
			SC	33.61	34.65	36.09	37.99	40.18	38.52	34.43	34.34	31.75	29.68	22.74	28.46
			Input	3.42	3.56	3.74	3.98	3.69	4.06	4.80	5.27	5.52	3.16	1.51	3.85
58 (208−230V)	69.8F (21C)	59F (15C)	TC	53.78	52.40	53.20	53.75	55.13	58.42	49.39	47.67	50.74	37.05	28.38	20.68
			SC	44.10	44.28	44.72	45.12	46.28	48.01	43.10	42.16	43.60	36.75	28.38	20.67
			Input	5.83	3.53	3.88	3.87	4.04	4.40	3.66	4.00	5.50	4.12	3.31	2.81
	75.2F (24C)	62.6F (17C)	TC	56.36	55.12	55.81	56.17	57.14	64.67	50.85	50.29	53.17	40.90	33.92	22.60
			SC	46.22	47.30	47.56	48.13	48.85	52.02	45.19	45.11	46.48	40.64	33.92	22.60
			Input	5.85	3.59	3.81	4.11	4.19	4.56	3.65	4.02	5.52	4.16	3.92	2.81
	80.6F (27C)	66.2F (19C)	TC	59.91	57.51	56.91	59.79	57.74	66.72	51.23	51.13	56.52	43.50	33.74	31.19
			SC	49.13	49.70	50.00	51.50	50.87	54.25	46.64	46.90	49.65	42.59	33.73	31.01
			Input	5.97	3.45	3.71	4.12	3.94	4.65	3.65	4.03	5.63	4.17	3.34	3.68
	89.6F (32C)	73.4F (23C)	TC	62.29	57.76	57.31	59.87	61.80	70.41	52.98	52.95	58.76	47.52	45.76	34.73
			SC	51.07	48.10	49.00	51.72	52.06	54.71	45.48	46.36	49.22	44.33	44.00	34.58
			Input	5.99	3.32	3.60	3.85	3.99	4.97	3.66	4.04	5.65	4.20	4.63	3.69

LEGEND
DB − Dry Bulb
WB − Wet Bulb
TC − Total Net Capacity (1000 Btu/hour)
SC − Sensible Capacity (1000 Btu/hour)
Input − Total Power (kW)

HEATING PERFORMANCE DATA − DUCTED

Model	Heating		Outdoor Conditions (DB)											
	Indoor Conditions DB		−22F (−30C)	−13F (−25C)	−4F (−20C)	0F (−17C)	5F (−15C)	17F (−8C)	19.4F (−7C)	24.8F (−4C)	32F (0C)	39.2F (4C)	44.6F (7C)	53.6F (12C)
36 (208−230V)	59F (15C)	TC	16.57	20.69	24.67	29.09	29.65	33.78	31.88	36.97	39.83	42.76	45.55	46.06
		Input	3.99	4.12	4.23	4.27	4.27	4.20	3.90	4.24	4.29	3.89	3.86	3.44
		COP	1.22	1.47	1.71	2.00	2.03	2.36	2.40	2.55	2.72	3.23	3.46	3.92
	64.4F (18C)	TC	17.62	21.98	25.93	25.29	29.30	34.18	35.37	37.89	40.66	41.53	46.80	44.59
		Input	3.71	3.92	4.24	3.98	4.33	4.45	4.20	4.34	4.36	4.47	4.14	3.59
		COP	1.39	1.64	1.79	1.86	1.98	2.25	2.47	2.56	2.73	3.01	3.32	3.64
	69F (20.5C)	TC	17.36	21.82	25.57	27.29	28.77	34.82	34.71	37.73	39.63	41.37	45.84	43.62
		Input	3.73	4.07	4.33	4.55	4.47	4.50	4.33	4.52	4.50	4.23	4.28	3.72
		COP	1.37	1.57	1.71	1.76	1.89	2.27	2.35	2.45	2.58	2.87	3.14	3.44
	71.6F (22C)	TC	13.98	16.83	20.28	22.43	23.77	29.42	30.75	34.15	37.25	41.84	45.57	43.40
		Input	2.84	3.05	3.26	3.39	3.48	3.66	3.74	3.93	4.10	4.38	4.39	3.92
		COP	1.44	1.62	1.82	1.94	2.00	2.36	2.41	2.55	2.66	2.80	3.04	3.25
48 (208−230V)	59F (15C)	TC	20.68	26.76	33.02	28.15	39.50	46.28	46.40	49.18	56.48	61.03	57.65	57.16
		Input	5.01	5.15	5.13	4.43	5.37	5.45	5.21	5.82	5.4	5.48	4.93	4.2
		COP	1.21	1.52	1.89	1.86	2.16	2.49	2.61	2.48	3.07	3.26	3.43	3.99
	64.4F (18C)	TC	21.03	27.27	32.23	35.93	37.90	47.55	46.77	49.71	55.46	60.17	56.59	55.71
		Input	5	5.14	5.29	5.56	5.47	5.61	5.31	5.72	5.62	5.7	5.16	4.39
		COP	1.23	1.56	1.79	1.9	2.03	2.48	2.58	2.55	2.89	3.09	3.21	3.72
	69F (20.5C)	TC	21.36	27.76	31.52	35.38	36.91	45.68	45.87	50.60	54.40	58.94	56.11	54.67
		Input	4.90	5.01	5.52	5.75	5.68	5.68	5.46	5.56	5.81	5.89	5.39	4.55
		COP	1.28	1.63	1.67	1.80	1.90	2.36	2.46	2.67	2.74	2.93	3.05	3.52
	71.6F (22C)	TC	20.98	27.07	31.53	34.80	36.40	45.13	44.36	51.88	53.86	56.93	55.91	60.26
		Input	4.91	5.01	5.56	5.89	5.72	5.85	5.48	5.37	5.94	5.89	5.53	4.99
		COP	1.25	1.58	1.66	1.73	1.86	2.26	2.37	2.83	2.66	2.83	2.96	3.54
58 (208−230V)	59F (15C)	TC	15.21	20.78	28.89	32.85	34.98	44.16	49.39	40.49	50.21	45.93	62.82	63.60
		Input	3.96	4.24	4.61	4.71	4.60	4.97	4.79	4.32	4.16	3.98	4.48	3.91
		COP	1.13	4.90	1.84	2.04	2.23	2.61	3.02	2.75	3.54	3.38	4.11	4.77
	64.4F (18C)	TC	15.57	21.64	29.97	32.31	34.18	45.66	48.10	40.65	48.96	46.05	62.28	59.39
		Input	4.01	4.20	4.66	4.86	4.77	4.96	5.00	4.49	4.34	4.19	4.70	3.98
		COP	3.88	1.51	1.89	1.95	2.1	2.7	2.82	2.66	3.31	3.22	3.89	4.38
	69F (20.5C)	TC	16.69	21.56	29.50	33.91	35.52	44.48	46.54	40.09	47.96	47.28	62.88	59.12
		Input	4.01	4.28	4.81	4.92	4.79	5.11	5.15	4.55	4.49	4.32	4.74	4
		COP	1.22	1.48	1.8	2.02	2.17	2.55	2.65	2.58	3.13	3.21	3.89	4.34
	71.6F (22C)	TC	12.84	16.92	23.54	23.04	30.80	37.20	37.91	34.73	47.03	42.11	60.96	60.46
		Input	3.18	3.35	3.6	3.45	3.87	4.15	4.17	3.99	4.56	4.19	4.82	4.17
		COP	1.18	1.48	1.91	1.96	2.33	2.63	2.67	2.55	3.02	2.94	3.71	4.25

LEGEND
DB − Dry Bulb
WB − Wet Bulb
TC − Total Net Capacity (1000 Btu/hour)
Input − Total Power (kW)
COP − W/W

COOLING PERFORMANCE DATA − CONSOLE

Model	Cooling			Outdoor Conditions (DB)											
	Indoor Conditions DB			−13F (−25C)	−4F (−20C)	0F (−17C)	5F (−15C)	17F (−8C)	47F (8C)	77F (25C)	86F (30C)	95F (35C)	104F (40C)	113F (45C)	122F (50C)
	DB	WB													
36 (208−230V)	69.8F (21C)	59F (15C)	TC	38.56	39.75	34.61	33.98	31.64	28.57	29.74	29.48	26.96	23.09	16.64	13.75
			SC	27.09	27.94	25.33	24.88	23.20	22.11	22.37	22.26	21.20	19.28	16.34	11.79
			Input	3.85	4.01	2.34	2.04	1.98	1.71	3.02	4.08	4.25	3.75	2.78	2.33
	75.2F (24C)	62.6F (17C)	TC	40.66	41.92	45.45	44.40	46.22	30.24	32.01	31.77	29.10	24.82	18.06	15.30
			SC	28.50	29.38	30.88	31.14	33.14	23.58	23.98	23.86	22.81	20.81	17.78	13.55
			Input	4.16	4.34	3.62	3.88	4.05	1.74	3.07	7.64	4.34	3.82	2.80	2.34
	80.6F (27C)	66.2F (19C)	TC	47.93	49.41	48.08	46.78	48.86	32.17	34.53	34.43	36.37	26.81	19.64	16.74
			SC	31.95	32.94	32.18	31.66	45.68	25.04	25.49	25.43	26.37	22.32	19.19	15.17
			Input	3.50	3.65	3.85	3.85	4.08	1.78	3.13	3.92	4.43	3.88	2.83	2.32
	89.6F (32C)	73.4F (23C)	TC	52.15	53.77	52.92	51.54	53.24	37.94	40.28	39.35	37.90	31.20	22.65	18.20
			SC	32.03	33.02	32.62	32.28	49.89	26.75	26.98	26.62	27.13	23.81	20.76	18.05
			Input	4.10	4.27	4.37	4.04	4.14	3.16	3.24	4.21	4.63	4.01	2.85	2.99
48 (208−230V)	69.8F (21C)	59F (15C)	TC	41.77	43.05	45.81	46.09	52.66	52.21	48.13	45.09	41.51	31.21	24.83	19.63
			SC	30.47	31.41	32.72	32.80	36.02	35.98	34.65	33.37	31.55	26.84	22.65	19.29
			Input	3.14	3.27	3.45	3.50	3.19	3.63	4.60	5.04	5.19	4.52	3.32	3.14
	75.2F (24C)	62.6F (17C)	TC	44.07	45.43	48.33	49.15	56.39	53.44	50.19	48.23	44.69	33.74	27.98	21.70
			SC	31.87	32.85	34.22	34.63	38.02	37.01	34.66	34.28	32.40	27.70	25.02	21.26
			Input	3.29	3.43	3.61	3.63	3.34	3.54	4.56	5.10	5.27	4.56	3.36	3.17
	80.6F (27C)	66.2F (19C)	TC	49.64	51.76	53.58	54.12	56.32	56.29	53.85	52.71	49.36	36.71	27.98	27.63
			SC	35.90	37.42	32.15	38.13	37.97	38.99	36.08	35.85	34.05	29.00	26.15	26.92
			Input	3.47	3.58	3.72	3.73	3.71	3.89	4.69	5.20	5.39	3.76	3.44	3.81
	89.6F (32C)	73.4F (23C)	TC	55.20	57.56	59.59	60.68	61.87	65.82	54.93	54.48	50.06	35.52	35.30	32.47
			SC	35.01	36.50	37.00	38.07	37.34	40.70	36.25	36.12	32.35	29.11	23.17	29.00
			Input	3.41	3.58	3.75	3.98	3.67	4.11	4.82	5.31	5.55	3.14	2.11	3.78
58 (208−230V)	69.8F (21C)	59F (15C)	TC	45.48	45.20	48.28	48.21	48.15	51.18	42.74	45.12	42.90	32.59	24.01	19.526
			SC	37.29	33.59	35.16	35.15	35.00	36.38	32.20	33.37	32.26	27.28	23.81	19.526
			Input	5.33	2.98	3.32	3.34	3.49	3.57	3.39	4.67	5.03	3.81	3.07	2.604
	75.2F (24C)	62.6F (17C)	TC	49.62	47.58	50.96	51.00	50.74	54.60	46.62	49.15	46.81	35.55	25.87	20.626
			SC	40.69	35.36	36.98	36.99	37.01	38.40	34.57	35.89	34.80	29.77	25.87	20.626
			Input	5.45	3.18	4.19	3.58	4.02	3.68	3.44	4.75	5.14	3.85	3.09	2.691
	80.6F (27C)	66.2F (19C)	TC	53.81	50.93	54.12	54.28	54.32	58.19	49.71	52.96	50.76	39.43	28.08	22.736
			SC	44.12	37.42	38.82	3.78	3.92	40.37	36.23	37.91	36.93	32.25	28.08	22.736
			Input	5.54	3.37	3.77	4.21	4.06	3.81	3.45	4.81	5.23	3.92	3.13	2.62
	89.6F (32C)	73.4F (23C)	TC	60.53	57.35	59.38	57.73	57.74	65.24	52.83	58.12	57.11	45.67	33.26	25.414
			SC	49.64	38.83	39.60	3.75	3.72	41.27	36.36	38.45	38.12	34.05	29.87	25.414
			Input	5.71	3.29	3.41	4.51	4.55	3.98	3.46	4.89	5.39	4.00	3.13	2.598

LEGEND
DB − Dry Bulb
WB − Wet Bulb
TC − Total Net Capacity (1000 Btu/hour)
SC − Sensible Capacity (1000 Btu/hour)
Input − Total Power (kW)

HEATING PERFORMANCE DATA − CONSOLE

Model	Heating		Outdoor Conditions (DB)											
	Indoor Conditions DB		−22F (−30C)	−13F (−25C)	−4F (−20C)	0F (−17C)	5F (−15C)	17F (−8C)	19.4F (−7C)	24.8F (−4C)	32F (0C)	39.2F (4C)	44.6F (7C)	53.6F (12C)
36 (208−230V)	59F (15C)	TC	14.60	18.23	21.74	25.63	26.12	29.76	28.09	32.57	35.09	37.68	40.13	40.58
		Input	2.89	3.00	3.07	3.10	3.11	3.05	2.83	3.09	3.12	2.82	2.80	2.50
		COP	1.48	1.78	2.07	2.43	2.46	2.86	2.91	3.09	3.30	3.92	4.20	4.76
	64.4F (18C)	TC	15.53	19.37	22.85	22.28	25.82	30.12	31.16	33.39	35.83	36.59	41.24	39.29
		Input	2.70	2.85	3.08	2.89	3.15	3.23	3.05	3.15	3.17	2.94	3.00	2.61
		COP	1.69	1.99	2.17	2.26	2.40	2.73	3.00	3.11	3.31	3.65	4.03	4.42
	69F (20.5C)	TC	15.30	19.23	22.53	24.05	25.35	30.68	30.58	33.24	34.92	36.45	40.39	38.43
		Input	2.70	2.96	3.18	3.30	3.24	3.26	3.14	3.28	3.27	3.07	3.11	2.70
		COP	1.66	1.91	2.07	2.14	2.29	2.75	2.85	2.97	3.13	3.48	3.81	4.17
	71.6F (22C)	TC	12.32	14.83	17.87	19.76	20.94	25.92	27.09	30.09	32.82	36.87	40.15	38.24
		Input	2.07	2.21	2.37	2.46	2.53	2.65	2.72	2.85	2.98	3.18	3.19	2.84
		COP	1.75	1.97	2.21	2.35	2.43	2.86	2.92	3.09	3.23	3.40	3.69	3.94
48 (208−230V)	59F (15C)	TC	21.14	27.01	.43	34.64	.53	45.33	47.26	50.52	57.53	54.74	58.72	59.89
		Input	4.98	5.15	.20	5.44	.43	5.46	5.51	5.58	5.61	5.65	5.49	4.76
		COP	1.24	1.54	.83	1.87	.03	2.44	2.51	2.65	3.01	2.84	3.14	3.69
	64.4F (18C)	TC	33.49	41.16	42.34	42.91	43.65	49.05	44.47	50.25	56.07	60.83	57.21	58.54
		Input	7.98	7.73	6.93	6.62	6.30	5.80	5.05	5.78	5.69	5.77	5.22	4.61
		COP	1.23	1.56	1.79	1.9	2.03	2.48	2.58	2.55	2.89	3.09	3.21	3.72
	69F (20.5C)	TC	18.71	24.32	.08	31.00	.20	38.99	40.19	44.33	47.66	.24	49.16	56.04
		Input	5.02	5.13	.59	5.92	.79	5.16	5.61	5.70	5.98	.29	5.10	5.43
		COP	1.19	1.51	.68	1.67	.83	2.22	2.28	2.47	2.54	.62	2.83	3.03
	71.6F (22C)	TC	19.94	20.93	28.10	33.08	34.60	42.90	42.17	49.31	51.20	54.11	53.15	57.28
		Input	4.81	4.56	5.16	5.76	5.60	5.72	5.36	5.25	5.80	5.76	5.41	4.87
		COP	1.22	1.35	1.60	1.68	1.81	2.20	2.31	2.75	2.59	2.75	2.88	3.44
58 (208−230V)	59F (15C)	TC	15.30	21.03	28.95	31.87	32.05	43.31	37.36	32.34	36.15	42.58	61.48	60.64
		Input	3.88	4.15	4.75	4.97	4.88	5.05	4.72	4.31	4.31	4.20	4.99	4.29
		COP	1.16	1.49	1.79	1.88	1.93	2.51	2.32	2.20	2.46	2.97	3.61	4.14
	64.4F (18C)	TC	15.13	20.48	28.40	28.71	27.66	42.03	36.83	34.83	34.66	41.99	60.16	59.10
		Input	4.00	4.25	4.94	4.88	4.68	5.22	4.92	4.56	4.37	4.38	5.19	4.47
		COP	1.11	1.411	1.686	1.725	1.733	2.361	2.196	2.24	2.323	2.81	3.398	3.872
	69F (20.5C)	TC	15.604	20.09	27.85	32.24	33.24	40.99	39.97	35.90	35.92	41.47	58.96	57.81
		Input	4.025	4.347	5.066	5.092	5.022	5.365	5.316	4.808	4.6	4.532	5.355	4.626
		COP	1.136	1.355	1.611	1.856	1.94	2.24	2.204	2.188	2.288	2.682	3.227	3.663
	71.6F (22C)	TC	10.927	15.64	22.22	23.08	27.54	35.52	36.42	32.91	32.74	41.76	58.03	57.74
		Input	3.151	3.356	3.784	3.663	3.942	4.421	4.473	4.174	4.172	4.639	5.452	4.705
		COP	1.016	1.366	1.721	1.846	2.048	2.355	2.386	2.311	2.3	2.638	3.12	3.584

LEGEND
DB − Dry Bulb
WB − Wet Bulb
TC − Total Net Capacity (1000 Btu/hour)
Input − Total Power (kW)
COP − W/W

APPLICATION DATA

UNIT SELECTION

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. 5) 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)		
	COOLING	HEATING
Outdoor DB	−13~122 (−25~50)	−22~86 (−30~30)

NOTE: Reference the product installation instructions for more information.

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 the *Long Line Applications* section 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

UNIT SIZE	TOTAL LINE LENGHT ft		ADDITIONAL CHARGE, oz/ft. Ft (m)	
	Min	Max	>10−25 (3−8)	>25−213 (8−65)
36K	10	213	None	0.43
48K				
58K				

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.

SIZES 36−58 RECOMMENDED CONNECTION METHOD FOR POWER AND COMMUNICATION WIRING

Power and Communication Wiring:

The main power is supplied to the outdoor unit. The field supplied power wiring from the outdoor unit to the indoor unit consists of three (3) wires and provides the power for the indoor unit. Two wires are high voltage AC power and one is a ground wire. To minimize voltage drop, the factory recommended wire size is 14/2 stranded with a ground.

Communication Wiring:

A separate shielded stranded copper conductor only, with a 600 volt rating and double insulated copper wire, must be used as the communication wire from the outdoor unit to the indoor unit. Please use a separate shielded 16GA stranded control wire.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

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

Wires should be sized based on NEC and local codes.

⚠ 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.

Connecting cable with conduit shall be routed through the hole in the conduit panel.

AIR FLOW DATA

SYSTEM SIZE	36K	48K	58K
Outdoor (CFM)	2,130	4,500	4,415

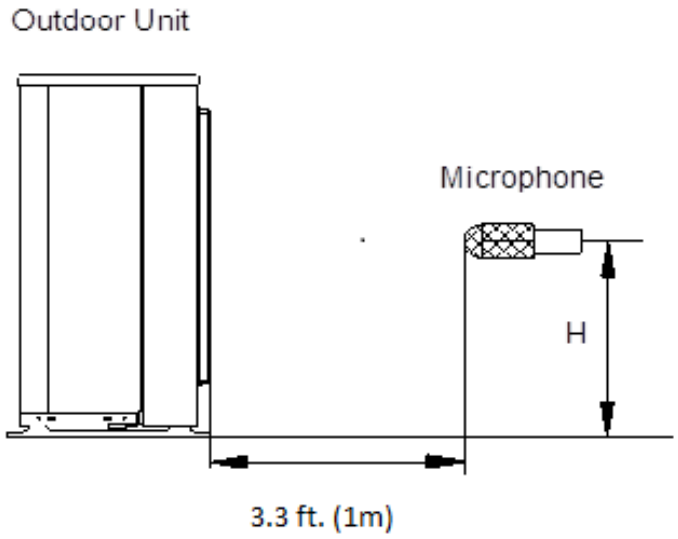
SOUND PRESSURE

SYSTEM SIZE		36K	48K	58K
Outdoor sound pressure level	dBa	63	62.5	64

SOUND PRESSURE IN OCTAVE BANDS

SIZE	Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
36K	Cooling dB(A)	51.3	59.2	56.3	51.3	49.4	46.8	42.6	35.7
	Heating dB(A)	53.8	62.3	60.8	53.7	52.0	48.4	45.8	37.8
48K	Cooling dB(A)	59.2	61.6	55.9	58.1	59.6	51.9	47.8	43.8
	Heating dB(A)	65.1	66.1	61.3	59.7	58.2	54.1	47.5	43.6
58K	Cooling dB(A)	22.9	41.3	46.6	50.1	50.8	52.6	46.0	40.4
	Heating dB(A)	30.0	46.8	48.4	52.0	54.3	52.8	43.7	41.3

OUTDOOR UNIT SOUND PRESSURE TEST CONDITIONS



NOTE: H=0.5 x Height of outdoor unit

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

FAN AND MOTOR SPECIFICATIONS

SYSTEM SIZE			36K	48K	58K
Outdoor Fan Propeller	Material	−−	AS	AS	AS
	Type	−−	ZL−560*139*12−3KN	ZL−554*148*12−3KFN	ZL−554*148*12−3KFN
	Diameter	in	22.05 (560)	21.81 (554)	21.81 (554)
	Height	in	5.47 (139)	5.83 (148)	5.83 (148)
Outdoor Fan Motor	Model	−−	WZDK120−38G−W	ZKFN−85−8−22	ZKFN−85−8−22
	Type	−−	DC	DC	DC
	Phase	−−	1	1	1
	FLA	A	1.21	1.17	1.17
	Insulation Class	−−	E	E	E
	Safe Class	−−	IPX0	IPX0	IPX0
	Input	W	150	126	126
	Output	W	120	85	85
	Range of current	A	1.21±10%	1.17±10%	1.17±10%
	Rated current	A	1.21	1.17	1.17
	Capacitor	μF	N/A	N/A	N/A
	Rated HP	HP	0.16	0.14	0.14
	Speed	rev/min	850/800/750	900/850/750	900/850/750
	Rated RPM	rev/min	1050	900	900
	Max. input	W	150	126	126

ELECTRICAL DATA

OUTDOOR UNIT SIZE		36K	48K	58K
Power Supply	Volts−PH−Hz	208/230−1−60	208/230−1−60	208/230−1−60
	Max − Min* Oper. Voltage	253−187	253−187	253−187
	MCA	30	35	35
	Max Fuse/CB AMP	50	50	50
Compressor	Volts−PH−Hz	208/230−1−60	208/230−1−60	208/230−1−60
	RLA	8.85	11.86	11.86

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

LEGEND
MCA − Minimum Circuit Amps
RLA − Rated Load Amps

WIRING DIAGRAMS

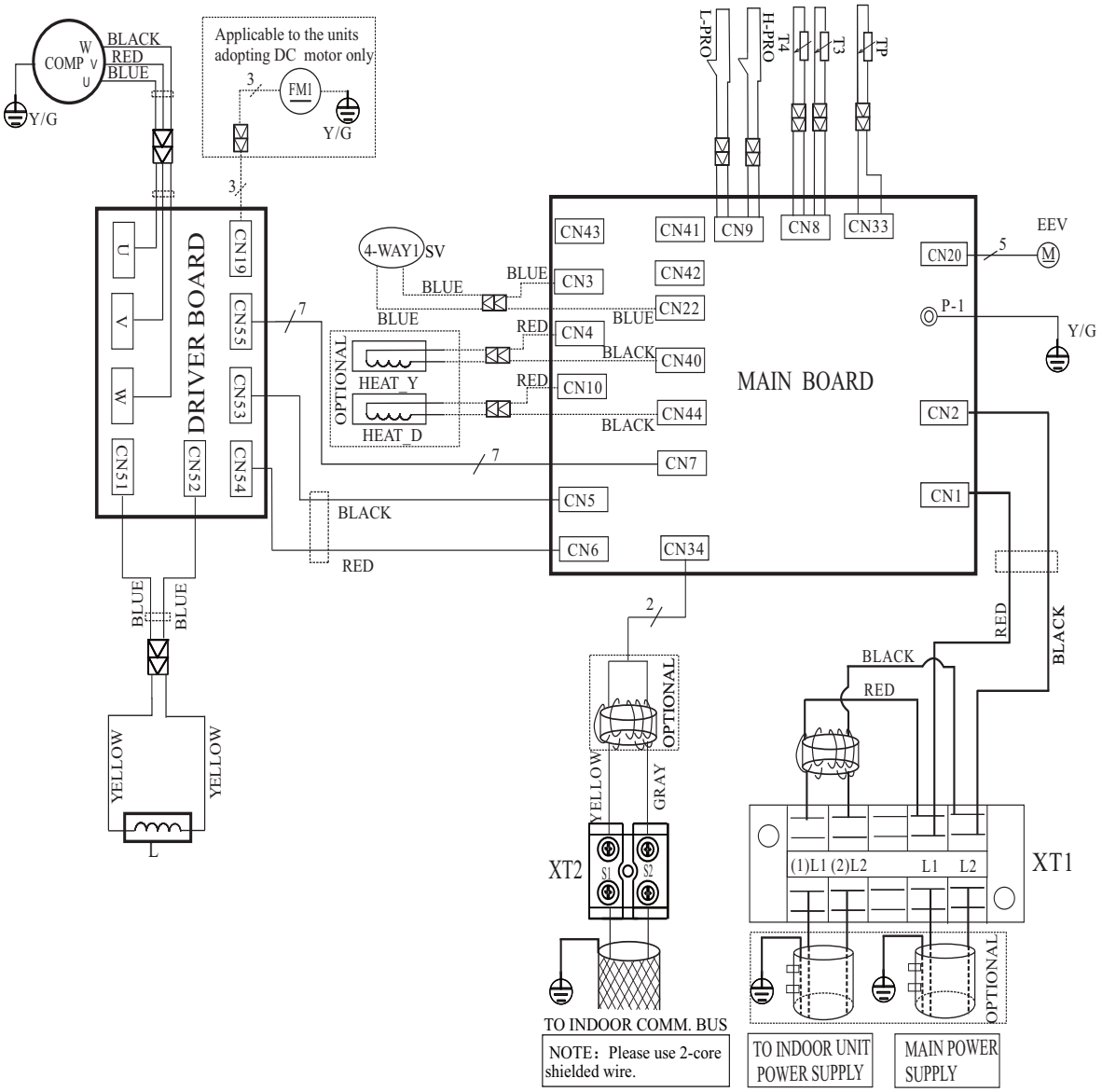


Fig. 7 – Wiring Diagram Size 36K

WIRING DIAGRAMS (CONT)

OUTDOOR UNIT MAIN BOARD	
CODE	**PART NAME**
CN1~CN2	Input: 230VAC High voltage
CN5~CN6	Output: 230VAC High voltage
P–1	Connection to the earth
CN10~CN44	Output: 230VAC High voltage Chassis Crankcase Heater
CN4~CN40	Output: 230VAC High voltage Compressor Crankcase Heat
CN3~CN22	Output: 230VAC High voltage
CN43	Output: Pin3~Pin2, Pin4~Pin2 (230 VAC High voltage) For AC FAN
CN41~CN42	Output To AC FAN Capacitor
CN34	Output:–24VDC–24VDC
CN33	Input: Pin 1 (0–5VDC),Pin 2 (5VDC) Discharge Temperature Sensor
CN8	Input: Pin3, Pin4 (5VDC),Pin2 (0VDC),Pin1,Pin5 (0–5VDC) T3 & T4
CN9	Input: Pin2, Pin4 (0VDC),Pin1,Pin3 (0–5VDC) H/L Pressure Switch
CN20	Output: Pin1–Pin4: Pulse waveform(0–12VDC),Pin5, Pin6 (12VDC)
CN7	Output: Pin1 (12VDC),Pin2 (5VDC),Pin3 (EARTH)

OUTDOOR UNIT PFC & IPM BOARD	
CODE	**PART NAME**
CN53~CN54	Input: 230VAC High voltage
CN55	Output: Pin1 (12VDC),Pin2 (5VDC),Pin3 (EARTH)
CN19	Pin1~Pin3: Connect to FAN voltage among phases 0~200VAC
U~V~W	Connect to compressor voltage among phases 0~200VAC
CN51~CN52	CN51~EARTH ,CN52~EARTH Output: 224–380VDC High voltage

CODE	PART NAME	CODE	PART NAME
COMP	COMPRESSOR	L	PFC INDUCTOR
CAP1	FAN MOTOR CAPACITOR	L–PRO	LOW PRESSURE SWITCH
HEAT	CRANKCASE HEATING	H–PRO	HIGH PRESSURE SWITCH
FM1	OUTDOOR DC FAN	SV	4–WAY VALVE
FAN1	OUTDOOR AC FAN	T3	CONDENSER TEMPERATURE SENSOR
EEV	ELECTRONICEXPANSION VALVE	T4	OUTDOOR AMBIENT TEMPERATURE SENSOR

WIRING DIAGRAMS (CONT)

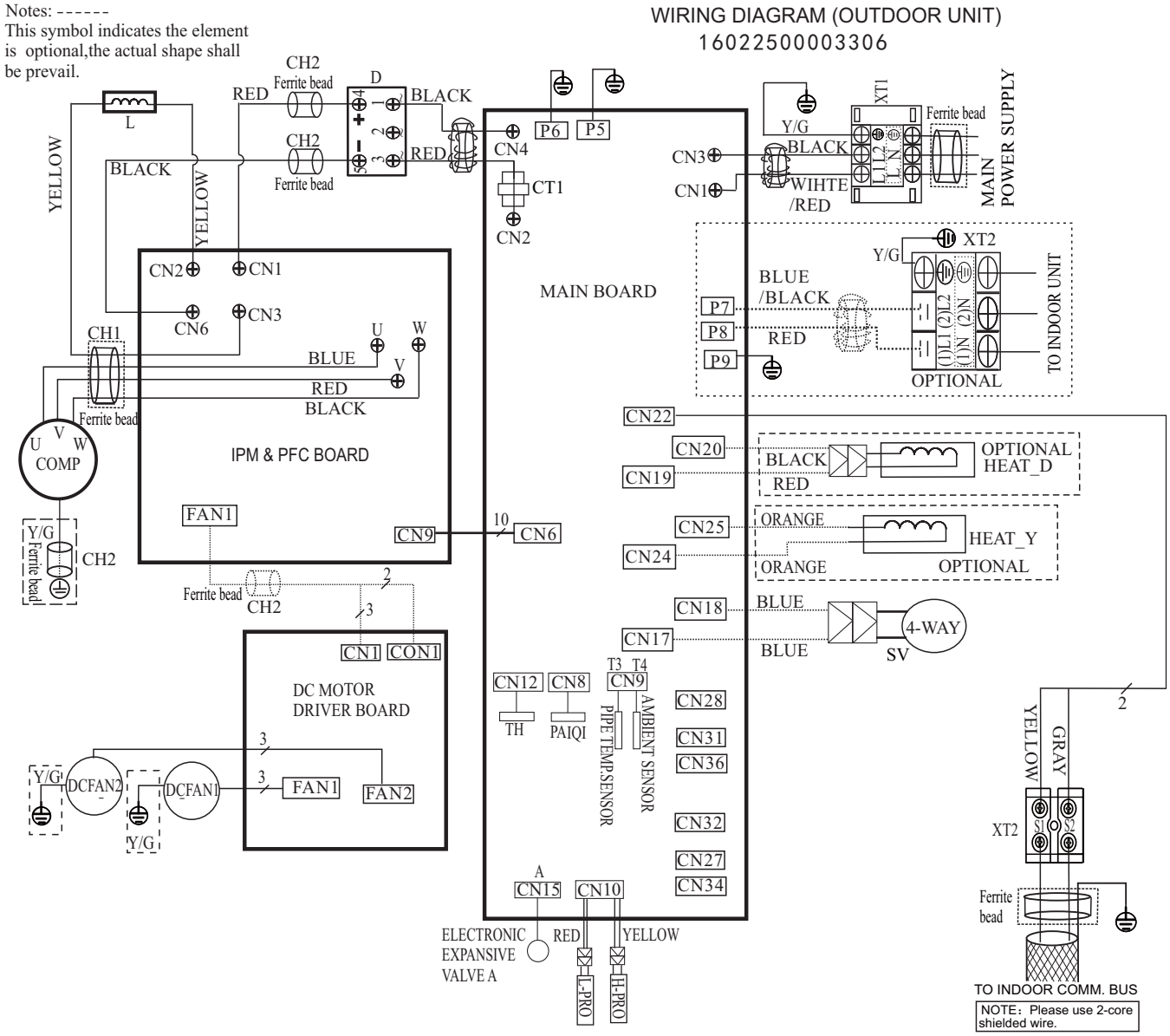


Fig. 8 – Wiring Diagram − Sizes 48K and 58K

OUTDOOR UNIT MAIN BOARD	
CODE	**PART NAME**
CN1～CN3	Input: 230VAC High voltage
P7～P8	Output: 230VAC High voltage to IDU
P5,P6,P9	Connection to the earth
CN22	Output:−24VDC−24VDC for IDU Communication
CN17～CN18	Output: 230VAC High voltage 4 way valve
CN19～CN20	Output: 230VAC High voltage Chassis Crankcase Heater
CN24～CN25	Output: 230VAC High voltage Compressor Crankcase Heater
CN2～CN4	Output: 230VAC High voltage to AC CURRENT DETECTOR
CN12	Input: Pin1 (0−5VDC),Pin2 (5VDC) Heatsink Temperature Sensor
CN8	Input: Pin1 (0−5VDC),Pin2 (5VDC) Compressor Top Sensor(PAIQI)
CN9	Input: Pin3,Pin4 (5VDC),Pin2 (0VDC),Pin1,Pin5 (0−5VDC) the ambient sensor and pipe sensor
CN10	Input: Pin2, Pin4 (0VDC),Pin1,Pin3 (0−5VDC) for the H/L pressure switch
CN15	Output: Pin1−Pin4: Pulse waveform (0−12VDC),Pin5, Pin6 (12VDC) EEV
CN6	Output: Pin1−Pin6: Pulse waveform (0−5VDC), Pin7, Pin9 (0VDC) Pin8 (0−5VDC), Pin10 (5VDC)

WIRING DIAGRAMS (CONT)

OUTDOOR UNIT PFC & IPM BOARD	
CODE	**PART NAME**
CN1～CN6	Output:224—380VDC High voltage to DIODE MODULE
CN2～CN3	Output:224—380VDC High voltage to PFC INDUCTOR
U～V～W	Connection to compressor voltage among phases 0～200VAC
CN9	Input:Pin1—Pin6: Pulse waveform (0—5VDC),Pin7, Pin9 (0VDC) Pin8 (0—5VDC),Pin10 (5VDC)
FAN1	Output: Pin1～Pin2: High voltage (224—380VDC), Pin4 (0—15VDC) Pin5 (0—5.6VDC), Pin6:Pulse waveform (0—15VDC)

OUTDOOR UNIT DC MOTOR DRIVER BOARD	
CODE	**PART NAME**
CON1	Output:Pin1～Pin2:High voltage (224—380VDC)
CN1	Input: Pin4: Pulse waveform (0—15VDC) ,Pin3 (0—6.5VDC) Pin2 (0VDC),Pin1 (15VDC)
FAN1	Pin1—Pin3: Connect to FAN voltage among phases 0～200VAC
FAN2	Pin1—Pin3: Connect to FAN voltage among phases 0～200VAC

CODE	**PART NAME**
COMP	COMPRESSOR
CAP1,CAP2	FAN MOTOR CAPACITOR
CT1	AC CURRENT DETECTOR
D	DIODE MODULE
EEV	ELECTRONIC EXPANSION VALVE
FM1,FM2	OUTDOOR DC FAN
FAN1,FAN2	OUTDOOR AC FAN
HEAT	CRANKCASE HEATING
H—PRO	HIGH PRESSURE SWITCH
L	PFC INDUCTOR
L—PRO	LOW PRESSURE SWITCH
KM	AC CONTACTOR
SV	4—WAY VALVE
TP	EXHAUST TEMPERATURE SENSOR
T3	CONDENSER TEMPERATURE SENSOR
T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
TH	HEATSINK TEMPERATURE SENSOR
PAIQI	COMPRESSOR TOP SENSOR (GAS PIPE SENSOR)
CH 1 CH 2 CH 3	FERRITE BEAD

GUIDE SPECIFICATIONS
HORIZONTAL DISCHARGE OUTDOOR UNITS

Size Range: 3 to 5 Ton Nominal Cooling and Heating Capacity
Model Number: 38MBR

PART 1 − GENERAL

1.01 System Description

A. 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.

B. Units are to be used in a refrigeration circuit matched to ductless heat pump fan coil units.

1.02 Agency Listings

A. Unit construction complies with ANSI/ASHRAE 15, latest revision, and with the NEC.

B. Units are evaluated in accordance with UL standard 1995.

C. Units are listed in the CEC directory.

D. Unit cabinet is capable of withstanding 500−hour salt spray test per Federal Test Standard No. 141 (method 6061).

E. 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 is 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. 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.

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

H. Electrical Requirements:

1. Unit operates on single−phase, 60 Hz power at 208/230V 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.
5. The unit has high and low voltage terminal block connections.

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