40MB*C / 38MAQ
Cassette Ductless Split System
Sizes 09 to 18

Carrier
turn to the experts

Product Data

INDUSTRY LEADING FEATURES / BENEFITS

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

The 38/40MB*C series ductless split 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 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.

When sound ordinances and proximity to neighbors demand quiet operation, the 38MAQ unit is the right choice: The advanced, horizontal airflow design distributes air more evenly over the coil.

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 38MAQ units can be installed close to an outside wall, coils are protected from vandals and severe weather.

FAST INSTALLATION

This compact ductless split system is simple to install. A mounting bracket is standard with the indoor units and only wire and piping need to be 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 38/40MB*C ductless split 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 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 cassette systems have extensive self−diagnostics to assist in troubleshooting.

BUILT − IN RELIABILITY

Ductless split 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 split 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 PUMP

Customizing these ductless split systems to your application is easily accomplished. The factory installed condensate 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 Q B 09 C – – 3

40 = FAN COIL UNIT

MB = MODEL

SYSTEM TYPE
Q = HEAT PUMP

MAXIMUM NUMBER OF FAN COIL UNITS THAT CAN BE CONNECTED TO THE OUTDOOR UNIT
B=1:1

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

VOLTAGE
3 = 208/230–1–60

NOT USED

INDOOR FAN COIL TYPE
C = CASSETTE

OUTDOOR UNIT

38 MA Q B 09 – – – 3

38 = OUTDOOR UNIT

MA = MODEL

SYSTEM TYPE
Q = HEAT PUMP

MAXIMUM NUMBER OF FAN COIL UNITS THAT CAN BE CONNECTED TO THE OUTDOOR UNIT
B = 1:1

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

VOLTAGE
3 = 208/230–1–60

NOT USED

UNIT TYPE
– = OUTDOOR UNIT

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
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	
3 Minute Time Delay For Compressor	S
Over Current Protection For Compressor	S
Indoor Coil Freeze Protection	S
Indoor Coil High Temp Protection in Heating Mode	S
Condenser High Temp Protection in Cooling Mode	S
Ease Of Service And Maintenance	
Cleanable Filters	S
Diagnostics	S
Liquid Line Pressure Taps	S
Application Flexibility	
Condensate Pumps	S
Crankcase Heater	S
Basepan Heater	S

Legend
S Standard
A Accessory

ACCESSORIES

ORDERING NO.	DESCRIPTION	FOR MODELS
KSACN0101AAA	Wired Remote Control	MB*C Series
40MBQB01C–––	Grille/Ceiling Panel	MB*C Cassette Indoor units
53DS–900–––008	Insulated 25' Line Set – 1/4" x 1/2"	SIZES 12, 18
53DS–900–––089	Insulated 25' Line Set – 1/4" x 3/8"	SIZE 09

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.

OUTDOOR UNITS

Crankcase Heater

Standard on all unit sizes. Heater clamps around compressor oil stump.

FACTORY INSTALLED BASEPAN HEATER

DIMENSIONS – INDOOR

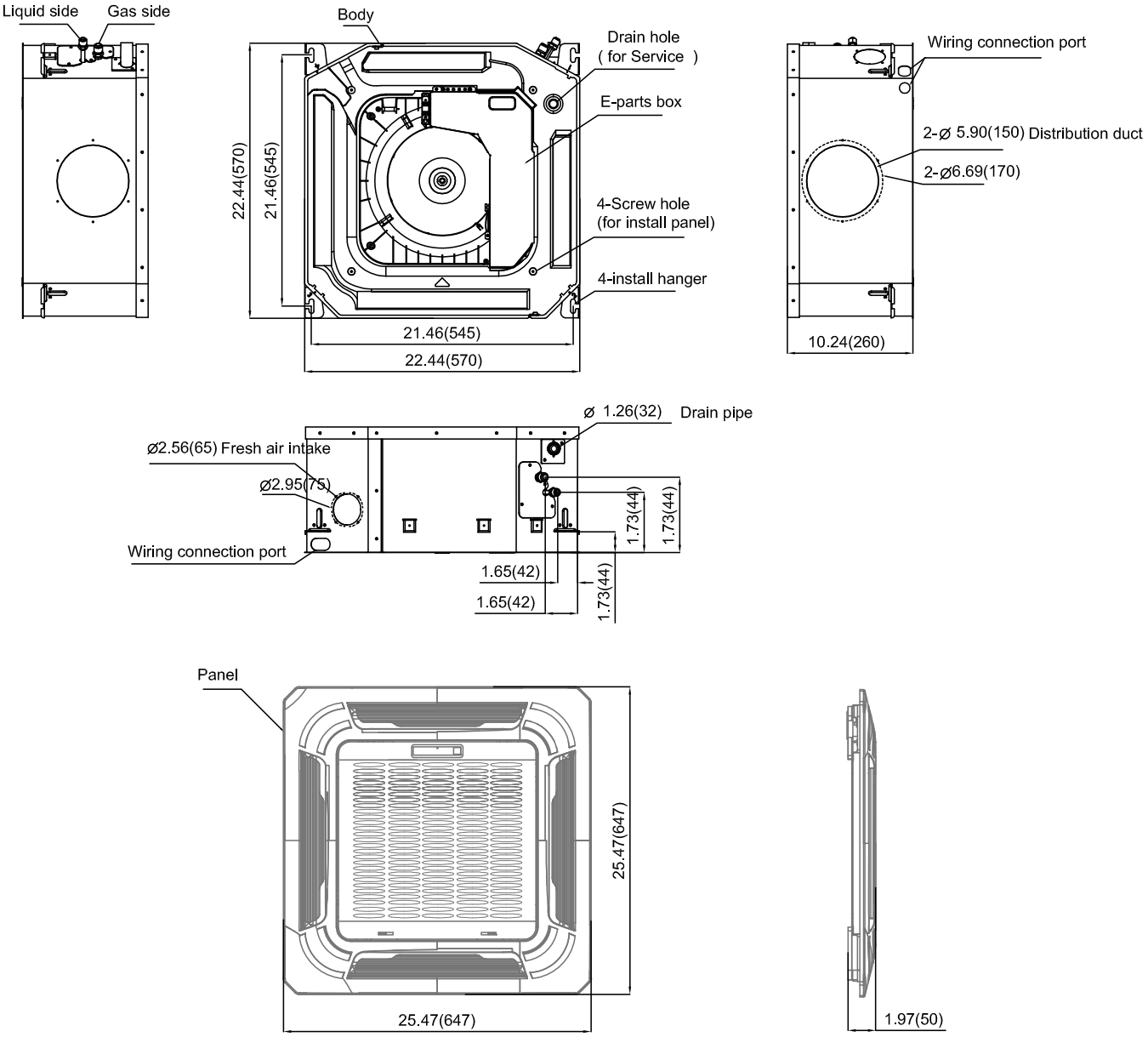

Fig. 1 – Indoor unit

UNIT SIZE		9K		12K		18K	
		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)
Width	in(mm)	22.44 (570)	25.47 (647)	22.44 (570)	25.47 (647)	22.44 (570)	25.47 (647)
Depth	in(mm)	22.44 (570)	25.47 (647)	22.44 (570)	25.47 (647)	22.44 (570)	25.47 (647)
PACKING							
Height	in(mm)	11.42 (290)	4.84 (123)	11.42 (290)	4.84 (123)	11.42 (290)	4.84 (123)
Width	in(mm)	25.79 (655)	28.15 (715)	25.79 (655)	28.15 (715)	25.79 (655)	28.15 (715)
Depth	in(mm)	25.79 (655)	28.15 (715)	25.79 (655)	28.15 (715)	25.79 (655)	28.15 (715)
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)
Weight-Net	lbs(kg)	35.27 (16)	5.51 (2.5)	35.27 (16)	5.51 (2.5)	39.68 (18)	5.51 (2.5)

DIMENSIONS – OUTDOOR

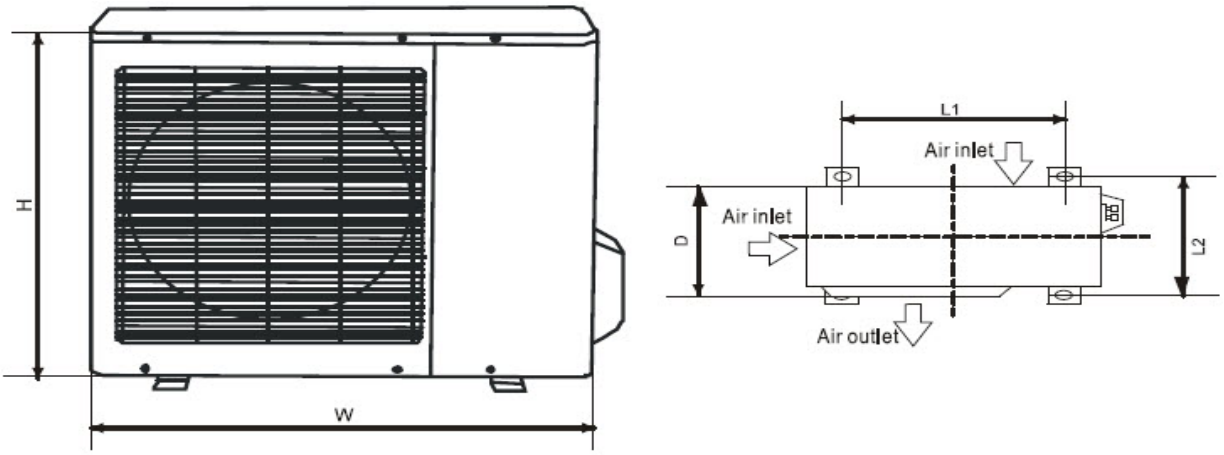

Fig. 2 – Outdoor unit

MODEL	W in (mm)	D in (mm)	H in (mm)	L1 in (mm)	L2 in (mm)	OPERATING WEIGHT lb (kg)
9K/12K	32.0 (810)	12.2 (310)	22.0 (558)	20.9 (530)	11.4 (290)	82.5 (37.4)
18K	32.3 (845)	12.6 (320)	27.6 (700)	22.1 (560)	13.2 (335)	102.5 (46.5)

CLEARANCES – INDOOR

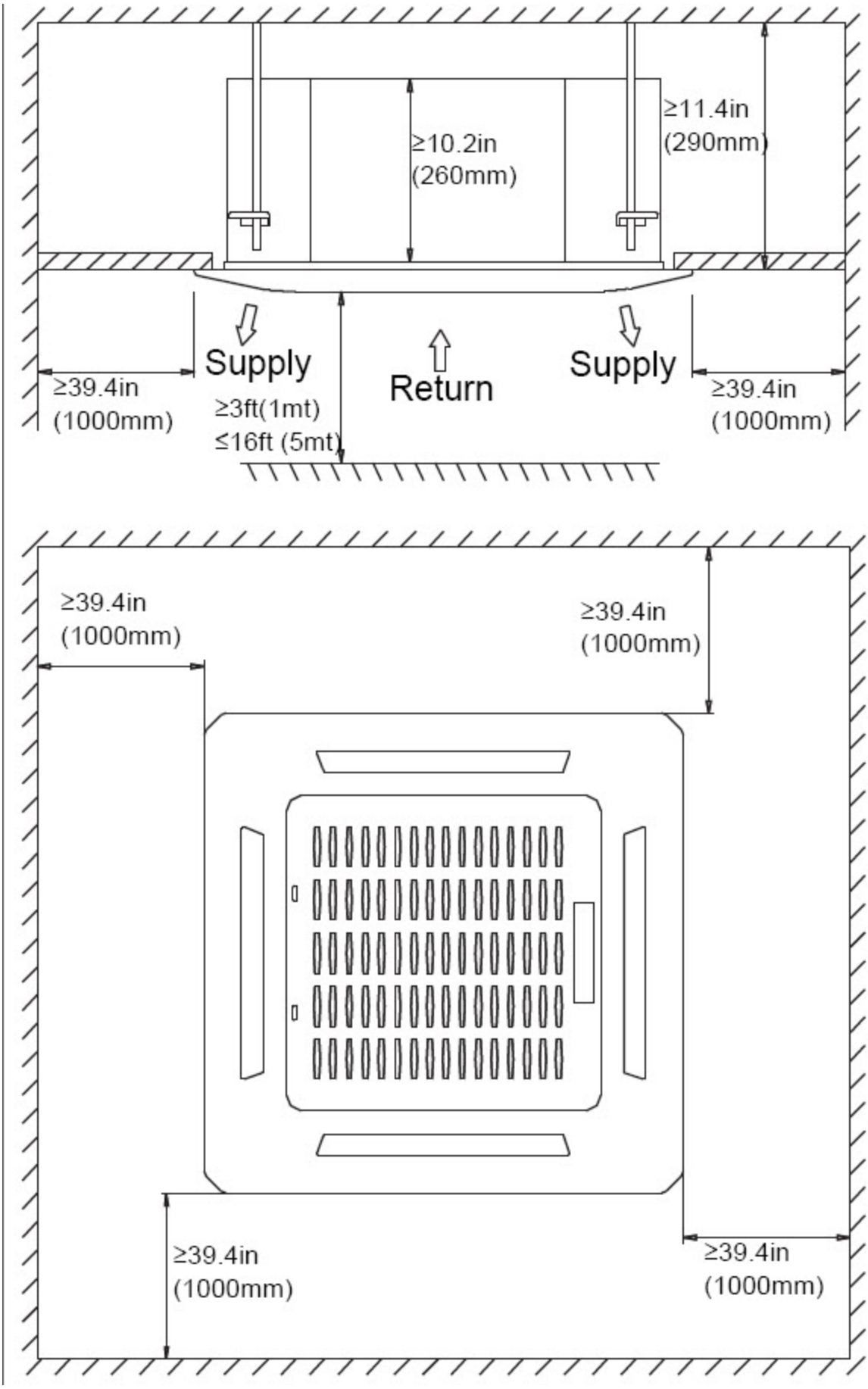

Fig. 3 – Indoor Unit Clearance

CLEARANCES – OUTDOOR

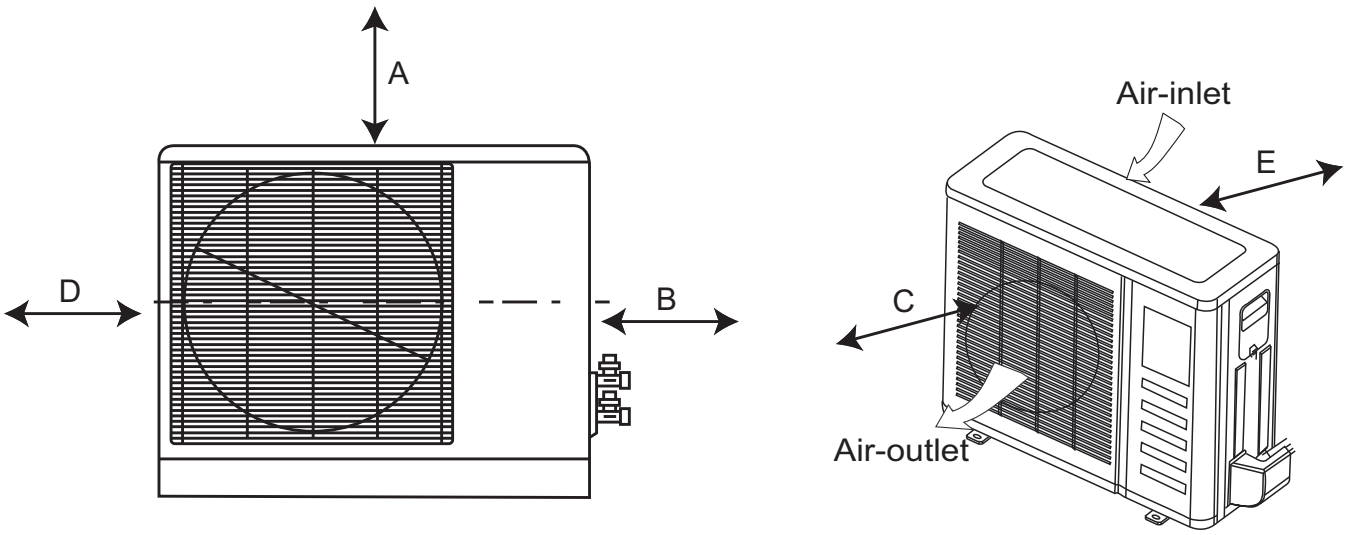

Fig. 4 – Clearances Outdoor

UNIT	MINIMUM VALUE in. (mm)
A	24 (609)
B	24 (609)
C	24 (609)
D	4 (101)
E	4 (101)

SPECIFICATIONS

	SIZE		9	12	18
System	Outdoor Model		38MAQB09−−−3	38MAQB12−−−3	38MAQB18−−−3
	Indoor Model		40MBQB09C−−3	40MBQB12C−−3	40MBQB18C−−3
	Energy Star		YES	YES	YES
Performance	Cooling Rated Capacity	Btu/h	9,000	12,000	16,000
	Cooling Cap. Range Min − Max	Btu/h	3,500~11,000	4,000~13000	4,500~18,000
	SEER		19.0	20.5	19.0
	EER		13.0	13.0	12.5
	Heating Rated Capacity	Btu/h	10,000	12,000	18,000
	Heating Cap. Range Min − Max	Btu/h	4,500~11,500	5,000~13500	5,500~19,000
	HSPF		10.0	10.0	9.0
	COP	W/W	3.1	3.8	3.3
Controls	Wireless Remote Controller (°F/°C Convertible)		Standard		
	Wired Remote Controller (°F/°C Convertible)		Optional		
Operating Range	Cooling Outdoor DB Min − Max	°F	−4~122	−4~122	−4~122
	Heating Outdoor DB Min − Max	°F	−4~86	−4~86	−4~86
Piping	Total Piping Length	Ft.	82	82	98
	Piping Lift*	Ft.	32	32	65
	Pipe Connection Size − Liquid	In.	1/4	1/4	1/4
	Pipe Connection Size − Suction	In.	3/8	1/2	1/2
Refrigerant	Type		R410A		
	Design Pressure	PSIG	550	550	550
	Metering Device		EEV	EEV	EEV
	Charge	Lbs.	2.76	2.76	4.19
Outdoor Coil	Face Area	Sq. Ft.	9.2	9.2	16.0
	No. Rows		2	2	2
	Fins per inch		21	21	18
	Circuits		4	4	6
Indoor Coil	Face Area	Sq. Ft.	3.1	3.1	3.1
	No. Rows		1	2	2
	Fins per inch		19	19	19
	Circuits		2	4	4
Compressor	Type		Hermetic Rotary DC Inverter Compressor		
	Model		ASM98D1UFZA	ASM108D1UFZA	ASM135D23UFZ
	Oil Type		VG74	VG74	VG74
	Oil Charge	Fl. Oz.	12.5	12.5	15.2
	Rated Current	RLA	5.3	5.7	7.3
Electrical	Voltage, Phase, Cycle	V/Ph/Hz	208/230−1−60	208/230−1−60	208/230−1−60
	Power Supply		Indoor unit powered from outdoor unit		
	MCA	A.	15	15	15
	MOCP − Fuse Rating	A.	15	15	20
Outdoor	Unit Width	In.	31.9	31.9	33.3
	Unit Height	In.	22.0	22.0	27.6
	Unit Depth	In.	12.2	12.2	12.6
	Net Weight	Lbs.	82.5	82.5	102.5
	Airflow	CFM	945	945	1050
	Sound Pressure	dB(A)	56	56	59
Indoor	Body Unit Width	In.	22.4	22.4	22.4
	Body Unit Height	In.	10.2	10.2	10.2
	Body Unit Depth	In.	22.4	22.4	22.4
	Body Net Weight	Lbs.	35.3	35.3	39.7
	Panel Unit Width	In.	25.5	25.5	25.5
	Panel Unit Height	In.	2.0	2.0	2.0
	Panel Unit Depth	In.	25.5	25.5	25.5
	Panel Net Weight	Lbs.	5.5	5.5	5.5
	Number of Fan Speeds		3	3	3
	Airflow (lowest to highest)	CFM	260/320/380	280/340/400	290/350/420
	Sound Pressure (lowest to highest)	dB(A)	34/39/44	36/39/42	46/48/50

* Condensing unit above or below indoor unit

COOLING PERFORMANCE DATA

Model	COOLING		OUTDOOR CONDITIONS (DB)						
	Indoor Conditions								
	DB	WB		77F(25C)	86F(30C)	95F(35C)	104F(40C)	113F(45C)	122F(50C)
09 (208-230V)	69.8F(21C)	59F(15C)	TC	7.41	7.82	9.73	8.34	6.12	5.10
			SC	6.64	6.69	8.18	7.37	4.36	3.74
			Input	0.35	0.54	0.81	0.8	0.75	0.75
	75.2F(24C)	62.6F(17C)	TC	7.76	9.16	9.89	8.62	6.92	5.83
			SC	3.58	8.11	6.27	5.52	4.85	4.29
			Input	0.35	0.54	0.81	0.8	0.75	0.75
	80.6F(27C)	66.2F(19C)	TC	8.21	9.22	10.41	9.27	7.32	6.00
			SC	7.39	5.88	8.22	7.79	5.11	4.37
			Input	0.35	0.75	0.82	0.81	0.75	0.75
	89.6F(32C)	73.4F(23C)	TC	8.41	9.72	11.59	10.22	8.82	7.51
			SC	3.68	5.76	6.9	6.2	5.55	5.00
			Input	0.36	0.56	0.83	0.82	0.76	0.77
12 (208-230V)	69.8F(21C)	59F(15C)	TC	8.21	11.75	11.42	9	7.85	6.68
			SC	7.06	9.05	8.68	7.38	6.42	5.58
			Input	0.38	0.8	1.04	0.87	0.82	0.81
	75.2F(24C)	62.6F(17C)	TC	8.42	11.84	12.01	9.35	8.32	7.34
			SC	7.28	8.69	8.66	7.62	6.53	5.81
			Input	0.57	0.94	1.25	1.27	0.98	0.94
	80.6F(27C)	66.2F(19C)	TC	8.81	11.95	12.23	9.69	8.87	7.95
			SC	7.49	8.32	8.63	7.85	6.64	6.04
			Input	0.39	0.75	1.06	0.89	0.85	0.82
	89.6F(32C)	73.4F(23C)	TC	9.01	12.15	12.43	9.89	9.07	8.15
			SC	7.70	8.53	8.84	8.06	6.85	6.25
			Input	0.4	0.97	1.30	1.34	0.92	0.85
18 (208-230V)	69.8F(21C)	59F(15C)	TC	12.58	15.24	16.25	11.04	8.32	6.78
			SC	8.34	10.3	10.6	7.93	6.18	5.16
			Input	0.58	0.93	1.53	1.20	1.42	1.32
	75.2F(24C)	62.6F(17C)	TC	13.48	16.41	16.66	12.3	9.43	7.74
			SC	8.85	10.94	11.35	8.62	6.87	5.91
			Input	0.57	0.93	1.56	1.22	1.45	1.35
	80.6F(27C)	66.2F(19C)	TC	14.43	18.04	18.37	13.35	9.97	7.96
			SC	9.59	11.95	12.37	9.28	7.23	6.02
			Input	0.57	0.94	1.59	1.24	1.48	1.38
	89.6F(32C)	73.4F(23C)	TC	14.7	19.03	20.18	15.36	12.02	9.97
			SC	9.08	11.72	12.5	9.69	7.85	6.89
			Input	0.6	0.97	1.62	1.27	1.51	1.41

LEGEND

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

HEATING PERFORMANCE DATA

Model	HEATING		OUTDOOR CONDITIONS (DB)									
	Indoor Conditions (DB)		53.6F(12C)	44.6F(7C)	39.2F(4C)	32F(0C)	24.8F(−4C)	19.4F(−7C)	17F(−8C)	5F(−15C)	0F(−17C)	−4F(−20C)
09 (208−230V)	59F(15C)	TC	11.18	11.08	10.89	10.65	9.87	9.11	8.27	6.71	6.21	5.80
		Input	0.73	0.79	1.04	1.01	0.96	0.9	0.84	0.8	0.79	0.78
		COP	4.49	4.11	3.07	3.09	3.01	2.97	2.88	2.46	2.30	2.18
	64.4F(18C)	TC	11.06	10.82	10.65	10.54	9.63	8.84	8.01	5.46	5.02	4.60
		Input	0.78	0.8	1.08	1.03	0.98	0.94	0.9	0.82	0.81	0.80
		COP	4.15	3.96	2.89	3.00	2.88	2.76	2.61	1.95	1.82	1.69
	69F(20.5C)	TC	10.84	10.55	10.48	10.32	9.43	8.55	7.95	4.29	4.11	4.02
		Input	0.8	0.81	1.11	1.05	1.00	0.98	0.96	0.84	0.83	0.82
		COP	3.97	3.82	2.77	2.88	2.76	2.56	2.43	1.50	1.45	1.44
	71.6F(22C)	TC	10.62	10.32	10.21	10.11	9.23	8.41	7.89	4.11	3.86	3.60
		Input	0.82	0.83	1.15	1.07	1.02	1.02	0.92	0.86	0.84	0.84
		COP	3.79	3.64	2.60	2.77	2.65	2.42	2.51	1.40	1.35	1.26
12 (208−230V)	59F(15C)	TC	11.78	12.72	12.42	11.32	10.4	9.54	8.9	5.75	5.41	4.82
		Input	0.79	1.01	1.05	1.1	1.02	1.00	0.98	0.83	0.8	0.78
		COP	4.37	3.69	3.47	3.02	2.99	2.80	2.66	2.03	1.98	1.81
	64.4F(18C)	TC	12.05	12.65	12.32	11.34	10.32	9.32	8.81	6.14	5.77	5.25
		Input	0.83	1.37	1.4	1.26	1.22	1.27	1.01	0.91	0.86	0.82
		COP	4.25	2.71	2.58	2.64	2.48	2.15	2.56	1.98	1.97	1.88
	69F(20.5C)	TC	12.27	12.6	12.12	11.32	10.21	9.12	8.43	6.49	6.05	5.45
		Input	0.83	1.1	1.12	1.19	1.19	1.25	1.03	0.98	0.92	0.86
		COP	4.33	3.36	3.17	2.79	2.51	2.14	2.40	1.94	1.93	1.86
	71.6F(22C)	TC	11.14	12.41	12.01	11.21	10.01	9.02	8.21	6.01	5.71	5.60
		Input	0.85	1.15	1.16	1.21	1.23	1.31	1.05	1.00	0.98	0.94
		COP	3.84	3.16	3.03	2.71	2.38	2.02	2.29	1.76	1.71	1.75
18 (208−230V)	59F(15C)	TC	23.16	20.54	19.42	17.56	16.52	14.28	12.08	9.39	8.73	8.02
		Input	1.58	1.49	1.48	1.58	1.46	1.4	1.35	1.21	1.19	1.16
		COP	4.29	4.04	3.84	3.26	3.32	2.99	2.62	2.27	2.15	2.03
	64.4F(18C)	TC	22.41	20.08	18.66	16.89	16.05	13.94	12.06	9.16	8.44	7.86
		Input	1.62	1.55	1.55	1.61	1.52	1.45	1.40	1.29	1.24	1.20
		COP	4.05	3.80	3.53	3.07	3.09	2.82	2.52	2.08	1.99	1.92
	69F(20.5C)	TC	21.71	19.67	17.93	16.26	15.62	13.62	12.07	8.95	8.33	7.62
		Input	1.67	1.62	1.63	1.65	1.58	1.5	1.45	1.38	1.32	1.31
		COP	3.81	3.56	3.22	2.89	2.90	2.66	2.44	1.90	1.85	1.70
	71.6F(22C)	TC	21.01	18.97	17.23	15.56	14.92	12.92	11.37	8.25	7.66	7.01
		Input	1.72	1.67	1.68	1.7	1.63	1.55	1.50	1.43	1.39	1.34
		COP	3.58	3.33	3.00	2.68	2.68	2.44	2.22	1.69	1.62	1.53

LEGEND

DB − Dry Bulb

WB − Wet Bulb

TC − Total Net Heating Capacity (1000 Btu/hour)

SC − Sensible Capacity (1000 Btu/hour)

Input − Total Power (kW)

APPLICATION DATA

UNIT SELECTION

Select equipment to either match or be slightly less than 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 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 unit Installation Instructions for further details.

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

Clearance – Minimum clearance, as shown in Fig. 4, must be provided for airflow. The condensing units are designed for free−blow application. Air inlets and outlets should not be restricted.

Unit location – A location which is convenient to installation and not exposed to strong wind.

A location which can bear the outdoor unit weight 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 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
Outdoor DB	−4 / 122 (−20 / 50)	−4 / 86 (−20 / 30)
Indoor DB	63 / 90 (17 / 32)	32 / 86 (0 / 30)
Indoor WB	59 / 84 (15 / 29)	4.1 / 70.7 (-15.5 / 21.5)

NON−OPERATING TEMPERATURE RANGE Min / Max °F (°C)	
Indoor/Outdoor DB	32 / 86 (0 / 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 fan coil connected.

DRAIN CONNECTIONS

Install drains to meet local sanitation codes. The in−ceiling cassette is supplied with a 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.

See physical dimension tables for drain sizes.

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), consult the *Long−Line Applications* section on this page for proper charge adjustments.
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.

Long Line Applications:

1. No change in line sizing is required.
2. Add refrigerant per table below.

ADDITIONAL CHARGE TABLE

UNIT SIZE	TOTAL LINE LENGTH ft		ADDITIONAL CHARGE, oz/ft. ft (m)		
	Min	Max	10 – 25 (3 – 8)	>25 – 82 (8 – 25)	>82 – 98 (25 – 30)
9	10	82	None	0.27	
12					
18		82		0.43	0.43

WIRING

All wires must be sized per NEC (National Electrical Code) or CEC (Canadian Electrical Code) and local codes. Use the 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.

Per caution note, only Stranded copper conductors with a 600 volt rating and double insulated copper wire must be used.

NOTE: The use of BX cable is not recommended.

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.

Recommended Connection Method for Power and Communication Wiring (To minimize communication wiring interference)

PowerWiring:

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 minimum 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.
- Use copper conductors only with a 600 volt rating and double insulated copper wire.

⚠ 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 indoor unit to outdoor unit.
- Every wire must be connected firmly. Loose wiring may cause terminal to overheat or result in unit malfunction. A fire hazard may also exist. Ensure all wiring is tightly connected.
- No wire should to touch refrigerant tubing, compressor or any moving parts.
- Disconnecting means must be provided and must be located within sight and readily accessible from the air conditioner.
- Connecting cable with conduit shall be routed through 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. 5 – Wireless remote control

1. A wireless remote control is supplied for system operation 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)

P/N KSACN0101AAA

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

AIR FLOW DATA

SYSTEM SIZE		CASSETTE		
		9K	12K	18K
	HIGH	380	400	420
	MEDIUM	320	340	350
	LOW	260	280	290
OUTDOOR (CFM)		945	945	1050

SOUND PRESSURE

SYSTEM SIZE		CASSETTE		
		9K	12K	18K
Cooling operation Indoor Sound Pressure	dBa (L/M/H)	34/39/44	36/39/42	46/48/50
Heating operation Indoor Sound Pressure	dBa (L/M/H)	31/37/42	37/39/42	46/47/49
Outdoor sound pressure level	dBa	55.5	56	59

SOUND POWER

SYSTEM SIZE		CASSETTE		
		9K	12K	18K
Cooling operation Indoor Sound Power	dBa (L/M/H)	43/48/53	45/48/51	56/58/60
Heating operation Indoor Sound Power	dBa (L/M/H)	40/48/51	46/48/51	56/57/59
Outdoor sound power level	dBa	65	66	69

ELECTRICAL DATA

UNIT SIZE	OPER. VOLTAGE MAX / MIN*	COMPRESSOR		OUTDOOR FAN				INDOOR FAN				MCA	MAX FUSE CB AMP
		V–PH–HZ	RLA	V–PH–HZ	FLA	HP	W	V–PH–HZ	FLA	HP	W		
9K	253 / 187	208–230/1/60	5.3	208–230/1/60	3.0	0.053	40	208–230/1/60	0.146	0.061	46	15	15
12K			5.7		3.0	0.053	40		0.146	0.061	46	15	15
18K			7.3		3.0	0.067	50		0.146	0.061	46	13	20

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

LEGEND

FLA – Full Load Amps

MCA – Minimum Circuit Amps

RLA – Rated Load Amps

FAN AND MOTOR SPECIFICATIONS

SYSTEM SIZE			CASSETTE		
			9K	12K	18K
Indoor Fan	material		ABS	ABS	ABS
	Type		LX−322*147.5*12−7N	LX−322*147.5*12−7N	LX−322*147.5*12−7N
	Diameter	inch	12.7	12.7	12.7
	Height	inch	5.8	5.8	5.8
Indoor Fan Motor	Model		WZDK46−38G	WZDK46−38G	WZDK46−38G
	Type		DC	DC	DC
	Phase		3	3	3
	FLA		0.146	0.146	0.146
	Insulation class		E	E	E
	Safe class		IPX0	IPX0	IPX0
	Input	W	45	45	45
	Output	W	46	46	46
	Range of current	Amps	0.146±10%	0.146±10%	0.146±10%
	Rated current	Amps	0.146	0.146	0.146
	Rated HP	HP	0.061	0.061	0.061
	Speed	rev/min	600/520/460	650/560/500	860/800/680/580
	Rated RPM	rev/min	960	960	960
	Max. input	W	45	45	45
Outdoor fan	material		AS	AS	AS
	Type		ZL−421*117*8−3K	ZL−421*117*8−3K	ZL−460*180*10−3N
	Diameter	inch	16.6	16.6	18.1
	Height	inch	7	4.6	7.1
Outdoor Fan Motor	Model		WZDK40−38G−W−1	WZDK40−38G−W−1	ZKFN−50−8−2
	Phase		DC	DC	DC
	FLA		3	3	3
	Type		0.42	0.42	0.85
	Insulation class		E	E	E
	Safe class		IPX0	IPX0	IPX0
	Input	W	46	46	103
	Output	W	40	40	50
	Range of current	Amps	0.42±10%	0.42±10%	0.85±10%
	Rated current	Amps	0.42	0.42	0.85
	Rated HP	HP	0.053	0.053	0.067
	Speed	rev/min	800/700/600	800/700/600	800/700/600
	Rated RPM	rev/min	900	900	800
	Max. input	W	46	46	103

WIRING DIAGRAMS

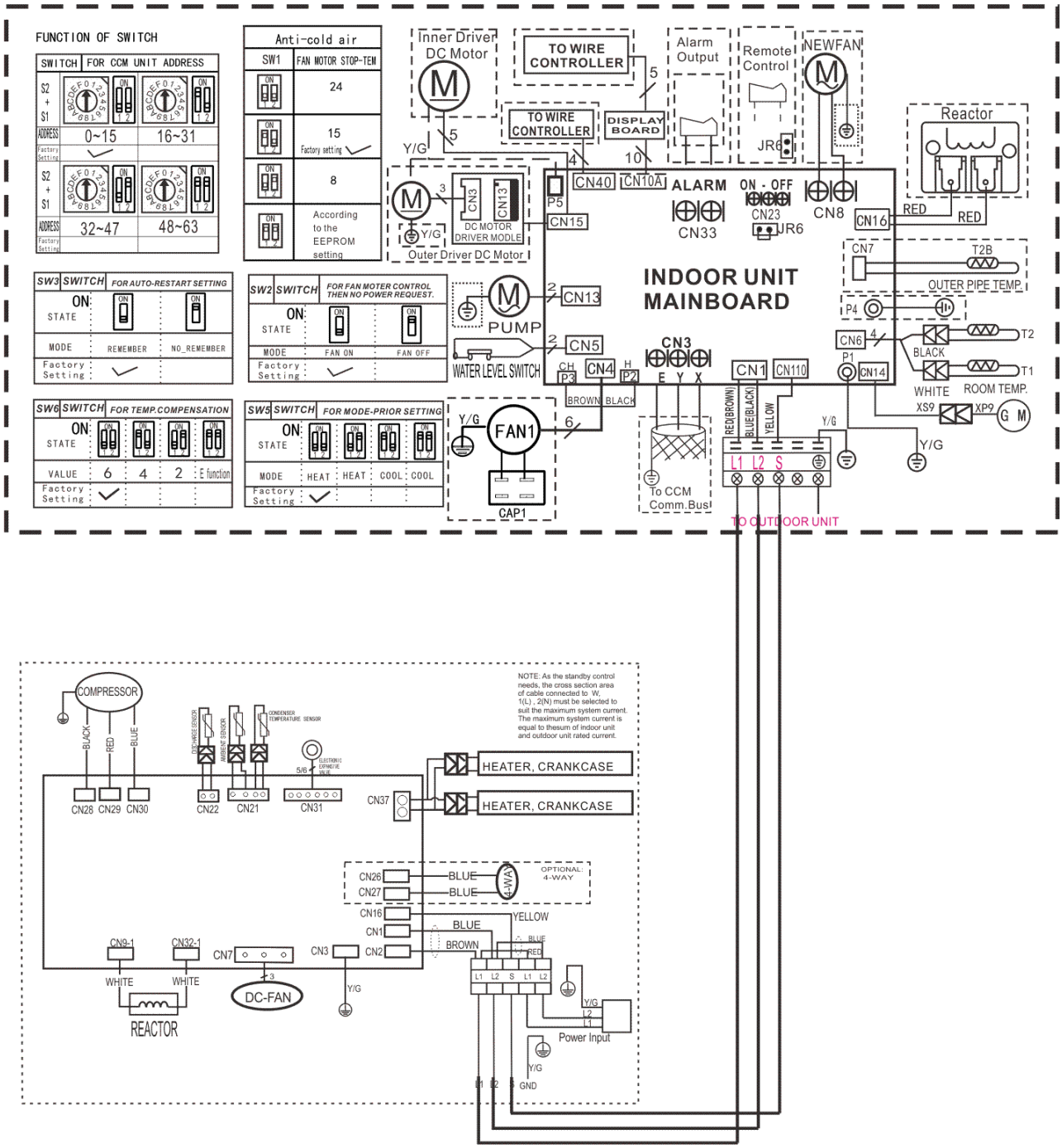

Fig. 6 – Wiring Diagram 38MAQB09–––3 / 40MBQ09C––3 AND 38MAQB12–––3 / 40MBQ12C––3

INDOOR UNIT		OUTDOOR UNIT	
CODE	**PART NAME**	**CODE**	**PART NAME**
CN1	Input: 230VAC High voltage Connection of the terminal	CN31	Output:Pin5&6(12V) Pin1–Pin4:Pulse waveform,(0–12V)
CN3	Output: 0–5VDC Connection of the CCM	CN21	Input:Pin3–4 (3.3V) Pin2(0V),Pin1,Pin5(0–3.3V)
P1	Output: 0V Connection of the earth	CN22	Input:Pin1 (3.3V) Pin2(0–3.3V)
CN5	Output: 1–5VDC Connection of the Water level switch	CN37	Output: 230VAC High voltage
CN6	Output: 5VDC Connection of the Room and Pipe temperature	CN9–1,CN32–1	Output: Connection of the high voltage
CN10A	Output: 12VDC Connection of the Display board	CN1	Input:230VAC High voltage
CN13	Output: 220VAC High voltage Connection of the Pump	CN2	Input:230 VAC High voltage
CN14	Output: 12VDC Connection of the Swing motor	CN3	Connection to the earth
CN15	Output: 320VDC High voltage Connection of the DC Fan	CN16	Output: Connection of the high voltage
CN16	Output: 320VDC High voltage Connection of the Reactor	CN26,CN27	Output: High voltage for 4–way control
CN23	Output: 1–12VDC Connection of the Remote switch	CN7	Output: Pulse(0–320VDC) for DC FAN
CN33	Output: 0V Connection of the Alarm	U V W	Output: Pulse(0–320VDC) for COMPRESSOR
CN40	Output: 12VDC Connection of the Wire controller		
CN110	Output: 24VDC between Pin2 of CN1 connection of the S signal		

WIRING DIAGRAMS (CONT)

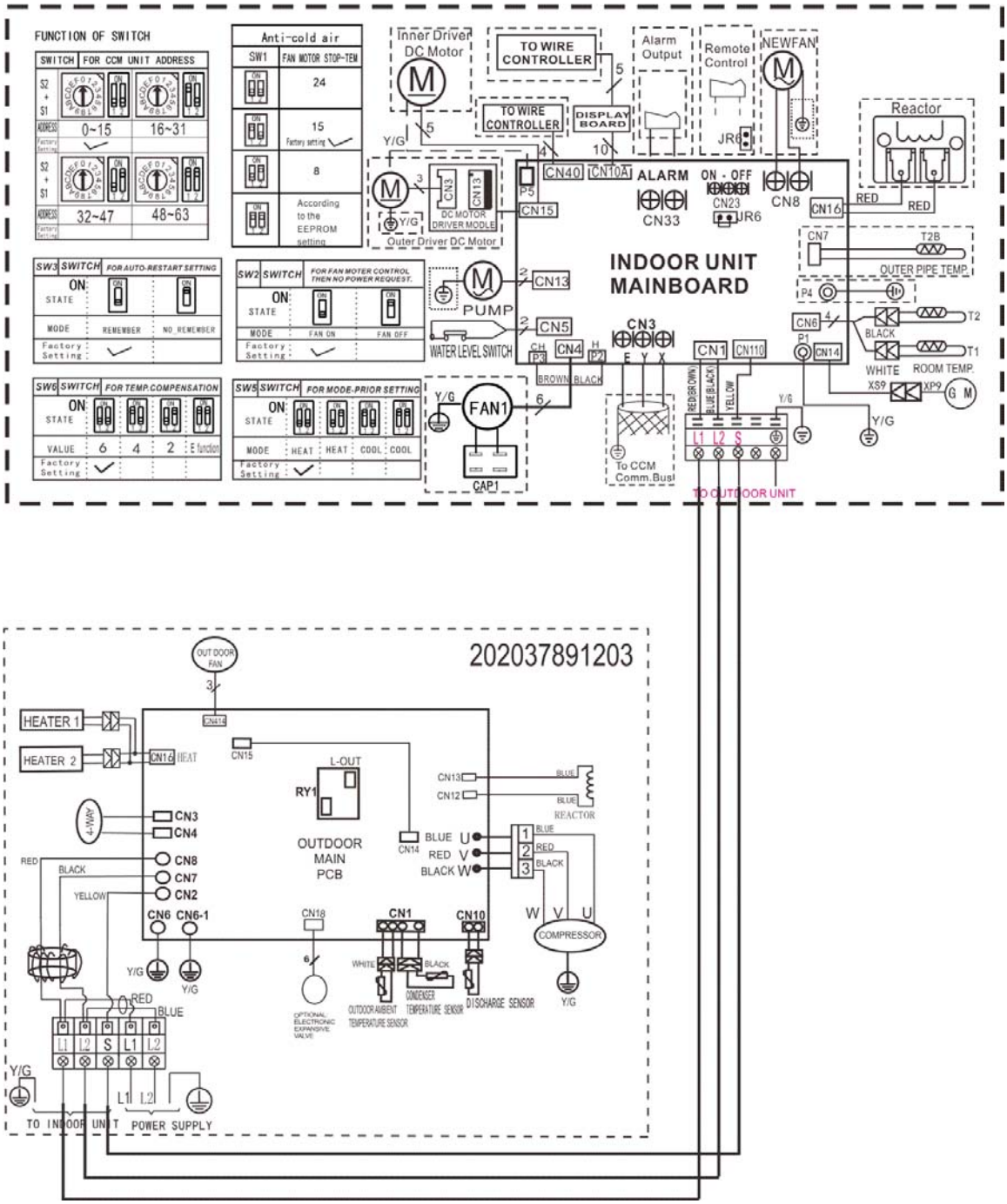

Fig. 7 – Wiring Diagram 38MAQB18−−−3 / 40MBQ18C−−3

INDOOR UNIT		OUTDOOR UNIT	
CODE	**PART NAME**	**CODE**	**PART NAME**
CN1	Input: 230VAC High voltage Connection of the terminal	CN7、CN8	Input: 230V High voltage
CN3	Output: 0−5VDC Connection of the CCM	CN2	Output: Connection of the high voltage
P1	Output: 0V Connection of the earth	CN3、CN4	Output: High voltage for 4−way control
CN5	Output: 1−5VDC Connection of the Water level switch	CN11、CN16	Output: 230V High voltage for HEATER
CN6	Output: 5VDC Connection of the Room and Pipe temperature	CN5	Output: Pulse(0−320V) for DC FAN
CN10A	Output: 12VDC Connection of the Display board	CN12、CN13	Output: Connection of the high voltage
CN13	Output: 220VAC High voltage Connection of the Pump	U V W	Output: Pulse(0−320V) for compressor
CN14	Output: 12VDC Connection of the Swing motor	CN10	Input:Pin1 (5V) Pin2(0−5V)
CN15	Output: 320VDC High voltage Connection of the DC Fan	CN1	Input:Pin3−4 (5V) Pin2(0V),Pin1,Pin5(0−5V)
CN16	Output: 320VDC High voltage Connection of the Reactor	CN18	Output:Pin5&6(12V) Pin1−Pin4:Pulse waveform,(0−12V)
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 UNITS

Size Range: 3/4 to 1 1/2 Ton Nominal Cooling and Heating Capacity
Carrier Model Number: 40MB*C

PART 1 – GENERAL

1.01 System Description

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

1.02 Agency Listings

Unit shall be 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 is constructed of galvanized steel. The cabinet is fully insulated for improved thermal and acoustic performance.

C.

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

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 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 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 provides 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 provide continuous checks of unit operation and warn of possible malfunctions. Error messages are displayed at 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 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 heat pump mode.

G. Filters:

Unit have a filter track with factory−supplied cleanable filters.

H. Electrical Requirements:

Indoor fan motor to operate on 208−230V on model sizes 09− 18, as specified. Power is supplied from the outdoor unit.

I. Operating Characteristics:

The 40MB*C 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.

GUIDE SPECIFICATIONS

HORIZONTAL DISCHARGE OUTDOOR UNITS

Size Range: 3/4 to 1 1/2 Ton Nominal Cooling and Heating Capacity

Carrier Model Number: 38MAQ

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 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 should 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 has been evaluated in accordance with UL standard 1995.

C. Units are be 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 the 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 are 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 inside and outside.
2. Unit access panels are removable with minimal screws and provide 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 direct−drive propeller type, and discharges air horizontally. Fans draw air through the outdoor coil.
2. Outdoor fan motors are totally−enclosed, single phase motors with class E insulation and permanently−lubricated ball bearings. The motor is protected by internal thermal overload protection.
3. The shaft has an inherent corrosion resistance.
4. Fan blades are non metallic and are statically and dynamically balanced.
5. Outdoor fan openings are equipped with PVC metal/mesh coated protection grille over fan.

D. Compressor:

1. Compressor is the fully hermetic rotary type.
2. Compressor is equipped with an oil system, operating oil charge, and motor. Internal overloads protect the compressor from over−temperature and over−current.
3. The motor is NEMA rated class E, suitable for operation in a refrigerant atmosphere.
4. The compressor assembly is installed on rubber vibration isolators.
5. The compressors are single phase.

E. Outdoor Coil:

The coil is constructed of aluminum fins and specially blue hydrophilic pre−coated for enhanced wet−ability mechanically bonded to seamless copper tubes, which are cleaned, dehydrated, and sealed.

F. Refrigeration Components:

Refrigerant circuit components include brass external liquid line service valve with service gage port connections, suction line service valve with 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 208−230v for unit sizes 9−18 as specified.
2. Unit electrical power is 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. Unit has high and low−voltage terminal block connections.

Copyright 2015 Carrier Corp. • 7310 W. Morris St. • Indianapolis, IN 46231
Edition Date: 12/15
Catalog No:38− 40MBC− 03PD

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.
Replaces:38−40MBC−02PD