

**619PB / 538PR
HIGH WALL DUCTLESS SPLIT SYSTEM
SIZES 09 TO 30**



Product Data



INDUSTRY LEADING FEATURES / BENEFITS

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

The 619PB/538PR 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 fan coil is mounted on the wall, near 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
- 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 619PB/538PR 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 619PB/538PR 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 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 619PB/538PR 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 high wall 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 high wall 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 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 while air moves through the ducts.

EASY-TO-USE CONTROLS

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

ACCESSORIES

Customizing these ductless split systems to your application is easily accomplished.

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

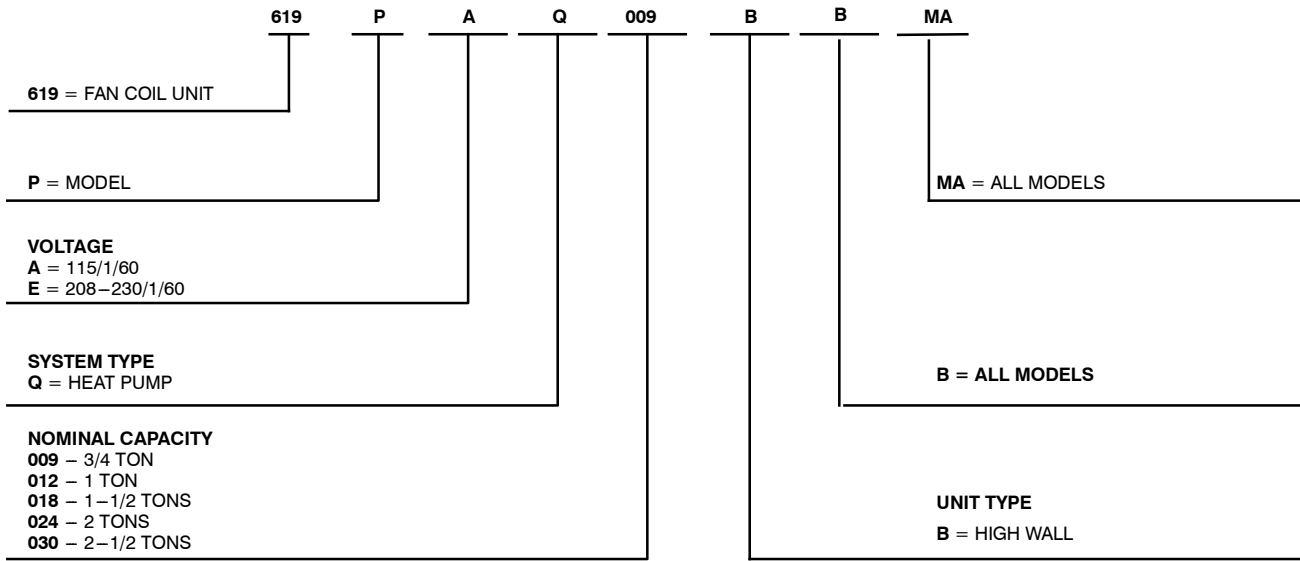
OPTIONAL WIRED CONTROLLER

AGENCY LISTINGS

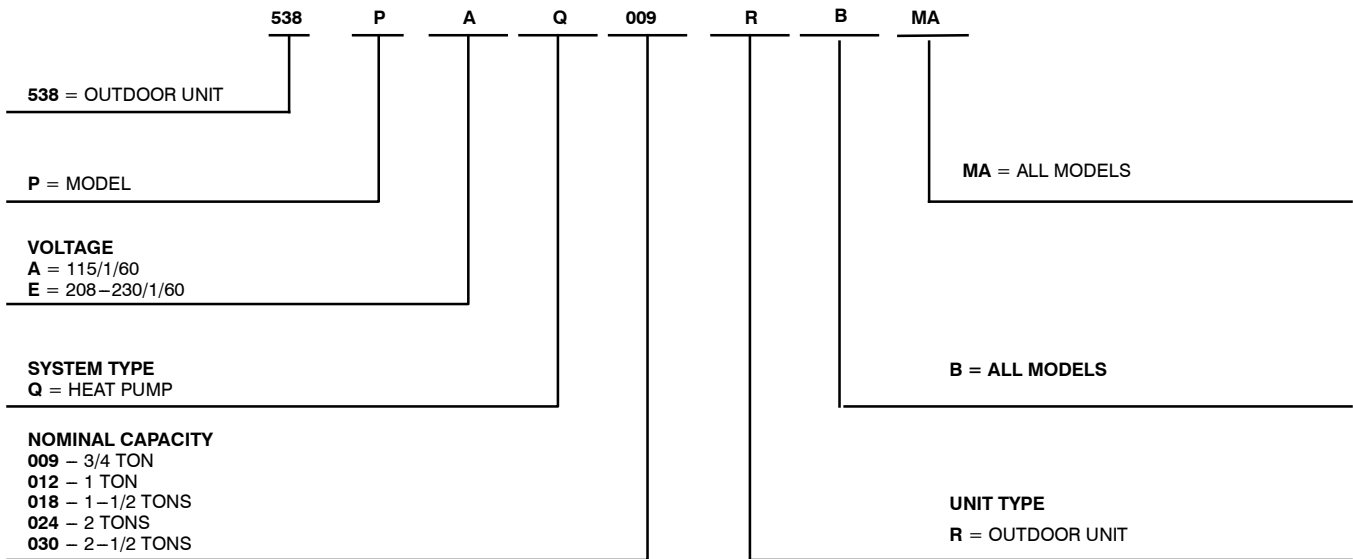
All systems are listed with AHRI (Air Conditioning, Heating & Refrigeration Institute), and ETL.

MODEL NUMBER NOMENCLATURE

INDOOR UNIT



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 Vertical Air Swing	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	A
Crankcase Heater	S
Base pan Heater	S

Legend
 S Standard
 A Accessory

ACCESSORIES

ACCESSORY NO.	DESCRIPTION	FOR MODELS
53DS-900---117	CONDENSATE PUMP (115V)	SIZES 09, 12 (115V)
53DS-900---118	CONDENSATE PUMP (208-230V)	SIZES 09, 12, 18, 24, 30 (208-230V)
KSACN0101AAA	WIRED REMOTE CONTROL	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 UNITS

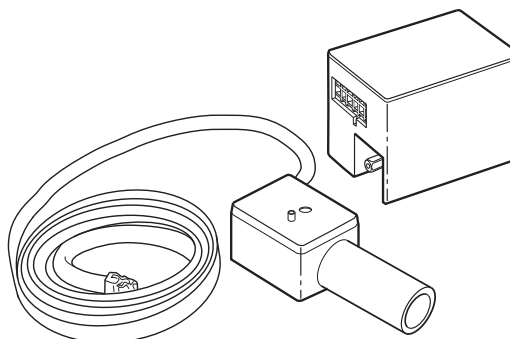


Fig. 1 – Condensate Pump Accessory

On high wall 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.

NOTE: An external 115v power source is required to run the pump on unit sizes 9k and 12k.

OUTDOOR UNITS

Crankcase Heater

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

FACTORY INSTALLED BASEPAN HEATER

DIMENSIONS - INDOOR

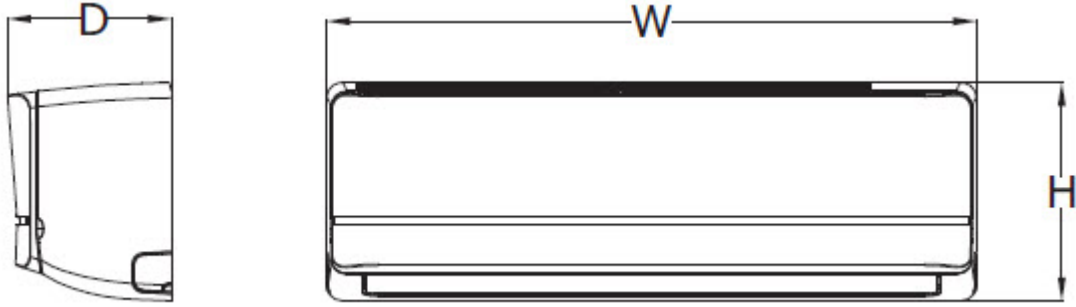


Fig. 2 – Indoor Unit

A150693

UNIT SIZE	W in (mm)	D in (mm)	H in (mm)	OPERATING WEIGHT lb (kg)
9K/12K	32.9 (835)	7.8 (198)	11.0 (280)	19.2 (8.7)
18K	39.0 (990)	8.6 (218)	12.4 (315)	26.5 (12.0)
24K/30K	46.7 (1186)	10.2 (258)	13.4 (343)	40.8 (18.5)

DIMENSIONS - OUTDOOR

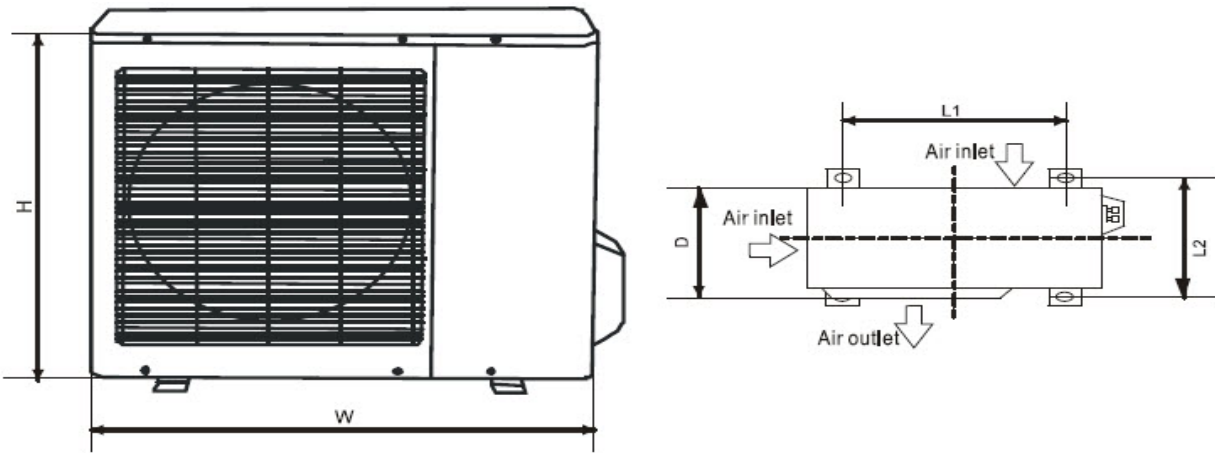


Fig. 3 – Outdoor Unit

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)
24K	37.2 (945)	15.6 (395)	31.9 (810)	25.1 (640)	15.9 (405)	137.6 (62.4)
30K	37.2 (945)	15.6 (395)	31.9 (810)	25.1 (640)	15.9 (405)	157.6 (71.5)

CLEARANCES - INDOOR

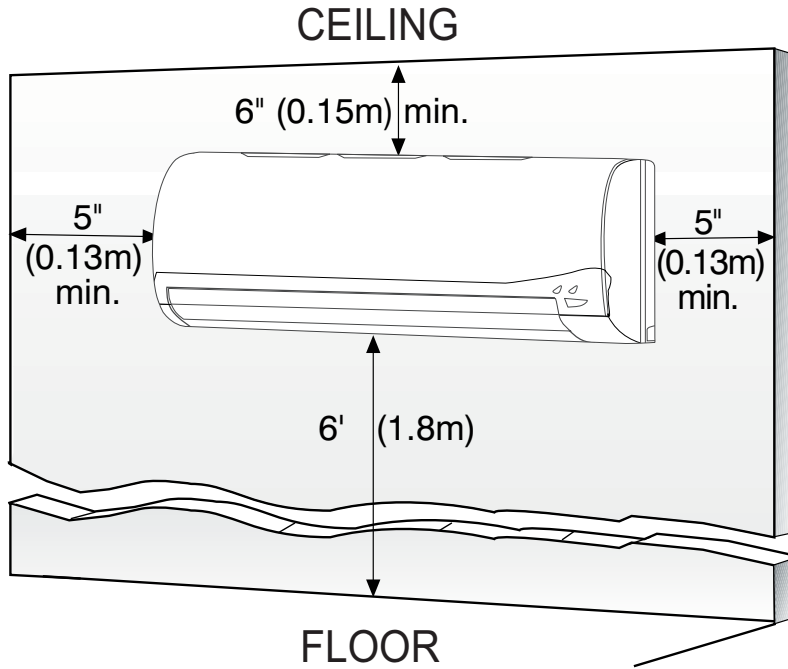


Fig. 4 – Indoor Unit Clearance

CLEARANCES - OUTDOOR

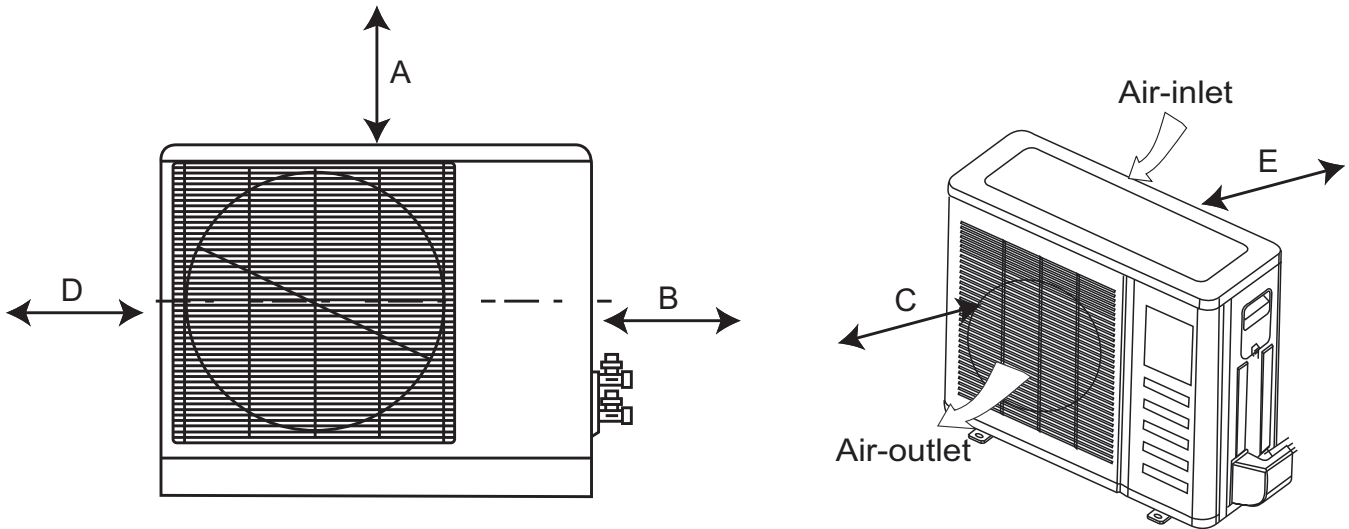


Fig. 5 – Clearances Outdoor

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

SPECIFICATIONS

System	SIZE		9	12	9	12	18	24	30
	Outdoor Model		538PAQ009RBMA	538PAQ012RBMA	538PEQ009RBMA	538PEQ012RBMA	538PEQ018RBMA	538PEQ024RBMA	538PEQ030RBMA
	Indoor Model		619PAQ009BBMA	619PAQ012BBMA	619PEQ009BBMA	619PEQ012BBMA	619PEQ018BBMA	619PEQ024BBMA	619PEQ030BBMA
	Energy Star		YES	YES	YES	YES	YES	YES	NO
Performance	Cooling Rated Capacity	Btu/h	9,000	12,000	9,000	12,000	17,500	23,000	30,000
	Cooling Cap. Range Min - Max	Btu/h	3500-11000	4000-13000	3500-11000	4000-13000	4500-18000	5500-23500	8000-30500
	SEER		23.5	21.5	23.5	21.5	19.5	20.0	16.5
	EER		14.5	13	14.5	13	12.5	12.5	9.5
	Heating Rated Capacity	Btu/h	10,000	12,000	10,000	12,000	18,000	25,000	32,000
	Heating Cap. Range Min - Max	Btu/h	4,500-11,500	5,000-13,500	4,500-11,500	5,000-13,500	5,500-19,000	6,000-26,000	9,000-34,000
	HSPF		10.0	10.0	10.0	10.0	9.6	10.0	9.6
	COP	W/W	3.36	3.22	3.66	3.36	3.36	3.22	2.92
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	-4-122	-4-122	-4-122	-4-122
	Heating Outdoor DB Min - Max	°F	-4-86	-4-86	-4-86	-4-86	-4-86	-4-86	-4-86
	Cooling Indoor DB Min -Max	°F	63-90	63-90	63-90	63-90	63-90	63-90	63-90
	Heating Indoor DB Min -Max	°F	32-86	32-86	32-86	32-86	32-86	32-86	32-86
Piping	Total Piping Length	Ft.	82	82	82	82	98	98	164
	Piping Lift	Ft.	32	32	32	32	65	65	82
	Pipe Connection Size - Liquid	In.	1/4	1/4	1/4	1/4	1/4	3/8	3/8
	Pipe Connection Size - Suction	In.	3/8	1/2	3/8	1/2	1/2	5/8	5/8
Refrigerant	Type		R410A						
	Design Pressure	PSIG	550	550	550	550	550	550	550
	Metering Device		Electronic Expansion Valve				Capillary Tube		
Refrigerant	Charge	Lb.	2.76	2.76	2.76	2.76	4.19	5.18	6.62
Outdoor Coil	Face Area	Sq. Ft.	9.2	9.2	9.2	9.2	16.0	21.1	17.2
	No. Rows		2	2	2	2	2	3	3
	Fins per inch		21	21	21	21	18	18	17
	Circuits		4	4	4	4	6	8	6
Indoor Coil	Face Area (sq. ft.)	Sq. Ft.	2.2	2.2	2.2	2.2	2.6	3.7	3.7
	No. Rows		2	2	2	2	2	3	3
	Fins per inch		20	20	20	20	20	18	18
	Circuits		3	3	3	3	4	7	7
Compressor	Type		Hermetic Rotary DC Inverter Compressor						
	Model		ASM98D1UFZA	ASM108D1UFZA	ASM98D1UFZA	ASM108D1UFZA	ASM135D23UFZ	DA250S2C-30MT	TNB306FPGMC-L
	Oil Type		VG74	VG74	VG74	VG74	VG74	VG74	FV50S
	Oil Charge	Fl. Oz.	12.5	12.5	12.5	12.5	15.2	27.7	36.2
	Rated Current	RLA	5.3	5.7	5.3	5.7	7.3	8.8	13.5
Electrical	Voltage, Phase, Cycle	V/Ph/ Hz	115-1-60	115-1-60	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.	15	15	15	15	13	15	20
	MOCP - Fuse Rating	A.	20	20	15	15	20	25	30
Outdoor	Unit Width	In.	31.9	31.9	.9	31.9	33.3	37.2	37.2
	Unit Height	In.	22.0	22.0	.0	22.0	.6	31.9	31.9
	Unit Depth	In.	12.2	12.2	.2	12.2	.6	15.6	15.6
	Net Weight	Lbs.	82.5	82.5	82.5	82.5	102.5	137.6	157.6
	Airflow	CFM	1200	1200	1200	1200	1390	2130	2130
	Sound Pressure	dB(A)	56	56	56	56	59	60	63
Indoor	Unit Width	In.	32.9	32.9	32.9	32.9	39.0	46.7	46.7
	Unit Height	In.	11.0	11.0	11.0	11.0	12.4	13.4	13.4
	Unit Depth	In.	7.8	7.8	7.8	7.8	8.6	10.2	10.2
	Net Weight	Lbs.	19.2	19.2	19.2	19.2	26.5	40.1	40.1
	Number of Fan Speeds		4	4	4	4	4	4	4
	Airflow (lowest to highest)	CFM	210/290/360/380	210/300/360/380	210/290/360/380	210/300/360/380	310/450/650/680	520/620/780/870	520/620/780/870
	Sound Pressure (lowest to highest)	dB(A)	27/34/42	27/34/42	27/34/42	27/34/42	33/40/46	39/45/50	39/45/50
	Air Throw Data	Ft.	23	23	23	23	30	36	36

*Condensing unit above or below indoor unit

COOLING PERFORMANCE DATA

MODEL	COOLING			OUTDOOR CONDITIONS (DB)					
	Indoor Conditions DB	Indoor Conditions WB		77F(25C)	86F(30C)	95F(35C)	104F(40C)	113F(45C)	122F(50C)
09 (115V)	69.8F(21C)	59F(15C)	TC	7.43	7.83	9.74	8.38	6.11	5.11
			SC	6.68	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	7.78	9.14	9.89	8.65	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
			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
			Input	0.36	0.56	0.83	0.82	0.76	0.77
12 (115V)	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	7.7	8.53	8.84	8.06	6.85	6.25
			Input	0.4	0.97	1.3	1.34	0.92	0.85
09 (208-230V)	69.8F(21C)	59F(15C)	TC	7.41	7.82	9.73	8.34	6.12	5.1
			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
			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
			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	7.7	8.53	8.84	8.06	6.85	6.25
			Input	0.4	0.97	1.3	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	1.2	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
24 (208-230V)	69.8F(21C)	59F(15C)	TC	19.5	20.69	21.43	18.05	14.27	13.32
			SC	15.15	15.61	15.49	14.23	10.03	8.78
			Input	1.2	1.88	2.29	2.14	1.9	1.86
	75.2F(24C)	62.6F(17C)	TC	20.01	21.21	22.31	18.51	15.08	13.3
			SC	15.25	15.71	15.59	14.33	10.13	8.88
			Input	1.2	1.87	2.3	2.21	2.14	1.92
	80.6F(27C)	66.2F(19C)	TC	20.54	21.75	23.21	18.98	15.91	13.3
			SC	15.35	15.81	15.69	14.43	10.23	8.98
			Input	1.21	1.86	2.31	2.26	2.16	1.93
	89.6F(32C)	73.4F(23C)	TC	20.61	22.94	24.4	21.84	19.17	16.66
			SC	15.58	16.04	15.92	14.66	10.46	9.21
			Input	1.22	1.87	2.34	2.33	2.32	1.96
30 (208-230V)	69.8F(21C)	59F(15C)	TC	27.33	27.43	27.51	22.77	18.29	17.32
			SC	19.4	19.48	19.56	17.21	16.32	15.28
			Input	2.28	3.29	3.63	3.11	2.35	2.25
	75.2F(24C)	62.6F(17C)	TC	29.41	30.01	29.82	24.53	20.71	18.24
			SC	19.95	20.47	20.07	17.73	17.24	16.29
			Input	2.31	3.32	3.68	3.17	2.41	2.31
	80.6F(27C)	66.2F(19C)	TC	31.57	32.68	32.21	26.37	23.2	19.21
			SC	20.55	21.52	20.65	18.3	18.21	17.35
			Input	2.35	3.35	3.74	3.23	2.47	2.38
	89.6F(32C)	73.4F(23C)	TC	32.6	33.71	33.24	27.4	24.23	20.24
			SC	20.9	21.87	21	18.65	18.56	17.7
			Input	2.42	3.42	3.81	3.3	2.54	2.45

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)

APPLICATION DATA

UNIT SELECTION

Select equipment that either matches or is 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 (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 Fig. 4).

Unit location - Select a location which provides the best air circulation for the room. These units should be positioned as high as possible on 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.

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 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 the refrigeration line hole locations.

SUPPORT

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

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)	
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 (sizes 09 - 18) has an electronic expansion valve to manage the refrigerant flow of the connected fan coil. Sizes 24 and 30 have capillary tube metering devices in the outdoor unit.

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 high wall fan coil unit condensate pumps have a maximum lift of 10' (3.05 m) for 9k and 12k units and 25' (7.62 m) for 18k and 30k units.

See the physical dimension tables for the drain sizes.

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

Drain connections may be routed through alternate locations on most fan coils (see Fig. 6).

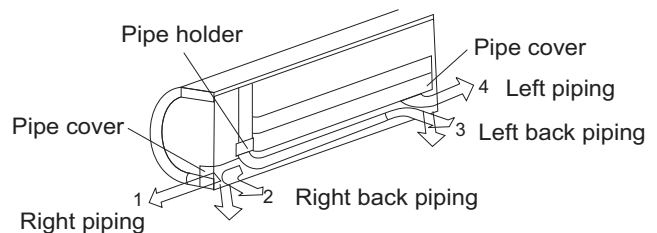


Fig. 6 – Piping Locations

REFRIGERANT LINES

General refrigerant line sizing:

- 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.
- 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.
- 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.
- 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:

- No change in line sizing is required.
- Add refrigerant per the following table.

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 - 164 (25 - 50)	
9	10	82	None	0.16		
12		98				
18				164		0.32
24						
30				0.32		

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

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 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)

Power Wiring:

The main power is supplied to the outdoor unit. The field supplied power wiring from the outdoor unit to 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.
- 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 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 also have a microprocessor) 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 controls the operating mode.

WIRELESS REMOTE CONTROL



Fig. 7 – Wireless remote control

1. A wireless remote control is supplied for system operation for system operation of all high wall 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 high wall 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.



Fig. 8 – Wired Remote Control

AIR FLOW DATA

SYSTEM SIZE		9K	12K	9K	12K	18K	24K	30K
		(115V)	(115V)	(208–230V)	(208–230V)	(208–230V)	(208–230V)	(208–230V)
Indoor (CFM)	Turbo	380	380	380	380	680	870	870
	High	360	360	360	360	650	780	780
	Medium	290	300	290	300	450	620	620
	Low	210	210	210	210	310	520	520
Outdoor (CFM)		1200	1200	1200	1200	1390	2130	2130

AIR THROW DATA

UNIT CAPACITY	MAX APPROXIMATE AIR THROW ft. (m)	APPROXIMATE AIR THROW ft. (m) RANGE
9K, 12K	23 (7)	11 (3.5) – 23 (7)
18K	30 (9)	13 (4) – 30 (9)
24K	36 (11)	16 (5) – 36 (11)
30K	36 (11)	16 (5) – 36 (11)

SOUND PRESSURE

SYSTEM SIZE		9K	12K	9K	12K	18K	24K	30K
		(115V)	(115V)	(208–230V)	(208–230V)	(208–230V)	(208–230V)	(208–230V)
Indoor Sound Pressure cooling mode (at different speeds)	dBa	42/34/27	42/34/27	42/34/27	42/34/27	46.5/40/33	50/45/39	50/45/39
Indoor Sound Pressure heating mode (at different speeds)	dBa	40/33/26	41/34/27	40/33/26	41/34/27	45/39/32	47/44/38	47/44/38
Outdoor sound pressure level	dBa	55.5	56	55.5	56	59	60	63

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	127 / 104	115/1/60	5.3	115/1/60	0.14	0.053	40	115/1/60	0.17	0.027	20	15	20			
12K			5.7													
9K	253 / 187	208–230/1/60	5.3	208–230/1/60	0.42	0.053	40	208–230/1/60	0.07	0.027	20	15	15			
12K			5.70													
18K			7.3											0.95	0.067	50
24K			8.8											0.47	0.16	120
30K			13.5											1.21	0.16	120

*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		9K	12K	9K	12K	18K	24K	30K
		(115V)	(115V)	(208-230V)	(208-230V)	(208-230V)	(208-230V)	(208-230V)
Indoor fan	material	AS	AS	AS	AS	AS	AS	AS
	Type	GL-98*655-N	GL-98*655-N	GL-98*655-N	GL-98*655-N	GL-107.5*760-IN	GL-118*895-IN	GL-118*895-IN
	Diameter	inch 3.8	3.8	3.8	3.8	4.2	4.6	4.6
	Height	inch 25.8	25.8	25.8	25.8	30	35.2	35.2
Outdoor fan	material	AS	AS	AS	AS	AS	AS	AS
	Type	ZL-421*117*8-3K	ZL-421*117*8-3K	ZL-421*117*8-3K	ZL-421*117*8-3K	ZL-460*180*10-3N	ZL-560*139*12-3KN	ZL-560*139*12-3KN
	Diameter	inch 16.5	16.5	16.5	16.5	18.1	22	22
	Height	inch 4.6	4.6	4.6	4.6	7	5.5	5.5
Indoor fan motor	Model	WZDK20-38M	WZDK20-38M	WZDK20-38G	WZDK20-38G	WZDK58-38G	WZDK60-38G	WZDK60-38G
	Type	DC	DC	DC	DC	DC	DC	DC
	Phase	3	3	3	3	3	3	3
	FLA	0.17	0.17	0.07	0.07	0.17	0.23	0.23
	Insulation class	E	E	E	E	E	E	E
	Safe class	IPX0	IPX0	IPX0	IPX0	IPX0	IPX0	IPX0
	Input	W 25	25	22	22	52	72	72
	Output	W 20	20	20	20	58	60	60
	Range of current	Amps 0.17±10%	0.17±10%	0.07±10%	0.07±10%	0.17±10%	0.23±10%	0.23±10%
	Rated current	Amps 0.17	0.17	0.07	0.07	0.17	0.23	0.23
	Rated HP	HP 0.027	0.027	0.027	0.027	0.077	0.08	0.08
	Speed	rev/min 1300/1170/900/700	1300/1170/900/700	1300/1170/900/700	1300/1170/900/700	1300/1170/900/700	1250/1200/1100/900	250/1200/1100/900
	Rated RPM	rev/min 1350	1350	1350	1350	1350	1350	1350
	Max. input	W 25	25	22	22	52	72	72
Outdoor fan motor	Model	WZDK40-38G-1	WZDK40-38G-1	WZDK40-38G-W-1	WZDK40-38G-W-1	ZKFN-50-8-2	WZDK120-38G-1	WZDK120-38G-W
	Phase	3	3	3	3	3	3	3
	FLA	0.14	0.14	0.42	0.42	0.95	0.47	1.21
	Type	DC	DC	DC	DC	DC	DC	DC
	Insulation class	E	E	E	E	E	E	E
	Safe class	IPX0	IPX0	IPX0	IPX0	IPX0	IPX0	IPX0
	Input	W 42	42	46	46	116	145	150
	Output	W 40	40	40	40	50	120	120
	Range of current	Amps 0.14±10%	0.14±10%	0.42±10%	0.42±10%	0.95±10%	0.47±10%	1.21±10%
	Rated current	Amps 0.14	0.14	0.42	0.42	0.95	0.47	1.21
	Rated HP	HP 0.053	0.053	0.053	0.053	0.067	0.16	0.16
	Speed	rev/min 800/700/600	800/700/600	800/700/600	800/700/600	800/700/600	850/750/700	850/800/750
	Rated RPM	rev/min 900	900	900	900	900	1050	1050
	Max. input	W 42	42	46	46	116	145	150

WIRING DIAGRAMS

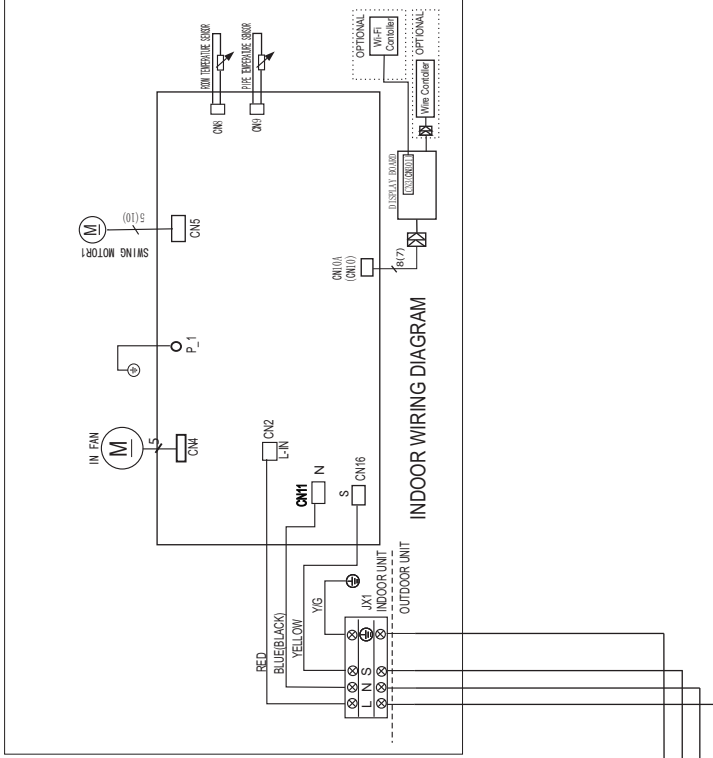
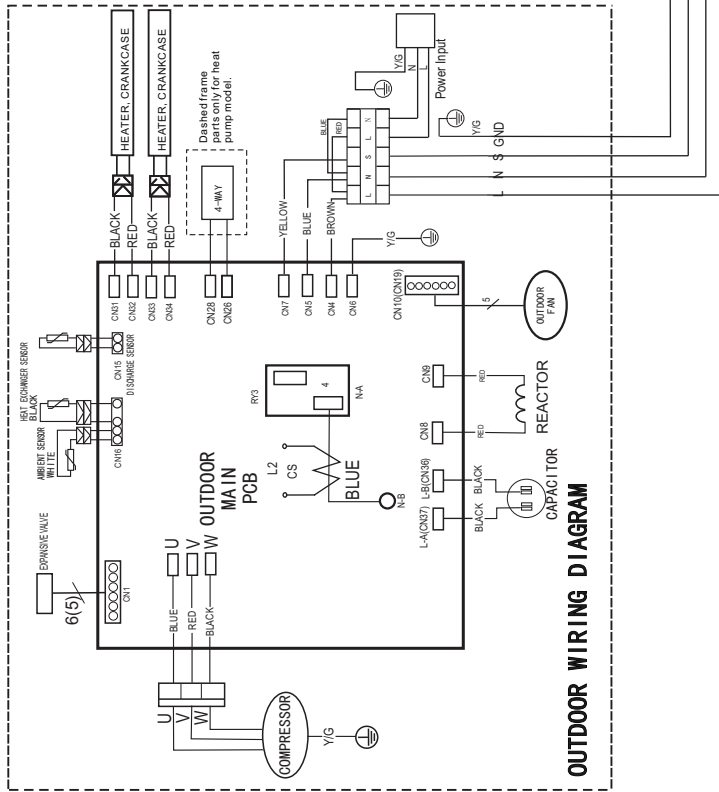


Fig. 9 – Wiring Diagram Sizes 09-12 (115V)

INDOOR UNIT CONTROL BOARD

INPUT or OUTPUT VALUE	
L IN	Power Voltage: AC 115V
CN11	Power Voltage: AC 115V
CN16	Relative to the N terminal voltage : DC 24V
CN15	Maximum voltage : DC5V
CN4	Indoor fan interface: Maximum voltage : DC31DV
CN5	Stepper motor interface: Maximum voltage between the lines : DC12V
P.1	Ground
CN8	Room temperature sensor interface: maximum voltage : DC5V
CN9	Pipe temperature sensor interface: maximum voltage : DC5V
CN10A	Display interface: maximum voltage between the lines : DC5V

OUTDOOR UNIT CONTROL BOARD

PART NAME	
CN1	Output: Pms3&6(12V) Pm1 – Pm4: Pulse waveform, (0 – 12V)
CN15	Input: Pm10 – Pm12 (0 – 1.8V)
CN16	Input: Pm1 – Pm3 – Pm4: Pms10 – 1.8V)
CN19	Output: Pm1 – Pms10 – 115V High voltage)
CN31, CN33	Output: T1.5VAC High voltage)
CN32, CN34	Output: T1.5VAC High voltage)
CN26, CN28	Output: T1.5VAC for 4 – way control
CN4	Input: T1.5VAC High voltage)
CN5	Input: T1.5VAC High voltage)
CN6	Connection to the earth
CN7	Output: Connection of the high voltage
CN8, CN9	Output: High voltage
CN35, CN37	Output: High voltage
N – B	Output: High voltage
UV – W	Output: Pulse(0 – 320VDC)

WIRING DIAGRAMS (CONTINUED)

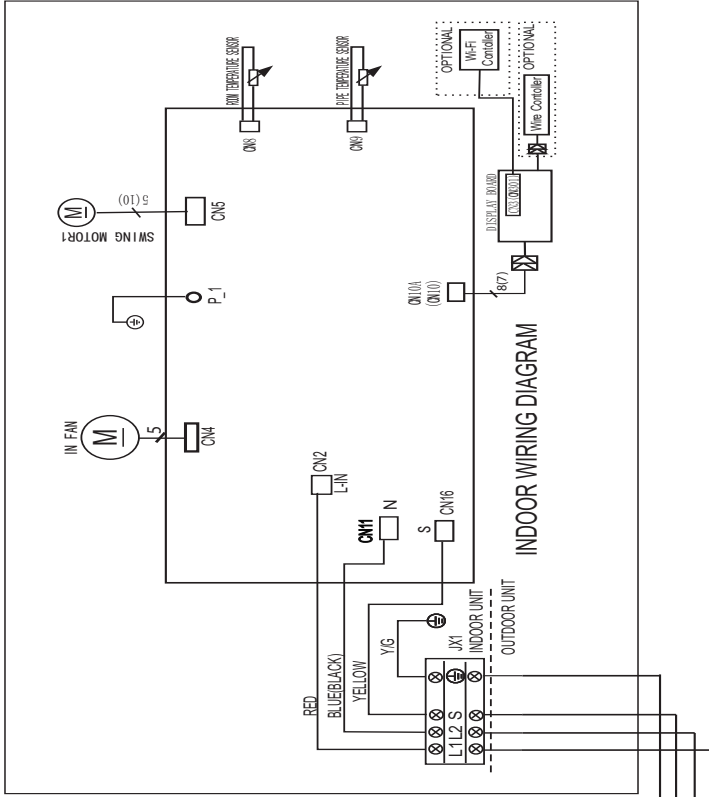
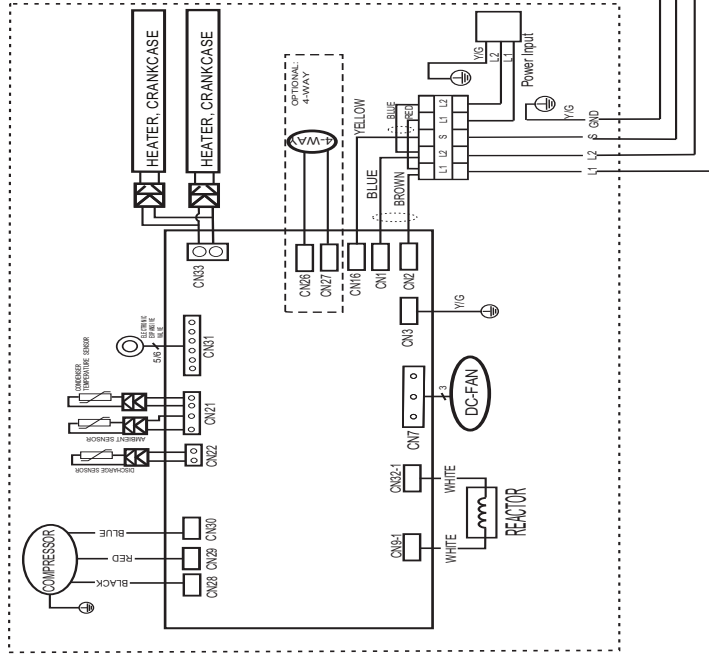


Fig. 10 – Wiring Diagram Sizes 09-12 (208-230V)

INDOOR UNIT CONTROL BOARD

	INPUT or OUTPUT VALUE
L-IN	Power Voltage : AC 230V
CN11	Power Voltage : AC230V
CN16	Relative to the N terminal voltage : DC 24V
CN15	Maximum voltage : DC5V
CN4	Indoor fan interface.Maximum voltage between the lines : DC310V
CN5	Stepper motor interface.Maximum voltage between the lines : DC12V
P. 1	Ground
CN8	Room temperature sensor interface.maximum voltage : DC5V
CN9	Pipe temperature sensor interface.maximum voltage : DC5V
CN10A	Display interface.maximum voltage between the lines : DC5V

OUTDOOR UNIT CONTROL BOARD

	INPUT or OUTPUT VALUE
CN31	OutputPins&8(12V) Pin1-Pin4:Pulse waveform.(0-12V)
CN21	InputPins-4 (3.3V) Pin2(0V),Pin1,Pin5(0-3.3V)
CN22	InputPin1 (3.3V) Pin2(0-3.3V)
CN37	Output: 230VAC High voltage
CN9-1,CN92-1	Output: Connection of the high voltage
CN1	Input230VAC High voltage
CN2	Input230 VAC High voltage
CN3	Connection to the earth
CN16	Output: Connection of the high voltage
CN26,CN27	Output: High voltage for 4-way control
CN7	Output: Pulse(0-320VDC) for DC FAN
U V W	Output: Pulse(0-320VDC) for COMPRESSOR

WIRING DIAGRAMS (CONTINUED)

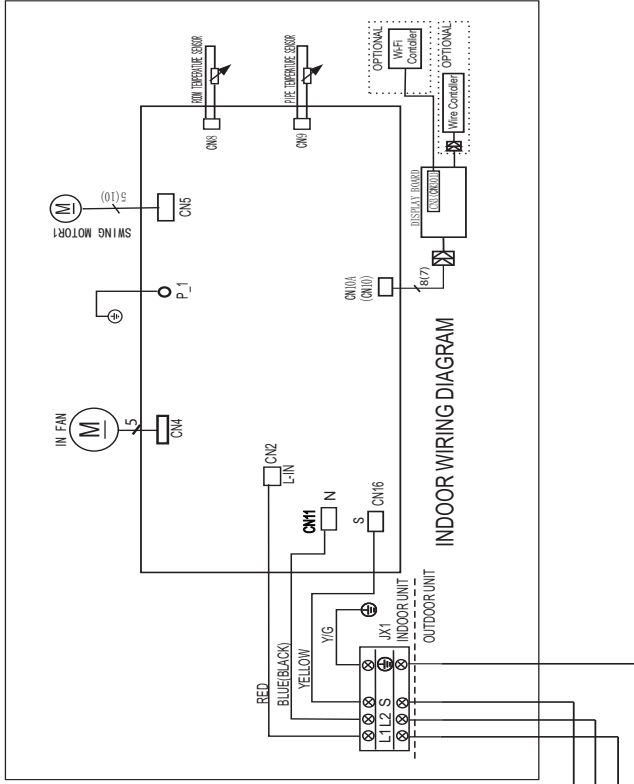
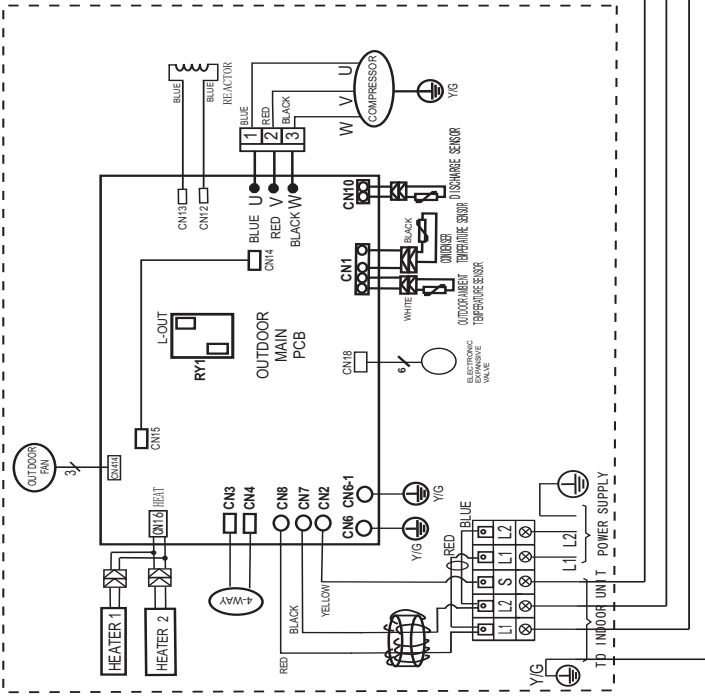


Fig. 11 – Wiring Diagram Size 18 (208–230V)

INDOOR UNIT CONTROL BOARD

	INPUT or OUTPUT VALUE
L, IN	Power Voltage : AC 230V
CN11	Power Voltage : AC230V
CN16	Relative to the N terminal voltage : DC 24V
CN15	Maximum voltage : DC5V
CN4	Indoor fan interface, Maximum voltage : DC310V
CN5	Stepper motor interface, Maximum voltage between the lines : DC12V
P. 1	Ground
CN8	Room temperature sensor interface, maximum voltage : DC5V
CN9	Pipe temperature sensor interface, maximum voltage : DC5V
CN10A	Display interface, maximum voltage between the lines : DC5V

OUTDOOR UNIT CONTROL BOARD

	INPUT or OUTPUT VALUE
CN7, CN8	Input: 230V High voltage
CN2	Output: Connection of the high voltage
CN3, CN4	Output: High voltage for 4-way control
CN11, CN16	Output: 230V High voltage for HEATER
CN5	Output: Pulse(0–320V) for DC FAN
CN12, CN13	Output: Connection of the high voltage
U, V, W	Output: Pulse(0–320V) for compressor
CN10	Input: Pin1 (5V) Pin2(0–5V)
CN1	Input: Pin3–4 (5V) Pin2(0V), Pin1, Pin5(0–5V)
CN18	Output: Pin5&6(12V) Pin1–Pin4: Pulse waveform, (0–12V)

WIRING DIAGRAMS (CONTINUED)

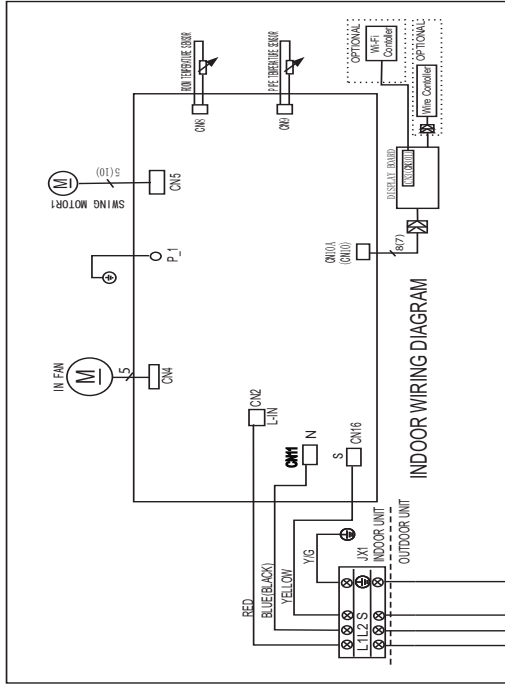
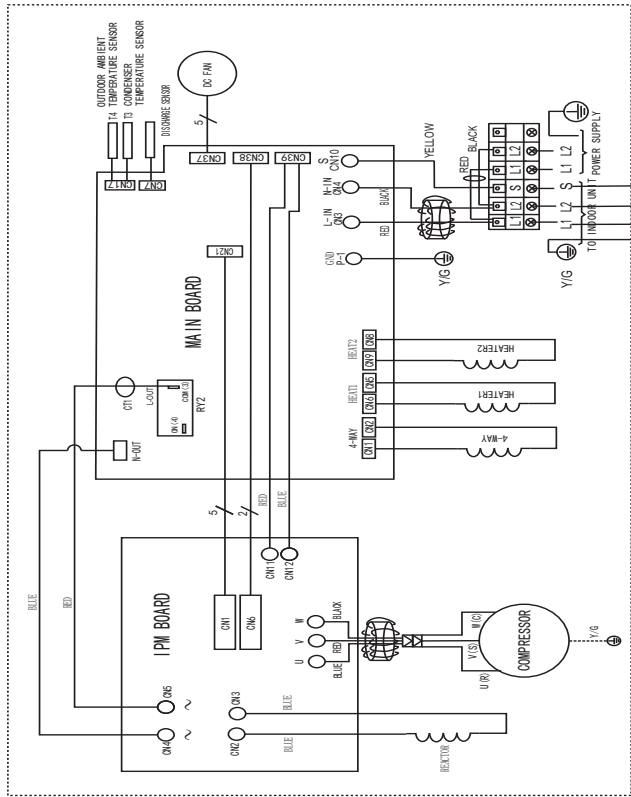


Fig. 12 – Wiring Diagram Size 24 (208–230V)

INDOOR UNIT CONTROL BOARD

	INPUT or OUTPUT VALUE
L IN	Power Voltage : AC 230V
CN11	Power Voltage : AC230V
CN16	Relative to the N terminal voltage : DC 24V
CN15	Maximum voltage : DC5V
CN4	Indoor fan interface,Maximum voltage : DC31DV
CN5	Stepper motor interface,Maximum voltage between the lines : DC12V
P.1	Ground
CN8	Room temperature sensor interface,maximum voltage : DC5V
CN9	Pipe temperature sensor interface,maximum voltage : DC5V
CN10A	Display interface,maximum voltage between the lines : DC5V

OUTDOOR UNIT CONTROL BOARD

	INPUT or OUTPUT VALUE
L IN	Power Voltage : AC 230V
CN11	Power Voltage : AC230V
CN16	Relative to the N terminal voltage : DC 24V
CN15	Maximum voltage : DC5V
CN6	Maximum output voltage : AC230V
CN4	Indoor fan interface,Maximum voltage : DC31DV
CN5	Stepper motor interface,Maximum voltage between the lines : DC12V
P.1	Ground
CN8	Room temperature sensor interface,maximum voltage : DC5V
CN9	Pipe temperature sensor interface,maximum voltage : DC5V
CN10A	Display interface,maximum voltage between the lines : DC5V
CN14	Stepper motor interface (optional),maximum voltage between the lines : DC12V

WIRING DIAGRAMS (CONTINUED)

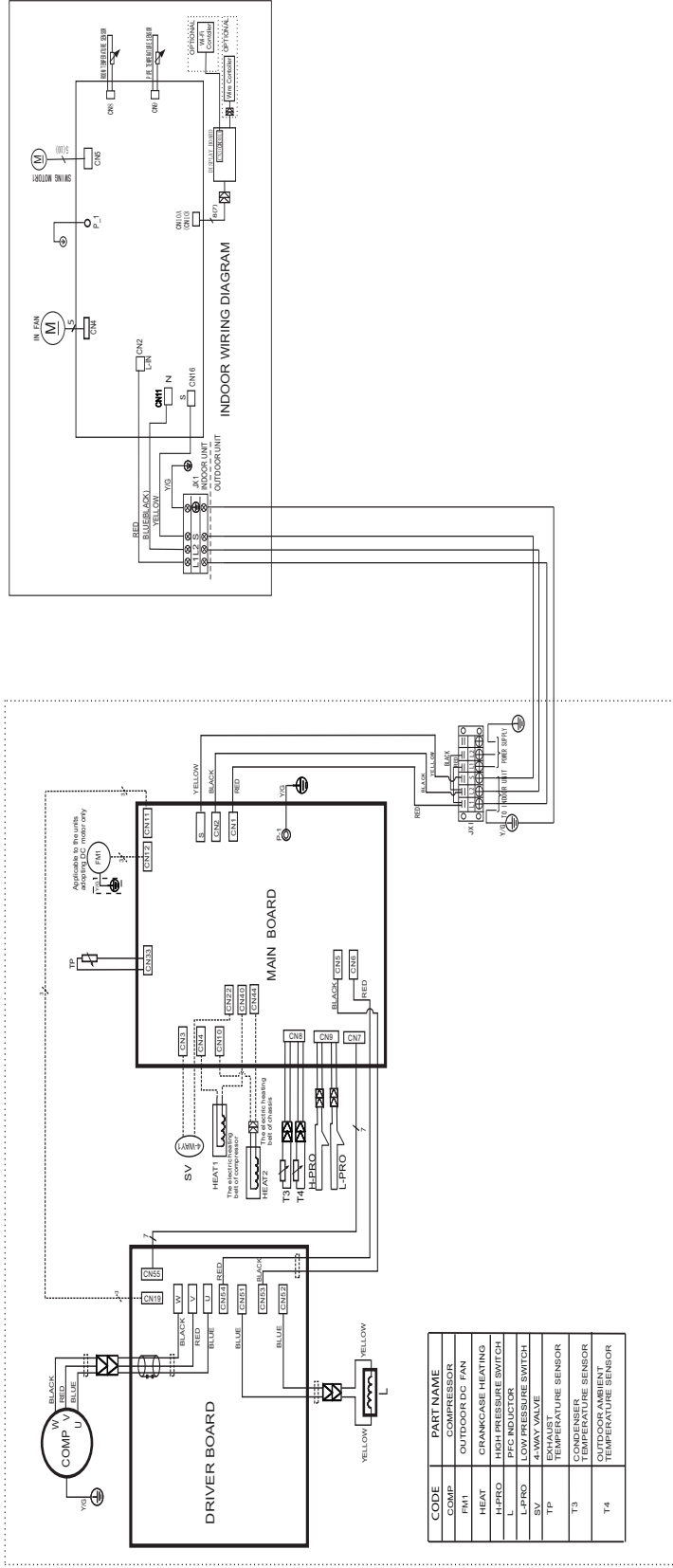


Fig. 13 – Wiring Diagram Size 30 (208-230V)

INDOOR UNIT CONTROL BOARD

	INPUT or OUTPUT VALUE
L, IN	Power Voltage : AC 230V
CN11	Power Voltage : AC230V
CN16	Relative to the N terminal voltage : DC 24V
CN15	Maximum voltage : DC5V
CN4	Indoor fan interface/Maximum voltage : DC310V
CN5	Stepper motor interface/Maximum voltage between the lines : DC12V
P-1	Ground
CN8	Room temperature sensor interface/maximum voltage : DC5V
CN9	Pipe temperature sensor interface/maximum voltage : DC5V
CN10A	Display interface/maximum voltage between the lines : DC5V

OUTDOOR UNIT CONTROL BOARD

	INPUT or OUTPUT VALUE
CN1, CN2	Input: 230V High voltage
S	Output: Connection of the high voltage
CN11, CN12	Output: Pulse(0-320V) for DC FAN
CN33	Input:Pin1 (5V) Pin2(0-5V)
CN3, CN22	Output: High voltage for 4-way control
CN4, CN40	Output: 230V High voltage for HEATER1
CN10, CN44	Output: 230V High voltage for HEATER2
CN8	Input:Pin3-4 (5V) Pin2(0V),Pin1,Pin5(0-5V)
CN9	Input:Pin1-3 (0V) Pin2-4(0-5V)
CN51, CN52	Output: Connection of the high voltage
U V, W	Output: Pulse(0-380V) for compressor

GUIDE SPECIFICATIONS

INDOOR WALL-MOUNTED DUCTLESS UNITS

Size Range: 3/4 to 2 1/2 Ton Nominal Cooling and Heating Capacity
Model Number: 619PB

PART 1 - GENERAL

1.01 System Description

Indoor, wall-mounted, direct-expansion fan coils are matched with the 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 shall be 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, wall-mounted fan coil. Unit shall be complete with a cooling/heating coil, fan, fan motor, piping connectors, electrical controls, microprocessor control system, and integral temperature sensing. Unit shall be furnished with an integral wall mounting bracket and mounting hardware.

B. Unit Cabinet:

Cabinet discharge and inlet grilles shall be attractively styled, high-impact polystyrene. Cabinet shall be fully insulated for improved thermal and acoustic performance.

C. Fans:

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

D. Coil:

The coil shall be a copper tube with aluminum fins and galvanized steel tube sheets. The fins shall be bonded to the tubes by mechanical expansion and blue hydrophilic pre-coated. A drip pan under the coil shall have a drain connection for the hose attachment to remove condensate. The condensate pan shall have an internal trap.

E. Motors:

Motors shall be open drip-proof, with a permanently lubricated ball bearing. The fan motors shall be 4-speed.

F. Controls:

Controls shall consist of a microprocessor-based control system which shall control space temperature, determine optimum fan speed, and run self diagnostics. The temperature control range shall be 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 shall have 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 the failure.
2. A timer function to provide a minimum 24-hour timer cycle for system Auto Start/Stop.
3. Temperature-sensing controls shall sense 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 shall provide increased latent removal capability by modulating the system operation and the set point temperature.
8. Fan-only operation to provide room air circulation when no cooling is required.
9. Diagnostics shall provide continuous checks of unit operation and warn of possible malfunctions. Error messages appear on the unit.
10. Fan speed control is user-selectable: turbo, high, medium, low, or microprocessor controlled automatic operation during all operating modes.
11. Automatic heating-to-cooling changeover in the heat pump mode. Control shall include deadband to prevent rapid mode cycling between heating and cooling.
12. Indoor coil high temperature protection shall be provided to detect excessive indoor discharge temperature when the unit is in the heat pump mode.

G. Filters:

Unit shall have filter track with factory-supplied cleanable filters.

H. Electrical Requirements:

Indoor fan motor to operate on 115V on model sizes 09-12 and on 208-230V on model sizes 09-30, as specified. Power is supplied by the outdoor unit.

I. Operating Characteristics:

The system shall have 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):

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

GUIDE SPECIFICATIONS

HORIZONTAL DISCHARGE OUTDOOR UNITS

Size Range: 3/4 to 2 1/2 Ton Nominal Cooling and Heating Capacity
Model Number: 538PR

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 shall 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 shall discharge air horizontally as shown on the contract drawings. Units shall function as the outdoor component of an air-to-air heat pump system.
- B. Units shall be used in a refrigeration circuit matched to ductless heat pump fan coil units.

1.02 Agency Listings

- A. Unit construction shall comply with ANSI/ASHRAE 15, latest revision, and with the NEC.
- B. Units shall be evaluated in accordance with UL standard 1995.
- C. Units shall be listed in the CEC directory.
- D. Unit cabinet shall be capable of withstanding 500-hour salt spray test per Federal Test Standard No. 141 (method 6061).
- E. Air-cooled condenser coils shall be leak tested at 550 psig.

1.03 Delivery, Storage, And Handling

Units shall be shipped in one piece and shall be 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 shall be all factory wiring, piping, controls, and the compressor.

B. Unit Cabinet:

- 1. Unit cabinet shall be constructed of galvanized steel, bonderized and coated with a baked-enamel finish on the inside and outside.
- 2. Unit access panels shall be removable with minimal screws and shall provide full access to the compressor, fan, and control components.
- 3. Outdoor compartment shall be isolated and have an acoustic lining to assure quiet operation.

C. Fans:

- 1. Outdoor fans shall be direct drive propeller type, and shall discharge air horizontally. Fans shall draw air through the outdoor coil.
- 2. Outdoor fan motors shall be totally enclosed, single phase motors with class E insulation and permanently lubricated ball bearings. Motor shall be protected by internal thermal overload protection.

- 3. Shaft shall have inherent corrosion resistance.
- 4. Fan blades shall be non-metallic and shall be statically and dynamically balanced.
- 5. Outdoor fan openings shall be equipped with a PVC metal/mesh coated protection grille over the fan.

D. Compressor:

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

E. Outdoor Coil:

Coil shall be constructed of aluminum blue hydrophilic pre-coated fins mechanically bonded to seamless copper tubes, which are cleaned, dehydrated, and sealed.

F. Refrigeration Components:

Refrigerant circuit components shall 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 shall be factory selected, assembled, and tested. The minimum control functions shall 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 shall operate on single-phase, 60 Hz power at 115 v for unit sizes 09-12 and 208-230v for unit sizes 09, 12, 18, 24, and 30, as specified.
- 2. Unit electrical power shall be a single point connection.
- 3. Unit Control voltage to the indoor fan coil shall be 0-15V DC.
- 4. All power and control wiring must be installed per NEC and all local electrical codes.
- 5. Unit shall have high and low voltage terminal block connections.