

# BARD WALL MOUNT™ Two Stage Air Conditioners 3 to 5 Ton Capacity W3S - W5S Unit Models 208V - 460V, Single and Three Phase 60hz

## **WS Series WALL-MOUNT™**

The Bard WS Series Wall-Mount Air Conditioner is an energy efficient self contained system that is designed to offer maximum indoor temperature control. Installed on an exterior wall surface, the WS Series provides cooling and heating without using valuable indoor floor space or outside ground space. This unit is the ideal product for versatile applications such as: modular buildings, light commercial, mobile buildings, schools, mining, petro-chemical, telecom, industrial, energy storage, and data centers. Factory or field installed accessories are available to meet specific job requirements for your unique application.

### **WS Series Features:**

- 3 to 5 ton cooling capacity uses energy efficient components including today's 2-stage compressor designs.
- Multi-speed Electronically commutated indoor motor (ECM) technology.
- Enclosed outdoor fan motor with ball bearing construction.
- Copper/Aluminum finned coils, and refrigerant system includes filter drier. Evaporator coil includes green fin coil protection.
- R454B A2L Refrigerant that meets the global objectives outlined in the Montreal Protocol and the Kigali Amendment.
- Factory or field installed ventilation options including economizers and energy recovery ventilators.
- Multiple cabinet finishes including stainless steel and aluminum.
- Coil and cabinet coating options for additional corrosion protection.
- Optional factory or field installed electric heater options from 5kw up to 15kw.
- Optional Circuit breakers for 208/230V single and three phase units.
- Filter options up to MERV13.
- Indoor air quality options including UVC-LED and NPBI devices.
- Controls include short cycle protection and phase monitoring. Hi and low pressure switch refrigerant system protection standard.
- Optional hot gas reheat dehumidification is available for all models.



### **WS Series Compliance:**

- Complies with efficiency requirements of ANSI/ASHRAE/IES 90.1-2019.
- Certified to ANSI/AHRI Standard 390-2021 for SPVU (Single Package Vertical Units).
- Intertek ETL Listed to Standard for Safety of Household and Similar Electrical Appliances ANSI/UL STD 60335-1 & ANSI/UL STD 60335-2-40/CSA STD C22.2 No. 60335-1 & CSA STD C22.2 No. 60335-2-40 Fourth Edition.
- Commercial Product - Not intended for residential applications.
- Bard is an ISO 9001:2015 Certified Manufacturer.
- The AHRI Certified® mark indicates Bard Manufacturing Company participation in the AHRI Certification program. For verification of individual certified products, go to [www.ahridirectory.org](http://www.ahridirectory.org).



<b>MODEL #</b>	<b>W</b>	<b>5 S</b>	<b>A</b>	<b>F</b>	<b>-</b>	<b>A</b>	<b>OZ</b>	<b>X</b>	<b>P</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>J</b>
<b>DIGIT #</b>	<b>1</b>	<b>2 3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8,9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>

<b>1</b>	<b>1. Series - Single Stage Compressor</b>
<b>W</b>	Bard Exterior Wall Mount

<b>2, 3</b>	<b>2-3. Nominal Capacity - 2 Stage Range</b>		
<b>3S</b>	2 to 3 Ton	<b>5S</b>	3.5 to 5 Ton
<b>4S</b>	2.5 to 4 Ton		

<b>4</b>	<b>4. Unit Type - Controls Location</b>
<b>A</b>	AC-Right or Center Controls

<b>5</b>	<b>5. Revision</b>
<b>F</b>	Revision (R454B Refrigerant)

<b>6</b>	<b>6. Special Feature Placeholder</b>
<b>-</b>	Standard Unit
<b>D</b>	HGR Dehumidification

<b>7</b>	<b>7. Voltage</b>	<b>Ph.</b>	<b>Hz.</b>
<b>A</b>	208/230VAC	1	60
<b>B</b>	208/230VAC	3	60
<b>C</b>	460VAC	3	60

<b>8, 9</b>	<b>8-9. Electric Heater Options</b>
<b>00</b>	0Kw with Lug Connections
<b>OZ</b>	0Kw with Breaker or Disconnect
<b>05-15</b>	5-15Kw Heat w/breaker or Disc.

<b>10</b>	<b>10. Ventilation Package Options</b>
<b>X</b>	Barometric Air Damper (Intake)
<b>A</b>	Bar. Air Damper (Intake+Exh)
<b>B</b>	Block Off Plate (No Vent)
<b>M</b>	Powered Comm. Vent, On/Off
<b>V</b>	Powered Comm. Vent, On/Off/Mod.
<b>D</b>	Econ, Field Supplied Controls
<b>Y</b>	Full Flow Economizer, JADE, Dry Bulb
<b>Z</b>	Full Flow Economizer, JADE, Enthalpy
<b>R</b>	Energy Recovery Ventilator

<b>11</b>	<b>11. Filter and IAQ Options</b>
<b>X</b>	Standard 1" MERV2 Disposable Filter.
<b>W</b>	1" MERV2 Washable Filter.
<b>P</b>	2" MERV8 Disposable Filter.
<b>M</b>	2" MERV11 Disposable Filter.
<b>N</b>	2" MERV13 Disposable Filter.
<b>A</b>	2" MERV13 Filter with UVC-LED Light.
<b>B</b>	2" MERV13 Filter with NPBI Device.
<b>C</b>	2" MERV8 Filter with NPBI Device.

<b>12</b>	<b>12. Cabinet Color and Finish</b>
<b>X</b>	Standard Beige Enamel Painted Steel.
<b>1</b>	White Enamel Painted Steel.
<b>4</b>	Buckeye Gray Enamel Painted Steel.
<b>5</b>	Desert Brown Enamel Painted Steel.
<b>8</b>	Dark Bronze Enamel Painted Steel.
<b>S</b>	316 Stainless Steel Exterior Finish.
<b>A</b>	Stucco Textured Aluminum Exterior Finish

<b>13</b>	<b>13. Cabinet Style</b>
<b>X</b>	Standard Cabinet

<b>14</b>	<b>14. Coil and Cabinet Coatings</b>
<b>X</b>	Standard Copper/Aluminum evap. and cond. coil.
<b>1</b>	Coated indoor evap. coil, std. outdoor cond. coil.
<b>2</b>	Coated outdoor cond. coil, std. indoor evap. coil.
<b>3</b>	Coated indoor evap. and outdoor cond. coil.
<b>4</b>	Coated coils and unit cabinet condenser area.
<b>5</b>	Coated coils and interior/exterior cabinet.

<b>15</b>	<b>15. Unit Mounted Controls Options</b>
<b>Standard: Hi/Lo Pressure and Ref. Leak (RDS) Sensor</b>	
<b>X</b>	Standard Controls
<b>E</b>	X + Low Ambient Control (LAC)
<b>J</b>	X + LAC and Alarm Relay (ALR)
<b>F</b>	X + LAC, ALR, and Filter Switch (FS)
<b>V</b>	X + DDC Control Sensor kit
<b>M</b>	X + LAC, ALR, and Hard Start kit (SK) 1ph only

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////// WS SERIES AHRI CAPACITY AND EFFICIENCY RATINGS

MODELS	W3SAF	W4SAF	W5SAF
Cooling Capacity BTUH <sup>Ⓢ</sup>	35,000	47,000	58,500
Unit efficiency EER	11.8	11.2	11.8
Unit Efficiency IPLV	15.0	15.5	15.5

Capacity is certified in accordance with ANSI/ARI Standard 390-2021.

EER = Energy Efficiency Ratio is certified in accordance with ANSI/ARI Standard 390-2021. All ratings based on no outside air introduction).

IPLV = Integrated Part Load Value is certified in accordance with ANSI/ARI Standard 390-2021. All ratings based on no outside air introduction).

////// UNIT COOLING CAPACITY AT VARIOUS INDOOR AND OUTDOOR CONDITIONS - FULL LOAD

MODEL	INDOOR RETURN AIR (DB/WB)	COOLING CAPACITY (BTUH)	DRY BULB OUTDOOR AIR TEMPERATURE ENTERING UNIT CONDENSER AREA										
			75°F 23.9°C	80°F 26.6°C	85°F 29.4°C	90°F 32.2°C	95°F 35°C	100°F 37.8°C	105°F 40.5°C	110°F 43.3°C	115°F 46.1°C	120°F 48.8°C	125°F 51.6°C
W3SAF FULL LOAD (2nd STAGE)	75/62	Total Cooling	38400	36200	34200	32200	30500	29000	27600	26300	25200	24200	23300
		Sensible Cooling	31600	29700	28100	26700	25500	24500	23600	23100	22500	22300	22200
	80/67	Total Cooling	41000	39400	37900	36400	35000	33800	32500	31400	30300	29300	28300
		Sensible Cooling	30600	29100	27800	26700	25700	24900	24200	23800	23400	23300	23300
	85/72	Total Cooling	48900	46100	43500	41100	38900	37000	35100	33400	31900	30500	29100
		Sensible Cooling	31400	29600	28000	26500	25200	24100	23100	22300	21600	21100	20600
W4SAF FULL LOAD (2nd STAGE)	75/62	Total Cooling	54100	50100	46700	43600	40900	38700	36900	35300	34200	33300	32700
		Sensible Cooling	42300	40100	38100	36400	35000	33800	32900	32100	31600	31300	31400
	80/67	Total Cooling	57700	54600	51800	49300	47000	45100	43500	42100	41100	40300	39800
		Sensible Cooling	41000	39300	37700	36400	35300	34400	33700	33200	32900	32800	33000
	85/72	Total Cooling	68700	63800	59500	55700	52200	49300	46900	44800	43200	41900	41000
		Sensible Cooling	42000	39900	37900	36200	34600	33300	32100	31100	30300	29600	29200
W5SAF FULL LOAD (2nd STAGE)	75/62	Total Cooling	62000	58900	56000	53400	50900	48800	46900	45100	43500	42100	40900
		Sensible Cooling	49200	47100	45200	43600	42200	41000	40000	39200	38500	38100	37800
	80/67	Total Cooling	66200	64200	62200	60300	58500	56900	55300	53800	52400	51000	49800
		Sensible Cooling	47700	46200	44800	43600	42600	41700	41000	40500	40100	39900	39800
	85/72	Total Cooling	78900	75100	71400	68100	65000	62200	59600	57200	55100	53000	51200
		Sensible Cooling	48900	46900	45000	43300	41800	40400	39100	38000	36900	36100	35200

////// UNIT COOLING CAPACITY AT VARIOUS INDOOR AND OUTDOOR CONDITIONS - PART LOAD

MODEL	INDOOR RETURN AIR (DB/WB)	COOLING CAPACITY (BTUH)	DRY BULB OUTDOOR AIR TEMPERATURE ENTERING UNIT CONDENSER AREA										
			75°F 23.9°C	80°F 26.6°C	85°F 29.4°C	90°F 32.2°C	95°F 35°C	100°F 37.8°C	105°F 40.5°C	110°F 43.3°C	115°F 46.1°C	120°F 48.8°C	125°F 51.6°C
W3SAF PART LOAD (1st STAGE)	75/62	Total Cooling	25200	24500	23800	22900	22000	20900	19700	18400	17100	15600	14100
		Sensible Cooling	20300	20100	19800	19500	19100	18500	18000	17300	16500	15600	14100
	80/67	Total Cooling	26900	26700	26400	25900	25200	24300	23200	21900	20500	18900	17100
		Sensible Cooling	19700	19700	19600	19500	19200	18800	18400	17800	17100	16400	15500
	80/67	Total Cooling	32100	31200	30300	29300	28000	26600	25000	23300	21600	19700	17600
		Sensible Cooling	20200	20000	19700	19400	18900	18200	17600	16700	15800	14800	13700
W4SAF PART LOAD (1st STAGE)	75/62	Total Cooling	37600	35800	34100	32400	30800	29200	27700	26300	24800	23400	21900
		Sensible Cooling	28900	28200	27500	26700	26000	25200	24300	23400	22600	21700	20800
	80/67	Total Cooling	40100	39000	37800	36600	35400	34000	32700	31300	29800	28300	26700
		Sensible Cooling	28000	27600	27200	26700	26200	25600	24900	24200	23500	22700	21900
	80/67	Total Cooling	47800	45600	43400	41300	39300	37200	35300	33300	31300	29400	27500
		Sensible Cooling	28700	28000	27400	26500	25700	24800	23800	22700	21700	20500	19400
W5SAF PART LOAD (1st STAGE)	75/62	Total Cooling	44300	43200	41800	40500	39000	37500	36000	34400	32700	31000	29200
		Sensible Cooling	33600	33300	32700	32200	31600	31000	30200	29400	28600	27600	26600
	80/67	Total Cooling	47300	47000	46400	45700	44800	43700	42400	41000	39300	37500	35500
		Sensible Cooling	32600	32600	32400	32200	31900	31500	31000	30400	29700	28900	28000
	80/67	Total Cooling	56400	55000	53300	51600	49800	47800	45700	43600	41300	39000	36500
		Sensible Cooling	33400	33100	32600	32000	31300	30500	29600	28500	27400	26100	24800

- Unit compressor cooling operation below 60°F requires a Low Ambient Control (LAC).
- Outdoor air temperatures provided are an average of the condenser inlet air temperature.

Capacity Multiplier Factors							
% of Rated Airflow	-30%	-20%	-10%	Rated	+10%	+20%	+30%
Total BTUH	0.93	0.95	0.97	1	1.01	1.02	1.04
Sensible BTUH	0.90	0.93	0.95	1	1.02	1.05	1.09



# UNIT CABINET DIMENSIONS

## DIMENSIONS OF W42-72A BASIC UNIT FOR ARCHITECTURAL & INSTALLATION REQUIREMENTS (NOMINAL)

MODEL	WIDTH (W)	DEPTH (D)	HEIGHT (H)	SUPPLY		RETURN		UNIT CABINET														
				A	B	C	B	E	F	G	I	J	K	L	M	N	O	R	S	T	U	V
W3S W4S	42	25.52	84.88	9.88	29.88	15.88	29.88	43.88	12.63	39.06	30	53.75	26.94	55.59	52.59	8.82	43	1.438	16	1.88	10.50	12.00
W5S	42	25.52	93.00	9.88	29.88	15.88	29.88	43.88	12.63	45	30	59.75	35.06	61.72	58.72	8.82	43	1.438	16	10	13.88	15.43

### CLEARANCES REQUIRED FOR SERVICE AND CONDENSER AIRFLOW

MODELS	LEFT SIDE	RIGHT SIDE	FRONT
ALL UNITS	20"	20"	10'

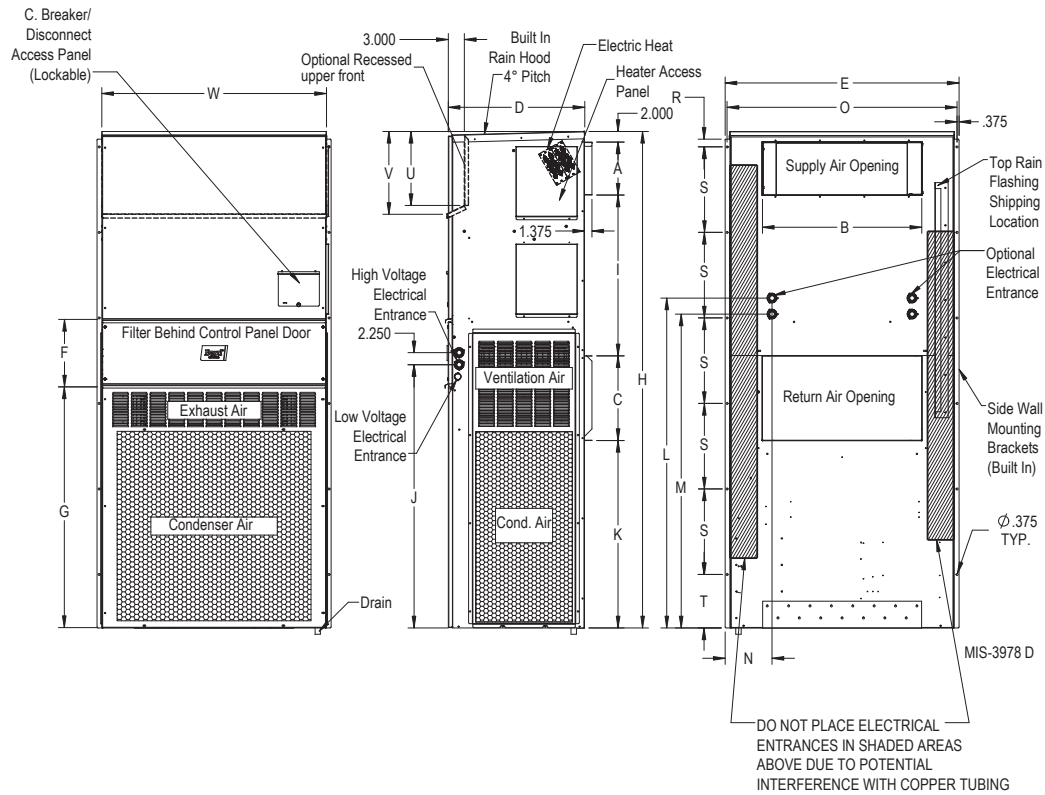
ECONOMIZER, ERV, OR CRV VENTS REQUIRE 40" ON EITHER RIGHT OR LEFT SIDE FOR INSTALLATION OR REMOVAL. SEE INSTALLATION INSTRUCTIONS FOR MORE INFORMATION.

### MINIMUM CLEARANCES REQUIRED TO COMBUSTIBLE MATERIALS

MODELS	SUPPLY AIR DUCT FIRST 3 FT.	CABINET
ALL UNITS	1/4"	0"

Refer to the Installation Manual for more detailed information.

Note:  
Opposing units that face each other require 15' clearance between condenser outlets.



## SOUND DATA - DBA @ 5 FT. AND 10 FT.\*

UNIT	DUCT FREE INDOOR COOLING OPERATION @ 5 FT.	DUCT FREE INDOOR COOLING OPERATION @ 10 FT.	DUCTED INDOOR COOLING OPERATION @ 5 FT.	DUCTED INDOOR COOLING OPERATION @ 10 FT.	OUTDOOR @ 5 FT.	OUTDOOR @ 10 FT.
W3S	56.1	51.7	56.3	51.1	73.7	67.1
W4S	57	52.7	57.8	52.8	73.6	69
W5S	56.5	53.3	56	52.7	71.4	66.8

Integrated values calculated per ANSI/ASA S12.60-2009/Part 2, Section 5.2.2.1.



## GENERAL UNIT ELECTRICAL SPECIFICATIONS

MODELS	CONTROL PANEL CABINET LOCATION	NOMINAL VOLTAGE VAC	PH	HZ	VOLTAGE RANGE VAC	RATED LOAD AMPS (RLA)	BRANCH CIRCUIT SELECTION CURRENT (BCSC)	LOCKED ROTOR AMPS (LRA)	INDOOR MOTOR VOLTAGE	INDOOR MOTOR AMPS	INDOOR MOTOR HP	OUTDOOR MOTOR AMPS	OUTDOOR MOTOR HP
W3SAF-A	Unit Front	230/208V	1	60	197-253V	14.7/16.5	14.6	90	230V	1.6/1.7	1/2	1.9	1/3
W3SAF-B	Unit Front	230/208V	3	60	197-253V	10/11.2	9.9	82	230V	1.6/1.7	1/2	1.9	1/3
W3SAF-C	Unit Front	460V	3	60	414-506V	5.5	4.8	44.3	460V	.85	1/2	.95	1/3
W4SAF-A	Unit Front	230/208V	1	60	197-253V	22.4/26.8	18.3	138	230V	1.9/1.3	3/4	1.3	1/3
W4SAF-B	Unit Front	230/208V	3	60	197-253V	14.6/17.5	11.9	112	230V	1.9/1.3	3/4	1.3	1/3
W4SAF-C	Unit Front	460V	3	60	414-506V	10	6.8	61.8	460V	.95	3/4	.65	1/3
W5SAF-A	Unit Front	230/208V	1	60	197-253V	25.8/29.9	25.2	147.3	230V	2.8/3.1	3/4	2.1	1/3
W5SAF-B	Unit Front	230/208V	3	60	197-253V	14.2/16.4	13.8	150	230V	2/3.1	3/4	2.1	1/3
W5SAF-C	Unit Front	460V	3	60	414-506V	8.2	6.9	58	460V	1.55	3/4	1.05	1/3

Note: All units have a Short Circuit Current Protection Rating (SCCR) of 5kA RMS Symmetrical.

## GENERAL UNIT REFRIGERANT AND MECHANICAL SPECIFICATIONS

UNIT MODEL	REFRIGERANT SYSTEM				INDOOR EVAPORATOR BLOWER			OUTDOOR CONDENSER FAN		
	CHARGE TYPE	STANDARD UNIT CHARGE RATE	DEHUMIDIFICATION UNIT CHARGE RATE	COMPRESSOR TYPE	INDOOR MOTOR -SPEEDS	INDOOR FAN	INDOOR CFM - RATED ESP	OUTDOOR MOTOR	OUTDOOR FAN	OUTDOOR FAN CFM
W3S	R454B	6.00 lbs.	5.75 lbs.	Scroll	ECM-5SPD	Dual Blower	1150 - .15	PSC	24" Axial	3000
W4S	R454B	6.25 lbs	5.94 lbs.	Scroll	ECM-5SPD	Dual Blower	1550 - .20	PSC	24" Axial	3000
W5S	R454B	7.75 lbs.	7.81 lbs.	Scroll	ECM-5SPD	Dual Blower	1750 - .20	PSC	24" Axial	3000

## AVAILABLE HEATER PACKAGES AND FIELD WIRING DATA - 3 TON STANDARD UNITS

UNIT MODEL	KW OPTION	RATED VOLTAGE AND PHASE (60HZ)	CONNECTION POINT	NO. OF FIELD CIRCUITS	SINGLE CIRCUIT		DUAL CIRCUIT				FIELD INSTALLED HEATER KIT PART NUMBERS. HEATERS CAN BE FACTORY OR FIELD INSTALLED.
					MINIMUM CIRCUIT AMPACITY (MCA)	MAX. OVER CURRENT PROTECTION (MOCP)	MCA		MOCP		
							CKT. A	CKT. B	CKT. A	CKT. B	
W3SAF-A	00	230/208-1	LUGS	1	24	30					NOT NEEDED
	0Z	230/208-1	C BREAKER	1	24	30					WMCBC-05A
	05	230/208-1	C BREAKER	1	31	35					EHWA03SA-A05
	10	230/208-1	C BREAKER	1	57	60					EHWA03SA-A10
	15	230/208-1	C BREAKER	1 or 2	83	90	57	26	60	30	EHWA03SA-A15
W3SAF-B	00	230/208-3	LUGS	1	19	25					NOT NEEDED
	0Z	230/208-3	C BREAKER	1	19	25					WMCBC-03B
	05	230/208-3	C BREAKER	1	20	25					EHWA03SA-B05
	09	230/208-3	C BREAKER	1	32	35					EHWA03SA-B09
	15	230/208-3	C BREAKER	1	51	60					EHWA03SA-B15
W3SAF-C	00	460-3	LUGS	1	10	15					NOT NEEDED
	0Z	460-3	DISCONNECT	1	10	15					WMCBC-06C
	05	460-3	DISCONNECT	1	11	15					EHWA03SA-C05
	09	460-3	DISCONNECT	1	17	20					EHWA03SA-C09
	15	460-3	DISCONNECT	1	26	30					EHWA03SA-C15

**CAUTION:** When more than one field power circuit is run through one conduit, the conductors must be de-rated. Pay special attention to Note 8 of Table 310 regarding Ampacity Adjustment Factors when more than three current carrying conductors are in a raceway.

**IMPORTANT:** While this electrical data is presented as a guide, it is important to electrically connect properly sized fuses and conductor wires in accordance with the National Electrical Code and all local codes. MOCP (Maximum Over-current Protection) value listed is the maximum value as per UL 60335 calculations for MOCP (branch-circuit conductor sizes in this chart are based on this MOCP). The actual factory installed Over-current Protective Device (Circuit Breaker) in this model may be lower than the maximum UL 60335 allowable MOCP value, but still above the UL 60335 minimum calculated value or Minimum Circuit Ampacity (MCA) listed. Refer to the National Electrical code (latest version), Article 310 for power conductor sizing. Review all wiring and safety information provided in the installation manual for the product.





////// AVAILABLE HEATER PACKAGES AND FIELD WIRING DATA - 4 AND 5 TON STANDARD UNITS

UNIT MODEL	KW OPTION	RATED VOLTAGE AND PHASE (60HZ)	CONNECTION POINT	NO. OF FIELD CIRCUITS	SINGLE CIRCUIT		DUAL CIRCUIT				FIELD INSTALLED HEATER KIT PART NUMBERS. HEATERS CAN BE FACTORY OR FIELD INSTALLED.
					MINIMUM CIRCUIT AMPACITY (MCA)	MAX. OVER CURRENT PROTECTION (MOCP)	MCA		MOCP		
							CKT. A	CKT. B	CKT. A	CKT. B	
W4SAF-A	00	230/208-1	LUGS	1	29	35					NOT NEEDED
	0Z	230/208-1	C BREAKER	1	29	35					WMCBC-05A
	05	230/208-1	C BREAKER	1	32	35					EHWA04SA-A05
	10	230/208-1	C BREAKER	1	58	60					EHWA048A-A10
	15	230/208-1	C BREAKER	1 or 2	84	90	58	26	60	30	EHWA048A-A15
W4SAF-B	00	230/208-3	LUGS	1	21	25					NOT NEEDED
	0Z	230/208-3	C BREAKER	1	21	25					WMCBC-03B
	05	230/208-3	C BREAKER	1	21	25					EHWA04SA-B05
	09	230/208-3	C BREAKER	1	33	35					EHWA048A-B09
	15	230/208-3	C BREAKER	1	51	60					EHWA048A-B15
W4SAF-C	00	460-3	LUGS	1	12	15					NOT NEEDED
	0Z	460-3	DISCONNECT	1	12	15					WMCBC-06C
	09	460-3	DISCONNECT	1	17	20					EHWA048A-C09
	15	460-3	DISCONNECT	1	26	30					EHWA048A-C15
W5SAF-A	00	230/208-1	LUGS	1	39	50					NOT NEEDED
	0Z	230/208-1	C BREAKER	1	39	50					WMCBC-08A
	05	230/208-1	C BREAKER	1	39	50					EHWA060A-A05
	10	230/208-1	C BREAKER	1	59	60					EHWA060A-A10
	15	230/208-1	C BREAKER	1 or 2	85	90	59	26	60	30	EHWA060A-A15
W5SAF-B	00	230/208-3	LUGS	1	25	30					NOT NEEDED
	0Z	230/208-3	C BREAKER	1	25	30					WMCBC-04B
	09	230/208-3	C BREAKER	1	34	35					EHWA042A-B09
	15	230/208-3	C BREAKER	1	52	60					EHWA060A-B15
W5SAF-C	00	460-3	LUGS	1	13	15					NOT NEEDED
	0Z	460-3	DISCONNECT	1	13	15					WMCBC-06C
	09	460-3	DISCONNECT	1	17	20					EHWA042A-C09
	15	460-3	DISCONNECT	1	26	30					EHWA042A-C15

**CAUTION:** When more than one field power circuit is run through one conduit, the conductors must be de-rated. Pay special attention to Note 8 of Table 310 regarding Ampacity Adjustment Factors when more than three current carrying conductors are in a raceway.

**IMPORTANT:** While this electrical data is presented as a guide, it is important to electrically connect properly sized fuses and conductor wires in accordance with the National Electrical Code and all local codes. MOCP (Maximum Over-current Protection) value listed is the maximum value as per UL 60335 calculations for MOCP (branch-circuit conductor sizes in this chart are based on this MOCP). The actual factory installed Over-current Protective Device (Circuit Breaker) in this model may be lower than the maximum UL 60335 allowable MOCP value, but still above the UL 60335 minimum calculated value or Minimum Circuit Ampacity (MCA) listed. Refer to the National Electrical code (latest version), Article 310 for power conductor sizing. Review all wiring and safety information provided in the installation manual for the product.



////// AVAILABLE HEATER PACKAGES AND FIELD WIRING DATA - 3, 4 AND 5 TON DEHUMIDIFICATION UNITS

UNIT MODEL	KW OPTION	RATED VOLTAGE AND PHASE (60HZ)	CONNECTION POINT	NO. OF FIELD CIRCUITS	SINGLE CIRCUIT		DUAL CIRCUIT				FIELD INSTALLED HEATER KIT PART NUMBERS. HEATERS CAN BE FACTORY OR FIELD INSTALLED.
					MINIMUM CIRCUIT AMPACITY (MCA)	MAX. OVER CURRENT PROTECTION (MOCP)	MCA		MOCP		
							CKT. A	CKT. B	CKT. A	CKT. B	
W3SAFDA	00	230/208-1	LUGS	1	23	30					NOT NEEDED
	0Z	230/208-1	C BREAKER	1	23	30					WMCBC-05A
	05	230/208-1	C BREAKER	1	31	35					EHWA03SA-A05
	10	230/208-1	C BREAKER	1	57	60					EHWA03SA-A10
	15	230/208-1	C BREAKER	1 or 2	83	90	57	26	60	30	EHWA03SA-A15
W3SAFDB	00	230/208-3	LUGS	1	18	20					NOT NEEDED
	0Z	230/208-3	C BREAKER	1	18	20					WMCBC-03B
	05	230/208-3	C BREAKER	1	20	20					EHWA03SA-B05
	09	230/208-3	C BREAKER	1	32	35					EHWA03SA-B09
	15	230/208-3	C BREAKER	1	50	50					EHWA03SA-B15
W3SAFDC	00	460-3	LUGS	1	9	15					NOT NEEDED
	0Z	460-3	DISCONNECT	1	9	15					WMCBC-06C
	05	460-3	DISCONNECT	1	10	15					EHWA03SA-C05
	09	460-3	DISCONNECT	1	16	20					EHWA03SA-C09
	15	460-3	DISCONNECT	1	25	25					EHWA03SA-C15
W4SAFDA	00	230/208-1	LUGS	1	31	35					NOT NEEDED
	0Z	230/208-1	C BREAKER	1	31	35					WMCBC-05A
	05	230/208-1	C BREAKER	1	33	35					EHWA04SADA05
	10	230/208-1	C BREAKER	1	59	60					EHWA048A-A10
	15	230/208-1	C BREAKER	1 or 2	85	90	59	26	60	30	EHWA048A-A15
W4SAFDB	00	230/208-3	LUGS	1	23	30					NOT NEEDED
	0Z	230/208-3	C BREAKER	1	23	30					WMCBC-04B
	05	230/208-3	C BREAKER	1	23	30					EHWA048A-B05
	09	230/208-3	C BREAKER	1	34	35					EHWA048A-B09
W4SAFDC	00	460-3	LUGS	1	13	15					NOT NEEDED
	0Z	460-3	DISCONNECT	1	13	15					WMCBC-06C
	05	460-3	DISCONNECT	1	13	15					EHWA048ADC05
	09	460-3	DISCONNECT	1	17	20					EHWA048A-C09
W5SAFDA	00	230/208-1	LUGS	1	40	50					NOT NEEDED
	0Z	230/208-1	C BREAKER	1	40	50					WMCBC-08A
	05	230/208-1	C BREAKER	1	40	50					EHWA060A-A05
	10	230/208-1	C BREAKER	1	60	60					EHWA060A-A10
	15	230/208-1	C BREAKER	1 or 2	86	90	60	26	60	30	EHWA060A-A15
W5SAFDB	00	230/208-3	LUGS	1	26	30					NOT NEEDED
	0Z	230/208-3	C BREAKER	1	26	30					WMCBC-05B
	09	230/208-3	C BREAKER	1	35	35					EHWA042A-B09
	15	230/208-3	C BREAKER	1	53	60					EHWA060A-B15
W5SAFDC	00	460-3	LUGS	1	13	15					NOT NEEDED
	0Z	460-3	DISCONNECT	1	13	15					WMCBC-06C
	09	460-3	DISCONNECT	1	18	20					EHWA042A-C09
	15	460-3	DISCONNECT	1	27	30					EHWA042A-C15

**CAUTION:** When more than one field power circuit is run through one conduit, the conductors must be de-rated. Pay special attention to Note 8 of Table 310 regarding Ampacity Adjustment Factors when more than three current carrying conductors are in a raceway.

**IMPORTANT:** While this electrical data is presented as a guide, it is important to electrically connect properly sized fuses and conductor wires in accordance with the National Electrical Code and all local codes. MOCP (Maximum Over-current Protection) value listed is the maximum value as per UL 60335 calculations for MOCP (branch-circuit conductor sizes in this chart are based on this MOCP). The actual factory installed Over-current Protective Device (Circuit Breaker) in this model may be lower than the maximum UL 60335 allowable MOCP value, but still above the UL 60335 minimum calculated value or Minimum Circuit Ampacity (MCA) listed. Refer to the National Electrical code (latest version), Article 310 for power conductor sizing. Review all wiring and safety information provided in the installation manual for the product.



////// ELECTRIC HEAT KW AND BTUH CHART AT FIELD SUPPLIED VOLTAGE

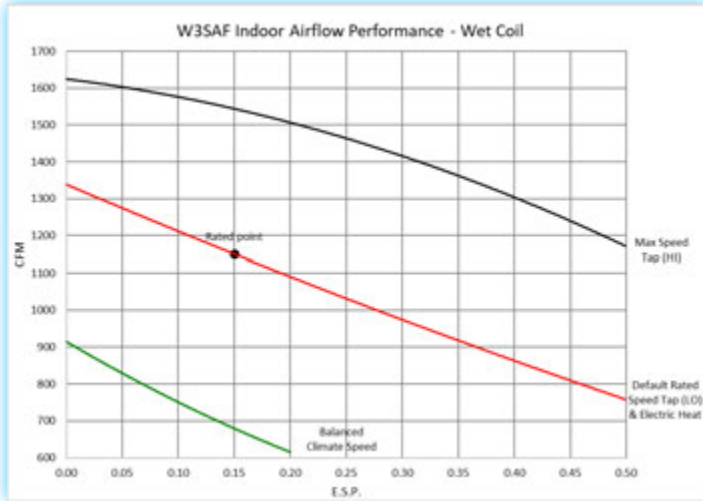
Electric Heat Nomenclature	Total KW and BTUH @ Field-Supplied Voltage										
	@ 230V (1)				@ 208V (1)				@ 460V		
	KW	1-PH Amps	3-PH Amps	BTUH	KW	1-PH Amps	3-PH Amps	BTUH	KW	3-PH Amps	BTUH
05	4.6	20.0	11.5	15,700	3.8	18.0	10.4	12,800	4.6	5.8	15,700
09	8.3		20.8	28,300	6.8		18.7	23,000	8.3	10.4	28,300
10	9.2	40.0		31,400	7.5	36.1		25,600			
15	13.8	60.0	34.6	47,100	11.3	54.1	31.2	38,400	13.8	17.3	47,100

////// VENTILATION OPTIONS FOR OUTDOOR AIR INTAKE AND ROOM EXHAUST

	VENT CODE	FIELD INSTALLED KIT PART NUMBER	UNIT MODEL NUMBER	INSTALLED WEIGHT	EXTERNAL FRONT HOOD DEPTH	VENTILATION OPERATION	OCCUPANCY VENTILATION INPUT SIGNAL	VENT AIRFLOW	DAMPER LEAKAGE STANDARD	VENT USE
Barometric Dampers	X	<a href="#">FAD-NE5</a>	ALL UNITS	13 (5.9)	No Hood	Barometric	None	Up to 25% of rated intake air. No exhaust.	N/A	The Barometric Intake Damper opens when the indoor fan is operating. Pins provide an easy way to set up the damper assembly.
	A	<a href="#">FAD-BE5</a>	ALL UNITS	16 (7.3)	No Hood	Barometric	None	Up to 25% of rated intake air with room exhaust.	N/A	This damper provides the same features as the intake version with an added exhaust damper.
No Vent	B	<a href="#">BOPLATE-5</a>	ALL UNITS	14 (6.4)	No Hood	No Air path	None	None, Air paths are sealed with block off plates.	N/A	The No Vent option provides plates over the intake and exhaust ventilation openings.
Commercial Ventilators	M	<a href="#">CRV-F5</a>	ALL UNITS	42 (19.1)	No Hood	Motor, Spring Return	24VAC	Up to 50% of rated intake air with room exhaust.	10cfm/ft2	Powered outdoor intake and room exhaust air damper. Opens when 24VAC is applied.
	V	<a href="#">CRV-V5A</a>	ALL UNITS	42 (19.1)	No Hood	Motor, Spring Return	24VAC or 2-10VDC	Up to 50% of rated intake air with room exhaust.	4cfm/ft2	Provides outdoor intake and room exhaust air with improved damper sealing. Opens with either a 24VAC signal or DC voltage is applied.
Free Cooling Economizers	D	<a href="#">ECON-NC5A</a>	ALL UNITS	44 (20)	No Hood	Motor, Spring Return	2-10VDC	Full rated intake air with room exhaust.	4cfm/ft2	Economizer assembly with damper motor. Field supplied controls needed for operation.
	Y	<a href="#">ECON-DB5A</a>	ALL UNITS	44 (20)	No Hood	Motor, Spring Return	24VAC or 0-10VDC	Full rated intake air with room exhaust.	4cfm/ft2	Economizer with JADE controller. User defined economizing based on dry bulb temperature.
	Z	<a href="#">ECON-WD5A</a>	ALL UNITS	44 (20)	No Hood	Motor, Spring Return	24VAC or 0-10VDC	Full rated intake air with room exhaust.	4cfm/ft2	Economizer with JADE controller. User defined economizing based on enthalpy curves.
Energy Recovery	R (230V Units)	<a href="#">ERV-FA5</a>	ALL 230V UNITS	87 (39.5)	No Hood	208/230V Unit Blowers	24VAC - 3 speeds	Up to 450cfm	N/A	Energy Recovery Ventilator with independently adjustable intake and exhaust fans. Heat exchange wheel used to transfer heat from outdoor intake and room exhaust air paths.
	R (460V Units)	<a href="#">ERV-FC5</a>	ALL 460V UNITS	87 (39.5)	No Hood	460V Unit Blowers	24VAC - 3 speeds	Up to 450cfm		





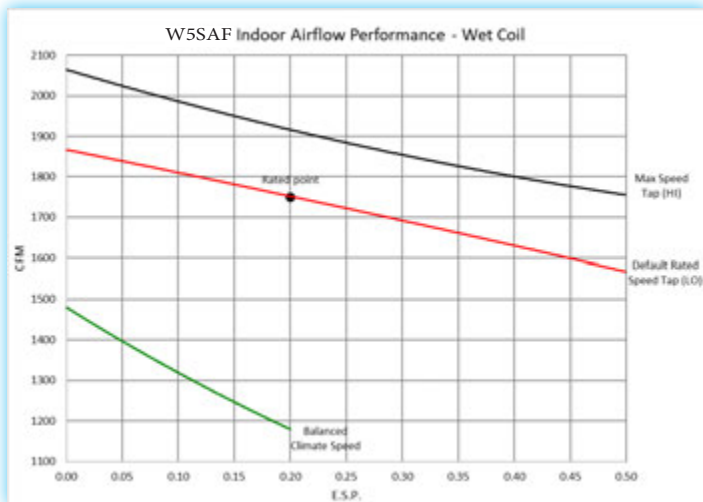
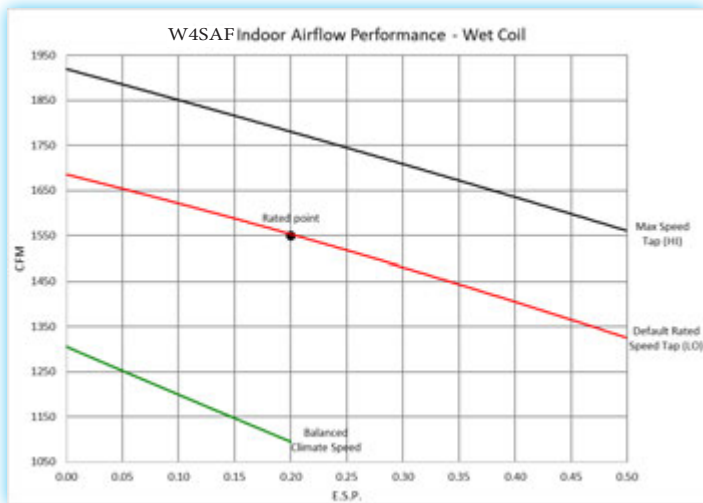


Indoor Airflow Speeds:

**Balanced Climate Speed:** This speed is used for 1st stage part load cooling (Y1). The WS series also uses this speed when the **Balanced Climate option or mechanical dehumidification option (D)** is used. Not recommended for static levels higher than Balanced Climate airflow data provided.

**LO Speed (Default):** The WS series uses this speed by default when using 2nd stage full load cooling (Y2) or heating operation (W1/W2). This speed is labeled as LO on the speed selection terminal strip inside the unit control panel. The WA series also uses this speed when fan only (G) or ventilation operation (A) is used. All units ship with cooling and heating operation at LO cooling and heating speed, and provides the **optimal airflow amount for normal use**.

**HI Speed (User Selectable):** This speed is user selectable option when using 2nd stage full load cooling (Y2) or heating operation (W1/W2). The speed is labeled as HI on the speed selection terminal strip inside the unit control panel. The HI speed tap provides **maximum unit airflow** per the airflow performance chart. Fan only, 1st stage part load cooling, and dehumidification fan operation is not effected by using HI speed.



## ///// INDOOR AIR STREAM FILTRATION OPTIONS

UNIT MODEL	FILTER CODE	FILTER MERV RATING	NUMBER OF FILTERS USED	BARD PART NUMBER	FILTER SIZE INCHES (CM)	FILTER ESP	FILTRATION LEVEL
ALL UNITS	X	MERV 2	2	7004-012	20x20x1 (51x51x3)	0" WC	Low Filtration, 1" Thickness Disposable Media.
	W	MERV 2	2	7003-085	20x20x1 (51x51x3)	0" WC	Low Filtration, 1" Thickness Cleanable Media.
	C, P	MERV 8	2	7004-052	20x20x2 (51x51x6)	.03" WC	Average Filtration, 2" Thickness Pleated Disposable Media.
	M	MERV 11	2	7004-060	20x20x2 (51x51x6)	.05" WC	Above Average Filtration, 2" Thickness Pleated Disposable Media.
	A, B, N	MERV 13	2	7004-063	20x20x2 (51x51x6)	.08" WC	High Filtration, 2" Thickness Pleated Disposable Media.

## ///// CABINET COLOR AND FINISH OPTIONS

UNIT MODEL	CABINET COLOR AND FINISH CODE	COLOR AND FINISH	DESCRIPTION
ALL UNITS	X	Beige Painted Steel	This cabinet option uses zinc coated steel panels that are cleaned, rinsed, sealed and dried before a polyurethane primer is applied. The cabinet paint coating is comprised of a textured enamel. The resulting finish is designed to withstand over 1000 hours of salt spray tests per ASTM B117-03. . Unit top, structural sides, and front service panels are constructed using 20 gauge materials. The unit base is constructed using 16 gauge galvanized steel. Cabinet components are insulated with a non-fiberglass formaldehyde free insulation that has a high "R" value, is easy to clean with a FSK foil backing, and resists delamination.
	1	White Painted Steel	
	4	Buckeye Gray Painted Steel	
	5	Desert Brown Painted Steel	
	8	Dark Bronze Painted Steel	
	S	Stainless Steel	Exterior Stainless Steel finish cabinets are often selected for corrosion and chemical resistance. The Bard stainless steel unit offers a high quality stainless steel 316 grade enclosure and fasteners for years of operation in these conditions. The exterior cabinet, sheet metal screws, washers, nuts, compressor mounting hardware and outdoor fan motor mount are stainless steel. The condenser fan is corrosion coated for additional protection.
	A	Aluminum	Aluminum external cabinet finish option "A" units are constructed of ASTM B 209 grade .06" thickness panels with a stucco appearance.



X—Beige



1—White



4—Gray



5—Desert



8—Bronze



S—Stainless



A—Aluminum

## ///// ADDITIONAL CORROSION COATED EVAPORATOR COIL, CONDENSER COIL, AND CABINET OPTIONS

UNIT MODEL	COIL AND CABINET COATING OPTION	EVAPORATOR COIL	CONDENSER COIL	INTERIOR CONDENSER SECTION	EXTERIOR AND INTERIOR CABINET	DESCRIPTION
ALL UNITS	X	STANDARD	STANDARD	STANDARD	STANDARD	Standard green fin evaporator coil and copper aluminum condenser coil. Cabinet is not coated.
	1	COATED	STANDARD	STANDARD	STANDARD	Corrosion coated evaporator coil and copper aluminum condenser coil. Cabinet is not coated.
	2	STANDARD	COATED	STANDARD	STANDARD	Standard green fin evaporator coil and corrosion coated condenser coil. Cabinet is not coated.
	3	COATED	COATED	STANDARD	STANDARD	Evaporator coil and condenser coil are both corrosion coated. Cabinet is not coated.
	4	COATED	COATED	COATED	STANDARD	Evaporator coil and condenser coil are both corrosion coated. Cabinet interior condenser section is coated.
	5	COATED	COATED	COATED	COATED	Evaporator coil and condenser coil are both corrosion coated. Cabinet interior and exterior is coated.



## ///// FACTORY CONTROLS OPTIONS CHART INCLUDING SWITCHES, SENSORS, RELAYS, AND START KITS

Factory installed controls are provided by Bard to enhance a Wall-Mount product before it is shipped. All Wall-Mount products are shipped with a auto-reset high pressure switch and an auto-reset low pressure switch to help protect refrigeration components. A compressor control module with adjustable voltage protection, delay on make and break, and high/low pressure diagnostics is also standard

CONTROL CODE STANDARD MODELS	CONTROL CODE DEHUMIDIFICATION MODELS	DESCRIPTION OF FACTORY INSTALLED COMPONENTS
X	X	Standard Hi Pressure Switch, Low Pressure Switch, Compressor Control Module, and Refrigerant leak detector (RDS). These controls are standard for all models.
E	E	Standard controls <b>and Low Ambient Control.</b>
F	NA	Standard controls, <b>Low Ambient Control and Dirty Filter Pressure Switch.</b>
J	NA	Standard controls, <b>Low Ambient Control and Refrigerant Pressure Alarm Relay with NO/NC Contacts.</b>
M	NA	Standard controls, <b>Low Ambient Control, Alarm Relay, and PTCR Start Kit (single phase only).</b>
V	NA	Standard controls, <b>Low Ambient Control, Alarm Relay, Discharge temperature sensor, Indoor Blower Airflow Press. Switch, Compressor Current Sensor, Dirty Filter Pressure Switch.</b>

## ///// FIELD KIT CONTROLS OPTIONS CHART INCLUDING SWITCHES, SENSORS, RELAYS, AND START KITS

Field installed kits provide accessories that can be installed in the field. Required components, wires, enclosures, screws, and instructions that are needed are provided within the kit.

KIT PART NO.	UNITS USING KIT	DESCRIPTION OF FIELD INSTALLED KIT
CMA-39	ALL UNITS	Low Ambient Control allows compressor cooling between 0°F and 50°F outdoor temp. - fan cycling
CMC-32	ALL UNITS	PTCR Start Kit. Increases starting torque by 2 to 3x. 230V-60hz-1 phase (A voltage) only. Cannot be used in combination with SK start kit
CMA-43	ALL UNITS	Outdoor Thermostat Kit used to disable compressor cooling below 50°F outdoor temp. Adjustable between 50° and 0°F
CMC-35	ALL UNITS	Compressor Control Module Lockout Alarm Relay Kit.
CMC-36	W3S	Crank case heater kit. 230V 1-PH units only
CMC-40	W3S	Crank case heater kit. 230V 3-PH units only
CMC-37	W3S	Crank case heater kit. 460V 3-PH units only
CMC-38	W4S, W5S	Crank case heater kit. 230V 1-PH units only
CMC-41	W4S, W5S	Crank case heater kit. 230V 3-PH units only
CMC-39	W4S, W5S	Crank case heater kit. 460V 3-PH units only

## ///// WALL CURB ACCESSORIES

Optional wall curb accessories are available to help reduce vibration through the outer wall surface or to use existing wall openings when replacing equipment. Follow all static pressure airflow requirements, safety and installation guidelines in the instructions provided with the curb and Wall-Mount products.

CURB	UNITS USING CURB	DESCRIPTION
WWC5-*	ALL UNITS	Install to use with existing 3 and 5 ton wall openings. Wall openings must provide sufficient airflow. Follow all instructions in curb and unit manual.

\* Color Option

## ///// NON-DUCTED SUPPLY AND RETURN GRILLES

GRILLE NO.	UNITS USING GRILLE	DESCRIPTION OF LOUVER GRILLE
SG-5	ALL UNITS	10" x 30" with 1" Flange 4 way deflection supply grille.
RG-5	ALL UNITS	16" x 30" with 1" Flange return grille.
SG-5W	ALL UNITS	10" x 30" with 2" Flange 4 way deflection supply grille.
RG-5W	ALL UNITS	16" x 30" with 2" Flange return grille.
RFG-5W	ALL UNITS	16" x 30" with 2" Flange return grille with filter bracket.*
RGDK-5W	ALL UNITS	16" x 30" manual shutter style damper that is mounted in the return duct behind the return grille (sold separately). Adjustable to restrict return air from room.

\* Not recommended to provide primary filtration with units that will bring in outdoor air.



## ////// CONTROLLER, THERMOSTAT, HUMIDISTAT AND CO2 VENTILATION CONTROL OPTIONS

Bard provides a wide variety of controllers for equipment cooling, thermostats, for equipment and comfort cooling, humidistats for dehumidification units, and CO2 sensors for ventilation control. Lockable thermostat covers are available for applications where security or supervisory control is desired.

CONTROLLER	OPERATION	DESCRIPTION
MC4002	1 to 2 Unit Lead/Lag Controller	Standard unit Lead/Lag Controller with remote alarming capability. Optional alarm board and SNMP or web page communication board. On board temperature sensor that can be remote mounted. Can use up to (2) remote temperature sensors.
MC5300	1 to 3 Unit Lead/Lag Controller	Advanced multi-unit Lead/Lag Controller with remote alarming capability. All models have Modbus communication and web pages. Optional alarm board with NO/NC contacts. On board temperature and humidity sensor that can be remote mounted. Can use up to (2) remote temperature sensors.
MC5600	1 to 6 Unit Lead Lag Controller	Advanced multi-unit Lead/Lag Controller with remote alarming capability. All models have Modbus communication and web pages. Optional alarm board with NO/NC contacts. On board temperature and humidity sensor that can be remote mounted. Can use up to (2) remote temperature sensors.

THERMOSTAT	OPERATION	DESCRIPTION
8403-060	3 Heat/3 Cool	Programmable or Nonprogrammable, ventilation output, dehumidification operation
8403-090	2 Heat/2 Cool	Temp. Settings per Day 4, 2, 1, 0 Programs per Week 7, 5-2, 5-1-1 or Nonprogrammable
8403-092	2 Heat/2 Cool	Programmable or Nonprogrammable, ventilation output, Wi-Fi

HUMIDISTAT	OPERATION	DESCRIPTION
8403-047	Humidity %RH	Electronic with display, lockable keypad, humidity sensor calibration (Viconics)
8403-100	Humidity %RH	Electronic with display, lockable keypad, humidity sensor calibration (Honeywell)

CO2 CONTROL	OPERATION	DESCRIPTION
S8403-096	CO2 PPM	CO2 ventilation control with digital display. On/Off or modulating ventilation operation

THERMOSTAT COVER*	SIZE	DESCRIPTION
8405-003	(Inside) 5-1/16" H x 6-1/16" W (Outside) 6-1/2" H x 7-1/2" W x 2-15/16" D	Clear acrylic with ventilation. Fits all thermostats except 8403-060
8405-005	(Inside) 5-7/8" H x 8-3/8" W (Outside) 7-1/4" H x 9-3/4" W x 3-3/8" D	Clear acrylic with ventilation. Fits all thermostats.
8405-006	(Inside) 5-1/16" H x 6-1/16" W (Outside) 6-3/8" H x 7-3/8" W x 2-7/8" D	Clear acrylic with ventilation. Fits all thermostats except 8403-060
8405-007	(Inside) 5-7/8" H x 8-3/8" W (Outside) 7-1/8" H x 9-5/8" W x 3-1/4" D	Beige painted steel cover with ventilation. Fits all thermostats.

\* Thermostat covers include ventilation, but may effect temperature control reaction time. If security control lockout is needed, the 8403-060 thermostat provides input control lockout features.



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Due to our continuous product improvement policy,  
all specifications subject to change without notice.

