

ECR International LLC 5780 Success Drive Rome, NY 13440 www.enviromaster.com email: info@enviromaster.com





UNCG/UNHG

R-410A High-Efficiency Ductless Split System Universal Air Handlers

Straight cool / Heat pump nominal capacities									
UNHG09	UNHG09 UNHG12 UNHG24								
9,000	9,000 12,000 18,000 - 23,800								
2.6	2.6 3.5 5.3 - 7.0								
	Straight cooling	g only — nominal capacity							
	UNC	G30	Units						
28,200									
	8	.3	kW						

Specificationsand **Performance**

(with EMI AmericaSeries condensers)





NOTICE

EMI AmericaSeries air handlers and condensers are backed by EMI and ECR International and are tested, rated and certified in accordance with ARI Standard 210/240 and UL-1995. Due to ongoing product development, product designs and specifications may change without notice. Please contact the factory for more information.



UNCG/UNHG Air Handlers — Product Description

Product description

- The AmericaSeries UNCG/UNHG is available as a (DX) direct expansion straight cool and heat pump.
- It offers a contemporary design in a ductless type air handlers and combines attractive appearance with high efficiency conditioning for small to medium size commercial or residential spaces.
- The UNCG/UNHG is equipped with unit mounted infrared compatible controls which also supports 24V remote wall thermostat operation. Optional handheld remote is available.



- Heat pump models provide up to 23,800 Btuh of cooling and 20,600 Btuh
 of heating. Electric heat options are available for up to 5 kW of supplemental heat.
- This American-made air handlers offers ease of installation, operation, and service.
- It can be matched with EMI's:
 - Single-zone condensing units S1CG/S1HG 9,000-24,000 Btuh and S1CG 30,000 Btuh.
- All EMI air handlers are backed by Enviromaster International LLC and are tested, rated and certified in accordance with ARI standards 210/240 and UL 1995.

Controls and components (Factory-installed or supplied)

- · Large LCD Backlit Display
- Single unit-mounted control package, configurable to either unit mount or remote wall thermostat operation, increasing installation flexibility.
- Unit control can be used in cooling only, cooling with electric heat, heat pump, or heat pump with second stage electric heat applications.
- Operational range set point temperature adjustable between 55°F and 90°F (13 to 32°C) in one-degree increments.
- Infrared-compatible controller allows use of optional IR hand held controller.
- Operation modes include Heat, Cool, Dry, Fan and Auto Change-over.
- Fan Operation Auto/On, High or Low speed fan
- Fan Purge Fan remains on for 60 seconds after Heat/Cool call is dropped for improved efficiency (Auto mode only)
- Room air sampling Selectable time intervals ensure the fan will cycle on periodically, in Auto Fan Mode to help eliminate room temperature stratification.
- Selectable Fahrenheit (°F) or Celsius (°C) temperature scale.
- Dry mode Operates cooling and electric heat simultaneously to remove humidity. Optional electric heat must be selected.
- Anti-Short Cycle Compressor Protection.
- Minimum on time for heating and cooling Helps eliminate room temperature drop and system short cycling.
- Freeze Protection Prevents air handlers freeze up.
- Test operation Allows ease of testing after installation (all timers are reduced).
- Non-volatile back-up memory will maintain control settings for an indefinite period during a power outage. When power is restored the equipment

will resume operation after a three-minute compressor time delay.

- 7-day, 4 event programmable with copy feature.
- Filter change indicator: A timer feature indicates when the filter should be cleaned according to the selected time.
- Modular design reduces parts required for control package. Deco panel, relay board, ribbon cables and microprocessor are combined into one package.
- Integral condensate pump safety-switch connection where-by the microprocessor monitors the condensate pump safety switch and displays an error code when a fault occurs. (Applies only with optional condensate pump).
- CEC (California Energy Commission) compliant.
- Condensate drain pan over flow protection.

Cabinet features:

- Easily accessible, washable, reusable, nylon mesh filter.
- Easy access to piping connections and condensate pump allows installation with the unit mounted in place.
- Condensate drain pan constructed of galvannealed steel (G60U), with anti-corrosion coating.

· Optional equipment

- Floor mount trim kit.
- Condensate pump (field installed only).
- 24V remote wall thermostat.
- Electric heat with automatic reset high temperature cutout and redundant high temperature fuse link (when heat option is selected). 208/230V only.
- Hand-held infrared controller.
- Metal return air grille.

Installer-supplied Items

- Low voltage wiring (18 AWG required).
- · High voltage power supply wiring.
- Mounting screws and fasteners.
- · Condensate piping.
- Refrigerant piping (if not supplied).
- Refrigerant (for interconnect charge).
- High voltage electrical disconnect.

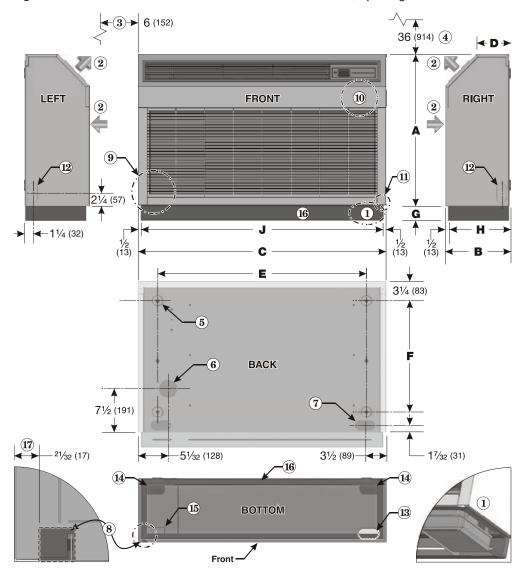
Table 1 Discharge air speed and flow @ 230 VAC / Sound values

Model	High speed CFM (I/s)	Low speed CFM (I/s)	Coil	FPM (m/s)	Throw feet (m)	Observed sound values (dBA)
09-12	425 (200)	425 (200) 375 (175) D		900 (4.6)	15 (4.6)	51
18-24	700 (350)	550 (250)	Dry	1,225 (6.2)	24 (7.3)	56
30	1,000 (470)	825 (400)	Dry	1,250 (6.4)	27 (8.2)	50



UNCG/UNHG Air Handlers — **Product Description** (continued)

Figure 1 UNCG/UNHG ductless air handlers — dimensions, openings and knockouts



DIMENSIONS inches (mm)										
Model	A	В	c							
UNHG09	26"	11"	41 ½"							
UNHG12	(660)	(279)	(1054)							
UNHG24	26"	11"	51 ½"							
	(660)	(279)	(1308)							
UNCG30	27 ½"	12 3/8"	62"							
	(699)	(314)	(1575)							
Model	D	E	F							
UNHG09	5 ½"	35"	19 ³ / ₁₆ "							
UNHG12	(140)	(887)	(487)							
UNHG24	5 ½"	45"	19 ³ / ₁₆ "							
	(140)	(1141)	(487)							
UNCG30	5 ¹ / ₁₆ "	55 ⁷ / ₁₆ "	20 ²³ / ₃₂ "							
	(141)	(1408)	(526)							
Model	G	н	J							
UNHG09	2 ½"	10 ⁷ / ₁₆ " (265)	40 ½"							
UNHG12	(64)		(1029)							
UNHG24	2 ½"	10 ⁷ / ₁₆ "	50 ½"							
	(64)	(265)	(1283)							
UNCG30	2 ½"	11 ¹³ / ₁₆ "	61"							
	(64)	(300)	(1549)							

- 1 Optional condensate pump floor-mount location (requires floor mount trim kit)
- 2 Supply and return air flow directions
- 3 Minimum clearance for air flow and access BOTH sides of cabinet
- 4 Minimum clearance ensure minimum clearance of 36 inches (914 mm) above supply air outlet and in front of return air inlet for air flow and access
- 5 Clearance holes (4) for securing unit to wall or ceiling, using appropriate hardware — 11/16 inch diameter
- **6** Knockout, 3-inch (76 mm), for optional customer-supplied/installed fresh air intake device

- 7 15/8 x 3 3/8 inches knockout each side of rear panel for refrigeration tubing, condensate drainage and/or power
- 8 Opening, 7/8 x 7/8 inch, on bottom right front corner of cabinet for condensate drain tube routing when unit is ceiling mounted
- **9** Refrigeration and condensate draining connections are located in this area
- **10** Electrical connections are located in this area
- 11 Location of item 7, above
- 12 15/8 x 3 3/8 inches knockout each side panel for refrigeration tubing, condensate drainage and/or power
- 13 15/8 x 3 3/8 inches knockout at bottom left front for refrigeration tubing, condensate drainage and/or power, most often used when

- unit is ceiling mounted; pump kit riser flanges do not interfere with knockouts
- 14 15/8 x 3 3/8 inches knockouts at bottom left rear each side for refrigeration tubing, condensate drainage and/or power; pump kit riser flanges do not interfere with knockouts
- 15 15/8 x 3 3/8 inches knockout at bottom right front for refrigeration tubing, condensate drainage and/or power, most often used when unit is ceiling mounted; pump kit riser flanges do not interfere with knockouts
- 16 Optional floor mount trim kit with 1-inch bottom flange; recessed ½ inch on front and sides, flush at rear
- 17 Distance from side of cabinet to 7/8 x 7/8 inch opening



UNCG/UNHG Air Handlers with S1CG/S1HG/S2CG/S2HG Condensers

S1CG/S1HG/S2CG/S2HG — description

The AmericaSeries S1CG/S1HG and S2CG/S2HG condensing units are air-cooled, vertically-arranged side-discharge, high-efficiency units designed specifically to meet or exceed a 13 SEER rating.

- The S1CG Models 9,000-36,000 Btuh and S1HG Models 9,000-24,000 Btuh condensing units will provide cooling and heating for a single evaporator.
- The S2CG/S2HG 18,000 (99), 21,000 (92) and 24,000 (22) Btuh capacity condensing units will provide cooling and heating for two
- The S1CG/S1HG, S2CG/S2HG are quiet units that can be recommended for both commercial and residential applications.

NOTICE

When specifying heat pump(s), it is recommended that the matching indoor unit(s) be equipped with electric heat.

Features

- Installation of the S1CG/S1HG and S2CG/S2HG condensing units is simplified by a 24v control interconnection from the evaporator.
- Multiple units can be lined up in close proximity to an exterior wall.
- Service valves are recessed to reduce tampering.
- All 9,000-12,000 Btuh units are equipped with a an oversized suction accumulator with surge baffles and enhanced oil management and a factory-installed solid core filter drier.
- A factory-installed crankcase heater is standard on S1HG 9,000-12,000 Btuh (thermostatically-controlled) and S2HG models, and is available as optional equipment on other models.

Controls and components (Factory-installed or supplied)

- Compressor and fan motor contactor
- Run capacitor
- Low voltage terminal connections
- High pressure switch with manual external reset
- Heat pump hard start
- Cooling operation down to 60° F (15.6° C) standard on all units
- Models 9,000-12,000 Btuh only:
 - Large capacity suction accumulator
 - Solid-core filter drier

Thermostatically-controlled crankcase heater

This feature energizes the crankcase heater only when needed, saving unnecessary power usage and increasing overall system efficiency.

System options

- Corrosion-resistant coil options (sea coast and harsh environment usage):
 - Copper fin/copper tube condenser coil
 - Coated aluminum fin/copper tube condenser coil
 - Low Ambient controls for cooling operation down to $0^{\circ}\,F\,$ (-18° C)
 - Optional field-installed kits, when specified, for cooling operation down to 0°F — kits include louvers/wind baffle, crankcase heater, and/or fan cycle switch, and installation instructions
- Models S1CG 9,000-12,000 Btuh only:
 - 115v (single-zone only S1CG or S1HG)
 - Field-installed thermostatically-controlled crankcase heater for heat pump units (S1HG or S2CG)

Installer-supplied items

- Power wiring.
- Low-voltage wiring (18 AWG minimum).
- Secure mounting pad or foundation.
- Refrigerant piping (if not purchased from EMI).
- High-voltage disconnect.
- Refrigerant for charging interconnect piping.

Table 2 Dimensional data, sound data and shipping weights

Model	Size Btu		t dimensi nches (mm	Sound level	Shipping weight	
	Blu	Α	В	С	dBA	Lbs (kg)
S1CG/S1HG9	9,000	24 (610)	15 (381)	36 (914)	59	98 (44.5)
S1CG/S1HG2	12,000	24 (610)	15 (381)	36 (914)	59	98 (44.5)
S1CG/S1HG8	18,000	32 (813)	15 (381)	36 (914)	62	156 (70.9)
S1CG/S1HG4	24,000	32 (813)	15 (381)	40 (1016)	63	156 (70.9)
S1CG3	30,000	38 (965)	15 (381)	44 (1118)	68	210 (95.5)
S2CG	18,000/21,000/ 24,000	38 (965)	15 (381)	44 (1118)	68	197 (89.6)
S2HG	18,000/21,000/ 24,000	38 (965)	15 (381)	44 (1118)	68	197 (89.6)
S1CG6	36,000	38 (965)	15 (381)	48 (1219)	68	210 (95.5)

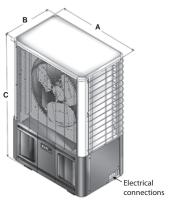




	Table 3 (Operat	tional Ran	ges							
			Accessories Part Numbers (Quantity) Required *** Order ALL Kits Listed Under the Operational Range ***								
	Unit			Operational Range							
		Voltage	32° to 115° F	0° to 115° F							
		voitage	(0 to 46° C)		(-18 to 46° C)						
			Crankcase Heater Kit	Crankcase Heater Kit	Fan Cycle Switch Kit	Architectural Louver/Hail Guard/ Wind Baffle Kit					
	S1CG9000	115	550002072 (1)	550002072 (1)	550002074 (1)	550001577 (1)					
	S1CG2000	208/230	550002073 (1)	550002073 (1)	550002074 (1)	550001577 (1)					
	S1CG8000	208/230	N/R	N/R	550002074 (1)	550001578 (1)					
	S1CG4000	208/230	N/R	N/R	550002074 (1)	550001602 (1)					
	S1CG3000	208/230	N/R	N/R	550002074 (1)	550001580 (1)					
	S2CG	208/230	550002073 (2)	550002073 (2)	550002074 (2)	550001580 (1)					
	S2HG	208/230	N/R	N/R	550002074 (2)	550001580 (1)					
	S1CG6000	208/230	N/R	N/R	550002074 (1)	550001581 (1)					
	S1HG9000	115	N/R	N/R	550002074 (1)	550001577 (1)					
	S1HG2000	208/230	N/R	N/R	550002074 (1)	550001577 (1)					
	S1HG8000	208/230	N/R	N/R	550002074 (1)	550001578 (1)					
	S1HG4000	208/230	N/R	N/R	550002074 (1)	550001602 (1)					
	Note: N/R -	Not Requ	uired								



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UNCG/UNHG

High Efficiency Ductless Split System Universal Air Handler with EMI AmericaSeries condensers

Straight cool / Heat pump nominal capacities									
UNHG09	UNHG09 UNHG12 UNHG24								
9,000	9,000 12,000 18,000-23,800								
2.6	3.5	3.5 5.3-7.0							
	Straight cooling	g only — nominal capacity							
	UNC	G30	Units						
	28,200 Btul								
	8.3								

Engineering Submittal

Job Name:
Location:
Customer:
Project Engineer:
Project Architect:
General Contractor:
Submitted by: For: Reference [] Approval []
Date:

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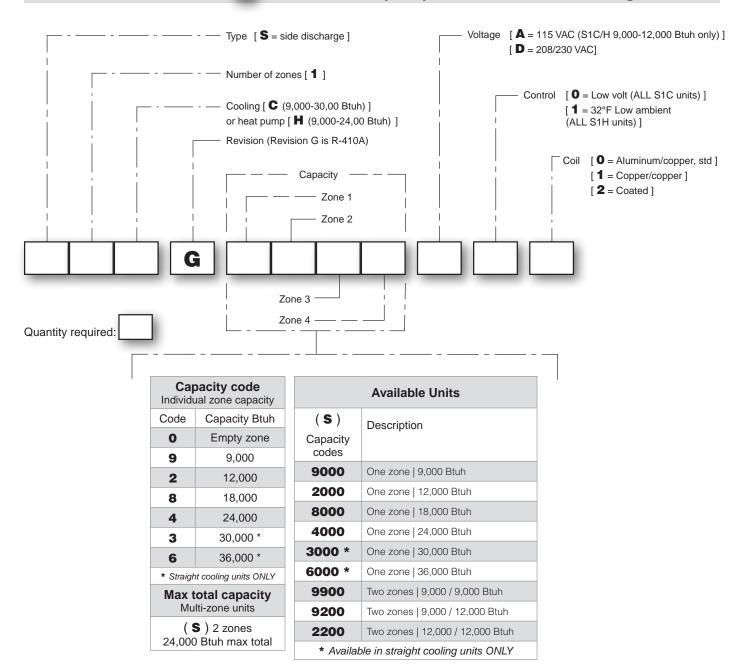
Please fill in the boxes below to specify the air handler units' codings Selection 1 Quantity required: Selection 2 Quantity required: Type [UN = universal air handler] Auxiliary heat: [**0** = no auxiliary heat] Operation [C = cooling—DX (UNCG 30 only)] - $\mathbf{3} = 3 \text{ kw} @ 208/230 \text{ VAC}, (UNHG 09, 12, 12)$ [H = heat pump (UNHG 09-24 only)] 24 only) [5 = 5 kw @ 208/230 VAC, (UNHG 24,)]Revision [G = R-410A refrigerant] — UNCG 30 only)] Voltage [**A** = 115 VAC (UNHG 09–12 only)] Capacity [**09**= 9,000 Btuh][D = 208/230 VAC][**12** = 12,000 Btuh] [**24** = 18 / 24,000 Btuh] [30 = 30 / 30,000 Btuh (cooling only)]**EXAMPLES** C 3 G G Cooling application | 30 / 36,000 Btuh capacity Heat pump application | 18 / 24,000 Btuh capacity | 208/230 VAC | 5 kw auxiliary heat | 208/230 VAC | 5 kw auxiliary heat

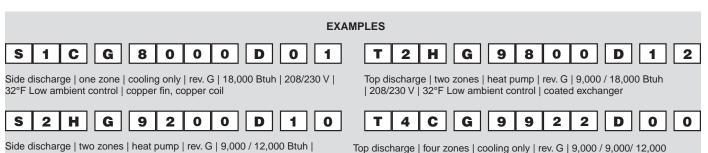
Please check the boxes below to specify optional field-installed accessories

Condensate Pump	Metal return air grille
Remote thermostat for air handler	Floor mount trim kit
Wind baffle / hail guard, architectural louver kit (required for cooling operation to 0°F (-18°C)	Refrigerant line set, 10-feet
Crankcase Heater (S1CG 9,000 - 12,000 Btuh only) required for cooling operating below 60°F (15°C)	Refrigerant line set, 25-feet
Hard Start Kit	Refrigerant line set, 50-feet
Fan Cycle Switch (required for cooling operation below 32°F (0°C))	



Please fill in the boxes below to specify the condenser unit coding





Side discharge | two zones | heat pump | rev. G | 9,000 / 12,000 Btuh | 208/230 V | standard low volt control | aluminum fin, copper coil

Top discharge | four zones | cooling only | rev. G | 9,000 / 9,000 / 12,000 | 12,000 Btuh | 208/230 V | standard low volt control | aluminum fin, copper coil

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UNCG/UNHG Air Handlers with S1CG/S1HG/S2CG/S2HG Condensers (continued)

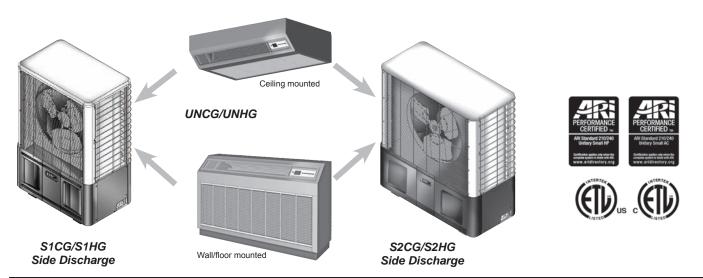


Table 4 Performance — cooling system with universal units

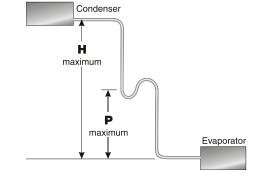
Condenser	Universal Units	Btuh (Kw)	SEER	SHR	EER	Ref.
S1CG9000	UNHG09	9,000 (2.6)	13.0	0.74	12.2	R-410A
S1CG2000	UNHG12	12,000 (3.5)	13.0	0.68	11.9	R-410A
S1CG8000	UNHG24	18,000 (5.3)	13.0	0.77	12.0	R-410A
S1CG4000	UNHG24	23,800 (7.0)	13.0	0.67	11.4	R-410A
S1CG3000	UNCG30	28,200 (8.1)	13.0	0.79	11.7	R-410A
S2CG2200	UNHG12 + UNHG12	18,000 (5.3)	13.0	0.73	12.1	R-410A
S2CG9200	UNHG09 + UNHG12	21,000 (6.2)	13.0	0.70	12.0	R-410A
S2CG9900	UNHG09 + UNHG09	24,000 (7.0)	13.0	0.68	12.0	R-410A

Table 5 Performance — heat pump system with universal units

Condenser	Universal Units	Cooling Btuh (Kw)	Heating Btuh (Kw)	SEER	HSPF	SHR	EER	СОР	Ref.
S1HG9000	UNHG09	9,000 (2.6)	8,800 (2.6)	13.0	7.7	0.72	12.2	3.3	R-410A
S1HG2000	UNHG12	12,000 (3.5)	10,600 (3.1)	13.0	7.7	0.67	11.7	3.3	R-410A
S1HG8000	UNHG24	18,000 (5.3)	17,600 (5.2)	13.0	7.7	0.77	12.1	3.5	R-410A
S1HG4000	UNHG24	23,800 (7.0)	20,600 (6.0)	13.0	7.7	0.67	11.7	3.4	R-410A
S2HG2200	UNHG12 + UNHG12	18,000 (5.3)	17,400 (5.1)	13.0	7.7	0.73	12.1	3.2	R-410A
S2HG9200	UNHG09 + UNHG12	21,000 (6.2)	19,200 (5.6)	13.0	7.7	0.70	12.0	3.2	R-410A
S2HG9900	UNHG09 + UNHG09	24,000 (7.0)	21,000 (6.2)	13.0	7.7	0.68	12.0	3.2	R-410A

Table 6 UNCG/UNHG interconnecting line sizes

Capacity	Max. Equivalent Length	Max. Lift	Max. Trap Height	Liquid Line	Suction Line	Condensate Line
		"H"	"P"	0.D.	0.D.	I.D.
9,000	50′	20′	15'	1/4"	1/2"	1/2"
12,000	(15 m)	(6 m)	(5 m)	1/4"	1/2"	1/2"
18,000	100/	251	201	3/8"	5/8" *	1/2"
24,000	100′ (30 m)	35′ (11 m)	20' (6 m)	3/8"	3/4"	1/2"
30,000	(50 111)	(11111)	(0111)	3/8"	3/4"	1/2"





Electrical Specifications

NOTICE

Due to ongoing product development, designs, specifications, and performance are subject to change without notice. Please consult the factory for further information.

 Table 7
 Electrical specifications — UNCG/UNHG

MODEL	VOLTS/HZ/PH	FAN RLA	НР	HEATER K.W.	AMPS	TOTAL AMPS	MIN VOLT	M.C.A.	HACR BRKR
	115/60/1	0.64	0.02	_	_	0.64	104	0.8	15
UNHG 09-12	208/230/60/1	0.34	0.02	-	-	0.34	197	0.4	15
09-12	208/230/60/1	0.34	0.02	3	13.04	13.38	197	16.7	20
	208/230/60/1	0.56	0.07	-	-	0.56	197	0.7	15
UNHG 24	208/230/60/1	0.56	0.07	3	13.04	13.6	197	17	20
24	208/230/60/1	0.56	0.07	5	21.74	22.3	197	27.9	30
UNCG	208/230/60/1	0.8	0.10	_	_	0.8	197	1	15
30	208/230/60/1	0.8	0.10	5	21.74	22.54	197	28.2	30

 Table 8
 Electrical specifications — S1CG/S1HG,S2CG/S2HG

Model #	Volts/HZ/PH	Fan Motor		Compressor							
				Circuit 1		Circuit 2		Total amps	Min volt	M.C.A.	HACR BRKR
		AMPS	НР	RLA	LRA	RLA	LRA				
S1CG9000A S1HG9000A	115/60/1	1.4	0.125	7.5	47	N/	/A	8.9	104	10.8	15
S1CG2000A S1HG2000A	115/60/1	1.4	0.125	9.9	53	N/	/A	11.3	104	13.8	20
S1CG9000D S1HG9000D	208/230/60/1	0.8	0.125	3.9	20	N/	/A	4.7	197	5.7	15
S1CG2000D S1HG2000D	208/230/60/1	0.8	0.125	5.2	27	N/A		6.0	197	7.3	15
S1CG8000D S1HG8000D	208/230/60/1	0.8	0.125	5.9	43	N/	/A	6.7	197	8.2	15
S1CG4000D S1HG4000D	208/230/60/1	0.8	0.125	8.0	43	N/	/A	8.8	197	10.8	15
S1CG3000D	208/230/60/1	1.8	0.330	11.6	74	N/	/A	13.4	197	16.3	25
S1CG6000D	208/230/60/1	1.8	0.330	12.7	74	N/	/A	14.5	197	17.7	30
S2CG2200D S2HG2200D	208/230/60/1	1.8	0.330	5.2	27	5.2	27	9.6	197	10.6	15
S2CG9200D S2HG9200D	208/230/60/1	1.8	0.330	3.9	20	5.2	27	10.9	197	12.2	15
S2CG9900D S2HG9900D	208/230/60/1	1.8	0.330	3.9	20	3.9	20	12.2	197	13.5	15



UNCG/UNHG R-410A High Efficiency Ductless Split System Universal Air Handlers

N	otes

EMI's Product Line

Indoor Units

WLCG/WLHG High Wall Air Handler



CACG/CAHG Cassette Air Handler



UNCG/UNHG Universal Floor or Ceiling Air Handler





Outdoor Units

S2CG/S2HG Dual Zone Side Discharge





S1CG/S1HG Single Zone Side Discharge

T2CG, T3CG and T4CG 2, 3 and 4 Zone Top Discharge



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An ISO 9001-2000 Certified Company