

UNCG/UNHG

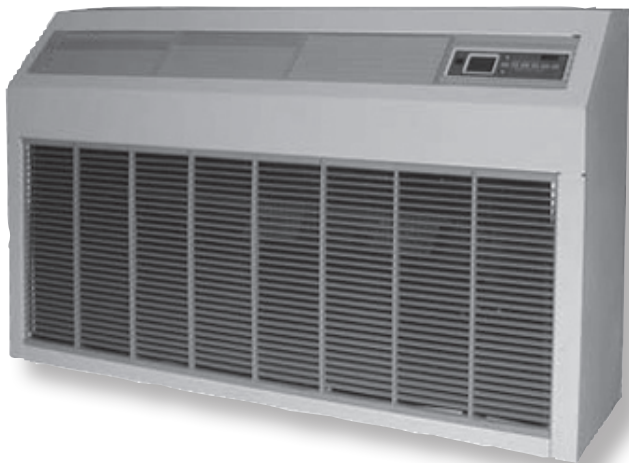
R-410A High-Efficiency Ductless Split System
Universal Air Handlers

EMI *AmericaSeries*
Comfort Where It Counts.

Straight cool / Heat pump nominal capacities			
UNHG09	UNHG12	UNHG24	Units
9,000	12,000	18,000 - 23,800	Btuh
2.6	3.5	5.3 - 7.0	kW
Straight cooling only — nominal capacity			
UNCG30			Units
28,200			Btuh
8.3			kW

Specifications and Performance

(with EMI AmericaSeries condensers)



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An ISO 9001-2000 Certified Company

NOTICE

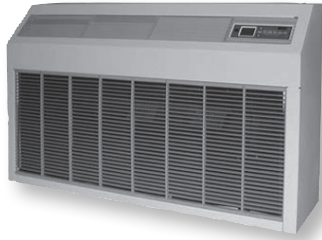
EMI AmericaSeries air handlers and condensers are backed by EMI and ECR International and are tested, rated and certified in accordance with ARI Standard 210/240 and UL-1995. Due to ongoing product development, product designs and specifications may change without notice. Please contact the factory for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

P/N 240007991, Rev. A [06/09]

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 20,800 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 galvanized 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

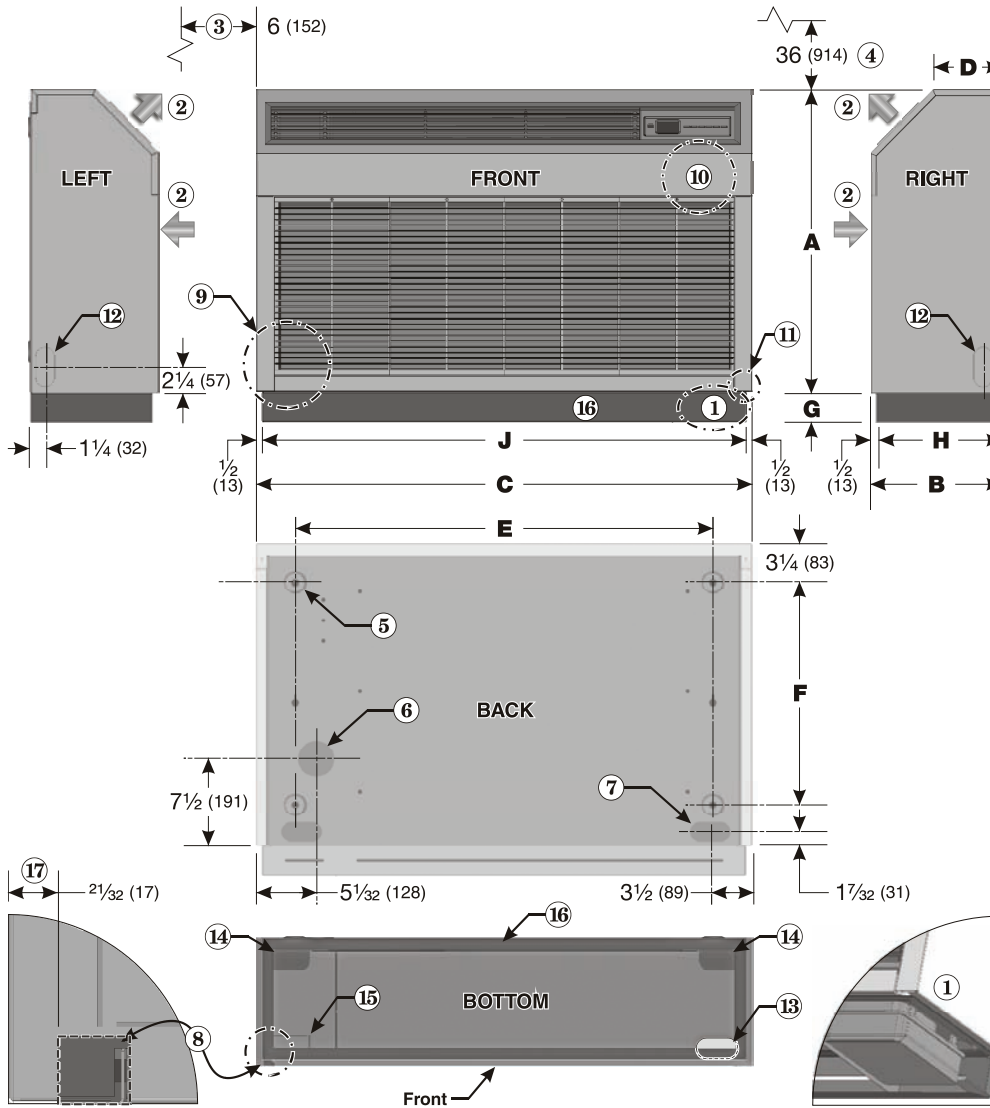
- Low voltage wiring (18 AWG required).
- High voltage power supply wiring.
- Mounting screws and fasteners.
- Condensate piping.
- Refrigerant piping (if not supplied).
- Refrigerant (for interconnect charge).
- High voltage electrical disconnect.

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

Model	High speed CFM (l/s)	Low speed CFM (l/s)	Coil	FPM (m/s)	Throw feet (m)	Observed sound values (dBA)
09-12	425 (200)	375 (175)	Dry	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	B	C
UNHG09 UNHG12	26" (660)	11" (279)	41 1/2" (1054)
UNHG24	26" (660)	11" (279)	51 1/2" (1308)
UNCG30	27 1/2" (699)	12 3/8" (314)	62" (1575)
Model	D	E	F
UNHG09 UNHG12	5 1/2" (140)	35" (887)	19 3/16" (487)
UNHG24	5 1/2" (140)	45" (1141)	19 3/16" (487)
UNCG30	5 1/16" (141)	55 7/16" (1408)	20 23/32" (526)
Model	G	H	J
UNHG09 UNHG12	2 1/2" (64)	10 7/16" (265)	40 1/2" (1029)
UNHG24	2 1/2" (64)	10 7/16" (265)	50 1/2" (1283)
UNCG30	2 1/2" (64)	11 13/16" (300)	61" (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 1/2 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 Condensers

S1CG/S1HG — description

The AmericaSeries S1CG/S1HG 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 S1CG/S1HG 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 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 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° 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)

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	Unit dimensions Inches (mm)			Sound level dBA	Shipping weight Lbs (kg)
		A	B	C		
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)
S1CG6	36,000	38 (965)	15 (381)	48 (1219)	68	210 (95.5)

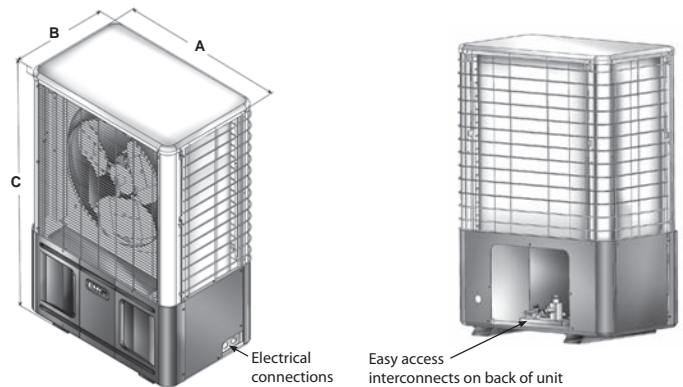


Table 3 Operational Ranges

Unit	Voltage	Accessories Part Numbers (Quantity) Required *** Order ALL Kits Listed Under the Operational Range ***			
		Operational Range			
		32° to 115° F (0 to 46° C)	0° to 115° F (-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		550002073 (1)	550002073 (1)	550002074 (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)
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)
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 Required

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

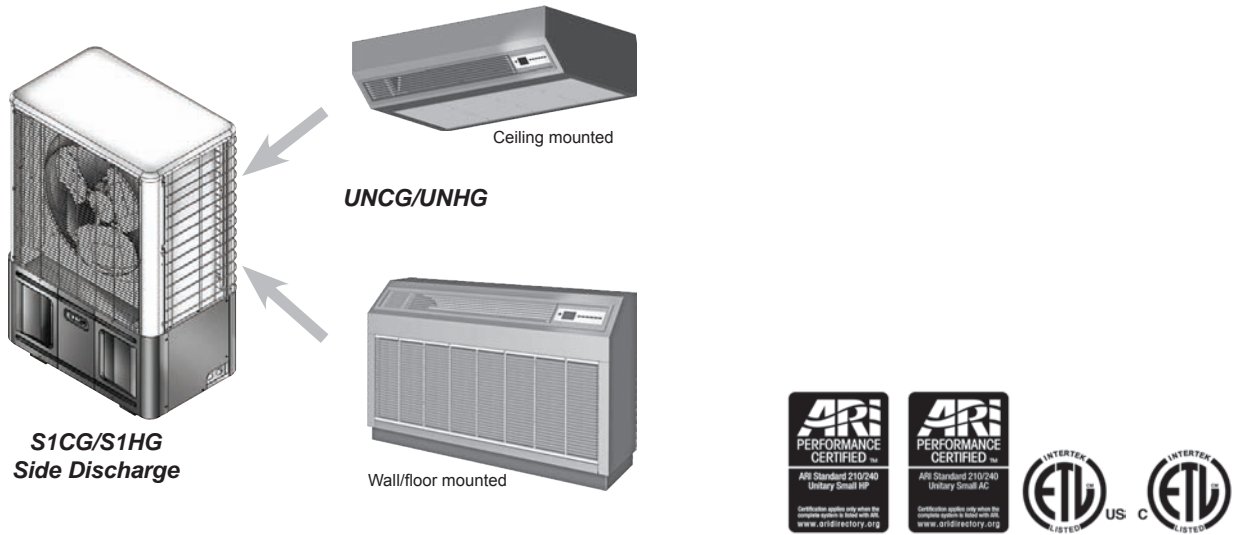


Table 4 Performance — cooling system with universal units

Condenser	Universal Units	Btuh	SEER	SHR	EER	Ref.
S1CG9000	UNHG09	9,000	13.0	0.74	12.2	R-410A
S1CG2000	UNHG12	12,000	13.0	0.68	11.9	R-410A
S1CG8000	UNHG24	18,000	13.0	0.77	12.0	R-410A
S1CG4000	UNHG24	23,800	13.0	0.67	11.4	R-410A
S1CG3000	UNCG30	28,200	13.0	0.79	11.7	R-410A

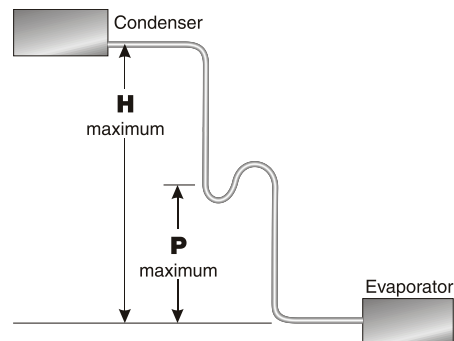
Table 5 Performance — heat pump system with universal units

Condenser	Universal Units	Cooling Btuh	Heating Btuh	SEER	HSPF	SHR	EER	COP	Ref.
S1HG9000	UNHG09	9,000	8,800	13.0	7.7	0.72	12.2	3.3	R-410A
S1HG2000	UNHG12	12,000	10,600	13.0	7.7	0.67	11.7	3.3	R-410A
S1HG8000	UNHG24	18,000	17,600	13.0	7.7	0.77	12.1	3.5	R-410A
S1HG4000	UNHG24	23,800	20,800	13.0	7.7	0.67	11.7	3.4	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"	O.D.	O.D.	I.D.
9,000	50' (15 m)	20' (6 m)	15' (5 m)	1/4"	1/2"	1/2"
12,000				1/4"	1/2"	1/2"
18,000	100' (30 m)	35' (11 m)	20' (6 m)	3/8"	5/8" *	1/2"
24,000				3/8"	3/4"	1/2"
30,000				3/8"	3/4"	1/2"

* Must bush down to 5/8" interconnect for 18K system



UNCG/UNHG

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

EMI  *AmericaSeries*
Comfort Where It Counts.

Straight cool / Heat pump nominal capacities			
UNHG09	UNHG12	UNHG24	Units
9,000	12,000	18,000-23,800	Btuh
2.6	3.5	5.3-7.0	kW
Straight cooling only — nominal capacity			
UNCG30			Units
28,200			Btuh
8.3			kW

Engineering Submittal

Job Name:
Location:
Customer:
Project Engineer:
Project Architect:
General Contractor:
Submitted by: For: Reference [<input type="checkbox"/>] Approval [<input type="checkbox"/>]
Date:

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Please fill in the boxes below to specify the air handler units' codings

Selection 1

Quantity required: **U** **N** **G**

Selection 2

Quantity required: **U** **N** **G**

Type [**UN** = universal air handler]

Operation [**C** = cooling—DX (UNCG 30 only)]
[**H** = heat pump (UNHG 09–24 only)]

Revision [**G** = R-410A refrigerant]

Capacity [**09** = 9,000 Btuh]
[**12** = 12,000 Btuh]
[**24** = 18 / 24,000 Btuh]
[**30** = 30 / 30,000 Btuh (cooling only)]

Auxiliary heat:

[**0** = no auxiliary heat]
[**3** = 3 kw @ 208/230 VAC, (UNHG 09, 12, 24 only)]
[**5** = 5 kw @ 208/230 VAC, (UNHG 24, UNCG 30 only)]

Voltage [**A** = 115 VAC (UNHG 09–12 only)]
[**D** = 208/230 VAC]

EXAMPLES

U **N** **C** **G** **3** **0** **D** **5**

Cooling application | 30 / 36,000 Btuh capacity
| 208/230 VAC | 5 kw auxiliary heat

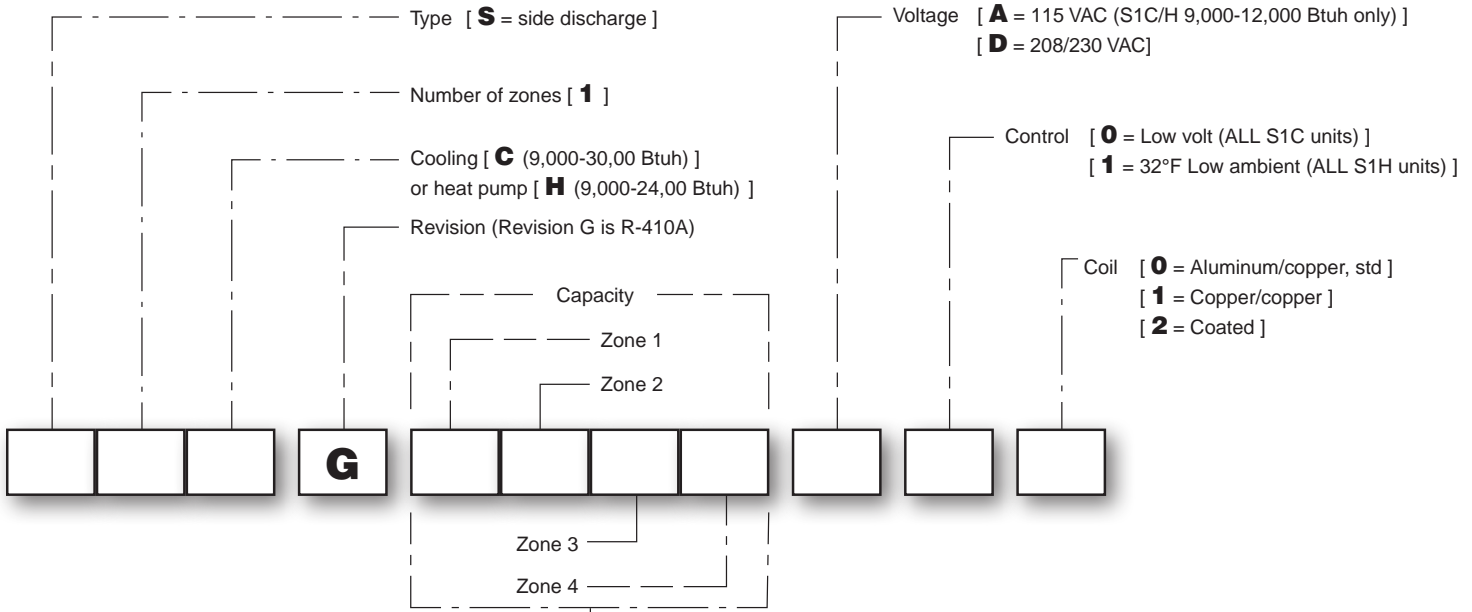
U **N** **H** **G** **2** **4** **D** **5**

Heat pump application | 18 / 24,000 Btuh capacity
| 208/230 VAC | 5 kw auxiliary heat

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

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

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



Capacity code	
Individual zone capacity	
Code	Capacity Btuh
0	Empty zone
9	9,000
2	12,000
8	18,000
4	24,000
3	30,000 *
6	36,000 *

* Straight cooling units ONLY

Available Units	
(S)	Description
Capacity codes	(Max combined capacity = 24,000 Btuh)
9000	One zone 9,000 Btuh
2000	One zone 12,000 Btuh
8000	One zone 18,000 Btuh
4000	One zone 24,000 Btuh
3000 *	One zone 30,000 Btuh
6000 *	One zone 36,000 Btuh

* Available in straight cooling units ONLY

EXAMPLES

S 1 C G 8 0 0 0 D 1 1

Side discharge | one zone | cooling only | rev. G | 18,000 Btuh | 208/230 V | 32°F Low ambient control | copper fin, copper coil

T 2 H G 9 8 0 0 D 1 2

Top discharge | two zones | heat pump | rev. G | 9,000 / 18,000 Btuh | 208/230 V | 32°F Low ambient control | coated exchanger

S 2 H G 9 2 0 0 D 0 0

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

T 4 C G 9 9 2 2 D 0 0

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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Electrical Specifications

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Table 7 Electrical specifications — UNCG/UNHG

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

Table 8 Electrical specifications — S1CG/S1HG

Model #	Volts/HZ/PH	Fan Motor		Compressor				Total amps	Min volt	M.C.A.	HACR BRKR
		AMPS	HP	Circuit 1		Circuit 2					
				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

M.C.A. - minimum circuit amps

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