

CACG/CAHG CACH/CAHH

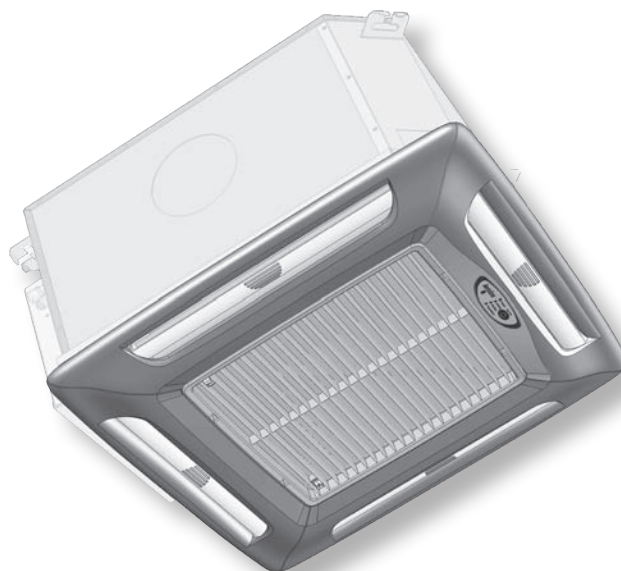
R-410A High-Efficiency Ductless Split System
Cassette Air Handlers

EMI *AmericaSeries*

Comfort Where It Counts.

Straight cool / Heat pump nominal capacities			
CAHG09 CAHH09	CAHG12 CAHH12	CAHG24 CAHH24	Units
9,000	12,000	18,000 - 24,000	Btuh
2.6	3.5	5.3 - 7.0	kW
Straight cooling only — nominal capacity			
CACG 36 & CACH 36			Units
30,000 / 36,000			Btuh
8.8 / 10.5			kW

Specifications and Performance



CAHH12

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An ISO 9001-2000 Certified Company



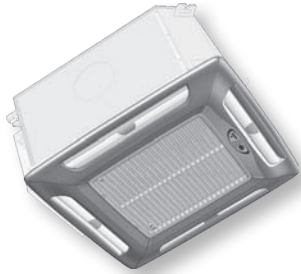
NOTICE

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.

CACG/CAHG/CACH/CAHH Air Handlers — Product Description

Product description

- The EMI AmericaSeries Cassette Air handlers are available in three cabinet sizes with four output capacities from 9,000–24,000 Btuh, and two cooling only capacities from 30,000–36,000 Btuh.
- Key features include a condensate pump with safety switch and a 36" (0.9 m) lift (measured from the base or bottom of the unit), fresh air inlet and branch duct knockouts, and motorized air vanes (models 24 and 36 only).
- Electric heat is a factory-installed option **ONLY** (there are no field installed electric heat kits available).
- The cassette air handler accepts a 24 volt thermostat control (thermostat not included).
- Designed for low noise levels, easy installation and maintenance and a slim line fascia, all ensure minimum intrusion into the conditioned environment.
- These American-made cassette air handlers produce system SEER's meeting or exceeding 13 when matched with EMI outdoor units:
 - Single-zone condensing units —
 - S1CG/S1HG 9,000-24,000 Btuh and S1CG 30,000-36,000 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.



- Four plastic air vanes, motor driven with auto sweep or fixed position stop setting on models 24 and 36. Models 09–12 are equipped with manually-adjusted air vanes.

Coil

- Coil is seamless, copper tubing, arranged in staggered configuration, with enhanced aluminum fins, tested to 600 psig.
- The tubes are mechanically expanded for secure bonding to fin shoulder.

Refrigeration Circuit

- Units are equipped with a serviceable fixed orifice expansion device and use R-410A refrigerant only.

Controls and components (Factory-installed or supplied)

- Connections for 24V remote thermostat.
- Custom control board featuring programmability, configuration, and multiple modes of operation. (CACH/CAHH only)
- Controls also feature anti-short-cycle timer, post purge fan relay, and an on-board 30-amp electric heat relay.
- Condensate pump with 36" (0.9 m) lift (measured from base of unit).
- 24V Transformer.

Optional equipment

CACG/CAHG units

- "G" units require a remote thermostat for operation. They do not include an onboard controller.

CACH/CAHH units

- "H" units include an on-board microprocessor controller with infrared remote.
- The remote is required to adjust settings and configure the controller.
- Also included is a bank of DIP switches for setting operating behavior. These can be used to select operation by the on-board controller or by a remote thermostat.
- When operated by remote thermostat, the controller offers limited options.

Materials of Construction

- Galvanized steel cabinet with fire-resistant thermal and acoustic foam insulation.
- Light grey high-impact ABS fascia.
- Expanded polystyrene drain pan with a tough, fire-retardant thermo-plastic liner.

Air Systems

- Fans are backward-curved impeller centrifugal design; dynamically and statically balanced; and mounted on integral mounting rails.
- Single-fan models 09, 12 & 24 are designed with fire-retardant plastic or aluminum impellers.
- Twin-fan model 36 is designed with fire-retardant plastic impellers.
- Motors are multispeed, enclosed type with thermal protection and sealed lifetime bearings.
- Permanent, washable filter (user accessible).
- Branch duct knockouts on three sides for remote discharge locations (using no more than two non-adjacent sides).
- Fresh air intake capability on three sides of cabinet (only two on models 09–12).

Optional equipment

- 24V remote thermostat.
- Electric Heat (@ 230V)
 - 1.5 kW — models 09–12.
 - 3 kW — model 24.
 - 5 kW — model 36.

Installer-supplied Items

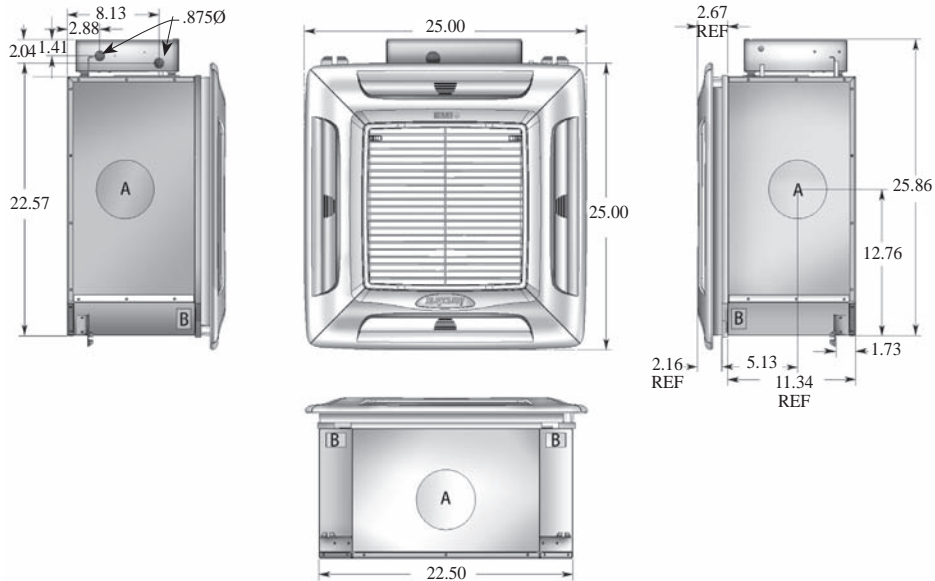
- Low voltage wiring (18 AWG required).
- High voltage power supply wiring.
- Mounting screws and fasteners.
- Condensate piping.
- Refrigerant piping (if not supplied).
- Refrigerant (for interconnect charge).
- Electrical Disconnect

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

Model	High speed CFM (l/s)	Low speed CFM (l/s)	Coil	Observed sound values (dBA) Fan Hi/Lo
09–12	380 (180)	335 (158)	Dry	41 / 39
18–24	700 (330)	620 (293)	Dry	44 / 42
36	1,300 (614)	1,160 (548)	Dry	51 / 49

CACG/CAHG/CACH/CAHH Air Handlers — Product Description *(continued)*

Figure 1 CACG/CAHG/CACH/CAHH ductless air handlers — dimensions, openings and knockouts



Note: All dimensions in inches.

Cassette 09,12

	FEATURE	QTY.	SIZE
A	Optional Discharge Knockout	3	5¼" Ø
B	Fresh Air Inlet Knockout	2	1¼" x 2½"
C	Condensate Discharge	1	½" Ø
D	Suction	1	½" Ø
E	Liquid	1	¼" Ø
F	Condensate Pump Access	1	-

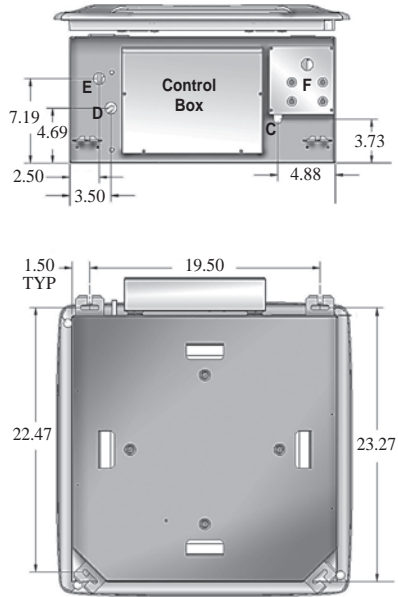
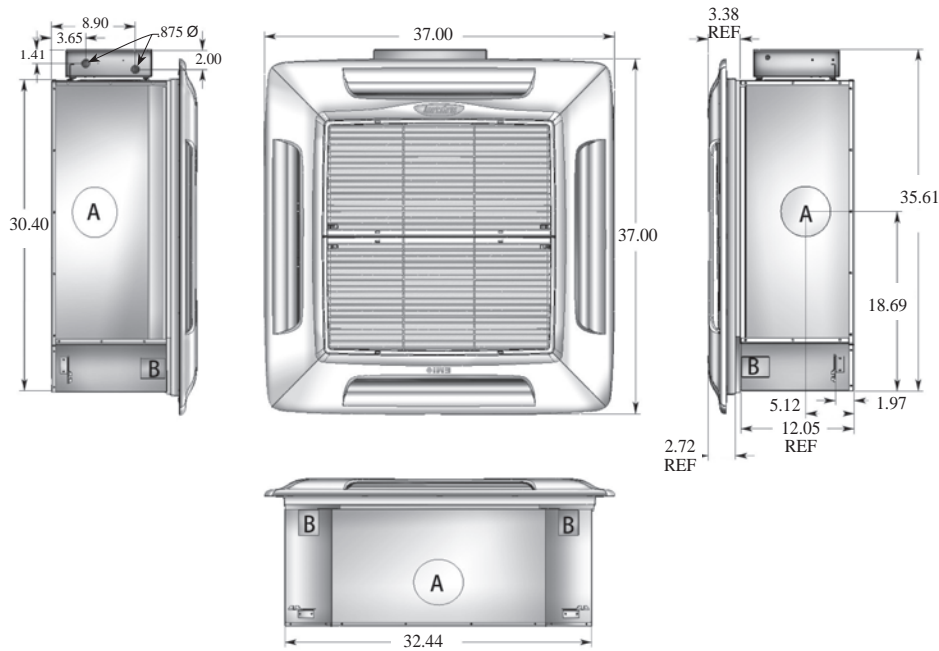


Figure 2 CACG/CAHG/CACH/CAHH ductless air handlers — dimensions, openings and knockouts



Note: All dimensions in inches.

Cassette 24

FEATURE	QTY.	SIZE
A Optional Discharge Knockout	3	5¼" Ø
B Fresh Air Inlet Knockout	3	3 x 3"
C Condensate Discharge	1	½" Ø
D Suction	1	¾" Ø*
E Liquid	1	⅜" Ø
F Condensate Pump Access	1	-

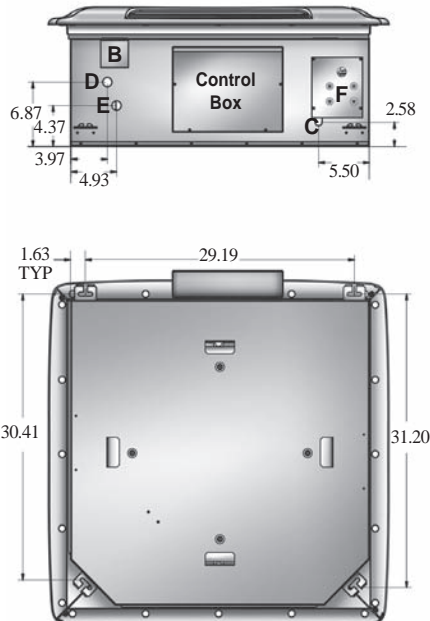
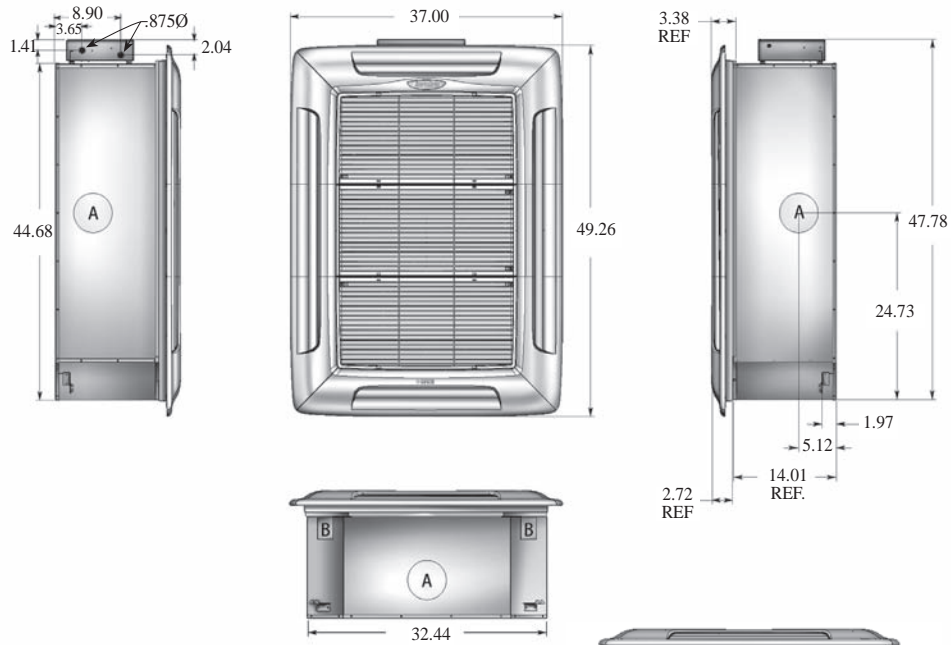


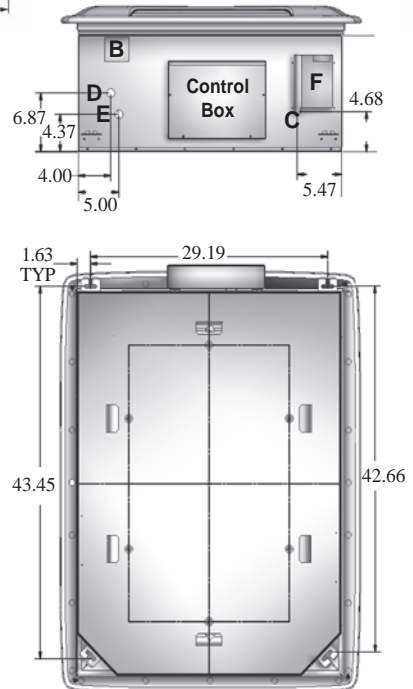
Figure 3 CACG/CAHG/CACH/CAHH ductless air handlers — dimensions, openings and knockouts



Note: All dimensions in inches.

Cassette 36

FEATURE	QTY.	SIZE
A Optional Discharge Knockout	3	5¼" Ø
B Fresh Air Inlet Knockout	3	3 x 3"
C Condensate Discharge	1	½" Ø
D Suction	1	¾" Ø
E Liquid	1	⅜" Ø
F Condensate Pump Access	1	-



CACG/CAHG/CACH/CAHH 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 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)

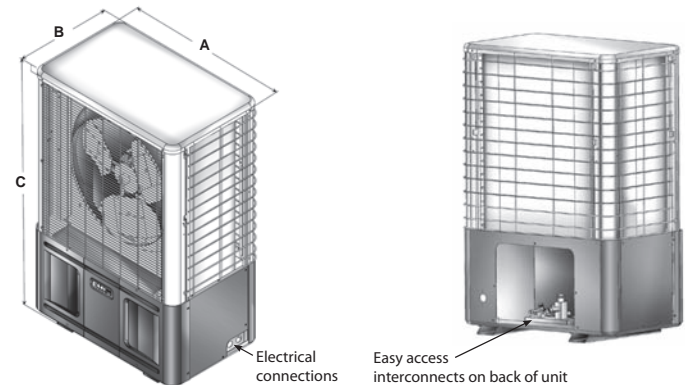


Table 3 Operational Ranges

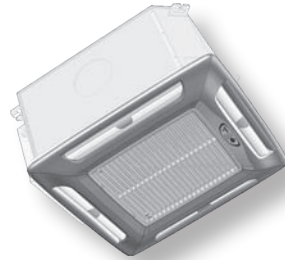
Unit	Voltage	Accessories Part Numbers (Quantity) Required *** Order ALL Kits Listed Under the Operational Range ***			
		Operational Range			
		32° to 115° F (0 to 46° C)	0° to 115° F (-18 to 46° C)		
		Crankcase Heater Kit	Crankcase Heater Kit	Fan Cycle Switch Kit	Architectural Louver/Hail Guard/Wind Baffle Kit
S1CG9000	115	550002072 (1)	550002072 (1)	550002074 (1)	
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)
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 Required

CACG/CAHG/CACH/CAHH Air Handlers with S1CG/S1HG Condensers (continued)



S1CG/S1HG
Side Discharge



CACG/CAHG/CACH/CAHH



Table 4 Performance — cooling system with High Wall units

Condenser	Air Handlers	Btuh	SEER	SHR	EER	Ref.
S1CG9000	CAH_09	9,000	13.0	0.77	11.8	R-410A
S1CG2000	CAH_12	12,000	13.0	0.67	11.5	R-410A
S1CG8000	CAH_24	18,000	13.0	0.75	11.9	R-410A
S1CG4000	CAH_24	24,000	13.0	0.69	11.9	R-410A
S1CG3000	CAH_30	30,000	13.0	0.77	11.9	R-410A
S1CG6000	CAH_36	36,000	13.0	0.72	11.5	R-410A

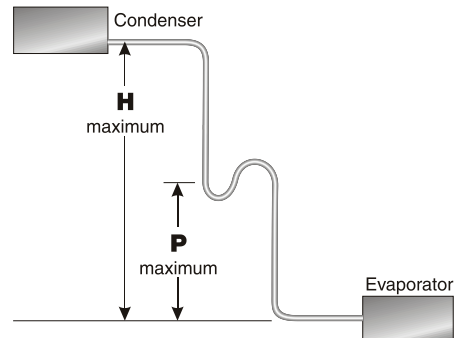
Table 5 Performance — heat pump system with High Wall units

Heat Pump	Air Handlers	Cooling Btuh	Heating Btuh	SEER	HSPF	SHR	EER	COP	Ref.
S1HG9000	CAH_09	9,000	8,200	13.0	7.7	0.72	11.8	3.2	R-410A
S1HG2000	CAH_12	12,000	10,600	13.0	7.7	0.66	11.5	3.1	R-410A
S1HG8000	CAH_24	18,000	16,400	13.0	7.7	0.76	12.1	3.4	R-410A
S1HG4000	CAH_24	24,000	20,400	13.0	7.7	0.69	12.0	3.3	R-410A

Table 6 CAC_/CAH_ 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"
				1/4"	1/2"	1/2"
18,000	100' (30 m)	35' (11 m)	20' (6 m)	3/8"	5/8" *	1/2"
3/8"				3/4"	1/2"	
3/8"				3/4"	1/2"	

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



CACG/CAHG CACH/CAHH

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

EMI  *AmericaSeries*

Comfort Where It Counts.

Straight cool / Heat pump nominal capacities			
CAHG09 CAHH09	CAHG12 CAHH12	CAHG24 CAHH24	Units
9,000	12,000	18,000 - 24,000	Btuh
2.6	3.5	5.3 - 7.0	kW
Straight cooling only — nominal capacity			
CACG 36 & CACH 36			Units
30,000 / 36,000			Btuh
8.8 / 10.5			kW

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: **C** **A**

Selection 2

Quantity required: **C** **A**

Type [**CA** = cassette air handler]

Operation [**C** = cooling—DX]
[**H** = heat pump (CA09–24 only)]

Revision [**G** = R-410A refrigerant | wall thermostat]
[**H** = R-410A refrigerant | infrared control / wall thermostat]

Capacity [**09** = 9,000 Btuh]
[**12** = 12,000 Btuh]
[**24** = 18 / 24,000 Btuh]
[**36** = 30 / 36,000 Btuh (cooling only)]

Auxiliary heat:
[**0** = no auxiliary heat]
[**1** = 1.5 kw — CAHG/CAHH 09-12 only]
[**3** = 3 kw — CAHG/CAHH 24 only]
[**5** = 5 kw — CACG/CACH 36 only]

Voltage [**D** = 208/230 VAC]

EXAMPLES

C A C G 3 6 D 5

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

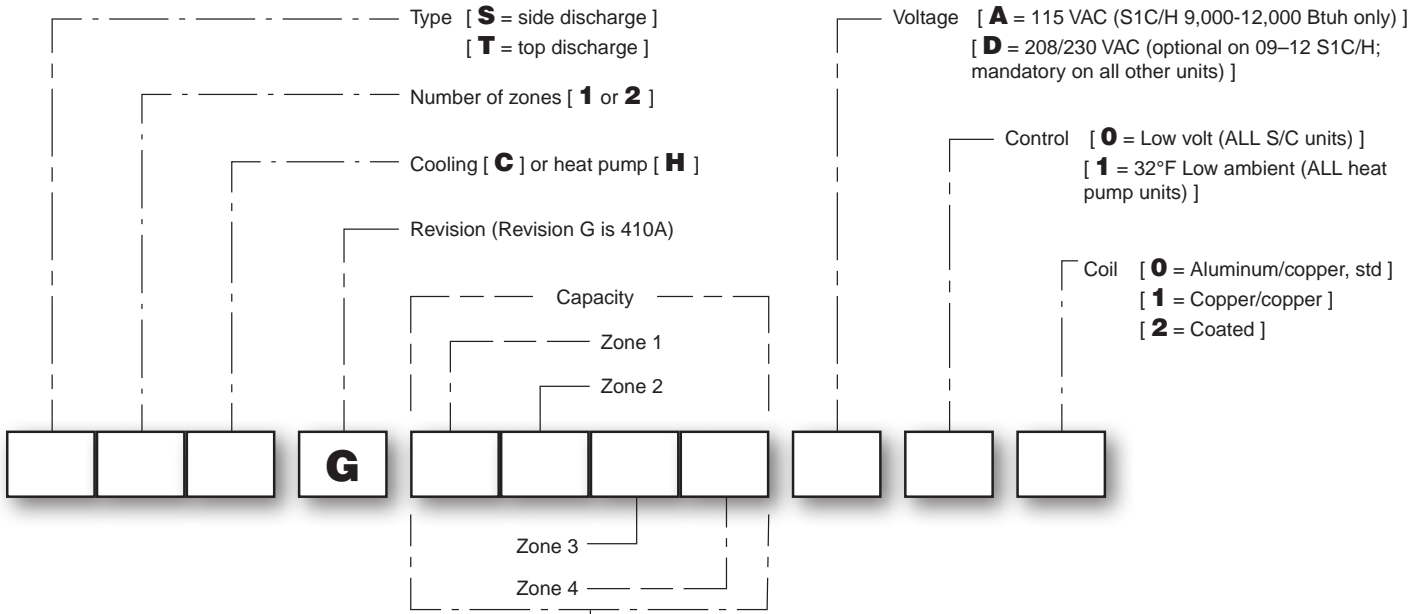
C A H H 2 4 D 3

Heat pump application | Infrared control |
18 / 24,000 Btuh capacity | 208/230 VAC | 3 kw auxiliary heat

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

<input type="checkbox"/>	Remote thermostat for air handler	<input type="checkbox"/>	Refrigerant line set, 10-feet
<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, 25-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, 50-feet
<input type="checkbox"/>	Fan Cycle Switch (required for cooling operation below 32°F (0°C))	<input type="checkbox"/>	Hard Start Kit (S1C only)

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 | coated exchanger

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Electrical Specifications

NOTICE

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Table 7 Electrical specifications — CACG/CACH/CAHG/CAHH

MODEL	VOLTS/HZ/PH	FAN RLA	HP	HEATER K.W.	AMPS	TOTAL AMPS	MIN VOLT	M.C.A.	HACR BRKR
CAHG/HH 09	208/230/60/1	0.35	1/10	–	–	0.4	197	0.5	15
CAHG/HH 09	208/230/60/1	0.35	1/10	1.5	6.52	6.9	197	8.6	15
CAHG/HH 12	208/230/60/1	0.35	1/10	–	–	0.4	197	0.5	15
CAHG/HH 12	208/230/60/1	0.35	1/10	1.5	6.52	6.9	197	8.6	15
CAHG/HH 24	208/230/60/1	0.55	1/10	–	–	0.6	197	0.7	15
CAHG/HH 24	208/230/60/1	0.55	1/10	3	13.04	13.6	197	17	20
CACG/CH 36	208/230/60/1	0.5, 0.5	1/10, 1/10	–	–	1	197	1.2	15
CACG/CH 36	208/230/60/1	0.5, 0.5	1/10, 1/10	5	21.74	22.7	197	28.3	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	RLA	LRA				
S1CG9000A S1HG9000A	115/60/1	1.4	0.125	7.5	47	8.9	104	10.8	15
S1CG2000A S1HG2000A	115/60/1	1.4	0.125	9.9	53	11.3	104	13.8	20
S1CG9000D S1HG9000D	208/230/60/1	0.8	0.125	3.9	20	4.7	197	5.7	15
S1CG2000D S1HG2000D	208/230/60/1	0.8	0.125	5.2	27	6.0	197	7.3	15
S1CG8000D S1HG8000D	208/230/60/1	0.8	0.125	5.9	43	6.7	197	8.2	15
S1CG4000D S1HG4000D	208/230/60/1	0.8	0.125	8.0	43	8.8	197	10.8	15
S1CG3000D	208/230/60/1	1.8	0.330	11.6	74	13.4	197	16.3	25
S1CG6000D	208/230/60/1	1.8	0.330	12.7	74	14.5	197	17.7	30

M.C.A. - minimum circuit amps

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