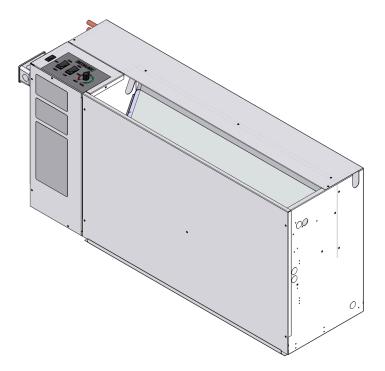
## СМ

## R-410A High Efficiency Water Source Heat Pump

MODEL CM - Heat pump nominal capacities

9,300 (8)	13,000 (12)	15,000 (15)	Btuh (Size)
2.7	3.8	4.4	kW

# Specifications and Performance



## СМ

Replacement for: Freidrich and Climate Master "801" Series Water Source



**RETROAIRE**<sup>™</sup> *The Right Fit for Comfort* 

ECR International, Inc. 2201 Dwyer Avenue Utica, NY 13501 e-mail: info@RetroAire.com



## Water Source Console Units Specifications and Performance •

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### NOTICE

RetroAire<sup>™</sup> Water Source Console Units are backed by EMI and ECR International and are tested and rated in accordance with:

#### AHRI/ ISO 13256-1

#### UL-484

Due to ongoing product development, product designs and specifications may change without notice.

Please contact the factory for more information.

## **General Product Information**

## **Product description**

RetroAire Water Source Console units are designed to operate with entering fluid temperatures between 60 and 95°F (15 and 35°C) for cooling operation. In heating, the entering fluid temperature design temperatures are between 60 and 90°F (15 and 33°C)

All RetroAire Water Source Console Units units are available as heat pump systems. Model CW is available as a straight cool unit.

The Retroaire Water Source Console Units:

- Use R-410A refrigerant.
- Include high-efficiency rotary compressors, protected by a 5-year warranty.
- Include enhanced, high-efficiency heat exchangers.
- Offer two fan speeds.
- RetroAire Water Source Console Units ratings:
- CM Series Water Source Console Units units are available in nominal sizes of 8,000 Btuh (2.3kW), 12,000 Btuh (3.5kW), or 15,000 Btuh (4.4kW).
- Energy Efficiency Rating(EER) in excess of 13.
- Coefficient of performance(COP) in excess of 4.

## Standard controls and components

#### Construction

- 20-gauge galvanized steel Water Source Console Units construction of chassis.
- Powder-coated evaporator drain pan.
- Foam strip seal for supply air duct.

#### Air systems

- Indoor fan motor is are thermally-protected PSC type.
- Air-stream surfaces are insulated with <sup>1</sup>/<sub>4</sub>" fiber-glass or <sup>1</sup>/<sub>8</sub>" (3.2 mm) Volara<sup>™</sup>.
- The indoor fan is a foward-curved type, directly mounted to the motor shaft.

#### Controls

- Unit-mounted operating controls include thermostat, fan speed control and heat/cool switch.
- Remote mount controls include fan speed control.
- High pressure switch.
- Low Temperature/Low water flow cut out switch compressor lock out relay
- 4-Way reversing valve with solenoid activated by line voltage. Solenoid is energized for cooling mode. (Heat pump models only)

## Factory-installed options (see model nomenclature)

- Voltage
- Electric Heat/Hydronic Heat
- Remote Master/Slave
- Disconnect Switches
- Piping
- Pipe connection
- Control

### **Field-installed accessories**

- Remote thermostat
- Hydronic heat valves

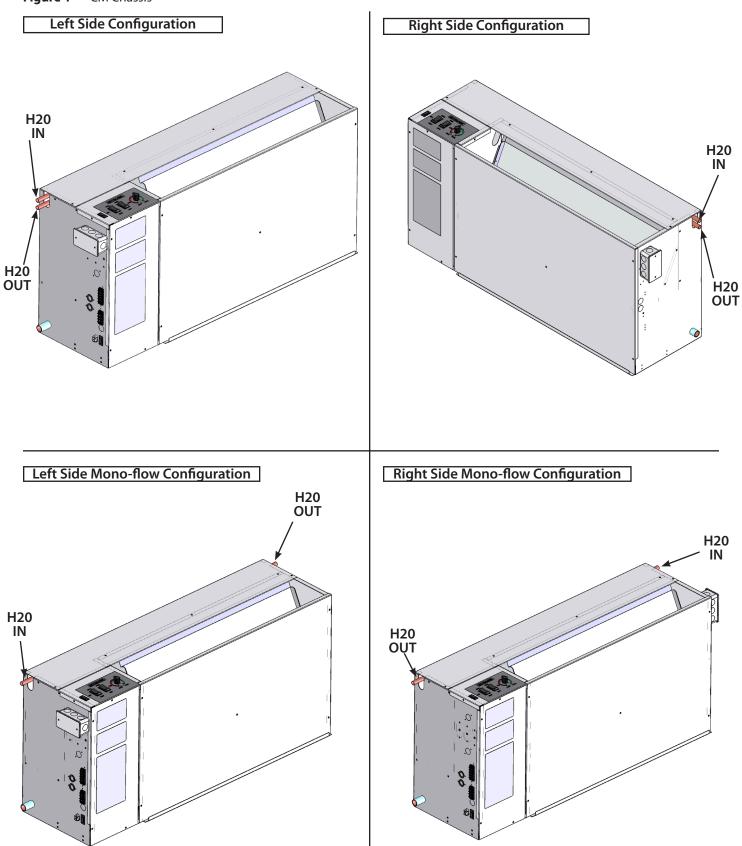
### NOTICE

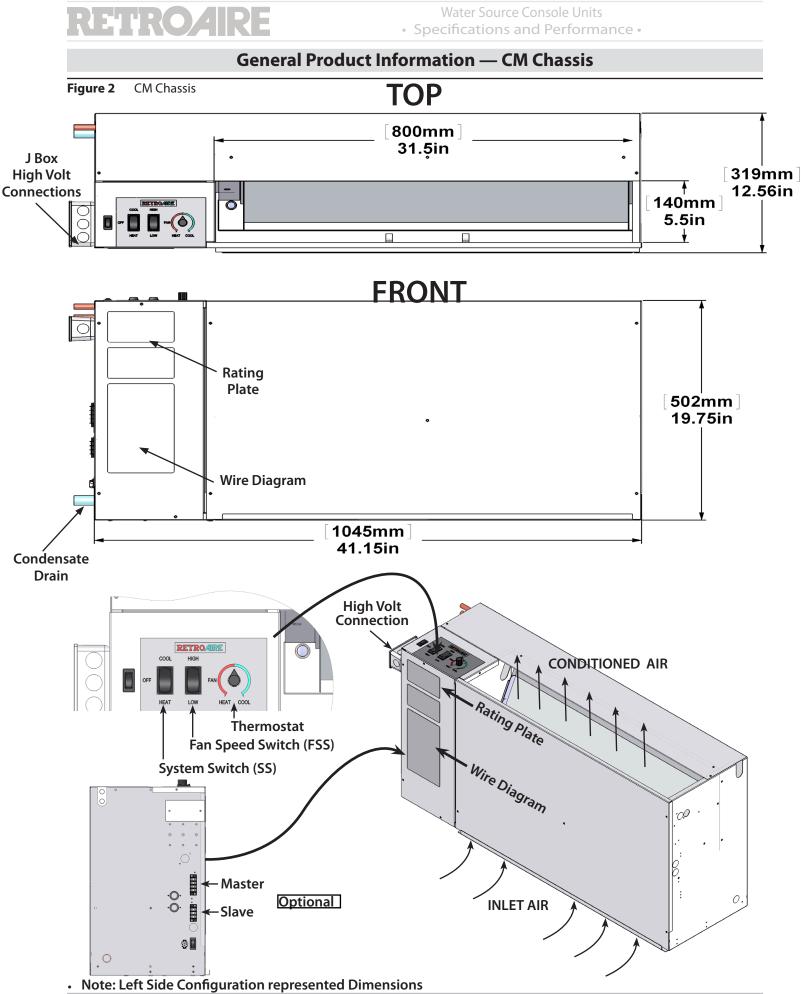
RetroAire units can be equipped with either unit-mounted or remote controlled thermostats. Specify when ordering.

## Water Source Console Units • Specifications and Performance •

## **General Product Information — CM Chassis**

Figure 1 CM Chassis'





P/N 240009754, Rev. A [9/2012]

## Water Source Console Units Specifications and Performance •

## CM, CW, WM Model Nomenclature

Ire 5 Model coding								
Position number: 1 2 3 4 5 6	6 7 8	9 10 11 12 13 14 15						
y with rating plate]								
Product Series	1	Design Revis						
[ CM series ]	i i	[ <b>B</b> = Rev Le						
[ CW series ]		Standard/Special						
[ WM series ]		[ <b>0</b> = standard ] [ <b>A-Z</b> = special op						
Straight cool or Heat Pump		Compressor Code						
[ C = straight cooling (CW Series Only)]		[ <b>A</b> = Tech]						
[ Ħ = heat pump unit ]		$[\mathbf{L} = \mathbf{LG}]$						
Refrigerant	i l	[ <b>T</b> = Toshiba]						
G = 410A		Pipe Connections						
Cooling Capacity (Btuh)		[ <b>1</b> = Female Pipe Thread]						
$\begin{bmatrix} 08 = 08,000 \text{ Btuh (CM and CW Series Only)} \end{bmatrix}$		[ <b>2</b> = Male Pipe Thread]						
[09 = 09,000  Btuh (CM and CW Series Only)]		[ <b>3</b> = Ball Valve & Union]						
[ <b>10</b> = 10,000 Bluh (CW Series Only)]	i i	[ <b>4</b> = Sweat Connection with						
[ <b>12</b> = 12,000 Btuh (CM and WM Series Only)]		Cupronickel Water Coil						
[ <b>13</b> = 13,000 Btuh (CW Series Only)]		<b>5</b> = Female Pipe thread						
[ <b>15</b> = 15,000 Btuh (CM and WM Series Only)]		with Cupronickel Water Co						
[ <b>17</b> = 17,000 Btuh (CW Series Only)]		[ <b>6</b> = Male Pipe thread with Cupronickel Water Coil]						
Voltage		[ 7 = Ball Valve & Union with						
[ <b>A</b> = 115 V / 1 / 60 ] (CW Series Only)		Cupronickel Water Coil]						
[ <b>D</b> = 208/230 V / 1 / 60 ]		Cabinet Options						
[ <b>E</b> = 265/277 V / 1 / 60 ]		[ A = No Cabinet]						
		[ <b>B</b> = With Cabinet (CW Series Only)]						
Heat Options (230 Volts) —		[ <b>C</b> = Cabinet with Locking Door (CW						
[ <b>0</b> = No electric heat ]		Series Only]						
[ 2 = 2 kW electric heat ]		L [ <b>D</b> = Front Air Intake (CW Series Only)]						
[ <b>3</b> = 3 kW electric heat ]		Divisor Octions						
[ <b>4</b> = 4 kW electric heat ]		Piping Options						
[ <b>5</b> = 5 kW electric heat ]		[ L = Left Hand Piping]						
[ 6 = 1 Row Hydronic Coil N/C Valve (CWC Right Hand Pipe Only ]		[ <b>R</b> = Right Hand Piping]						
[ <b>7</b> = 1 Row Hydronic Coil N/O Valve (CWC Right Hand Pipe Only ]		[ <b>M</b> = Left Mono Flow Piping] [ <b>N</b> = Right Mono Flow Piping]						
Control Options	Control Option	s (Con't)						
[ <b>0</b> = Unit Mount MCO]	[ A = Remote]	1						
[1 = Unit Mount MCO Boiler less (Heat pump with Electric Heat Only]	[ B = Remote N	/laster / Slave]						
[ 2 = Unit Mount MCO with Disconnect Switch]	[ C = Remote w	vith Disconnect Sw.]						
[ 3 = Unit Mount MCO Boilerless (Heatpump with Elect Heat Only)]	[ D = Remote M	Aaster / Slave with Disconnect Sw.]						
[ <b>4</b> = Unit Mount ACO]	[ E = Remote B	oilerless (Heat Pump with Elect Heat Only)]						
[ <b>5</b> = Unit Mount ACO Boilerless (Heat Pump with Elect Heat Only)]	[ F = Remote M	laster / Slave Boilerless (Heat Pump with Elect Heat						
[6 = Unit Mount ACO with Disconnect Sw.]	Only)]							
<pre>[7 = Unit Mount ACO Boilerless (Heat Pump with Elect Heat Only and Disconnect Sw.)]</pre>	[ <b>G</b> = Remote w Disconne	vith Boilerless (Heat Pump with Elect Heat Only) and ect Sw.]						
	-	Master / Slave with Boilerless (Heat Pump with Elect Heat d Disconnect SW.]						

### Features

#### Indoor coil freeze protection (standard)

This feature will prevent the indoor coil from freeze up in the cooling mode.

- Indoor coil freeze up can occur due to a dirty air filter, restricted or poor air flow, low refrigerant charge or low room or coil water temperatures.
- Low temperature water flow cut-out switch.
- High pressure control.
- Should a freeze condition be detected, the compressor will be switched off until the freeze condition is satisfied.
- During this time the indoor fan will continue to run to aid in the defrost process.

### Power cord with integral safety protection (optional)

Water Source Console Units have the option of a power cord with internal safety protection.

- Provides personal shock protection as well as arcing and fire prevention, The device is designed to sense any damage in the line cord and disconnect power before a fire can occur.
- Tested in accordance with Underwriters Laboratories, the cord set also offers a unique "passive" operation, meaning the unit does not require resetting if main power is interrupted.

#### **Heat pump**

Heat pumps are designed to operate when entering water temperature is between  $60^{\circ}F(16^{\circ}C)$  to  $90^{\circ}F(33^{\circ}C)$  and with a maximum indoor air temperature of  $80^{\circ}F(27^{\circ}C)$ . The unit is equipped with a reversing valve that is energized for cooling and de-energized in heating mode.

#### Hydronic heating (optional)

An optional hydronic heat package may be selected in lieu of electric heat. Heating operation is essentially the same as that of units with electric heat.

### **Optional wall-mounted thermostats**

#### Thermostats available from EMI

EMI offers a thermostat that is compatible with your Water Source Console Unit.

- Select EMI part number 240008208 for the latest RetroAire price list for this option. This is a single stage, cool/heat, thermostat that can be used in all RetroAire cooling, heating or heat pump applications.
- The thermostat has an adjustable setpoint range of between  $45^{\circ}F(7^{\circ}C)$  and  $90^{\circ}F(32^{\circ}C)$ .
- For heat pumps another option is EMI part number 240008209. This is a 2 stage heat/cool thermostat which allows for emergency heat.

### Selecting a thermostat (by others)

When selecting a thermostat other than one offered by EMI, choose a single stage heat/cool, 24v thermostat.

#### Straight cooling with electric heat or hydronic heat

Select a thermostat that is compatible with a cooling/electric heat system. The thermostat should have "**R**", "**Y**", "**W**" and "**G**" terminals.

#### **Heat pump**

Select a thermostat that is compatible with a cooling/single-stage heat/heat pump system. The thermostat should have "**R**", "**Y**", "**O**" and "**G**" terminals. RetroAire units are single stage heating only.

### IMPORTANT

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

### Table 1Performance Data

		PERFO	RMAN	CE DATA CM	**		
Valtana	Madal	Cooling	l	Heat Pum	р	Indoor	Shipping
Voltage	Model	Btuh (kW)	EER	Btuh (kW)	COP	Airflow CFM (L/S)	Weight Lbs (Kg)
	CMHG08	9,300 (2.7)	11.3	11,200 (3.3)	4.0	350 (165)	140 (64)
115V	CMHG12	13,000 (3.8)	11.5	15,600 (4.6)	3.9	450 (212)	140 (64)
	CMHG08	9,300 (2.7)	11.3	11,200 (3.3)	4.0	350 (165)	140 (64)
208/230V	CMHG12	13,000 (3.8)	11.5	15,600 (4.6)	3.9	450 (212)	140 (64)
	CMHG15	15,000 (4.4)	11.3	18,300 (5.4)	3.5	500 (236)	150 (68)
	CMHG08	9,300 (2.7)	11.3	11,200 (3.3)	4.0	350 (165)	140 (64)
265/277V	CMHG12	13,000 (3.8)	11.5	15,600 (4.6)	3.9	450 (212)	140 (64)
	CMHG15	15,000 (4.4)	11.3	18,300 (5.4)	3.5	500 (236)	150 (68)

\*\*Cooling – E.A.T. D.B. 80.6°F (27°C) E.A.T. W.B. 66.2°F (19°C) E.W.T. 86°F (30°C)

\*\*Heating - E.A.T. D.B. 68°F (20°C) E.A.T. W.B. 59°F (15°C) E.W.T. 68°F (20°C)

### Figure 6 Operating Limits

CM Operatin	g Limits	
Air & Water Limits	Cooling°F(°C)	Heating°F(°C)
Min. Ambient Air	50(10)	50(10)
Rated Ambient Air	80(27)	70(21)
Max. Ambient Air	100(38)	85(30)
Mim. EAT	50(10)	70(21)
Rated EAT DB/WB	80/67(27/20)	60(16)
Max. EAT DB/WB	100/83(38/29)	80(27)
Rated *EAT DB/WB °F	80/67(27/20)	70/60(21/16)
Rated**EWT °F	85(30)	70(21)
Rated***LWT °F	95(35)	N/A
Max.EWT°F	95/71(35/22)	80/67(27/20)
Max.EWT °F	95(35)	90(33)
Min.*EAT DB/WB °F	67/57(20/14)	N/A
Min.*EWT °F	65(19)	N/A
Water Limits	Cooling°F(°C)	Heating°F(°C)
Min. EWT	60(16)	60(16)
Normal EWT	85(30)	70(21)
Max. EWT	95(35)	90(33)

## **Electrical Specifications**

### **IMPORTANT**

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

### Figure 7 CM 8,000 BTU electrical specification

	Supply – 1–60	Comp	ressor	Indoo Mo			Electr	ic Heat			Unit	Electrical	Ratings	
Volt	Min	RLA	LRA	FLA	Нр	Htr#	Volt	W	HA	TCA	THA	MCA	МОСР	Plug
115V	104	8	45.6	1.4	0.09	N/A	N/A	N/A	N/A	9.4	N/A	11.4	15	5-15P
						0	N/A	N/A	N/A		N/A	5.6	15	6-15P
						2	208	1636	7.9		8.5	10.6	15	6–15P
						2	230	2000	8.7		9.3	11.6	15	0-156
208/						3	208	2454	11.8		12.4	15.5	20	6-20P
230V	197	4	22.2	0.6	0.08 5		230	3000	13.0	4.6	13.6	17.1	20	0-201
2300						4	208	3271	15.7		16.3	20.4	25	6-30P
							230	4000	17.4		18.0	22.5	25	0-301
						5	208	4089	19.7		20.3	25.3	30	6-30P
							230	5000	21.7		22.3	27.9		
						0	N/A	N/A	N/A		N/A	4.8	15	7-20P
						2	265	1830	6.9		7.6	9.5	15	7-20P
						<u> </u>	277	2000	7.2		7.9	9.9	15	7-201
265/						3	265	2454	10.4		11.0	13.8	15	7-20P
203/ 277V	240	240 3.32 18.8 0.67 0.0		0.08		277	3000	10.8	4.0	11.5	14.4	15	7-201	
2,77					4		265	3661	13.8		14.5	18.1	20	7-20P
						277	4000	14.4		15.1	18.9	20	/ 201	
					5		265	4576	17.3		17.9	22.4	20	7-30P
						5	277	5000	18.1		18.7	23.4	20	7-30F

Figure 8 CM 12,000 BTU electrical specification

	Supply – 1–60	Comp	ressor	Indoor Fan Motor			Electri	ic Heat			Unit	Electrical	Ratings	Plug 5-20P 6-15P 6-15P 6-20P 6-30P 6-30P			
Volt	Min	RLA	LRA	FLA	Нр	Htr#	Volt	w	HA	TCA	THA	MCA	МОСР	Plug			
115V	104	12.7	63	1.4	0.09	N/A	N/A	N/A	N/A	14.1	N/A	13.8	25	5-20P			
						0	N/A	N/A	N/A		N/A	7.1	15	6-15P			
							2	208	1636	7.9		9.3	10.6	15	6 1ED		
										230	2000	8.7	]	10.1	11.6	15	0-15P
								3	208	2454	11.8		13.2	15.5	20	6_20P	
208/	197	5.6	29	0.6	0.08		230	3000	13.0	6.2	14.4	17.1	20	0-201			
230V						4	4	208	3271	15.7		17.1	20.4	25	6-30P		
2501							230	4000	17.4		18.8	22.5	25	0-301			
						5	208	4089	19.7		21.1	25.3	30	6-30P			
							230	5000	21.7		23.1	27.9		0-501			
						0	N/A	N/A	N/A		N/A	6.4	15	7-20P			
						2	265	1830	6.9		7.6	9.5	15	7-20P			
						<u> </u>	277	2000	7.2		7.9	9.9	15	7-201			
265/						3	265	2746	10.4		11.0	13.8	15	7-20P			
277V	240	4.6	20	0.67	0.08		277	3000	10.8	5.3	11.5	14.4	15	7-201			
2770					4	265	3661	13.8		14.5	18.1	20	7-20P				
						277	4000	14.4		15.1	18.9	20	7-206				
					5		265	4576	17.3		17.9	22.4	25	7-30P			
						5	277	5000	18.1		18.7	23.4	25	7-30P			

## **Electrical Specifications**

### IMPORTANT

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

#### Table 2 CM 15,000 BTU electrical specifications

	Supply – 1–60	Comp	ressor	Indoor Fan Motor			Electr	ic Heat			Unit	Electrical	Ratings	
Volt	Min	RLA	LRA	FLA	Нр	Htr#	Volt	W	HA	TCA	THA	MCA	МОСР	Plug
						0	N/A	N/A	N/A		N/A	8.9	15	6-15P
						2	208	1636	7.9		8.5	10.6	15	6–15P
						2	230	2000	8.7		9.3	11.6	15	0-15P
						3		2454	11.8		12.4	15.5	20	6–20P
208/	197	6.6	33	0.6	0.08		230	3000	13.0	7.2	13.6	17.1	20	0-206
230V						4	208	3271	15.7		16.3	20.4	25	6-30P
2501						-	230	4000	17.4		18.0	22.5	25	0-501
					5	208	4089	19.7		20.3	25.3	30	6-30P	
							230	5000	21.7		22.3	27.9		
						0	N/A	N/A	N/A		N/A	7.7	15	7-20P
						2	265	1830	6.9		7.6	9.5	15	7-20P
						-	277	2000	7.2		7.9	9.9	15	/ 201
265/						3	265	2746	10.4		11.0	13.8	15	7-20P
277V	240	5.6	28	0.67	0.08		277	3000	10.8	6.3	11.5	14.4	15	/ 201
2// 1					4 2 5 2	265	3661	13.8		14.5	18.1	20	7-20P	
						277	4000	14.4		15.1	18.9		/ 201	
						265	4576	17.3		17.9	22.4	25	7-30P	
							277	5000	18.1		18.7	23.4	25	, 301

Figure 9 NEMA Specifications for Non-Locking Plugs / Receptacles

	LINE	1	5 AMP	PERE		20 AMF	PERE		30 AMPERE					
VOLTAGE	NO.	RECEPTACI	LE	PLUG	REC	EPTACLE		PLUG	RECEPTACLE	PLUG				
125V	5	5-15R		5-15P	5-20R	5-20R			5-20R	5-30P				
250V	6	6-15R		6-15P	6-20R		6-20P		6-30R	6-30P				
277V	7	7-15R	G	7-15P	7-20R	G	7-20P		7-30R	7-30P				

## Water Source Console UnitsSpecifications and Performance

## Notes


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