

ESIP60 ISO
ES Series, Inch Pounds - 60 Hz
ES018-070 (iso)
Spec Guides
Spec Sheets

Rev 10_06

7-21-03 ES Spec Sheets
7-21-03 Specification guide changed
9-04-03 Changed Guide Spec - coated coils
9-14-03 No 5 year warranty on ECM motors
5-27-05 corrected WPD ES018 ~ 036
8-2-05 Adjusted Blower table ES018 & 024 to 0.8" ESP max
1-24-06 ES024 performance adjusted
10-18-06 Replaced ARI logo
10-20-06 Added -2, -4 electrical nameplate data
10-23-06 removed internal GL pump package info

GUIDE SPECIFICATIONS

ES Series R-410A

GENERAL

Units shall be performance certified to ISO standard 13256-1 for Water Loop Heat Pump, Ground Water Heat Pump and Ground Loop Heat Pump applications. Units shall be Underwriter Laboratories (UL and ULc) listed for safety on all models. Each unit shall be run tested at the factory. Each unit shall be pallet mounted and stretch wrapped. The units shall be manufactured in an ISO9001:2000 certified facility.

The units shall be warranted by the manufacturer against defects in materials and workmanship for a period of one year on all parts, and 5 years on the compressor.

The units shall be designed to operate with entering fluid temperatures between 50°F (10°C) and 110°F (43.3°C) in cooling and temperatures between 25°F (-3.9°C) and 80°F (27°C) in heating as manufactured in Fort Lauderdale, Florida.

CASING & CABINET

The cabinet shall be fabricated from heavy-gauge steel finished with Galvalume® plus, an aluminum-zinc alloy with a clear acrylic coating for additional corrosion protection. The interior shall be insulated with ½" (12.7mm) thick, multi density, coated, glass fiber. All units shall allow sufficient service access to replace the compressor without unit removal. One blower and two compressor compartment access panels shall be removable with supply and return ductwork in place. A duct collar shall be provided on the supply air opening. A filter rack with 1" (25.4mm) thick disposable filters and a 1" (25.4mm) return air duct collar shall be provided with each unit. The units shall have an insulated divider panel between the air handling section and the compressor section to minimize the transmission of compressor noise, and to permit service testing without air bypass. Units shall have a stainless steel condensate drain pan.

REFRIGERATION CIRCUITS

All units shall contain a sealed refrigerant circuit including a hermetic compressor, bi-directional thermal expansion valve metering device, finned tube air-to-refrigerant heat exchanger, refrigerant reversing valve and service ports. Compressor shall be high efficiency rotary or scroll type, designed for heat pump duty, quiet operation and mounted on rubber vibration isolators. Compressor motors shall be equipped with overload protection. Refrigerant reversing valves shall be pilot operated sliding piston type with replaceable encapsulated magnetic coils energized only during the cooling cycle. The finned tube coil shall be constructed of lanced aluminum fins not exceeding fourteen fins per inch bonded to rifled copper tubes in a staggered pattern not less than three rows deep and have a 450 PSIG (3100 kPa) working pressure. Coils shall have a baked polyester enamel coating for protection against most airbourn chemicals. Coil end plates shall be aluminum. The coaxial water-to-refrigerant heat exchanger shall be constructed of a convoluted copper (optional cupronickel) inner tube and steel outer tube with a designed refrigerant working pressure of 450 PSIG (3100 kPa) and a designed water side working pressure of no less than 400 PSIG (2750 kPa). The water-to-refrigerant heat exchanger shall be insulated to prevent condensation at low fluid temperatures.

FAN MOTOR & ASSEMBLY

The fan shall be direct drive centrifugal forward curved type with a dynamically balanced wheel. The housing and wheel shall be designed for quiet low velocity operation. The fan housing shall be removable from the unit without disconnecting the supply air ductwork for servicing of the fan motor. The fan motor shall be an ECM-2 microprocessor controlled DC type motor with internal programming factory set for the specific unit and featuring soft start/stop and a delay off feature for maximum efficiency and quiet operation. There will further be provisions for adjusting the air delivery of the motor and blower by +/- 15% from rated air flow.

ELECTRICAL

Controls and safety devices will be factory wired and mounted within the unit. Controls shall include compressor contactor, 24V transformer, reversing valve coil and solid state lock-out controller (UPM). The UPM controller shall include the following features: diagnostic LED's, low pressure bypass time delay (to prevent nuisance low pressure lock-outs during operation with low fluid temperatures), anti short cycle time delay, random start time delay and one time intelligent reset. When the safety controls are activated the lock-out circuit shall reset itself the first time. If the safety controls are subsequently activated, then the lock-out circuit shall disable the compressor until it is reset at the thermostat or main circuit breaker to prevent compressor operation during fault conditions. A lock-out indicating terminal shall be provided in the low voltage circuit. Safety devices include a low pressure cutout set a 20 PSIG (140 kPa) for loss of charge protection (freezestat and/or high discharge gas temperature sensor is not acceptable) and a high pressure cutout control set at 380 PSIG (2600 kPa).

The ECM motor interface board shall provide a screw type terminal block for thermostat connection, LED's to indicate thermostat status and air delivery. It shall also provide a means of changing the motor program to any of up to four pre-programmed options. Direct wiring of the motor control harness to the thermostat is not acceptable.

A terminal block with screw terminals shall be provided for control wiring. An optional condensate overflow device shall be factory installed to stop compressor operation if drain pan overflow is imminent. An optional energy management relay to allow unit control by an external source shall be factory installed.

PIPING

Supply, return water and condensate drain connections shall be brass female pipe thread fittings and mounted flush to cabinet exterior.

INTERNAL ELECTRIC HEAT

208/230-1-60 volt units shall be equipped with optional factory installed internal electric resistance heat for auxiliary and emergency heat. Electric heater must be Underwriter's Laboratories (UL and ULc) approved for safety when installed in the unit. External heater packages or heater packages not specifically listed for use with the unit are unacceptable. Electric heater packages shall include a heater collar mounted to the blower outlet, individual thermal overload protected heater elements no greater than 5kW each and magnetic contactors. Heater packages shall have a separate power supply connection from the compressor and this power supply shall also power the unit blower motor and control transformer for safe operation.

HEAT RECOVERY PACKAGE

208/230 volt units shall be equipped with a optional factory installed internal heat recovery kit for domestic hot water production. This kit shall include an internally protected pump, double walled coaxial water-to-refrigerant heat exchanger, 140°F (60°C) hot water temperature limit switch and an on/off switch/circuit breaker.

LOOP PUMP PACKAGE - CONSULT FACTORY

208/230-1-60 volt units shall be equipped with an optional factory installed ground loop pump kit. This kit shall include a 1/6 HP loop pump, isolation valves and a set of purge connections for purging and pressurizing the ground loop with the unit in place. The pump, all piping and valves shall be internal to the unit.

PACKAGED UNITS SPECIFICATION DATA SHEET

HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

ES018

ENVIROSAVER

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	10.3	51.0	2.8	1/3	-	-	17.5	25
265-1-60	-2	7.1	44.0	2.4	1/3	-	-	11.3	15

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
2.12	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450		
Blower Size	Compr Type		
9 x 7	Rotary		
Net Weight	Ship Weight		
184 lbs	196 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
+				690								
Norm				600								
-				510								



ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 600 CFM and 4.0 GPM

Water Loop				Ground Water				Ground Loop			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
18,500	15.2	24,000	5.6	22,000	27.4	19,000	4.4	19,500	19.6	14,500	3.5

FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
2	0.86	0.37
3	1.78	0.77
4	2.99	1.29
6	6.20	2.68
8	10.40	4.50

CAPACITY DATA All performance at 600 CFM and 4.0 GPM

COOLING EFT Range (Standard) 50°F to 100°F							
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db	19.87	12.88	0.65	0.63	22.01	31.65
60°		18.77	12.27	0.65	0.77	21.38	24.51
70°		17.67	11.70	0.66	0.90	20.76	19.55
85°		16.02	10.89	0.68	1.11	19.82	14.42
100°		14.38	10.11	0.70	1.32	18.88	10.91
50°	75°db	21.27	15.36	0.72	0.63	23.43	33.69
60°		20.10	14.63	0.73	0.77	22.72	26.09
70°		18.92	13.95	0.74	0.91	22.02	20.81
85°		17.16	12.98	0.76	1.12	20.97	15.35
100°		15.40	12.05	0.78	1.33	19.92	11.61
50°	80°db	23.32	16.93	0.73	0.64	25.50	36.65
60°		22.04	16.13	0.73	0.78	24.69	28.38
70°		20.75	15.38	0.74	0.92	23.88	22.63
85°		18.82	14.31	0.76	1.13	22.66	16.70
100°		16.88	13.29	0.79	1.34	21.45	12.63
50°	85°db	25.38	18.52	0.73	0.64	27.57	39.55
60°		23.98	17.65	0.74	0.78	26.65	30.63
70°		22.57	16.82	0.75	0.92	25.73	24.43
85°		20.47	15.66	0.76	1.14	24.35	18.02
100°		18.37	14.54	0.79	1.35	22.97	13.63

HEATING EFT Range (Standard) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	20.20	1.24	15.98	4.79
60°		22.87	1.25	18.61	5.37
70°		25.55	1.26	21.25	5.94
80°		28.22	1.27	23.88	6.51
50°		70°	19.09	1.26	14.79
60°	21.61		1.27	17.27	4.98
70°	24.14		1.28	19.76	5.51
80°	26.66		1.29	22.25	6.03
50°	80°		17.78	1.29	13.38
60°		20.13	1.30	15.69	4.53
70°		22.48	1.31	18.00	5.02
80°		24.84	1.32	20.32	5.49

LOW TEMP HEATING

Antifreeze Required

25°	60°	13.25	1.21	9.13	3.21
30°		14.56	1.21	10.42	3.51
40°		17.18	1.23	13.00	4.11
25°	70°	12.53	1.23	8.32	2.98
30°		13.76	1.24	9.54	3.26
40°		16.24	1.25	11.98	3.81
25°	80°	11.67	1.26	7.37	2.71
30°		12.82	1.27	8.50	2.97
40°		15.13	1.28	10.77	3.47

Units are complete packages containing compressor, reversing valve, expansion valve metering device, ECM fan motor and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and solid state lock-out circuit. Optional UL approved internal electric heater, factory installed with primary thermal overload protection and magnetic contactors (208/230-1-60 only) optional UL approved internal Heat Recovery Package and/or Ground Loop Pump with purge connections available

Performance based on ARI/ISO conditions. For other conditions, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.
ES018IP60 Rev: 10-06

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PACKAGED UNITS SPECIFICATION DATA SHEET

HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

ES024

ENVIROSAVER

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	13.5	69.0	2.8	1/3	-	-	21.5	30
265-1-60	-2	11.5	61.0	2.4	1/3	-	-	16.8	30
208/230-3-60	-3	9.3	63.0	2.8	1/3	-	-	14.4	20
460-3-60	-4	4.5	27.0	2.4	1/3	-	-	8.1	15

Note: 460 Volt Units (-4) Require Both Ground and Neutral Wires

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
2.12	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9 x 7 DD	Scroll		
Net Weight	Ship Weight		
194 lbs	206 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
+				920								
Norm				800								
-				680								



ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 800 CFM and 5.0 GPM

Water Loop				Ground Water				Ground Loop			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
25,000	13.6	32,500	4.3	29,500	21.9	26,500	3.7	27,000	15.9	20,500	3.3

FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
3	1.78	0.77
4	2.99	1.29
5	4.47	1.93
6	6.20	2.68
8	10.40	4.50

CAPACITY DATA All performance at 800 CFM and 5.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F							
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db	26.68	17.30	0.65	1.18	30.71	22.6
60°		25.32	16.56	0.65	1.36	29.96	18.6
70°		23.96	15.86	0.66	1.54	29.22	15.5
85°		21.92	14.89	0.68	1.82	28.11	12.1
100°		19.88	13.97	0.70	2.09	27.00	9.5
50°	75°db	28.56	20.62	0.72	1.19	32.61	24.0
60°		27.10	19.74	0.73	1.37	31.78	19.8
70°		25.65	18.91	0.74	1.55	30.95	16.5
85°		23.47	17.75	0.76	1.83	29.70	12.9
100°		21.38	16.66	0.78	2.10	28.45	10.1
50°	80°db	31.32	22.74	0.73	1.20	35.40	26.2
60°		29.72	21.76	0.73	1.38	34.44	21.5
70°		28.13	20.85	0.74	1.57	33.47	18.0
85°		25.73	19.57	0.76	1.84	32.01	14.0
100°		23.34	18.37	0.79	2.12	30.56	11.0
50°	85°db	34.07	24.87	0.73	1.21	38.19	28.2
60°		32.34	23.80	0.74	1.39	37.09	23.2
70°		30.60	22.81	0.75	1.58	35.99	19.4
85°		2.00	21.41	0.76	1.86	34.33	15.1
100°		25.39	20.09	0.79	2.13	32.68	11.9

HEATING

HEATING					
EFT Range (Standard) 25°F to 80°F					
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	27.93	2.02	21.02	4.0
60°		31.29	2.13	24.02	4.3
70°		34.66	2.24	27.01	4.5
80°		38.02	2.35	30.01	4.7
50°		70°	26.39	2.06	19.35
60°	29.57		2.17	22.16	4.0
70°	32.75		2.28	24.96	4.2
80°	35.92		2.39	27.76	4.4
50°	80°		24.59	2.11	17.38
60°		27.54	2.22	19.96	3.6
70°		30.50	2.33	22.53	3.8
80°		33.46	2.45	25.11	4.0

LOW TEMP HEATING

LOW TEMP HEATING					
Antifreeze Required					
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
25°	60°	19.14	1.76	13.15	3.2
30°		20.79	1.81	14.61	3.4
40°		24.09	1.92	17.54	3.7
25°	70°	18.09	1.79	11.98	3.0
30°		19.64	1.84	13.35	3.3
40°		22.76	1.95	16.09	3.4
25°	80°	16.85	1.83	10.61	2.7
30°		18.30	1.89	11.87	2.8
40°		21.20	2.00	14.38	3.1

Units are complete packages containing compressor, reversing valve, expansion valve metering device, ECM fan motor and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and solid state lock-out circuit. Optional UL approved internal electric heater, factory installed with primary thermal overload protection and magnetic contactors (208/230-1-60 only) optional UL approved internal Heat Recovery Package and/or Ground Loop Pump with purge connections available

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.
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PACKAGED UNITS SPECIFICATION DATA SHEET

HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

ES030

ENVIROSAVER

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	13.5	69.0	2.8	1/3	-	-	21.5	30
265-1-60	-2	11.5	61.0	2.4	1/3	-	-	16.8	30
208/230-3-60	-3	9.3	63.0	2.8	1/3	-	-	14.4	20
460-3-60	-4	4.5	27.0	2.4	1/3	-	-	8.1	15

Note: 460 Volt Units (-4) Require Both Ground and Neutral Wires

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
3.5	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9 x 7 DD	Scroll		
Net Weight	Ship Weight		
285 lbs	310 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
+						1150						
Norm						1000						
-						850						



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
3	1.23	0.53
4.5	2.56	1.11
6	4.29	1.86
7.5	6.41	2.77
12	14.94	6.47

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1000 CFM and 7.5 GPM

Water Loop				Ground Water				Ground Loop			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
30,000	17.0	33,500	4.8	34,500	25.9	27,500	4.2	31,000	20.1	22,000	3.5

CAPACITY DATA All performance at 1000 CFM and 7.5 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F							
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db	30.79	19.94	0.65	1.18	34.80	26.2
60°		29.36	19.18	0.65	1.33	33.89	22.1
70°		27.94	18.48	0.66	1.48	32.99	18.9
85°		25.81	17.52	0.68	1.71	31.63	15.1
100°		23.67	16.62	0.70	1.94	30.28	12.2
50°	75°db	32.97	23.79	0.72	1.18	37.00	27.9
60°		31.44	22.88	0.73	1.34	36.00	23.5
70°		29.92	22.04	0.74	1.49	35.00	20.1
85°		27.64	20.90	0.76	1.72	33.50	16.1
100°		25.35	19.83	0.78	1.95	32.00	13.0
50°	80°db	36.15	26.23	0.73	1.19	40.22	30.3
60°		34.48	25.23	0.73	1.35	39.08	25.6
70°		32.81	24.31	0.74	1.50	37.93	21.9
85°		30.31	23.04	0.76	1.73	36.22	17.5
100°		27.81	21.87	0.79	1.96	34.50	14.2
50°	85°db	39.34	28.70	0.73	1.20	43.44	32.7
60°		37.52	27.61	0.74	1.36	42.16	27.7
70°		35.71	26.60	0.74	1.51	40.87	23.6
85°		32.99	25.21	0.76	1.75	38.94	18.9
100°		30.26	23.93	0.79	1.98	37.01	15.3

HEATING

HEATING					
EFT Range (Standard) 25°F to 80°F					
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	29.23	1.92	22.68	4.5
60°		32.44	1.98	25.70	4.8
70°		35.65	2.03	28.72	5.1
80°		38.86	2.09	31.74	5.5
50°		70°	27.63	1.96	20.95
60°	30.66		2.01	23.79	4.5
70°	33.69		2.07	26.62	4.8
80°	36.72		2.13	29.46	5.1
50°	80°		25.74	2.00	18.91
60°		28.56	2.06	21.53	4.1
70°		31.39	2.12	24.16	4.3
80°		34.21	2.18	26.79	4.6

LOW TEMP HEATING

LOW TEMP HEATING					
Antifreeze Required					
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
25°	60°	20.80	1.78	14.71	3.4
30°		22.37	1.81	16.19	3.6
40°		25.52	1.87	19.15	4.0
25°	70°	19.66	1.82	13.45	3.2
30°		21.14	1.85	14.84	3.4
40°		24.11	1.90	17.62	3.7
25°	80°	18.32	1.86	11.97	2.9
30°		19.70	1.89	13.26	3.1
40°		22.47	1.94	15.83	3.4

Units are complete packages containing compressor, reversing valve, expansion valve metering device, ECM fan motor and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and solid state lock-out circuit. Optional UL approved internal electric heater, factory installed with primary thermal overload protection and magnetic contactors (208/230-1-60 only) optional UL approved internal Heat Recovery Package and/or Ground Loop Pump with purge connections available

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.
ES030/PP60 Rev: 10-06

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PACKAGED UNITS SPECIFICATION DATA SHEET

HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

ES036

ENVIROSAVER

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	14.8	72.5	4.3	1/2	-	-	24.6	35
265-1-60	-2	12.5	64.0	4.1	1/2	-	-	19.8	30
208/230-3-60	-3	10.4	35.0	4.3	1/2	-	-	17.3	20
460-3-60	-4	6.0	32.0	4.1	1/2	-	-	10.4	15

Note: 460 Volt Units (-4) Require Both Ground and Neutral Wires

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
3.5	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9 x 7 DD	Scroll		
Net Weight	Ship Weight		
290 lbs	315 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
+						1380						
Norm						1200						
-						1020						



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
5	3.05	1.32
7	5.60	2.42
9	8.80	3.81
11	12.63	5.47
13	17.06	7.38

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1200 CFM and 9.0 GPM

Water Loop				Ground Water				Ground Loop			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
33,000	15.6	39,000	5.2	38,500	23.9	31,500	4.4	34,000	19.0	24,000	3.5

CAPACITY DATA All performance at 1200 CFM and 9.0 GPM

COOLING							
EFT Range (Standard) 50°F to 100°F							
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db	34.44	22.31	0.65	1.41	39.24	24.5
60°		32.68	21.34	0.65	1.58	38.07	20.7
70°		30.92	20.45	0.66	1.75	36.89	17.7
85°		28.28	19.19	0.68	2.01	35.13	14.1
100°		25.64	18.00	0.70	2.27	33.37	11.3
50°	75°db	36.88	26.61	0.72	1.41	41.71	26.1
60°		35.00	25.46	0.73	1.59	40.41	22.1
70°		33.11	24.39	0.74	1.76	39.12	18.8
85°		30.29	22.89	0.76	2.02	37.18	15.0
100°		27.46	21.48	0.78	2.28	35.24	12.1
50°	80°db	40.45	29.45	0.73	1.43	45.31	28.4
60°		38.38	28.08	0.73	1.60	43.84	24.0
70°		36.32	26.90	0.74	1.77	42.37	20.5
85°		33.22	25.25	0.76	2.04	40.17	16.3
100°		30.12	23.69	0.79	2.30	37.96	13.1
50°	85°db	44.02	32.11	0.73	1.44	48.92	30.6
60°		41.77	30.72	0.74	1.61	47.27	25.9
70°		39.52	29.43	0.74	1.79	45.63	22.1
85°		36.15	27.63	0.76	2.05	43.16	17.6
100°		32.78	25.92	0.79	2.32	40.69	14.2

HEATING

HEATING					
EFT Range (Standard) 25°F to 80°F					
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	33.28	2.08	26.20	4.7
60°		37.50	2.13	30.24	5.2
70°		41.72	2.18	34.28	5.6
80°		45.93	2.23	38.32	6.0
50°		70°	31.45	2.11	24.24
60°	35.44		2.17	28.04	4.8
70°	39.42		2.22	31.85	5.2
80°	43.40		2.27	35.65	5.6
50°	80°		29.31	2.16	21.93
60°		33.02	2.22	25.45	4.4
70°		36.73	2.27	28.98	4.7
80°		40.44	2.32	32.51	5.1

LOW TEMP HEATING

LOW TEMP HEATING					
Antifreeze Required					
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
25°	60°	22.30	1.95	15.65	3.4
30°		24.36	1.97	17.63	3.6
40°		28.50	2.02	21.59	4.1
25°	70°	21.07	1.98	14.31	3.1
30°		23.03	2.01	16.17	3.4
40°		26.93	2.06	19.90	3.8
25°	80°	19.64	2.03	12.72	2.8
30°		21.46	2.05	14.44	3.1
40°		25.09	2.11	17.90	3.5

Units are complete packages containing compressor, reversing valve, expansion valve metering device, ECM fan motor and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and solid state lock-out circuit. Optional UL approved internal electric heater, factory installed with primary thermal overload protection and magnetic contactors (208/230-1-60 only) optional UL approved internal Heat Recovery Package and/or Ground Loop Pump with purge connections available

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.
ES036IP60 Rev: 10-06

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PACKAGED UNITS SPECIFICATION DATA SHEET

HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

ES042

ENVIROSAVER

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	18.6	105.0	4.3	1/2	-	-	29.3	40
208/230-3-60	-3	13.5	77.0	4.3	1/2	-	-	21.2	30
460-3-60	-4	6.5	39.0	4.1	1/2	-	-	12.3	15

Note: 460 Volt Units (-4) Require Both Ground and Neutral Wires

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
4.5	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
9 x 7 DD	Scroll		
Net Weight	Ship Weight		
270 lbs	290 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
+						1610						
Norm						1400						
-						1190						



ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1400 CFM and 9.0 GPM

Water Loop				Ground Water				Ground Loop			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
43,000	14.3	47,000	4.7	47,000	21.6	39,000	4.1	44,500	16.5	30,500	3.3

FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
5	1.98	0.86
7	3.63	1.57
9	5.70	2.47
13	11.05	4.78
15	14.30	6.19

CAPACITY DATA All performance at 1400 CFM and 9.0 GPM

COOLING EFT Range (Standard) 50°F to 100°F								
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER	
50°	70°db	41.43	27.17	0.66	1.90	47.91	21.8	
60°		40.23	26.61	0.66	2.20	47.74	18.3	
70°		61°wb	39.03	26.14	0.67	2.50	47.57	15.6
85°			37.23	25.59	0.69	2.95	47.31	12.6
100°			35.43	25.19	0.71	3.40	47.05	10.4
50°	75°db	44.37	32.41	0.73	1.91	50.89	23.2	
60°		43.08	31.74	0.74	2.21	50.63	19.5	
70°		63°wb	41.79	31.17	0.75	2.52	50.38	16.6
85°			39.87	30.52	0.77	2.97	50.00	13.4
100°			37.94	30.05	0.79	3.42	49.63	11.1
50°	80°db	48.66	35.74	0.73	1.93	55.23	25.3	
60°		47.25	35.00	0.74	2.23	54.86	21.2	
70°		67°wb	45.84	34.38	0.75	2.54	54.50	18.1
85°			43.73	33.66	0.77	2.99	53.95	14.6
100°			41.61	33.14	0.80	3.45	53.39	12.1
50°	85°db	52.95	39.11	0.74	1.94	59.57	27.3	
60°		51.41	38.29	0.74	2.25	59.09	22.9	
70°		71°wb	49.88	37.62	0.75	2.56	58.61	19.5
85°			47.58	36.83	0.77	3.02	57.89	15.8
100°			45.28	36.26	0.80	3.48	57.16	13.0

HEATING EFT Range (Standard) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	41.02	2.80	31.48	4.3
60°		45.64	2.86	35.88	4.7
70°		50.25	2.92	40.29	5.0
80°		54.87	2.98	44.70	5.4
50°		70°	38.77	2.85	29.04
60°	43.13		2.91	33.19	4.3
70°	47.49		2.97	37.34	4.7
80°	51.85		3.04	41.49	5.0
50°	80°		36.12	2.92	26.17
60°		40.18	2.98	30.02	4.0
70°		44.24	3.04	33.86	4.3
80°		48.30	3.11	37.70	4.6

LOW TEMP HEATING

Antifreeze Required

25°	60°	28.91	2.65	19.88	3.2
30°		31.17	2.68	22.04	3.4
40°		35.70	2.74	26.35	3.8
25°	70°	27.33	2.70	18.12	3.0
30°		29.46	2.73	20.16	3.2
40°		33.74	2.79	24.22	3.5
25°	80°	25.46	2.76	16.05	2.7
30°		27.45	2.79	17.93	2.9
40°		31.43	2.85	21.70	3.2

Units are complete packages containing compressor, reversing valve, expansion valve metering device, ECM fan motor and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and solid state lock-out circuit. Optional UL approved internal electric heater, factory installed with primary thermal overload protection and magnetic contactors (208/230-1-60 only) optional UL approved internal Heat Recovery Package and/or Ground Loop Pump with purge connections available

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

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ES042IP60 Rev: 10-06

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PACKAGED UNITS SPECIFICATION DATA SHEET

HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

ES048

ENVIROSAVER

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	20.6	109.0	6.8	3/4	-	-	34.3	50
208/230-3-60	-3	14.6	91.0	6.8	3/4	-	-	25.1	35
460-3-60	-4	7.1	46.0	5.5	3/4	-	-	14.4	20

Note: 460 Volt Units (-4) Require Both Ground and Neutral Wires

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
4.5	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
10 x 8 DD	Scroll		
Net Weight	Ship Weight		
318 lbs	348 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
+						1840						
Norm						1600						
-						1360						



ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 1600 CFM and 12.0 GPM

Water Loop				Ground Water				Ground Loop			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
48,500	14.3	58,000	4.9	55,000	21.6	47,000	4.3	49,000	17.2	37,500	3.5

FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
5	2.93	1.27
7	3.87	1.67
9.5	6.70	2.90
12	10.20	4.42
16	17.12	7.41

CAPACITY DATA All performance at 1600 CFM and 12.0 GPM

COOLING EFT Range (Standard) 50°F to 100°F							
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db	48.94	32.07	0.66	2.24	56.58	21.9
60°		46.48	30.71	0.66	2.50	55.01	18.6
70°		44.02	29.45	0.67	2.76	53.45	15.9
85°		40.34	27.69	0.69	3.16	51.10	12.8
100°		36.65	26.03	0.71	3.55	48.76	10.3
50°	75°db	52.41	38.26	0.73	2.25	60.09	23.3
60°		49.78	36.65	0.74	2.51	58.36	19.8
70°		47.15	35.14	0.75	2.78	56.63	17.0
85°		43.20	33.05	0.77	3.17	54.03	13.6
100°		39.25	31.07	0.79	3.57	51.43	11.0
50°	80°db	57.48	42.20	0.73	2.27	65.23	25.3
60°		54.60	40.42	0.74	2.54	63.25	21.5
70°		51.71	38.76	0.75	2.80	61.27	18.5
85°		47.39	36.46	0.77	3.20	58.31	14.8
100°		43.06	34.28	0.80	3.60	55.34	12.0
50°	85°db	62.56	46.18	0.74	2.29	70.36	27.3
60°		59.42	44.23	0.74	2.56	68.14	23.3
70°		56.28	42.42	0.75	2.82	65.92	19.9
85°		51.58	39.90	0.77	3.22	62.59	16.0
100°		46.87	37.52	0.80	3.63	59.25	12.9

HEATING EFT Range (Standard) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	50.25	3.24	39.18	4.5
60°		55.98	3.33	44.61	4.9
70°		61.72	3.42	50.04	5.3
80°		67.45	3.51	55.47	5.6
50°		70°	47.49	3.30	36.22
60°	52.91		3.39	41.32	4.6
70°	58.33		3.49	46.43	4.9
80°	63.74		3.58	51.53	5.2
50°	80°		44.25	3.38	32.72
60°		49.30	3.47	37.45	4.2
70°		54.34	3.56	42.18	4.5
80°		59.39	3.66	46.90	4.8

LOW TEMP HEATING

Antifreeze Required

25°	60°	35.21	3.02	24.91	3.4
30°		38.02	3.06	25.57	3.6
40°		43.64	3.15	32.88	4.1
25°	70°	33.28	3.07	22.79	3.2
30°		35.93	3.12	25.29	3.4
40°		41.25	3.21	30.29	3.8
25°	80°	31.01	3.14	20.29	2.9
30°		33.49	3.19	22.60	3.1
40°		38.44	3.28	27.23	3.4

Units are complete packages containing compressor, reversing valve, expansion valve metering device, ECM fan motor and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and solid state lock-out circuit. Optional UL approved internal electric heater, factory installed with primary thermal overload protection and magnetic contactors (208/230-1-60 only) optional UL approved internal Heat Recovery Package and/or Ground Loop Pump with purge connections available

Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

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ES048IP60 Rev: 10-06

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PACKAGED UNITS SPECIFICATION DATA SHEET

HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

ES060

ENVIROSAVER

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/ Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	27.6	158.0	6.8	3/4	-	-	43.1	60
208/230-3-60	-3	18.1	137.0	6.8	3/4	-	-	29.5	40
460-3-60	-4	9.0	62.0	5.5	3/4	-	-	16.8	25

Note: 460 Volt Units (-4) Require Both Ground and Neutral Wires

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/ Inch
4.5	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
11 x 9 DD	Scroll		
Net Weight	Ship Weight		
390 lbs	415 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
+						2300						
Norm						2000						
-						1700						



ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 2000 CFM and 15.0 GPM

Water Loop				Ground Water				Ground Loop			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
57,500	13.6	66,000	4.4	68,000	20.1	56,000	3.9	60,000	15.6	45,000	3.3

FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
8	3.48	1.51
10	5.21	2.25
15	10.80	4.68
18	15.00	6.49
22	21.52	9.32

CAPACITY DATA All performance at 2000 CFM and 12.0 GPM

COOLING

EFT Range (Standard)
50°F to 100°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db 61°wb	61.03	39.50	0.65	3.11	71.65	19.6
60°		57.71	37.66	0.65	3.41	69.36	16.9
70°		54.38	35.93	0.66	3.71	67.06	14.6
85°		49.40	33.49	0.68	4.16	63.61	11.9
100°		44.41	31.15	0.70	4.62	60.16	9.6
50°	75°db 63°wb	65.36	47.14	0.72	3.13	76.04	20.9
60°		61.80	44.94	0.73	3.43	73.52	18.0
70°		58.24	42.88	0.74	3.73	70.99	15.6
85°		52.90	39.97	0.76	4.19	67.20	12.6
100°		47.56	37.18	0.78	4.64	63.41	10.2
50°	80°db 67°wb	71.69	51.99	0.73	3.15	82.46	22.7
60°		67.79	49.57	0.73	3.46	79.60	19.6
70°		63.89	47.30	0.74	3.77	76.74	17.0
85°		58.04	44.09	0.76	4.22	72.45	13.7
100°		52.18	41.02	0.79	4.68	68.16	11.1
50°	85°db 71°wb	78.02	56.89	0.73	3.18	88.88	24.5
60°		73.78	54.25	0.74	3.49	85.68	21.2
70°		69.53	51.76	0.74	3.80	82.49	18.3
85°		63.17	48.26	0.76	4.26	77.70	14.8
100°		56.80	44.90	0.79	4.72	72.90	12.0

Units are complete packages containing compressor, reversing valve, expansion valve metering device, ECM fan motor and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and solid state lock-out circuit. Optional UL approved internal electric heater, factory installed with primary thermal overload protection and magnetic contactors (208/230-1-60 only) optional UL approved internal Heat Recovery Package and/or Ground Loop Pump with purge connections available

HEATING

EFT Range (Standard)
25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	58.93	4.20	44.58	4.1
60°		64.76	4.31	50.04	4.4
70°		70.59	4.42	55.50	4.7
80°		76.42	4.53	60.96	4.9
50°		70°	55.69	4.28	41.08
60°	61.20		4.39	46.21	4.1
70°	66.71		4.50	51.34	4.3
80°	72.22		4.62	56.47	4.6
50°	80°		51.90	4.38	36.95
60°		57.03	4.49	41.69	3.7
70°		62.16	4.61	46.43	4.0
80°		67.29	4.72	51.18	4.2

LOW TEMP HEATING

Antifreeze Required

25°	60°	43.48	3.93	30.06	3.2
30°		46.34	3.99	32.73	3.4
40°		52.05	4.10	38.08	3.7
25°	70°	41.10	4.01	27.43	3.0
30°		43.80	4.06	29.94	3.2
40°		49.20	4.17	34.96	3.5
25°	80°	38.30	4.10	24.32	2.7
30°		40.82	4.15	26.64	2.9
40°		45.85	4.27	31.29	3.1

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Performance based on ARI/ISO rated air flow, fluid flow and voltage. For conditions other than rated, consult the EAD selection software. Due to variations in installation actual performance may vary marginally from tabulated values.

As a result of continuing research and development, specifications are subject to change without notice.
ES060IP60 Rev: 10-06

PACKAGED UNITS SPECIFICATION DATA SHEET

HIGH-EFFICIENCY WATER SOURCE HEAT PUMPS

ES070

ENVIROSAVER

ELECTRICAL SPECIFICATIONS

Electrical Characteristics	Elect. Symbol	Compressor		Blower		Loop Pump		Min. Circuit Amps	Max. Fuse/Breaker
		RLA	LRA	FLA	HP	FLA	HP		
208/230-1-60	-1	28.8	169.0	6.8	3/4	-	-	44.6	70
208/230-3-60	-3	19.3	129.0	6.8	3/4	-	-	31.0	40
460-3-60	-4	9.7	75.0	5.5	3/4	-	-	17.7	25

Note: 460 Volt Units (-4) Require Both Ground and Neutral Wires

MECHANICAL SPECIFICATIONS

Refrigerant: R-410A			
Air Coil			
Square Feet	Rows Deep	Tube O.D.	Fins/Inch
6.0	3	3/8	14
Water Coil			
Type	Work Press		
Coaxial	450 psig		
Blower Size	Compr Type		
11 x 9 DD	Scroll		
Net Weight	Ship Weight		
450 lbs	495 lbs		

BLOWER PERFORMANCE

Available External Static Pressure (Inches of Water, Gauge. Wet Coil and Filter Included)												
Blower Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
+						-						
Norm						2200						
-						1870						



FLUID PRESSURE DROP

Fluid Flow (GPM)	Pressure Drop	
	(FOH)	(PSIG)
10	6.39	2.77
14	11.72	5.07
16	14.90	6.45
18	18.42	7.97
20	22.27	9.64

ISO 13256-1 CERTIFIED PERFORMANCE DATA Rated at 2200 CFM and 16.0 GPM

Water Loop				Ground Water				Ground Loop			
Cooling		Heating		Cooling		Heating		Cooling		Heating	
Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP
68,000	14.0	80,000	4.6	76,000	20.3	68,000	4.1	70,000	15.6	53,000	3.3

CAPACITY DATA All performance at 2200 CFM and 16.0 GPM

COOLING EFT Range (Standard) 50°F to 100°F							
Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Sensible Capacity (MBtuH)	Sensible to Total Ratio	Power Input (kW)	Heat of Reject (MBtuH)	EER
50°	70°db	67.21	44.05	0.66	3.31	78.51	20.3
60°		64.72	42.76	0.66	3.72	77.41	17.4
70°		62.22	41.63	0.67	4.13	76.30	15.1
85°		58.48	40.15	0.69	4.74	74.64	12.3
100°		54.74	38.89	0.71	5.35	72.98	10.2
50°	75°db	71.98	52.55	0.73	3.33	83.34	21.6
60°		69.31	51.03	0.74	3.74	82.07	18.5
70°		66.64	49.68	0.75	4.15	80.80	16.1
85°		62.63	47.92	0.77	4.76	78.89	13.1
100°		58.62	46.41	0.79	5.38	76.97	10.9
50°	80°db	78.95	57.97	0.73	3.36	90.41	23.5
60°		76.02	56.28	0.74	3.77	88.89	20.2
70°		73.09	54.79	0.75	4.18	87.37	17.5
85°		68.70	52.86	0.77	4.80	85.09	14.3
100°		64.31	51.20	0.80	5.42	82.81	11.9
50°	85°db	85.92	63.43	0.74	3.38	97.47	25.4
60°		82.74	61.59	0.74	3.80	95.70	21.8
70°		79.55	59.96	0.75	4.22	93.94	18.9
85°		74.77	57.84	0.77	4.84	91.29	15.4
100°		70.00	56.03	0.80	5.46	88.65	12.8

HEATING EFT Range (Standard) 25°F to 80°F

Entering Fluid Temp. (°F)	Entering Air Temp. (°F)	Total Capacity (MBtuH)	Power Input (kW)	Heat of Abs. (MBtuH)	COP
50°	60°	70.86	4.80	54.48	4.3
60°		78.40	4.91	61.65	4.7
70°		85.93	5.01	68.82	5.0
80°		93.46	5.12	75.99	5.3
50°		70°	66.97	4.89	50.29
60°	74.09		5.00	57.03	4.3
70°	81.21		5.11	63.78	4.7
80°	88.32		5.22	70.52	5.0
50°	80°		62.40	5.00	45.34
60°		69.03	5.11	51.59	4.0
70°		75.66	5.22	57.84	4.2
80°		82.29	5.33	64.08	4.5

LOW TEMP HEATING

Antifreeze Required

25°	60°	51.01	4.53	35.54	3.3
30°		54.70	4.59	39.05	3.5
40°		62.09	4.69	46.07	3.9
25°	70°	48.22	4.62	32.46	3.1
30°		51.71	4.67	35.76	3.2
40°		58.68	4.78	42.37	3.6
25°	80°	44.94	4.72	28.82	2.8
30°		48.19	4.78	31.88	3.0
40°		54.68	4.89	38.00	3.3

Units are complete packages containing compressor, reversing valve, expansion valve metering device, ECM fan motor and heat exchangers. Also included are safety controls: Overload protection for motors, high and low refrigerant pressure switches and solid state lock-out circuit. Optional UL approved internal electric heater, factory installed with primary thermal overload protection and magnetic contactors (208/230-1-60 only) optional UL approved internal Heat Recovery Package and/or Ground Loop Pump with purge connections available

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