

SHPA SERIES

AIR SOURCE HEAT PUMP HEAT PUMP WATER HEATER

The State SHPA-250 is an air-to-water heat pump water heater designed to be an energy-efficient, zero-emissions solution for your commercial water heating needs.

FEATURES:

- Up to 160°F maximum water temperature
- Ambient operating range of 40-120°F
- Air-to-Water units cool and dehumidify the surrounding ambient air, reducing the need for air conditioning and further increasing savings
- Environmentally-friendly R134a refrigerant
- Double wall condenser for potable water heating
- Integrated potable water-approved pump
- Suitable for indoor and outdoor applications
- BACnet compatible logic controller optional

APPLICATIONS

- Restaurants
- Hotels
- Apartment buildings
- Laundry facilities
- Healthcare facilities
- Schools
- Sports arenas
- Gyms
- Prisons
- Military barracks
- Manufacturing facilities, etc

ONE-YEAR LIMITED WARRANTY

- Backed by 1-year limited warranty, with an option for additional 5-year Extended Compressor Warranty
- For complete warranty information, consult written warranty or go to StateWaterHeaters.com



MODEL SHPA-250



SOLID. STATE.



SPECIFICATIONS

Operating Conditions	Model Number		SHPA-250					
	Recovery Rate †		340 Gal/hr					
	Compressor Type		Reciprocating					
	Refrigerant		R134a					
	Max Water Temperature		160° F					
	Ambient Operating Range		40° F - 120° F					
	Max Working Water Pressure		150 psig					
Multi-Pass Unit Sizing	Water Connections		2" FPT Copper					
	Water Flow Rate		50 GPM					
	Condenser Pressure Drop		18.48 ft Head					
	External Head Pressure Allowed by Unit		3.08 ft Head / 50 ft run of 2" pipe					
Single-Pass Unit Sizing	Water Connections		1 1/2" FPT Copper					
	Average Water Flow Rate		25 GPM					
	Condenser Pressure Drop		4.93 ft Head					
	External Head Pressure Allowed by Unit		3.46 ft Head / 50 ft run of 1 1/2" pipe					
Unit Specifications	Air Flow Rate		8,000 CFM					
	Dry Weight		2,100 lbs					
	Operating Weight		2,175 lbs					
	Model	Dimensions (L x W x H)		Ext. Static Pressure (in H2O)		Standard Sound Rating		
	Axial	84 1/2" x 54 3/8" x 70"		N/A		64 dB		
	Blower	84 1/2" x 54 3/8" x 67 5/8"		1.52		65 dB		
Power Requirements	Voltage	Compressor LRA	Total RLA †† (Compressor + Fans)		Wire and Disconnect Sizing †††			
					MCA		MOCP / MFS	
			Axial	Blower	Axial	Blower	Axial	Blower
	208-230/3/60	446	95.4	106.2	119	129	125	150
	440-480/3/60	223	49.1	52.8	60	65	70	70
575/3/60	164	40.9	44.2	50	54	60	60	

† Water heated from 50° F to 150° F with 75° F entering air temperature and 60% relative humidity

†† Axial fan is standard, high-static blower is optional.

††† Single point electric service

Legend

LRA: Locked Rotor Amps

RLA: Rated Load Amps

MCA: Maximum Current Ampacity (used for wire sizing)

MOCP: Minimum Overcurrent Protection (minimum disconnect size to be used)



COMMERCIAL

HEAT PUMP WATER HEATERS

PERFORMANCE DATA

Model	Entering Air Condition	Air Cooling Capacity (Btu/hr)	Entering Water Temp (°F)	Leaving Water Temp (°F)	Supply Heating Capacity (Btu/hr)	Power Input (kW)
SHPA-250 - Axial	40°F 60% RH	169300	50	58	202000	13.39
		152700	60	68	187800	14.06
		141700	70	77	178900	14.70
		131300	80	87	170900	15.38
		122000	90	97	163600	16.14
		112400	100	106	155400	16.41
		105800	110	116	150500	16.48
		89700	120	125	133700	16.68
		76300	130	135	120600	16.78
	69100	140	145	113000	16.79	
	50°F 60% RH	196200	50	59	231500	13.97
		185600	60	69	223400	14.87
		172800	70	79	213700	16.01
		163400	80	88	207000	16.59
		152300	90	98	199300	17.65
		134200	100	108	183600	17.88
		127000	110	117	177600	18.64
		113600	120	127	165100	18.89
		93900	130	136	145600	18.94
	88100	140	146	139400	18.99	
	60°F 60% RH	234400	50	61	270800	14.44
		218400	60	70	258300	15.59
		207000	70	80	250300	16.49
		191500	80	100	239400	17.80
		188000	90	109	230100	18.82
		169200	100	107	223200	19.62
		154700	110	119	211200	20.34
		133000	120	128	197300	21.18
		120300	130	137	181300	21.5
	108300	140	147	168400	21.7	
	70°F 60% RH	275900	50	63	313600	14.83
		262000	60	72	303700	16.00
		247800	70	82	294200	17.38
		234400	80	92	285600	18.78
		220100	90	101	275900	20.15
		205800	100	111	265600	21.29
		185800	110	120	249300	22.40
		168600	120	130	235900	23.52
		152200	130	140	221500	24.14
	138500	140	149	209100	24.39	
	80°F 60% RH	326200	50	65	364100	14.34
		307400	60	74	352800	16.49
		294100	70	84	343200	18.18
		278700	80	93	333700	19.90
		264200	90	103	324500	21.44
		243900	100	113	310500	23.06
		223600	110	122	294000	24.41
		197700	120	131	272200	25.60
185500		130	140	261600	25.86	
165300	140	150	238500	26.18		
90°F 60% RH	338500	50	67	385100	13.69	
	324200	60	76	369000	15.49	
	308500	70	85	354800	17.47	
	280100	80	95	341100	19.44	
	260950	90	104	320500	21.33	
	231500	100	113	306500	23.07	
	208900	110	122	295300	24.57	
	197700	120	131	272000	25.77	
	185500	130	140	261200	26.24	
165300	140	150	248500	26.66		

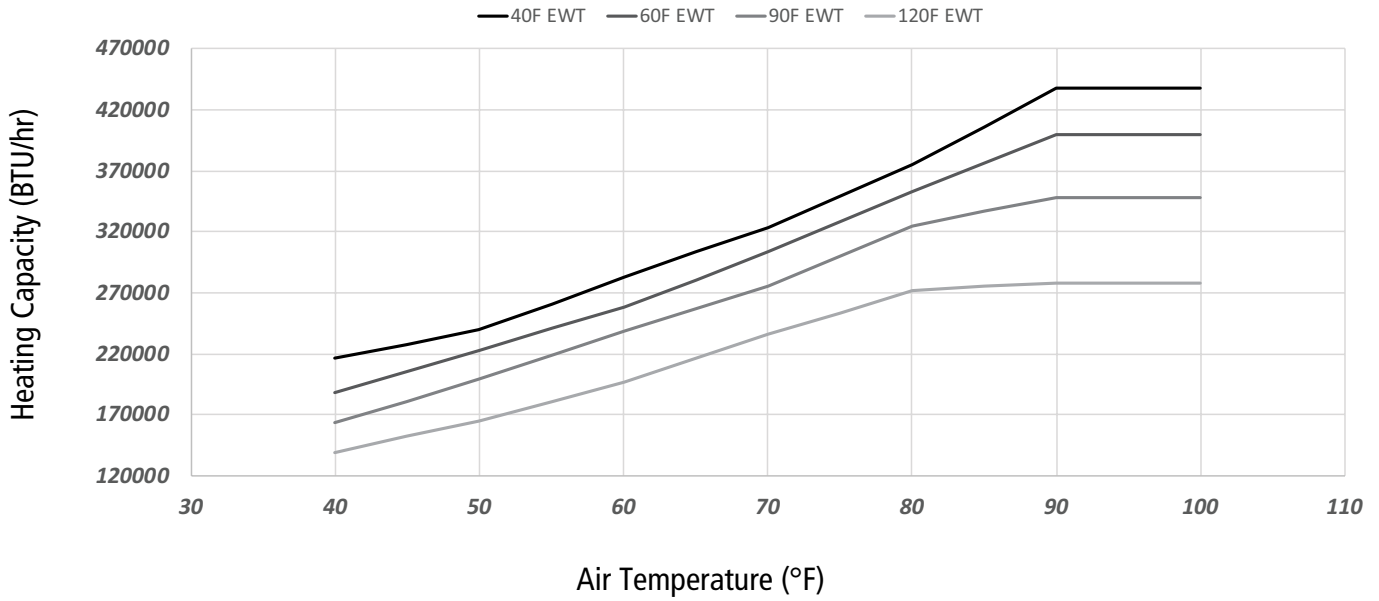


PERFORMANCE DATA

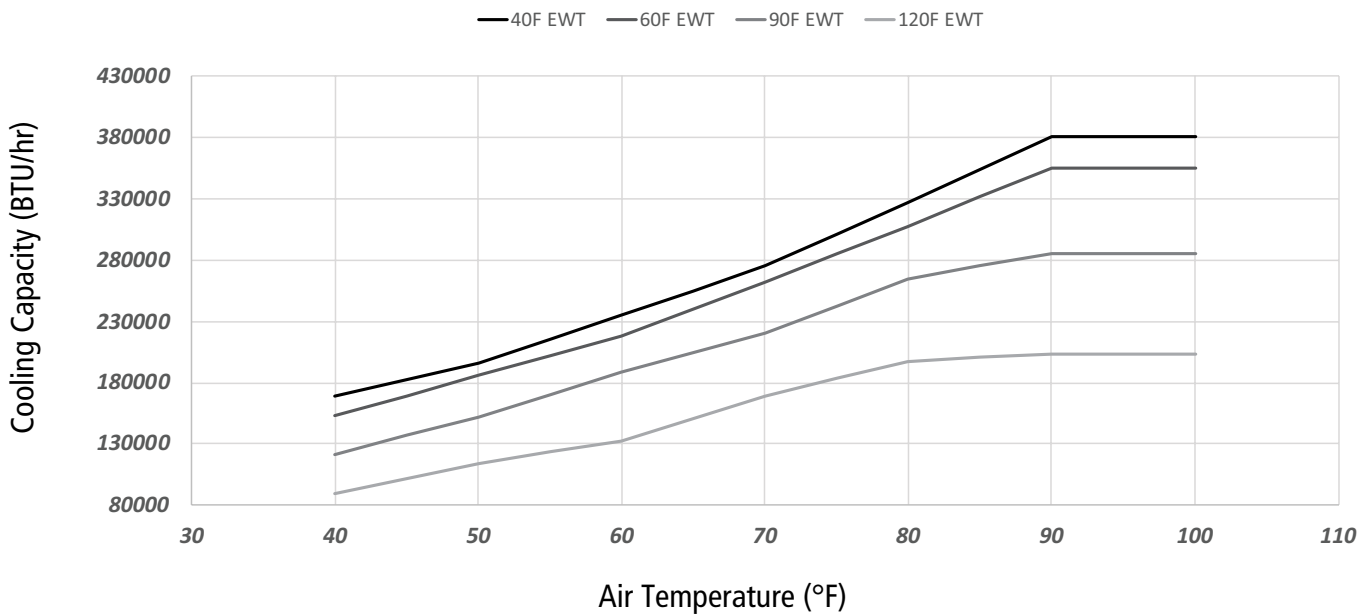
Model	Entering Air Condition	Air Cooling Capacity (Btu/hr)	Entering Water Temp (°F)	Leaving Water Temp (°F)	Supply Heating Capacity (Btu/hr)	Power Input (kW)
SHPA-250 - Blower	40°F 60% RH	169300	50	58	202000	13.39
		152700	60	68	187800	14.06
		141700	70	77	178900	14.70
		131300	80	87	170900	15.38
		122000	90	97	163600	16.14
		112400	100	106	155400	16.41
		105800	110	116	150500	16.48
		89700	120	125	133700	16.68
		76300	130	135	120600	16.78
	69100	140	145	113000	16.79	
	50°F 60% RH	196200	50	59	231500	13.97
		185600	60	69	223400	14.87
		172800	70	79	213700	16.01
		163400	80	88	207000	16.59
		152300	90	98	199300	17.65
		134200	100	108	183600	17.88
		127000	110	117	177600	18.64
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		93900	130	136	145600	18.94
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		205800	100	111	265600	21.29
		185800	110	120	249300	22.40
		168600	120	130	235900	23.52
		152200	130	140	221500	24.14
	138500	140	149	209100	24.39	
	80°F 60% RH	326200	50	65	364100	14.34
		307400	60	74	352800	16.49
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		278700	80	93	333700	19.90
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	280100	80	95	341100	19.44	
	260950	90	104	320500	21.33	
	231500	100	113	306500	23.07	
	208900	110	122	295300	24.57	
	197700	120	131	272000	25.77	
	185500	130	140	261200	26.24	
165300	140	150	248500	26.66		

PERFORMANCE CHARTS

Heating Capacity vs. Air Temperature

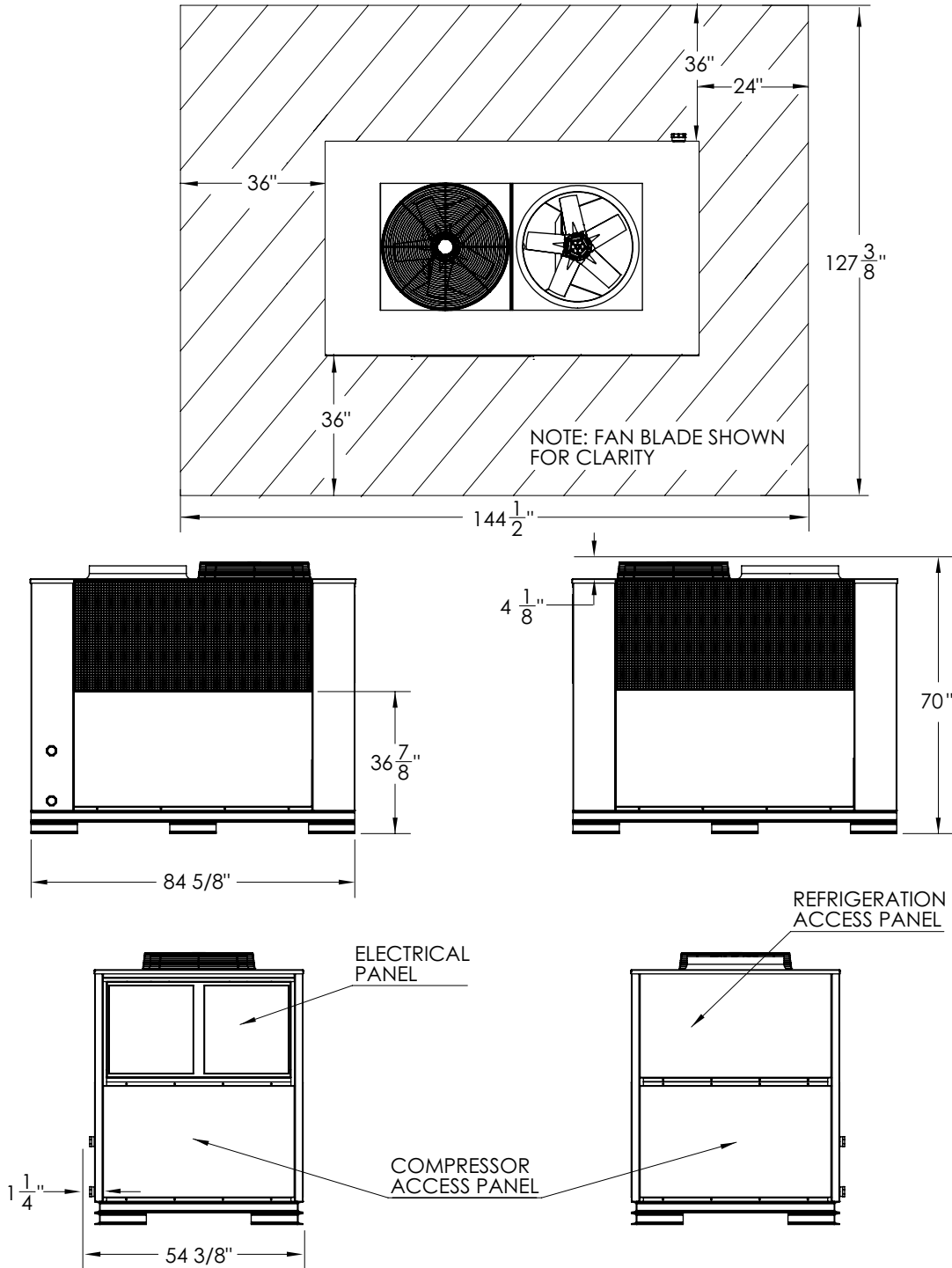


Cooling Capacity vs. Air Temperature



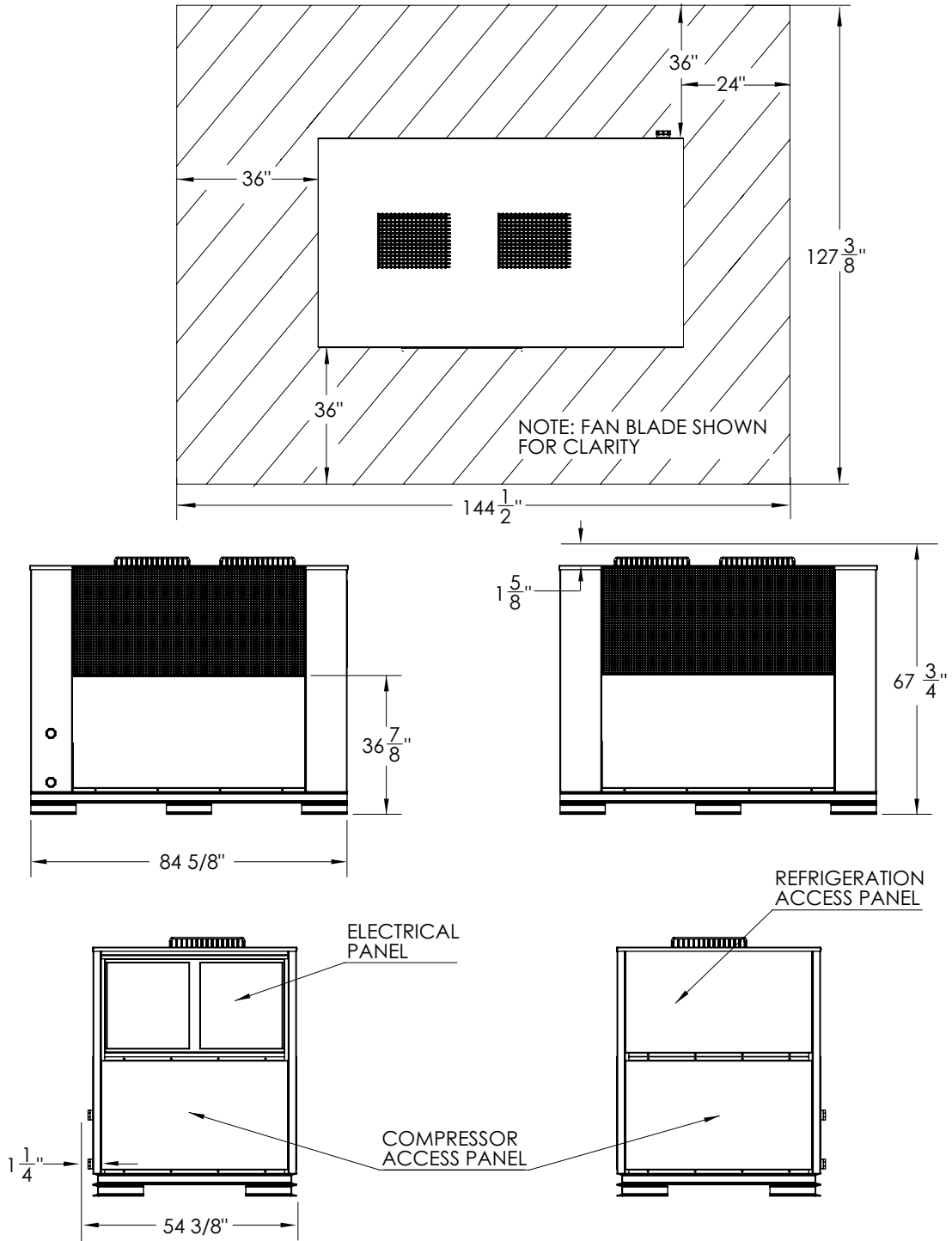
Water heated from 50°F to 150°F with 75°F dry bulb, 60% RH ambient air

AXIAL MODEL DIMENSIONS



NOTE: 36" electrical service clearance per NEC 110.26(A)(1) Working Spaces for "Condition 1."
Check with local codes for additional requirements.

BLOWER MODEL DIMENSIONS



NOTE: 36" electrical service clearance per NEC 110.26(A)(1) Working Spaces for "Condition 1."
Check with local codes for additional requirements.



SUGGESTED SPECIFICATION

The HEAT PUMP shall be State Model SHPA-250 having a heating capacity capable of 272,450 BTU/h and cooling capacity of 218,000 BTU/h.

The HEAT PUMP shall have a reciprocating compressor, factory charged with R134a refrigerant, NSF61-approved stainless steel circulator pump, and double-wall stainless steel condenser for potable water applications. The HEAT PUMP shall have a factory coated evaporator coil. The complete heat pump assembly shall carry a one (1) year limited warranty.

The HEAT PUMP refrigerant circuit shall contain an adjustable thermal expansion valve, receiver, accumulator, serviceable filter drier and service ports for refrigerant gauges.

The HEAT PUMP shall be certified and listed by TUV to CSA C22.2 No. 236:2015, UL 1995:2015-07 standards. The HEAT PUMP shall be certified for indoor and/or outdoor installation.

The HEAT PUMP shall be constructed with a heavy gauge aluminum jacket assembly and painted on both sides.

The HEAT PUMP shall utilize a 24 VDC control circuit and components. The control system shall have a display (PLC Option) for HEAT PUMP set-up, HEAT PUMP status and HEAT PUMP diagnostics. All components shall be easily accessed and serviceable. The HEAT PUMP shall be equipped with low and high refrigerant pressure switches short-cycle control outlet water temperature sensor and return water temperature sensor.

The HEAT PUMP shall have an optional control for "Cascade" to sequence and rotate while maintaining operation of up to eight HEAT PUMPs of same BTU inputs. The HEAT PUMP shall be capable of controlling a valve (single pass option) that maintains constant delivery temperature to the storage tank. The HEAT PUMP shall have an optional gateway device which will allow integration with BACnet.

The HEAT PUMP shall be equipped with terminal strips for electrical connections. A low voltage connection board shall have connection points for safety and operating controls, i.e., alarm contacts, runtime contacts and tank thermostat. A high voltage terminal strip shall be provided for supply voltage connection. Supply voltage shall be 208-230V/3PH/60Hz, 440-480V/3PH/60Hz, or 575V/3PH/60Hz.

The HEAT PUMP shall be suitable for use with polypropylene glycol, up to 50% concentration. The de-rate associated with the glycol will vary per glycol manufacturer.

STANDARD CONSTRUCTION

The HEAT PUMP shall be constructed in accordance with the code requirements as standard equipment.