

SHPM SERIES

MODULAR WATER SOURCE HEAT PUMP HEAT PUMP WATER HEATER

The State SHPM-1890 is a modular water-to-water heat pump water heater designed to be an energy efficient, zero emissions solution for your commercial water heating needs.

FEATURES:

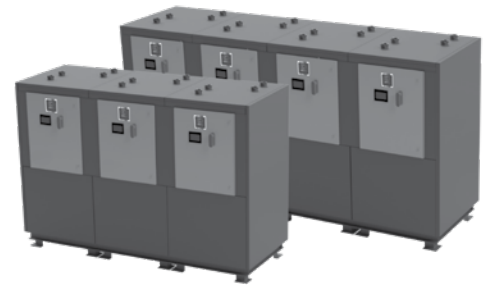
- Up to 160°F maximum water temperature
- Ambient operating range of 40-120°F
- Absorbs heat from water sources, including return chiller water, process and groundwater
- Environmentally friendly R134a refrigerant
- Double wall condenser for potable water heating
- Suitable for indoor and outdoor applications
- 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 SHPM-1890



SOLID. STATE.



SPECIFICATIONS

Operating Conditions	Model Number		SHPM-1890		
	Recovery Rate †		2,261 Gal/hr		
	Compressor Type		Scroll		
	Refrigerant		R134a		
	Max Water Temperature		160° F		
	Source Water Range		40° F - 100° F		
	Max Working Water Pressure		150 psig		
Multi-Pass Unit Sizing	Water Connections		2" FPT Copper		
	Condenser Water Flow Rate		350 GPM		
	Condenser Pressure Drop		10.76 ft Head*		
	Evaporator Water Flow Rate		350 GPM		
	Evaporator Pressure Drop		11.19 ft Head*		
	External Head Pressure Allowed by Unit		3.08 ft Head / 50 ft run of 2" pipe		
Single-Pass Unit Sizing	Heated Water Connections		1 1/2" FPT Copper		
	Source Water Connections		2" FPT Copper		
	Average Condenser Water Flow Rate		175 GPM		
	Condenser Pressure Drop		1.92 ft Head*		
	Evaporator Water Flow Rate		350 GPM		
	Evaporator Pressure Drop		11.19 ft Head*		
	External Head Pressure Allowed by Unit		3.46 ft Head / 50 ft run of 1 1/2" pipe		
Unit Specifications	Dry Weight		8,050 lbs		
	Operating Weight		9,100 lbs		
	Standard Sound Rating		86.5 dB		
	Dimensions (L x W x H)		Based on configuration selected		
Power Requirements	Voltage	Compressor LRA	RLA Per Compressor	Wire and Disconnect Sizing ††	
				MCA	MOCP / MFS
	208-230/3/60	560	92.9	Based on configuration selected	
	440-480/3/60	270	49.3	Based on configuration selected	
	575/3/60	198	28.2	Based on configuration selected	

Note: Pump for heated side provided by State. Customer responsible for providing source side pump.

† Water heated from 50° F to 150° F with 75° F entering source water temperature

†† Max 5 AHPM-270 units per single point electric service

*XXXX ft Head per module

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 Source Water Temp(°F)	Leaving Source Water Temp(°F)	Source Cooling Capacity (Btu/hr)	Entering Heated Water Temp(°F)	Leaving Heated Water Temp(°F)	Supply Heating Capacity (Btu/hr)	Power Input (kW)
SHPM-1890	42°F	36	1059100	50	57.7	1352400	85.96
		36.2	1026900	60	67.7	1346100	93.31
		36.4	993300	70	77.7	1339800	101.22
		36.6	958300	80	87.6	1332800	109.69
		36.8	922600	90	97.6	1327900	118.65
		37	884800	100	107.6	1322300	128.24
		37.2	845600	110	117.6	1318800	138.6
		37.4	802900	120	127.6	1313900	149.59
		37.7	761600	130	137.6	1312500	161.49
		37.7	753900	140	147.6	1310400	165.83
	50°F	42.7	1246000	50	58.8	1544200	87.15
		43.1	1208900	60	68.8	1531600	95.69
		43.4	1172500	70	78.7	1523200	102.69
		43.6	1132600	80	88.6	1512000	111.37
		43.9	1075200	90	98.6	1501500	120.54
		44.1	1033200	100	108.6	1491000	130.34
		44.3	999600	110	118.6	1481200	140.56
		44.6	946400	120	128.5	1471400	152.04
		44.9	893200	130	138.5	1465100	164.29
		45.1	852600	140	148.5	1458100	176.4
	60°F	52	1395800	50	59.7	1696100	87.85
		52.3	1354500	60	69.6	1680700	95.48
		52.5	1314600	70	79.6	1668100	103.6
		52.8	1268400	80	89.5	1652000	112.42
		53	1223600	90	99.4	1638700	121.66
		53.3	1176000	100	109.4	1625400	131.74
		53.6	1126300	110	119.3	1610700	142.03
		53.9	1066800	120	129.3	1593900	154.49
		54.2	1017100	130	139.2	1584100	166.04
		54.5	960400	140	149.1	1572900	177.17
	70°F	61.1	1559600	50	60.6	1862000	88.55
		61.2	1537200	60	70.5	1843100	96.25
		61.6	1470000	70	80.5	1826300	104.51
		61.9	1418200	80	90.4	1806000	113.4
		62.2	1369200	90	100.4	1788500	122.85
		62.5	1316700	100	110.3	1770300	132.93
		62.7	1260700	110	120.1	1753500	143.78
		63.1	1197000	120	130	1730400	156.45
		63.5	1143100	130	139.9	1715000	167.72
		63.8	1080800	140	149.9	1698900	181.09

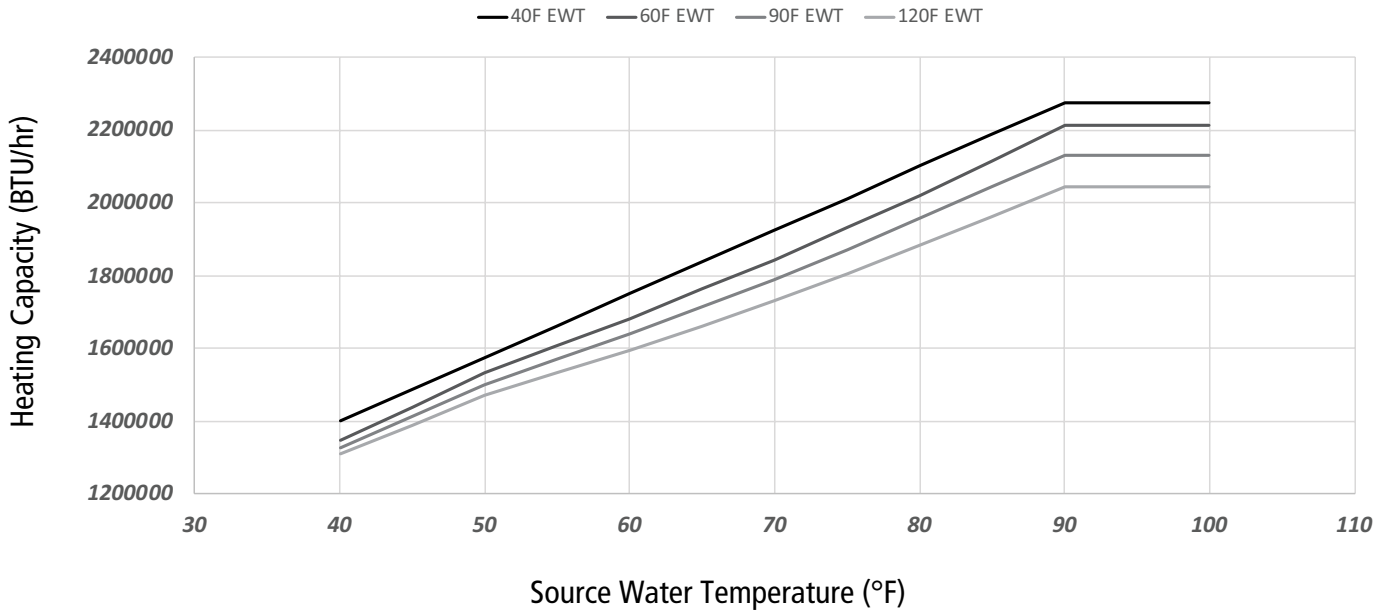


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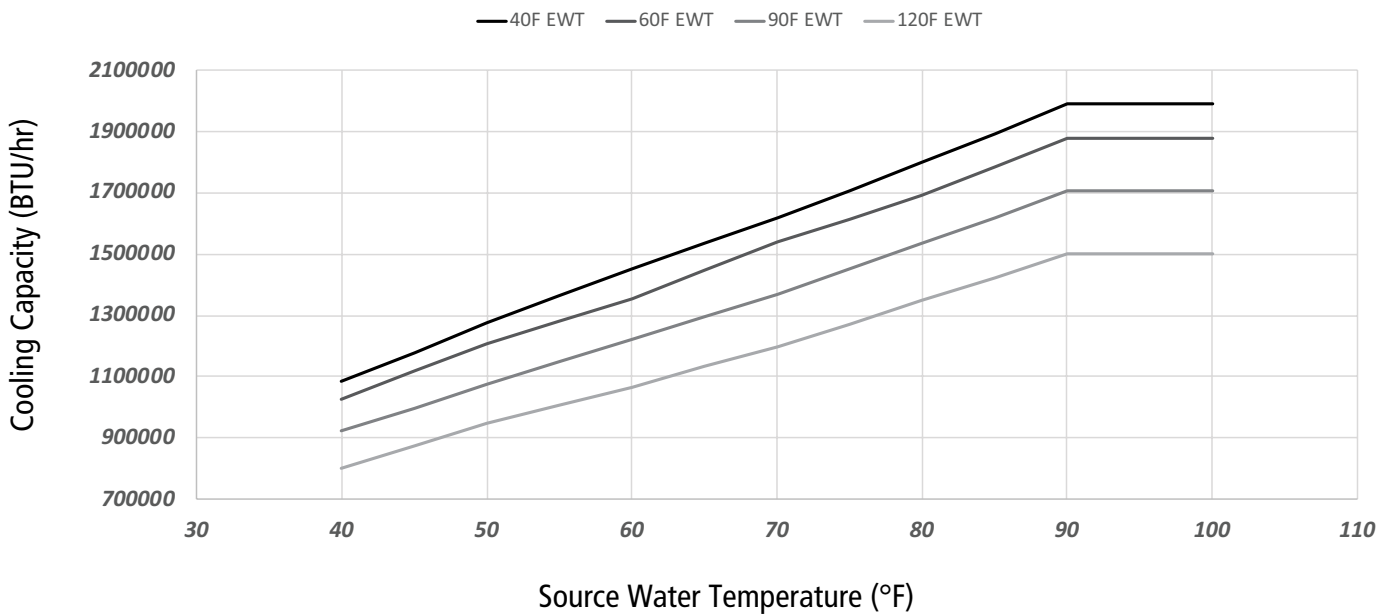
Model	Entering Source Water Temp(F°)	Leaving Source Water Temp(°F)	Source Cooling Capacity (Btu/hr)	Entering Heated Water Temp(°F)	Leaving Heated Water Temp(°F)	Supply Heating Capacity (Btu/hr)	Power Input (kW)
SHPM-1890	80°F	70	1738800	50	61.7	2042600	89.18
		70.3	1688400	60	71.5	2019500	97.02
		70.6	1639400	70	81.4	1999200	105.42
		70.9	1585500	80	91.3	1976100	114.31
		71.2	1534400	90	101.2	1955800	123.2
		71.7	1468600	100	111.1	1927100	134.05
		72	1409800	110	121	1904700	144.97
		72.4	1346800	120	131	1882300	156.73
		72.8	1281000	130	140.9	1858500	169.19
	73.1	1212400	140	150.7	1836800	182.77	
	90°F	78.9	1932700	50	62.8	2239300	89.81
		79.35	1878100	60	72.7	2211300	97.72
		79.8	1824200	70	82.5	2186800	109.27
		80.25	1762600	80	92.3	2156000	115.22
		80.7	1703800	90	102.1	2130100	124.6
		81.15	1638000	100	111.9	2099300	135.1
		81.6	1574300	110	121.5	2073400	145.81
		82.05	1502200	120	131.1	2041900	157.85
		82.5	1432200	130	140.9	2013900	170.1
83		1357300	140	150.7	1983100	184.31	

PERFORMANCE CHARTS

Heating Capacity vs. Source Water Temperature



Cooling Capacity vs. Source Water Temperature

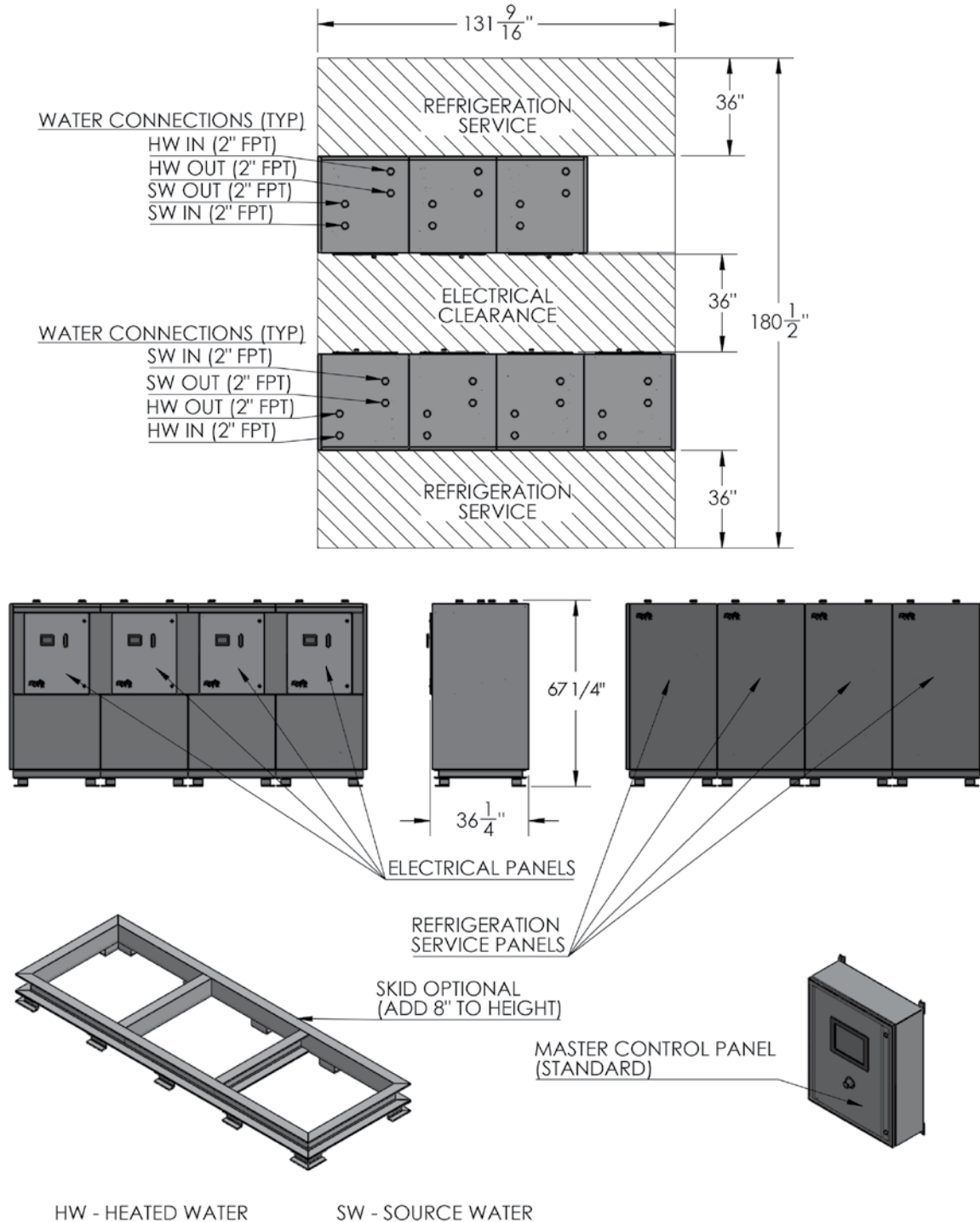


Water heated from 50°F to 150°F with 75°F entering source water temperature

DIMENSIONS

Customer specific layout available utilizing a combination of seven (7) SHPM-270 modules.

(Electrical codes limit a maximum of five (5) AHPM-270 modules on a single electrical service)



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 SHPM-1890 having a heating capacity capable of 1,939,700 BTU/h and cooling capacity of 1,475,600 BTU/h.

The HEAT PUMP shall have a scroll 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 be equipped with a stainless steel single-wall heat exchanger evaporator. 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.