Engineering Submittal - HPX Series Heat Pumps

Job Name _____

Address _____

_____

Designer / Engineer _____

Wholesaler _____

Contractor _____

Model / Quantity □ HPX 3 ___ □ HPX 5 ___

Date _____

Standard features and benefits

- Highly efficient heating and cooling
- Enhanced Vapor Injection (EVI) design increases efficiency, lowers ambient temperature operating range, and increases maximum supply water temperature
- Renewable energy source
- Modulating
- Quiet operation
- Easy set-up for Set-Point or Outdoor Reset heating
- Flow-proving and high limit safeties built in

Certifications

The appliances are tested and certified under CSA STD.C22.2 No.60335-1 and 60335-2-40.

The code requirements for every installation are to conform to local codes, or in the absence of these, with the latest editions of UL STD.60335-1 and 60335-2-40 / CSA STD. C22.2 No. 60335-1 and 60335-2-40.

HPX-series Dimensions

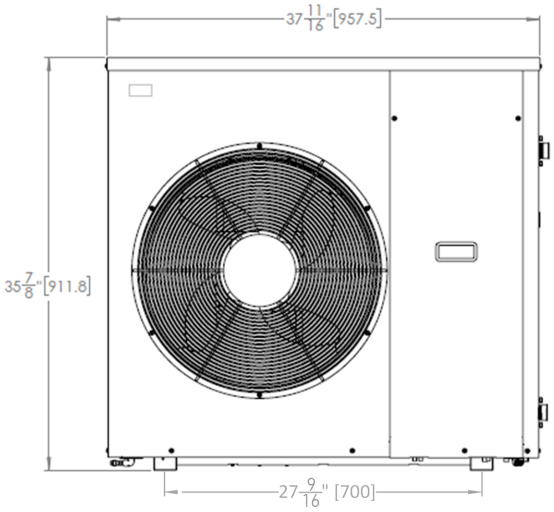


Figure 1 *Front view- HPX 3*

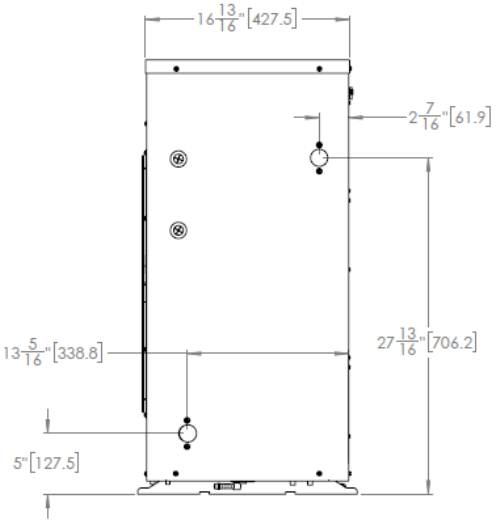


Figure 2 *Side view- HPX 3*

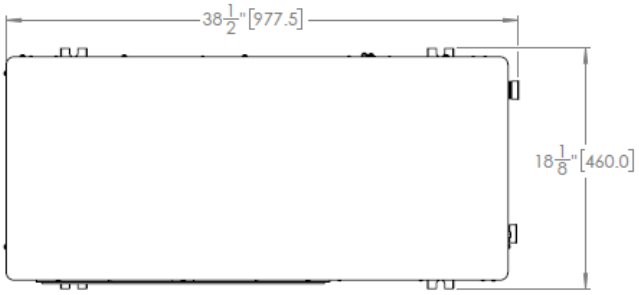


Figure 3 *Top view- HPX 3*

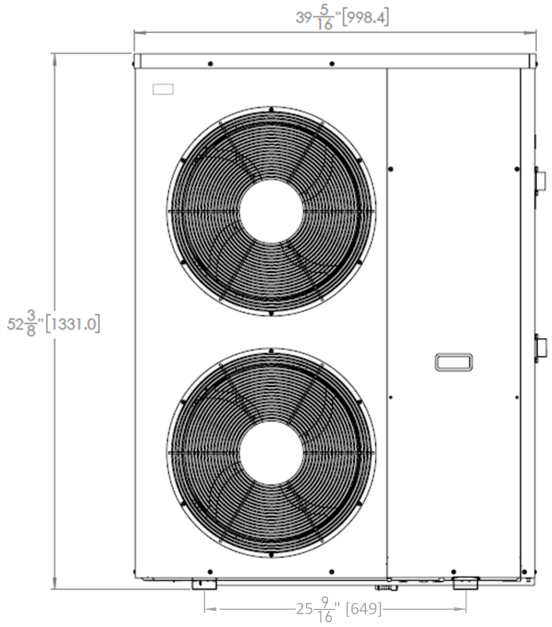


Figure 4 *Front view- HPX 5*

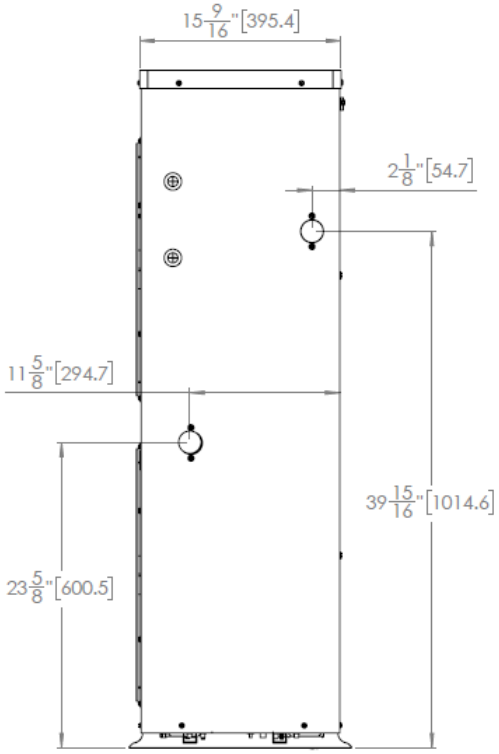


Figure 5 *Side view - HPX 5*

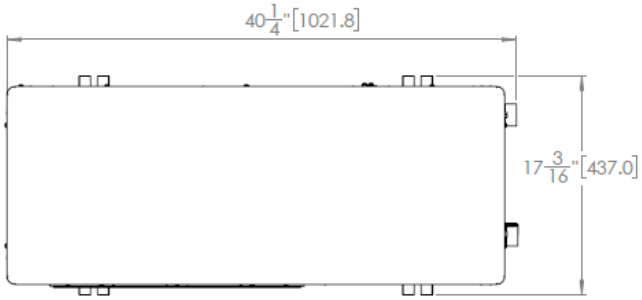


Figure 6 *Top view- HPX 5*

Connection Specifications

Description	HPX 3	HPX 5
Return water inlet	1" NPT-M	1¼" NPT-M
Supply water outlet	1" NPT-M	1¼" NPT-M
Supply power knock-out	Dual 3/4" and 1"	
Control wiring knock-out	1/2"	

Warranties

For residential applications, IBC offers a 2-year parts and a 5-year compressor limited warranty against defects in materials or workmanship.

For commercial applications, IBC offers a 2-year parts and a 2-year compressor limited warranty against defects in materials or workmanship.

To view the full warranty statement for the HPX-series, go to ibcboiler.com.

Boiler Control

All HPX Heat Pump setup and configuration can be done through IBC's Sky-35 controller. Using the Sky-35 controller gives the installer the advantage that control wiring to the HPX will consist of only two wires, i.e. a R485 communication cable. It also eliminates the need to run any wiring from the HPX outdoors to its circulator indoors, as this can also be Sky-35-controlled.

The HPX can also be used in stand-alone mode. Typically this involves at least one household thermostat or a buffer tank temperature sensor. It also requires using the provided touchscreen interface for setup of certain basic parameters.

Product Specifications

Hydronic Heat Pump Specifications	HPX 3	HPX 5
Rated Voltage / Frequency / Phase	208/230V 60Hz 1Ph	
Heating Capacity Range *	9.6 - 44.2 MBH	14.4 - 56.6 MBH
Heating Capacity Range *	2.8 - 12.9 kW	4.2 - 16.6 kW
Cooling Capacity Range **	15.5 - 34.5 MBH	21.4 - 47.6 MBH
Cooling Capacity Range **	4.55 - 10.1 kW	6.3 - 14.0 kW
Total Load (@240V)	20.3 A	26.6 A
Noise measured at 1 meter	38 - 52 dB (A)	42 - 53 dB (A)
Weight (empty)	220 lb / 100 kg	320 lb / 145 kg
Compressor Rating Load	19.5 A	25 A
Fan Motor Rating Load	0.8 A	2 x 0.8 A
Minimum Circuit Ampacity	25.2 A	33 A
Max Fuse Size	40 A	50 A
Rated Water Flow	6.6 gpm / 1.5 m^3/h	7.5 gpm / 1.7 m^3/h
Water Pressure Drop (Head Loss)	7 feet / 2.1 m	9 feet / 2.7 m
Maximum Outlet Water Temp. (electronic hi-limit)	140°F/ 60°C	
Design Water Pressure	30 psig / 207 kPa	
Maximum Water Pressure	145 psig / 1,000 kPa	
Minimum Water Pressure	8 psig / 55 kPa	
Minimum Ambient Temperature	-22°F / -30°C	
Maximum Refrigerant Pressure (low side)	305 psig / 2.1 MPa	
Maximum Refrigerant Pressure (high side)	638 psig / 4.4 MPa	
Maximum Allowable Refrigerant Pressure	696 psig / 4.8 MPa	725 psig / 5.0 MPa
Refrigerant Type and Charge	R410a / 2.2 kg	R410a / 2.5 kg
Refrigerant Safety Group Classification	A1	
Moisture Resistance	IPX4	

* for conditions Ambient Temp = 45°F (7°C), Outlet Water Temp = 106°F (41°C)

** for conditions Ambient Temp = 95°F (35°C), Outlet Water Temp = 54°F (12°C)

Heating Output and Coefficient of Performance (COP) charts

HPX 3 Heating Capacity, 30 Hz modulation (Btu/h)																	
Water Outlet (°F [°C])	95 [35]	/	/	9,700	10,200	10,700	11,100	12,100	12,800	13,600	14,400	15,600	16,100	17,300	18,500	19,800	21,200	22,600
	106 [41]	/	/	9,200	9,600	10,000	10,300	10,900	12,000	12,700	13,600	15,000	15,500	16,600	17,800	19,000	20,300	21,800
	113 [45]	/	/	8,600	9,000	9,400	9,700	10,200	11,300	12,200	12,900	14,400	14,900	16,000	17,100	18,300	19,600	21,000
	122 [50]	/	/	8,000	8,300	8,600	8,900	9,400	10,700	11,600	12,500	13,600	14,100	15,100	16,100	17,300	18,500	19,800
	131 [55]	/	/	7,600	8,000	8,300	8,500	9,000	10,100	11,300	12,000	13,100	13,600	14,600	15,600	16,700	17,800	19,100
	140 [60]	/	/	7,000	7,200	7,500	7,800	8,200	9,200	10,800	11,400	12,600	13,100	14,000	15,000	16,000	17,100	18,300
		-22 [-30]	-13 [-25]	-4 [-20]	5 [-15]	10 [-12]	17 [-8.3]	23 [-5]	32 [0]	36 [2]	41 [5]	47 [8.3]	50 [10]	59 [15]	68 [20]	77 [25]	86 [30]	95 [35]
		Outdoor Air Temperature (°F [°C])																

HPX 3 Heating Capacity, 30 Hz modulation (kW)																	
Water Outlet (°F [°C])	95 [35]	/	/	2.85	2.98	3.15	3.25	3.54	3.75	3.98	4.23	4.56	4.73	5.06	5.41	5.79	6.2	6.63
	106 [41]	/	/	2.71	2.82	2.94	3.03	3.19	3.51	3.72	3.99	4.38	4.55	4.87	5.21	5.57	5.96	6.38
	113 [45]	/	/	2.53	2.64	2.75	2.83	2.98	3.32	3.57	3.78	4.22	4.38	4.68	5.01	5.36	5.74	6.14
	122 [50]	/	/	2.34	2.43	2.53	2.61	2.75	3.13	3.41	3.65	3.98	4.13	4.42	4.73	5.06	5.41	5.79
	131 [55]	/	/	2.24	2.34	2.43	2.50	2.64	2.95	3.31	3.52	3.85	3.99	4.27	4.57	4.89	5.23	5.6
	140 [60]	/	/	2.04	2.12	2.21	2.28	2.4	2.71	3.16	3.35	3.69	3.83	4.1	4.39	4.69	5.02	5.37
		-22 [-30]	-13 [-25]	-4 [-20]	5 [-15]	10 [-12]	17 [-8.3]	23 [-5]	32 [0]	36 [2]	41 [5]	47 [8.3]	50 [10]	59 [15]	68 [20]	77 [25]	86 [30]	95 [35]
		Outdoor Air Temperature (°F [°C])																

HPX 3 COP, 30 Hz modulation																	
Water Outlet (°F [°C])	95 [35]	/	/	2.94	3.02	3.10	3.12	3.32	3.42	3.52	3.68	3.84	3.94	4.16	4.34	4.54	4.74	4.96
	106 [41]	/	/	2.50	2.54	2.60	2.64	2.70	2.90	3.00	3.20	3.38	3.45	3.65	3.85	4.05	4.25	4.40
	113 [45]	/	/	2.10	2.14	2.18	2.22	2.26	2.46	2.62	2.72	2.94	3.04	3.20	3.34	3.54	3.68	3.84
	122 [50]	/	/	1.84	1.88	1.90	1.92	1.98	2.20	2.36	2.48	2.64	2.72	2.86	3.02	3.18	3.32	3.46
	131 [55]	/	/	1.64	1.66	1.70	1.70	1.74	1.90	2.08	2.18	2.32	2.40	2.52	2.66	2.80	2.92	3.04
	140 [60]	/	/	1.40	1.42	1.46	1.46	1.50	1.66	1.90	1.98	2.14	2.22	2.34	2.46	2.60	2.74	2.86
		-22 [-30]	-13 [-25]	-4 [-20]	5 [-15]	10 [-12]	17 [-8.3]	23 [-5]	32 [0]	36 [2]	41 [5]	47 [8.3]	50 [10]	59 [15]	68 [20]	77 [25]	86 [30]	95 [35]
		Outdoor Air Temperature (°F [°C])																

HPX 3 Heating Capacity, 60 Hz modulation (Btu/h)																	
Water Outlet (°F [°C])	95 [35]	16,800	18,700	20,700	22,800	24,400	25,900	28,600	30,800	31,700	32,700	33,600	33,800	34,800	35,800	36,800	37,900	38,900
	106 [41]	16,400	18,300	20,200	22,300	24,000	25,400	28,000	30,200	31,200	31,800	32,300	32,500	33,500	34,500	35,500	36,500	37,500
	113 [45]	15,700	17,600	19,500	21,500	23,100	24,600	27,100	29,200	30,200	30,800	31,300	31,500	32,400	33,400	34,400	35,300	36,400
	122 [50]	15,100	16,900	18,800	20,700	22,300	23,700	26,200	28,300	29,200	29,800	30,200	30,400	31,400	32,300	33,300	34,200	35,200
	131 [55]	14,400	16,200	18,100	20,000	21,500	22,900	25,400	27,400	28,300	28,800	29,300	29,500	30,400	31,300	32,200	33,200	34,200
	140 [60]	13,600	15,300	17,100	19,000	20,500	21,800	24,200	26,200	27,000	27,600	28,000	28,200	29,100	30,000	30,900	31,800	32,800
		-22 [-30]	-13 [-25]	-4 [-20]	5 [-15]	10 [-12]	17 [-8.3]	23 [-5]	32 [0]	36 [2]	41 [5]	47 [8.3]	50 [10]	59 [15]	68 [20]	77 [25]	86 [30]	95 [35]
		Outdoor Air Temperature (°F [°C])																

HPX 3 Heating Capacity, 60 Hz modulation (kW)																	
Water Outlet (°F [°C])	95 [35]	4.92	5.48	6.06	6.67	7.16	7.59	8.37	9.02	9.30	9.58	9.83	9.90	10.19	10.49	10.79	11.10	11.41
	106 [41]	4.81	5.36	5.93	6.54	7.02	7.44	8.21	8.86	9.13	9.32	9.46	9.52	9.81	10.10	10.39	10.69	11.00
	113 [45]	4.61	5.15	5.72	6.31	6.78	7.20	7.94	8.57	8.84	9.02	9.16	9.22	9.50	9.78	10.07	10.36	10.66
	122 [50]	4.42	4.94	5.50	6.08	6.54	6.94	7.68	8.29	8.55	8.72	8.86	8.92	9.19	9.46	9.75	10.03	10.33
	131 [55]	4.23	4.75	5.29	5.87	6.31	6.70	7.43	8.03	8.28	8.44	8.58	8.64	8.90	9.17	9.45	9.73	10.01
	140 [60]	3.99	4.49	5.02	5.58	6.01	6.40	7.10	7.68	7.92	8.08	8.20	8.26	8.52	8.78	9.05	9.32	9.60
		-22 [-30]	-13 [-25]	-4 [-20]	5 [-15]	10 [-12]	17 [-8.3]	23 [-5]	32 [0]	36 [2]	41 [5]	47 [8.3]	50 [10]	59 [15]	68 [20]	77 [25]	86 [30]	95 [35]
		Outdoor Air Temperature (°F [°C])																

HPX 3 COP, 60 Hz modulation																	
Water Outlet (°F [°C])	95 [35]	2.60	2.86	3.12	3.40	3.60	3.78	4.10	4.34	4.42	4.50	4.56	4.56	4.66	4.76	4.84	4.96	5.06
	106 [41]	2.46	2.68	2.92	3.14	3.32	3.46	3.74	3.98	4.08	4.12	4.12	4.12	4.20	4.30	4.38	4.48	4.58
	113 [45]	2.20	2.40	2.62	2.84	2.98	3.12	3.38	3.60	3.68	3.74	3.72	3.72	3.80	3.90	3.98	4.06	4.14
	122 [50]	2.02	2.22	2.42	2.64	2.78	2.90	3.16	3.36	3.44	3.48	3.48	3.48	3.56	3.64	3.70	3.78	3.86
	131 [55]	1.80	1.98	2.16	2.36	2.50	2.62	2.84	3.02	3.10	3.14	3.12	3.14	3.20	3.28	3.34	3.42	3.48
	140 [60]	1.60	1.76	1.94	2.12	2.24	2.36	2.56	2.74	2.80	2.84	2.82	2.84	2.90	2.96	3.02	3.10	3.16
		-22 [-30]	-13 [-25]	-4 [-20]	5 [-15]	10 [-12]	17 [-8.3]	23 [-5]	32 [0]	36 [2]	41 [5]	47 [8.3]	50 [10]	59 [15]	68 [20]	77 [25]	86 [30]	95 [35]
		Outdoor Air Temperature (°F [°C])																

HPX 3 Heating Capacity, 80 Hz modulation (Btu/h)																		
Water Outlet (°F [°C])	95 [35]	23,900	25,700	27,600	29,700	31,900	33,200	35,300	37,600	39,400	41,300	43,880	44,700	47,100	49,600	51,600	53,700	55,700
	106 [41]	20,500	22,000	23,700	25,500	27,400	29,800	32,200	34,300	35,800	37,500	40,366	41,700	43,900	46,200	49,700	52,300	54,200
	113 [45]	19,500	21,000	22,500	24,200	26,000	28,500	30,900	32,900	34,400	36,000	38,553	39,600	41,700	43,900	46,800	49,200	51,000
	122 [50]	18,500	19,900	21,400	23,000	24,700	26,600	28,700	30,500	31,900	33,400	35,831	37,000	38,900	41,000	43,900	46,200	47,900
	131 [55]	17,600	18,900	20,300	21,800	23,500	25,100	27,100	28,800	30,100	31,500	33,773	34,900	36,700	38,600	41,000	43,200	44,800
	140 [60]	16,700	17,900	19,300	20,700	22,300	23,300	24,900	26,500	27,700	28,900	30,975	31,900	33,600	35,300	37,900	39,900	41,300
		-22 [-30]	**-13 [-25]**	**-4 [-20]**	**5 [-15]**	**10 [-12]**	**17 [-8.3]**	**23 [-5]**	**32 [0]**	**36 [2]**	**41 [5]**	**47 [8.3.]**	**50 [10]**	**59 [15]**	**68 [20]**	**77 [25]**	**86 [30]**	**95 [35]**
		Outdoor Air Temperature (°F [°C])																

HPX 3 Heating Capacity, 80 Hz modulation (kW)																		
Water Outlet (°F [°C])	95 [35]	6.99	7.52	8.09	8.70	9.35	9.72	10.36	11.03	11.54	12.09	12.86	13.11	13.80	14.53	15.12	15.75	16.32
	106 [41]	6.01	6.46	6.95	7.47	8.03	8.72	9.44	10.04	10.50	10.99	11.83	12.23	12.87	13.55	14.56	15.32	15.88
	113 [45]	5.71	6.14	6.60	7.09	7.63	8.35	9.07	9.65	10.09	10.56	11.30	11.61	12.22	12.86	13.71	14.43	14.95
	122 [50]	5.42	5.83	6.27	6.74	7.25	7.79	8.41	8.94	9.35	9.78	10.50	10.84	11.41	12.01	12.86	13.54	14.03
	131 [55]	5.15	5.54	5.95	6.40	6.88	7.36	7.93	8.44	8.82	9.22	9.90	10.22	10.75	11.32	12.03	12.66	13.12
	140 [60]	4.89	5.26	5.66	6.08	6.54	6.83	7.30	7.77	8.11	8.48	9.08	9.35	9.84	10.36	11.10	11.69	12.11
		-22 [-30]	**-13 [-25]**	**-4 [-20]**	**5 [-15]**	**10 [-12]**	**17 [-8.3]**	**23 [-5]**	**32 [0]**	**36 [2]**	**41 [5]**	**47 [8.3.]**	**50 [10]**	**59 [15]**	**68 [20]**	**77 [25]**	**86 [30]**	**95 [35]**
		Outdoor Air Temperature (°F [°C])																

HPX 3 COP, 80 Hz modulation																		
Water Outlet (°F [°C])	95 [35]	2.22	2.36	2.48	2.64	2.80	2.86	3.00	3.14	3.24	3.34	3.48	3.50	3.62	3.74	3.80	3.88	3.96
	106 [41]	1.88	2.00	2.10	2.24	2.38	2.56	2.70	2.84	2.92	3.02	3.16	3.24	3.34	3.44	3.64	3.74	3.80
	113 [45]	1.76	1.86	1.96	2.06	2.22	2.40	2.54	2.68	2.76	2.86	2.96	3.02	3.12	3.24	3.38	3.50	3.54
	122 [50]	1.62	1.72	1.82	1.92	2.06	2.18	2.32	2.42	2.52	2.60	2.72	2.78	2.88	3.00	3.14	3.24	3.30
	131 [55]	1.50	1.60	1.68	1.78	1.92	2.02	2.14	2.24	2.34	2.42	2.52	2.58	2.66	2.80	2.92	3.00	3.06
	140 [60]	1.40	1.48	1.56	1.66	1.78	1.84	1.94	2.02	2.12	2.20	2.28	2.34	2.40	2.52	2.66	2.74	2.80
		-22 [-30]	**-13 [-25]**	**-4 [-20]**	**5 [-15]**	**10 [-12]**	**17 [-8.3]**	**23 [-5]**	**32 [0]**	**36 [2]**	**41 [5]**	**47 [8.3.]**	**50 [10]**	**59 [15]**	**68 [20]**	**77 [25]**	**86 [30]**	**95 [35]**
		Outdoor Air Temperature (°F [°C])																

HPX 3 Heating Capacity, 90 Hz modulation [240V only] (Btu/h)																		
Water Outlet (°F [°C])	95 [35]	26200	28200	30400	32700	35700	37100	39600	42300	44300	46400	49700	51000	53700	56500	58800	61200	63500
	106 [41]	22600	24200	26100	28000	30700	33300	36100	38500	40300	42200	45700	47600	50100	52700	56600	59600	61800
	113 [45]	21400	23000	24800	26600	29100	31900	34600	37000	38700	40500	43600	45100	47500	50000	53300	56100	58100
	122 [50]	20300	21900	23500	25300	27700	29800	32100	34300	35900	37500	40600	42200	44400	46700	50000	52600	54600
	131 [55]	19300	20800	22300	24000	26300	28100	30300	32400	33800	35400	38200	39800	41800	44000	46800	/	/
	140 [60]	18400	19800	21200	22800	25000	26100	27900	29800	31200	32600	35100	36400	38300	40300	43200	/	/
		-22 [-30]	**-13 [-25]**	**-4 [-20]**	**5 [-15]**	**10 [-12]**	**17 [-8.3]**	**23 [-5]**	**32 [0]**	**36 [2]**	**41 [5]**	**47 [8.3]**	**50 [10]**	**59 [15]**	**68 [20]**	**77 [25]**	**86 [30]**	**95 [35]**
		Outdoor Air Temperature (°F [°C])																

HPX 3 Heating Capacity, 90 Hz modulation [240V only] (kW)																		
Water Outlet (°F [°C])	95 [35]	7.69	8.27	8.90	9.57	10.47	10.87	11.61	12.40	12.99	13.60	14.56	14.95	15.74	16.56	17.24	17.95	18.60
	106 [41]	6.61	7.10	7.64	8.21	8.99	9.75	10.57	11.29	11.82	12.37	13.39	13.94	14.67	15.45	16.60	17.47	18.10
	113 [45]	6.28	6.75	7.26	7.80	8.54	9.35	10.15	10.85	11.35	11.88	12.79	13.23	13.93	14.66	15.62	16.45	17.04
	122 [50]	5.96	6.41	6.89	7.41	8.12	8.72	9.41	10.06	10.52	11.00	11.89	12.36	13.01	13.69	14.66	15.43	15.99
	131 [55]	5.67	6.09	6.55	7.04	7.71	8.24	8.88	9.49	9.92	10.37	11.21	11.65	12.26	12.90	13.71	/	/
	140 [60]	5.38	5.79	6.22	6.69	7.33	7.65	8.18	8.74	9.13	9.54	10.28	10.66	11.22	11.81	12.66	/	/
		-22 [-30]	**-13 [-25]**	**-4 [-20]**	**5 [-15]**	**10 [-12]**	**17 [-8.3]**	**23 [-5]**	**32 [0]**	**36 [2]**	**41 [5]**	**47 [8.3]**	**50 [10]**	**59 [15]**	**68 [20]**	**77 [25]**	**86 [30]**	**95 [35]**
		Outdoor Air Temperature (°F [°C])																

HPX 3 COP, 90 Hz modulation [240V only]																		
Water Outlet (°F [°C])	95 [35]	2.16	2.28	2.42	2.56	2.72	2.80	2.92	3.08	3.18	3.28	3.42	3.44	3.50	3.60	3.68	3.76	3.82
	106 [41]	1.84	1.94	2.06	2.18	2.32	2.48	2.64	2.78	2.86	2.94	3.10	3.18	3.22	3.32	3.50	3.62	3.68
	113 [45]	1.70	1.80	1.92	2.02	2.16	2.32	2.48	2.62	2.70	2.78	2.90	2.98	3.02	3.12	3.26	3.38	3.42
	122 [50]	1.58	1.68	1.78	1.88	2.00	2.12	2.26	2.38	2.48	2.54	2.66	2.74	2.78	2.90	3.04	3.14	3.18
	131 [55]	1.46	1.56	1.64	1.74	1.86	1.96	2.08	2.20	2.30	2.36	2.46	2.54	2.58	2.70	2.82	/	/
	140 [60]	1.36	1.44	1.52	1.62	1.74	1.80	1.88	1.98	2.08	2.14	2.24	2.30	2.32	2.44	2.58	/	/
		-22 [-30]	**-13 [-25]**	**-4 [-20]**	**5 [-15]**	**10 [-12]**	**17 [-8.3]**	**23 [-5]**	**32 [0]**	**36 [2]**	**41 [5]**	**47 [8.3]**	**50 [10]**	**59 [15]**	**68 [20]**	**77 [25]**	**86 [30]**	**95 [35]**
		Outdoor Air Temperature (°F [°C])																

Table 1 *HPX 3 Heating Capacity and COP tables*

HPX 5 Heating Capacity, 30 Hz modulation (Btu/h)

Water Outlet (°F [°C])	-22 [-30]	-13 [-25]	-4 [-20]	5 [-15]	10 [-12]	17 [-8.3]	23 [-5]	32 [0]	36 [2]	41 [5]	47 [8.3]	50 [10]	59 [15]	68 [20]	77 [25]	86 [30]	95 [35]
95 [35]	/	/	13,600	15,000	16,300	17,000	18,400	19,600	20,000	20,400	21,200	21,600	22,500	23,400	24,600	25,800	27,100
106 [41]	/	/	13,100	14,400	15,700	16,400	17,700	18,900	19,200	19,700	20,400	20,800	21,700	22,600	23,700	24,900	26,100
113 [45]	/	/	12,500	13,800	15,000	15,700	16,900	18,000	18,400	18,800	19,500	19,900	20,700	21,500	22,600	23,700	24,900
122 [50]	/	/	11,900	13,100	14,200	14,900	16,100	17,100	17,500	17,800	18,500	18,900	19,700	20,400	21,500	22,600	23,700
131 [55]	/	/	11,200	12,300	13,400	14,000	15,100	16,100	16,400	16,800	17,400	17,800	18,500	19,200	20,200	21,200	22,200
140 [60]	/	/	10,400	11,400	12,400	13,000	14,100	15,000	15,300	15,600	16,200	16,500	17,200	17,900	18,800	19,700	20,700

Outdoor Air Temperature (°F [°C])

HPX 5 Heating Capacity, 30 Hz modulation (kW)

Water Outlet (°F [°C])	-22 [-30]	-13 [-25]	-4 [-20]	5 [-15]	10 [-12]	17 [-8.3]	23 [-5]	32 [0]	36 [2]	41 [5]	47 [8.3]	50 [10]	59 [15]	68 [20]	77 [25]	86 [30]	95 [35]
95 [35]	/	/	3.99	4.39	4.77	4.99	5.40	5.74	5.86	5.98	6.21	6.34	6.60	6.86	7.20	7.56	7.94
106 [41]	/	/	3.84	4.22	4.59	4.81	5.20	5.53	5.64	5.76	5.98	6.11	6.35	6.61	6.94	7.29	7.65
113 [45]	/	/	3.67	4.03	4.39	4.60	4.96	5.28	5.39	5.50	5.71	5.83	6.07	6.31	6.63	6.96	7.31
122 [50]	/	/	3.49	3.83	4.17	4.36	4.72	5.02	5.12	5.22	5.42	5.54	5.76	5.99	6.29	6.61	6.94
131 [55]	/	/	3.28	3.60	3.92	4.10	4.43	4.72	4.81	4.91	5.10	5.21	5.42	5.64	5.92	6.21	6.52
140 [60]	/	/	3.05	3.35	3.64	3.81	4.12	4.39	4.47	4.57	4.74	4.85	5.04	5.24	5.50	5.78	6.07

Outdoor Air Temperature (°F [°C])

HPX 5 COP, 30 Hz modulation

Water Outlet (°F [°C])	-22 [-30]	-13 [-25]	-4 [-20]	5 [-15]	10 [-12]	17 [-8.3]	23 [-5]	32 [0]	36 [2]	41 [5]	47 [8.3]	50 [10]	59 [15]	68 [20]	77 [25]	86 [30]	95 [35]
95 [35]	/	/	2.72	2.94	3.12	3.24	3.42	3.60	3.62	3.66	3.74	3.82	3.92	4.04	4.12	4.20	4.28
106 [41]	/	/	2.40	2.58	2.76	2.86	3.02	3.18	3.20	3.24	3.32	3.36	3.46	3.58	3.64	3.72	3.78
113 [45]	/	/	2.10	2.26	2.42	2.50	2.66	2.78	2.80	2.84	2.90	2.96	3.04	3.12	3.20	3.26	3.32
122 [50]	/	/	1.74	1.88	2.00	2.06	2.20	2.30	2.32	2.34	2.40	2.44	2.50	2.58	2.64	2.68	2.74
131 [55]	/	/	1.44	1.54	1.64	1.70	1.80	1.90	1.92	1.94	1.98	2.00	2.06	2.12	2.18	2.22	2.26
140 [60]	/	/	1.16	1.26	1.34	1.38	1.46	1.54	1.54	1.56	1.60	1.62	1.68	1.72	1.76	1.80	1.82

Outdoor Air Temperature (°F [°C])

HPX 5 Heating Capacity, 60 Hz modulation (Btu/h)

Water Outlet (°F [°C])	-22 [-30]	-13 [-25]	-4 [-20]	5 [-15]	10 [-12]	17 [-8.3]	23 [-5]	32 [0]	36 [2]	41 [5]	47 [8.3]	50 [10]	59 [15]	68 [20]	77 [25]	86 [30]	95 [35]
95 [35]	23,900	26,100	28,500	31,000	33,100	34,900	38,100	40,900	41,700	42,600	43,700	43,900	45,100	46,400	47,600	48,900	50,200
106 [41]	22,900	25,100	27,500	29,900	32,000	33,700	36,900	39,500	40,800	41,600	42,200	42,500	43,700	44,900	46,100	47,400	48,700
113 [45]	22,000	24,200	26,500	28,900	30,900	32,600	35,700	38,300	39,400	40,300	40,900	41,200	42,300	43,500	44,700	45,900	47,100
122 [50]	21,000	23,000	25,200	27,600	29,500	31,200	34,200	36,700	37,800	38,600	39,200	39,400	40,600	41,700	42,900	44,100	45,200
131 [55]	20,000	22,000	24,200	26,500	28,400	30,000	32,900	35,300	36,400	37,200	37,800	38,000	39,100	40,200	41,300	42,500	43,600
140 [60]	19,100	21,200	23,300	25,500	27,300	28,900	31,700	34,100	35,200	35,900	36,500	36,700	37,800	38,800	39,900	41,000	42,200

Outdoor Air Temperature (°F [°C])

HPX 5 Heating Capacity, 60 Hz modulation (kW)

Water Outlet (°F [°C])	-22 [-30]	-13 [-25]	-4 [-20]	5 [-15]	10 [-12]	17 [-8.3]	23 [-5]	32 [0]	36 [2]	41 [5]	47 [8.3]	50 [10]	59 [15]	68 [20]	77 [25]	86 [30]	95 [35]
95 [35]	6.99	7.65	8.35	9.09	9.70	10.23	11.18	11.98	12.23	12.48	12.80	12.88	13.23	13.59	13.96	14.34	14.72
106 [41]	6.72	7.37	8.05	8.77	9.37	9.88	10.81	11.59	11.95	12.20	12.38	12.46	12.81	13.16	13.52	13.89	14.26
113 [45]	6.46	7.09	7.76	8.47	9.05	9.55	10.46	11.22	11.56	11.80	11.98	12.06	12.40	12.74	13.09	13.45	13.81
122 [50]	6.14	6.75	7.40	8.09	8.65	9.14	10.02	10.76	11.09	11.32	11.49	11.56	11.89	12.22	12.56	12.91	13.26
131 [55]	5.86	6.46	7.10	7.77	8.31	8.79	9.64	10.36	10.68	10.90	11.07	11.14	11.46	11.78	12.11	12.45	12.79
140 [60]	5.61	6.20	6.82	7.48	8.01	8.47	9.30	10.00	10.31	10.52	10.69	10.76	11.07	11.38	11.70	12.03	12.37

Outdoor Air Temperature (°F [°C])

HPX 5 COP, 60 Hz modulation

Water Outlet (°F [°C])	-22 [-30]	-13 [-25]	-4 [-20]	5 [-15]	10 [-12]	17 [-8.3]	23 [-5]	32 [0]	36 [2]	41 [5]	47 [8.3]	50 [10]	59 [15]	68 [20]	77 [25]	86 [30]	95 [35]
95 [35]	2.78	3.02	3.26	3.50	3.68	3.84	4.14	4.38	4.42	4.46	4.50	4.56	4.60	4.68	4.76	4.84	4.94
106 [41]	2.58	2.78	2.98	3.20	3.36	3.54	3.76	3.96	4.06	4.08	4.10	4.14	4.18	4.26	4.34	4.42	4.50
113 [45]	2.30	2.48	2.68	2.86	3.02	3.18	3.38	3.58	3.66	3.68	3.70	3.72	3.76	3.84	3.92	3.98	4.06
122 [50]	2.00	2.18	2.34	2.50	2.66	2.80	2.98	3.16	3.22	3.24	3.26	3.28	3.32	3.38	3.46	3.50	3.58
131 [55]	1.76	1.92	2.06	2.22	2.34	2.48	2.64	2.80	2.86	2.88	2.90	2.92	2.96	3.00	3.06	3.12	3.18
140 [60]	1.64	1.78	1.94	2.08	2.20	2.34	2.48	2.64	2.68	2.70	2.72	2.74	2.78	2.82	2.88	2.94	3.00

Outdoor Air Temperature (°F [°C])

HPX 5 Heating Capacity, 80 Hz modulation (Btu/h)																		
Water Outlet (°F [°C])	95 [35]	27,400	29,400	31,700	34,100	36,600	37,700	40,100	42,700	44,700	46,800	49,600	50,300	52,900	55,700	58,200	60,700	62,900
	106 [41]	26,300	28,300	30,500	32,800	35,200	36,500	38,900	41,400	43,400	45,400	48,300	49,000	51,600	54,300	56,400	59,300	61,500
	113 [45]	25,100	27,000	29,000	31,200	33,500	35,300	37,900	40,300	42,200	44,200	46,900	47,500	50,000	52,600	55,100	58,000	60,200
	122 [50]	23,900	25,700	27,600	29,700	31,900	34,000	36,500	38,900	40,700	42,700	45,400	46,200	48,700	51,200	53,900	56,800	58,800
	131 [55]	22,900	24,600	26,400	28,400	30,600	32,700	35,300	37,600	39,300	41,200	44,000	45,000	47,400	49,900	52,100	54,800	56,800
	140 [60]	21,500	23,100	24,800	26,700	28,700	31,200	33,900	36,000	37,700	39,500	42,300	43,400	45,700	48,100	50,400	53,100	55,000
		-22 [-30]	**-13 [-25]**	**-4 [-20]**	**5 [-15]**	**10 [-12]**	**17 [-8.3]**	**23 [-5]**	**32 [0]**	**36 [2]**	**41 [5]**	**47 [8.3.]**	**50 [10]**	**59 [15]**	**68 [20]**	**77 [25]**	**86 [30]**	**95 [35]**
		Outdoor Air Temperature (°F [°C])																

HPX 5 Heating Capacity, 80 Hz modulation (kW)																		
Water Outlet (°F [°C])	95 [35]	8.03	8.63	9.28	9.98	10.73	11.05	11.76	12.51	13.10	13.73	14.54	14.73	15.50	16.32	17.06	17.78	18.42
	106 [41]	7.72	8.30	8.93	9.60	10.32	10.70	11.41	12.14	12.72	13.32	14.14	14.37	15.12	15.92	16.52	17.39	18.02
	113 [45]	7.35	7.90	8.49	9.13	9.82	10.36	11.11	11.81	12.37	12.96	13.74	13.93	14.66	15.43	16.16	17.01	17.63
	122 [50]	6.99	7.52	8.09	8.70	9.35	9.96	10.71	11.39	11.93	12.50	13.29	13.55	14.26	15.01	15.80	16.64	17.24
	131 [55]	6.70	7.21	7.75	8.33	8.96	9.60	10.35	11.01	11.52	12.07	12.89	13.20	13.90	14.63	15.26	16.07	16.65
	140 [60]	6.29	6.76	7.27	7.82	8.41	9.16	9.93	10.56	11.06	11.57	12.39	12.73	13.40	14.11	14.78	15.56	16.12
		-22 [-30]	**-13 [-25]**	**-4 [-20]**	**5 [-15]**	**10 [-12]**	**17 [-8.3]**	**23 [-5]**	**32 [0]**	**36 [2]**	**41 [5]**	**47 [8.3.]**	**50 [10]**	**59 [15]**	**68 [20]**	**77 [25]**	**86 [30]**	**95 [35]**
		Outdoor Air Temperature (°F [°C])																

HPX 5 COP, 80 Hz modulation																		
Water Outlet (°F [°C])	95 [35]	2.32	2.46	2.60	2.76	2.92	2.96	3.10	3.24	3.34	3.46	3.56	3.58	3.70	3.82	3.90	4.00	4.06
	106 [41]	2.20	2.34	2.48	2.62	2.78	2.84	2.98	3.12	3.22	3.32	3.44	3.46	3.56	3.68	3.74	3.86	3.92
	113 [45]	2.04	2.16	2.30	2.44	2.58	2.70	2.84	2.98	3.08	3.18	3.30	3.30	3.40	3.54	3.62	3.74	3.80
	122 [50]	1.90	2.00	2.12	2.26	2.42	2.54	2.68	2.82	2.94	3.02	3.14	3.16	3.26	3.40	3.50	3.62	3.68
	131 [55]	1.78	1.88	2.00	2.10	2.28	2.40	2.54	2.66	2.78	2.88	3.02	3.04	3.14	3.28	3.36	3.46	3.52
	140 [60]	1.62	1.72	1.82	1.94	2.08	2.24	2.40	2.50	2.64	2.72	2.86	2.88	2.98	3.14	3.22	3.32	3.38
		-22 [-30]	**-13 [-25]**	**-4 [-20]**	**5 [-15]**	**10 [-12]**	**17 [-8.3]**	**23 [-5]**	**32 [0]**	**36 [2]**	**41 [5]**	**47 [8.3.]**	**50 [10]**	**59 [15]**	**68 [20]**	**77 [25]**	**86 [30]**	**95 [35]**
		Outdoor Air Temperature (°F [°C])																

HPX 5 Heating Capacity, 90 Hz modulation [240V only] (Btu/h)																		
Water Outlet (°F [°C])	95 [35]	30,100	32,400	34,800	37,500	41,000	42,200	44,900	48,000	50,300	53,000	59,200	60,300	63,000	66,300	69,300	72,200	74,800
	106 [41]	29,000	31,200	33,500	36,000	39,400	40,900	43,600	46,600	48,800	51,400	57,600	58,800	61,400	64,600	67,100	70,600	73,200
	113 [45]	27,600	29,700	31,900	34,300	37,500	39,600	42,400	45,300	47,500	50,000	56,000	57,000	59,500	62,600	65,600	69,100	71,600
	122 [50]	26,200	28,200	30,400	32,700	35,700	38,100	40,900	43,700	45,800	48,200	54,200	55,500	57,900	60,900	64,200	67,600	70,000
	131 [55]	25,100	27,100	29,100	31,300	34,300	36,700	39,500	42,200	44,300	46,500	52,500	54,000	56,400	59,400	62,000	/	/
	140 [60]	23,600	25,400	27,300	29,300	32,100	35,000	37,900	40,500	42,400	44,600	50,500	52,100	54,400	57,300	60,000	/	/
		-22 [-30]	**-13 [-25]**	**-4 [-20]**	**5 [-15]**	**10 [-12]**	**17 [-8.3]**	**23 [-5]**	**32 [0]**	**36 [2]**	**41 [5]**	**47 [8.3.]**	**50 [10]**	**59 [15]**	**68 [20]**	**77 [25]**	**86 [30]**	**95 [35]**
		Outdoor Air Temperature (°F [°C])																

HPX 5 Heating Capacity, 90 Hz modulation [240V only] (kW)																		
Water Outlet (°F [°C])	95 [35]	8.83	9.49	10.21	10.98	12.02	12.38	13.17	14.07	14.74	15.52	17.36	17.67	18.45	19.42	20.31	21.15	21.92
	106 [41]	8.49	9.13	9.82	10.56	11.56	11.99	12.78	13.66	14.31	15.05	16.89	17.24	18.00	18.94	19.66	20.69	21.44
	113 [45]	8.08	8.69	9.34	10.05	11.00	11.60	12.44	13.29	13.92	14.65	16.40	16.71	17.44	18.36	19.23	20.25	20.98
	122 [50]	7.69	8.27	8.90	9.57	10.47	11.15	12.00	12.82	13.42	14.12	15.88	16.26	16.97	17.86	18.81	19.80	20.52
	131 [55]	7.37	7.93	8.52	9.17	10.04	10.75	11.59	12.38	12.97	13.64	15.40	15.84	16.54	17.41	18.16	/	/
	140 [60]	6.92	7.44	8.00	8.60	9.42	10.26	11.12	11.88	12.44	13.08	14.80	15.28	15.95	16.79	17.59	/	/
		-22 [-30]	**-13 [-25]**	**-4 [-20]**	**5 [-15]**	**10 [-12]**	**17 [-8.3]**	**23 [-5]**	**32 [0]**	**36 [2]**	**41 [5]**	**47 [8.3.]**	**50 [10]**	**59 [15]**	**68 [20]**	**77 [25]**	**86 [30]**	**95 [35]**
		Outdoor Air Temperature (°F [°C])																

HPX 5 COP, 90 Hz modulation [240V only]																		
Water Outlet (°F [°C])	95 [35]	2.26	2.38	2.52	2.68	2.84	2.88	3.02	3.18	3.28	3.40	3.72	3.76	3.86	3.98	4.08	4.16	4.24
	106 [41]	2.14	2.28	2.40	2.54	2.70	2.76	2.90	3.06	3.14	3.26	3.58	3.64	3.72	3.84	3.90	4.04	4.10
	113 [45]	2.00	2.10	2.24	2.36	2.52	2.62	2.76	2.92	3.02	3.12	3.44	3.48	3.56	3.68	3.78	3.90	3.98
	122 [50]	1.86	1.96	2.06	2.20	2.36	2.48	2.62	2.76	2.86	2.98	3.28	3.34	3.40	3.56	3.66	3.78	3.84
	131 [55]	1.74	1.84	1.94	2.04	2.22	2.34	2.48	2.60	2.72	2.82	3.12	3.20	3.28	3.42	3.50	/	/
	140 [60]	1.58	1.68	1.78	1.88	2.02	2.18	2.34	2.46	2.58	2.68	2.94	3.04	3.12	3.28	3.36	/	/
		-22 [-30]	**-13 [-25]**	**-4 [-20]**	**5 [-15]**	**10 [-12]**	**17 [-8.3]**	**23 [-5]**	**32 [0]**	**36 [2]**	**41 [5]**	**47 [8.3.]**	**50 [10]**	**59 [15]**	**68 [20]**	**77 [25]**	**86 [30]**	**95 [35]**
		Outdoor Air Temperature (°F [°C])																

Table 2 *HPX 5 Heating Capacity and COP tables*

Cooling Output and Energy Efficiency Ratio (EER) charts

HPX 3 Cooling capacity (kW)

	At ambient 35°C dry bulb, 24°C wet bulb							At ambient 43°C dry bulb, 26°C wet bulb						
Water Inlet / Outlet	25°C/20°C	22°C/17°C	20°C/15°C	17°C/12°C	14°C/9°C	12°C/7°C	10°C/5°C	Water Inlet / Outlet	25°C/20°C	22°C/17°C	20°C/15°C	17°C/12°C	14°C/9°C	12°C/7°C	10°C/5°C
30 Hz modulation	5.32	5.05	4.75	4.55	4.24	3.69	3.42	30 Hz modulation	4.74	4.50	4.23	4.05	3.78	3.47	3.22
40 Hz modulation	7.22	6.84	6.44	6.17	5.75	5.00	4.64	40 Hz modulation	6.43	6.10	5.74	5.50	5.13	4.70	4.36
50 Hz modulation	8.87	8.42	7.92	7.58	7.07	6.15	5.71	50 Hz modulation	7.91	7.50	7.06	6.76	6.30	5.78	5.36
60 Hz modulation	10.06	9.54	8.98	8.59	8.02	6.97	6.47	60 Hz modulation	8.96	8.52	8.00	7.66	7.14	6.55	6.11
70 Hz modulation	11.83	11.22	10.56	10.11	9.43	8.20	7.61	70 Hz modulation	10.54	10.00	9.41	9.01	8.40	7.70	7.15

HPX 3 Cooling capacity (Btu/h)

	At ambient 95°F dry bulb, 75°F wet bulb							At ambient 109°F dry bulb, 79°F wet bulb						
Water Inlet / Outlet	77°F/68°F	72°F/63°F	68°F/59°F	63°F/54°F	57°F/48°F	54°F/45°F	50°F/41°F	Water Inlet / Outlet	77°F/68°F	72°F/63°F	68°F/59°F	63°F/54°F	57°F/48°F	54°F/45°F	50°F/41°F
30 Hz modulation	18,200	17,200	16,200	15,500	14,500	12,600	11,700	30 Hz modulation	16,200	15,400	14,500	13,800	12,900	11,800	11,000
40 Hz modulation	24,600	23,400	22,000	21,000	19,600	17,100	15,800	40 Hz modulation	21,900	20,800	19,600	18,800	17,500	16,000	14,900
50 Hz modulation	30,300	28,700	27,000	25,900	24,100	21,000	19,500	50 Hz modulation	27,000	25,600	24,100	23,100	21,500	19,700	18,300
60 Hz modulation	34,300	32,500	30,600	29,300	27,400	23,800	22,100	60 Hz modulation	30,600	29,100	27,300	26,100	24,400	22,300	20,900
70 Hz modulation	40,400	38,300	36,000	34,500	32,200	28,000	26,000	70 Hz modulation	36,000	34,100	32,100	30,700	28,700	26,300	24,400

HPX 3 Cooling EER

	At ambient 95°F / 35°C dry bulb, 75°F / 24°C wet bulb							At ambient 109°F / 43°C dry bulb, 79°F / 26°C wet bulb						
Water Inlet / Outlet	77°F/68°F	72°F/63°F	68°F/59°F	63°F/54°F	57°F/48°F	54°F/45°F	50°F/41°F	Water Inlet / Outlet	77°F/68°F	72°F/63°F	68°F/59°F	63°F/54°F	57°F/48°F	54°F/45°F	50°F/41°F
	25°C/20°C	22°C/17°C	20°C/15°C	17°C/12°C	14°C/9°C	12°C/7°C	10°C/5°C		25°C/20°C	22°C/17°C	20°C/15°C	17°C/12°C	14°C/9°C	12°C/7°C	10°C/5°C
30 Hz modulation	12.56	12.21	11.81	11.54	11.53	10.69	10.23	30 Hz modulation	10.59	10.29	9.96	9.73	9.72	9.54	9.12
40 Hz modulation	12.07	11.73	11.36	11.09	11.09	10.28	9.83	40 Hz modulation	10.18	9.89	9.58	9.35	9.35	9.17	8.77
50 Hz modulation	11.83	11.50	11.13	10.87	10.86	10.07	9.64	50 Hz modulation	9.83	9.56	9.25	9.04	9.03	8.85	8.47
60 Hz modulation	11.28	10.97	10.61	10.37	10.36	9.61	9.19	60 Hz modulation	9.51	9.27	8.95	8.74	8.74	8.67	8.34
70 Hz modulation	10.88	10.58	10.24	10.00	10.00	9.27	8.86	70 Hz modulation	9.18	8.92	8.63	8.43	8.43	8.26	7.91

Table 3 *HPX 3 Cooling Capacity and EER tables*

HPX 5 Cooling Capacity (kW)

	At ambient 35°C dry bulb, 24°C wet bulb							At ambient 43°C dry bulb, 26°C wet bulb						
Water Inlet / Outlet	25°C/20°C	22°C/17°C	20°C/15°C	17°C/12°C	14°C/9°C	12°C/7°C	10°C/5°C	Water Inlet / Outlet	25°C/20°C	22°C/17°C	20°C/15°C	17°C/12°C	14°C/9°C	12°C/7°C	10°C/5°C
30 Hz modulation	7.42	7.10	6.69	6.28	5.75	5.33	4.94	30 Hz modulation	6.50	6.22	5.85	5.50	5.04	4.91	4.55
40 Hz modulation	10.06	9.63	9.06	8.51	7.80	7.22	6.70	40 Hz modulation	8.81	8.43	7.94	7.45	6.83	6.66	6.17
50 Hz modulation	12.37	11.84	11.15	10.46	9.59	8.88	8.24	50 Hz modulation	10.83	10.36	9.76	9.16	8.39	8.18	7.59
60 Hz modulation	14.02	13.41	12.63	11.86	10.86	10.06	9.33	60 Hz modulation	12.27	11.77	11.06	10.38	9.51	9.27	8.65
70 Hz modulation	16.49	15.78	14.86	13.95	12.78	11.84	10.98	70 Hz modulation	14.44	13.82	13.01	12.21	11.19	10.91	10.12

HPX 5 Cooling Capacity (Btu/h)

	At ambient 95°F dry bulb, 75°F wet bulb							At ambient 109°F dry bulb, 79°F wet bulb						
Water Inlet / Outlet	77°F/68°F	72°F/63°F	68°F/59°F	63°F/54°F	57°F/48°F	54°F/45°F	50°F/41°F	Water Inlet / Outlet	77°F/68°F	72°F/63°F	68°F/59°F	63°F/54°F	57°F/48°F	54°F/45°F	50°F/41°F
30 Hz modulation	25,300	24,200	22,800	21,400	19,600	18,200	16,900	30 Hz modulation	22,200	21,200	20,000	18,800	17,200	16,800	15,500
40 Hz modulation	34,300	32,900	30,900	29,000	26,600	24,700	22,900	40 Hz modulation	30,100	28,800	27,100	25,400	23,300	22,700	21,100
50 Hz modulation	42,200	40,400	38,000	35,700	32,700	30,300	28,100	50 Hz modulation	37,000	35,400	33,300	31,300	28,600	27,900	25,900
60 Hz modulation	47,800	45,800	43,100	40,500	37,100	34,300	31,900	60 Hz modulation	41,900	40,200	37,700	35,400	32,500	31,700	29,500
70 Hz modulation	56,300	53,900	50,700	47,600	43,600	40,400	37,500	70 Hz modulation	49,300	47,200	44,400	41,700	38,200	37,200	34,500

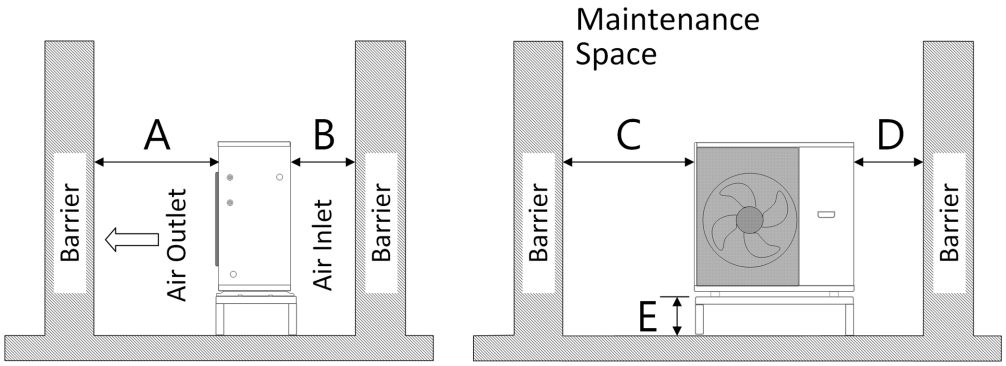
HPX 5 Cooling EER

	At ambient 95°F / 35°C dry bulb, 75°F / 24°C wet bulb							At ambient 109°F / 43°C dry bulb, 79°F / 26°C wet bulb						
Water Inlet / Outlet	77°F/68°F	72°F/63°F	68°F/59°F	63°F/54°F	57°F/48°F	54°F/45°F	50°F/41°F	Water Inlet / Outlet	77°F/68°F	72°F/63°F	68°F/59°F	63°F/54°F	57°F/48°F	54°F/45°F	50°F/41°F
	25°C/20°C	22°C/17°C	20°C/15°C	17°C/12°C	14°C/9°C	12°C/7°C	10°C/5°C		25°C/20°C	22°C/17°C	20°C/15°C	17°C/12°C	14°C/9°C	12°C/7°C	10°C/5°C
30 Hz modulation	13.12	12.87	12.42	11.87	11.13	10.57	10.13	30 Hz modulation	10.95	10.74	10.37	9.90	9.29	9.59	9.19
40 Hz modulation	12.61	12.37	11.94	11.41	10.70	10.16	9.73	40 Hz modulation	10.53	10.32	9.97	9.52	8.93	9.22	8.83
50 Hz modulation	12.36	12.12	11.70	11.18	10.49	9.96	9.54	50 Hz modulation	10.17	9.97	9.63	9.20	8.63	8.91	8.53
60 Hz modulation	11.79	11.56	11.16	10.66	10.00	9.50	9.10	60 Hz modulation	9.84	9.67	9.32	8.90	8.35	8.72	8.40
70 Hz modulation	11.37	11.15	10.77	10.28	9.65	9.16	8.78	70 Hz modulation	9.49	9.31	8.99	8.58	8.06	8.31	7.96

Table 4 *HPX 5 Cooling Capacity and EER tables*

Clearance Distances from Heat Pump Mounting Sites

The hydronic heat pumps are designed and approved for outdoor installation. .



A = 4 ft 11" / 1.5 m minimum
B = 1 ft 8" / 0.5 m minimum
C = 3 ft 3½" / 1.0 m minimum
D = 1 ft 8" / 0.5 m minimum
E = 1 ft / 0.3 m minimum above snow level

Table 5 *Clearance distances for hydronic heat pump mounting sites*

Pressure drop for circulator selection

It is up to the installer to select a circulator that can overcome the head resistance shown in the appropriate table below:

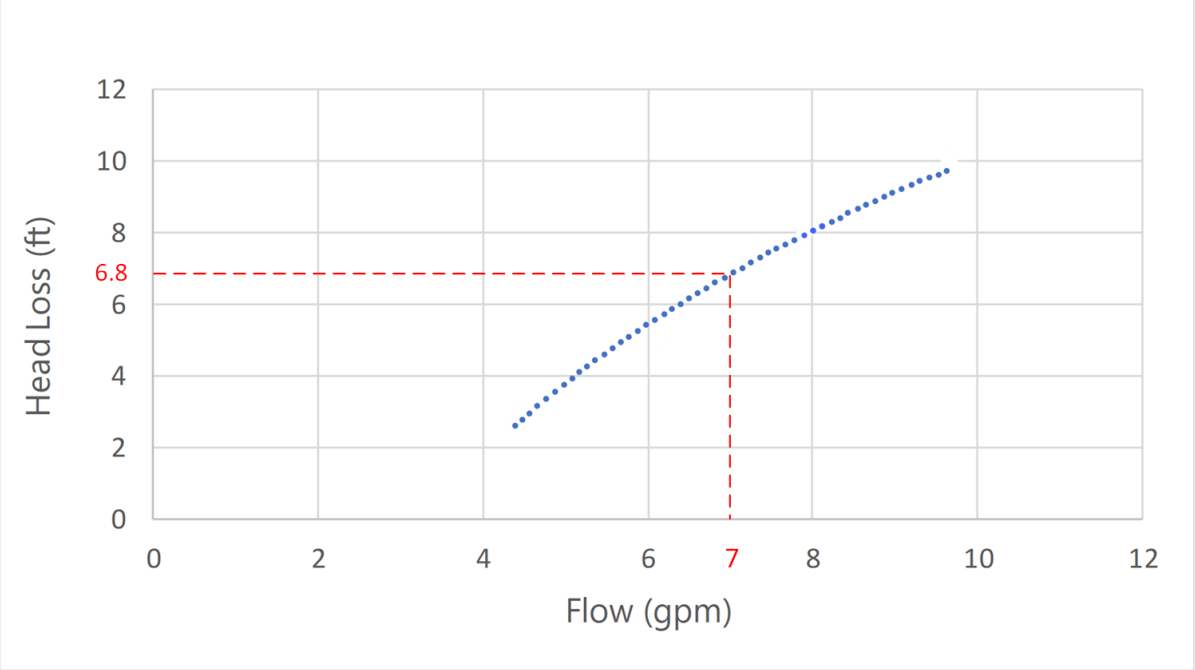


Table 6 *HPX 3 heat exchanger head loss (requires correction if glycol is used)*

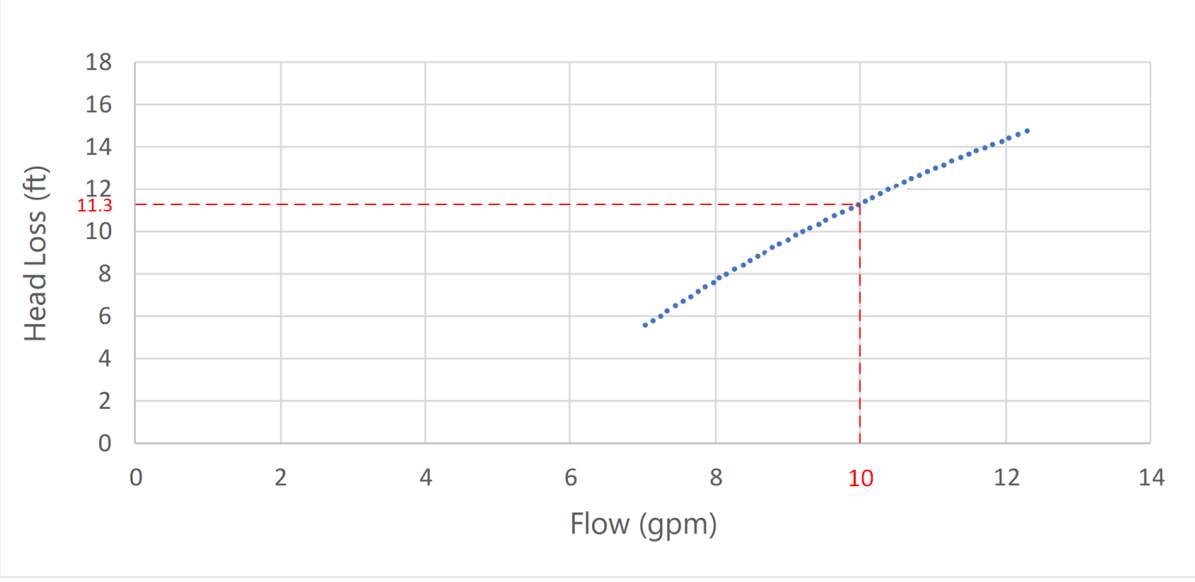


Table 7 *HPX 5 heat exchanger head loss (requires correction if glycol is used)*

Ensure that the selected circulator delivers a minimum the following minimum flow:

Heat Pump Flow Requirement	HPX 3	HPX 5
Rated Water Flow*	6.6 gpm / 1.5 m^3/h	7.5 gpm / 1.7 m^3/h
Water Pressure Drop (Head Loss)	7 feet / 2.1 m	9 feet / 2.7 m
Minimum Heat Pump Flow Rate (Variable Speed Pump)	3.1 USgpm / 0.7 m^3/h	4.0 USgpm / 0.9 m^3/h
Maximum Heat Pump Flow Rate (Fixed Speed Pump)	10.1 USgpm / 2.3 m^3/h	12.0 USgpm / 2.7 m^3/h
Recommended Heat Pump Flow Rate	7.0 USgpm / 1.6 m^3/h	10.0 USgpm / 2.3 m^3/h

* "Rated" indicates the flow rate at which the heat pump's heating output, pressure drop and noise was measured

Propylene glycol adjustment factors (typical): consult manufacturer for final calculations					
Glycol percentage by weight	25%	30%	40%	45%	50%
Freeze protection to ambient	-10.5° C	-13° C	-20° C	-25° C	-27.5° C
Target water flow	1.107	1.133	1.188	1.215	1.242
Water pressure drop	1.275	1.332	1.484	1.541	1.610

For example, to select a HPX 5 circulator if using 30% glycol:

- 10 gpm is the HPX 5's recommended water flow and 1.133 is the 30% flow adjustment; multiply 10 gpm x 1.133 = 11.33 gpm.
- Consult the head loss chart above to find for 11.33 gpm a head loss of 13.2 ft.
- Multiply the head loss by the Water pressure drop adjustment factor; 13.2' x 1.332 = 17.6 ft
- Select a circulator capable of 17.6 ft at 11.33 gpm.

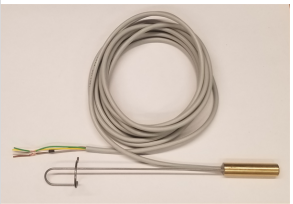
Do not reduce pipe sizes from the HPX's supplied connectors; in some cases, it will be preferable to increase pipe size.

Optional Accessories

P-216

Secondary Loop Sensor with Well kit

qty: _____



P-9172

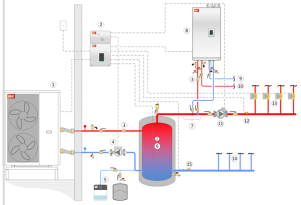
Dual Temperature Sensor

qty: _____

P-195C

Air Vent with isolation Kit

qty: _____



Sky-35 Controller

Controller for multiple heat sources

qty: _____