

Sorensen HPX Series

High Power Extensible Programmable DC Series

36 kW - 240 kW
10 - 1000 V
45 - 6000 A

Advanced Features

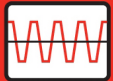
- High Power Density: Up to 150KW in a single bay rack-mount cabinet. Up to 240KW in a dual bay rack.
- Fast Load Transient Response: Protection from undesired voltage excursions
- Fast Slew Rate with exceptional rise/fall times for speed-critical applications
- Low Ripple: Suitable for the most sensitive applications
- Low Audible Noise: Temperature controlled variable speed fans
- High accuracy: Voltage/current measurements without external DMMs
- Modular architecture simplifies sparing and maintenance



Configurable High Power Solution

The Sorensen HPX High Power Extensible, Programmable DC Series from 36kW ~ 240kW+, delivers unsurpassed quality & reliable low-noise performance, fast and precise programmability with premium features at an affordable price, all in a convenient rack-mount cabinet with casters.

- **High power configured the way you want for today's testing and beyond.**
- **Affordable system power with all the precision of expensive, custom solutions.**
- **Serving every major market and application with demanding test specifications.**



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The Flexibility You Want with the Capability You Need in One System

The HPX Series features two modes in one: Automatic constant voltage and constant current mode crossover with protection against hazardous faults. Remote Shutdown (S/D) Interlock provides various external output shutdown capability in case hazardous faults occur. Other features such as External Analog Programming provide increased control and convenience for external programming applications achieved through various external voltage control methods. The HPX also includes Remote Sense for correcting errors from line voltage drops. Sophisticated power conversion technology, with State-of-the-art FET-based high frequency switching technology provides accuracy, exceptional load transient response & low noise in a smaller footprint as compared to other technologies.

Markets and Applications

The HPX Series is designed for testing today's complex electronics, including telecommunications, aerospace and commercial electronics requiring sophisticated programmability with high power density. Applications include:

- Telecommunications & IT
- Magnets, RF Amplifiers & Beam Steering
- Battery, Ultracapacitor & Energy Storage Testing
- Electroplating, Sputtering & Coating
- Burn-in & Lights-out Testing
- PV Inverter, Fuel Cell & Renewable Energy R&D
- Test & Measurement
- Semiconductor Processing
- Gas, Chemical, Petroleum & Utility Plants
- Defense, Military & Aerospace ATE
- Compliance Testing
- Industrial Automation & Process Control
- Heater Supplies
- Material Research
- Electrical Component Validation
- Laser Diode Validation & Testing
- Aerospace & Satellite Testing
- Water Treatment & Purification
- Industrial Automation
- EOL Test, QC and Inspection
- Automotive Component, ECU & HIL Testing

Modular Architecture Benefits

- The HPX system does not go down in the event that one of the power building blocks fails.
- Modularity also allows more efficient maintenance as sparing can be done at the building block level. Intelligent controls allow for sophisticated sequencing, constant power mode to allow for independent settings of max voltage, current and power and save/recall of the supply settings.
- Flexible control includes front panel manual control, isolated analog input, RS232 and Ethernet (LXI) with an option to replace the Ethernet interface with IEEE-488.

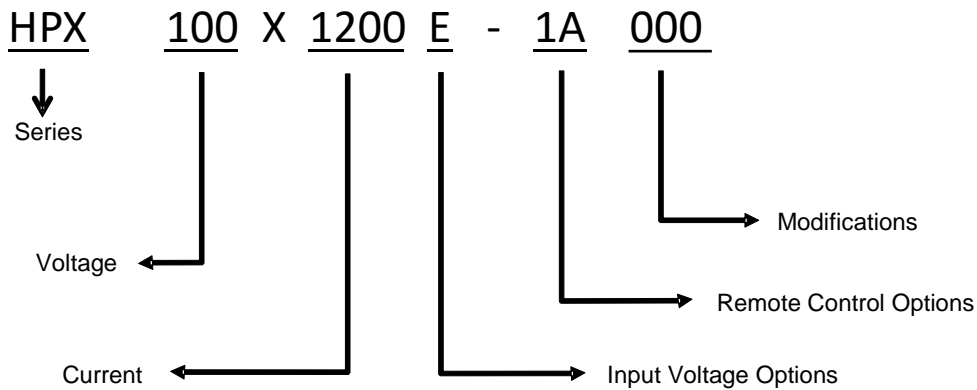
Specifications

Electrical Specifications	
Input Power	
Voltage (Standard)	440/480 VAC $\pm 10\%$ (allowed range 396-528 VAC)
Voltage (Options)	208/220 VAC $\pm 10\%$ (allowed range 187-242 VAC) (for power levels to 75KW) 380/400 VAC $\pm 10\%$ (allowed range 342-440 VAC)
Frequency	47 to 63 Hz
Phases	3-phase, 3-wire plus ground. Not phase rotation sensitive. Neutral not used.
Power Factor	0.9 typical
Efficiency	87% typical at full load, nominal line for 40-1000V models 85% typical at full load, nominal line for 10-30VDC models
Load Regulation	
Voltage	0.02% of maximum output voltage for 40-1000V models 0.05% of maximum output voltage for 10-30VDC models
Current	0.1% of maximum output current
Load Regulation	
Voltage	0.02% of maximum output voltage for 40-1000V models 0.05% of maximum output voltage for 10-30VDC models
Current	0.1% of maximum output current
Other	
Transient Response	Recovers within 1ms to $\pm 0.75\%$ of full scale output for a 50% to 100% or 100% to 50% load change
Down Programming	With full load, the output will program from 100% to 10% in less than 10 seconds
Voltage Stability	$\pm 0.05\%$ of set point after 30-min warm-up > 8 hrs. with fixed line, load, and temperature at sense points.
Temperature Coefficient	0.02%/°C of max output voltage rating for voltage set point, typical 0.03%/°C of max output current rating for current set point, typical
Environmental Specifications	
Cooling	Internal fans in all power supplies, w/ additional fans in racks above 60 kW. Vents from front to rear <60kW.
Humidity	95% maximum, non-condensing, 0 to 50°C; 45°C maximum wet-bulb temperature
Operating Temperature	0 to 50°C
Storage Temperature	-25° to 65°C
Altitude	Operating full power available up to 5,000 ft (1524 m)

Remote Control / Monitor Specifications	
Front Panel and Remote Digital Programming	
Voltage	±0.1% of full-scale
Current	±0.4% of full-scale
Oversvoltage Protection (OVP)	±1% of full-scale output
Front Panel Meter Accuracy	
Voltage	±0.1% of full-scale
Current	±.4% of full-scale
Remote Digital Readback	
Voltage	±0.15% of full-scale
Current	±0.4% of full-scale
Remote Analog Programming	
Voltage	±0.25% of full-scale output for 0-5V range (±0.5% 0-10V range)
Current	±1% of full-scale output for 0-5V range (±2% 0-10V range)
Oversvoltage Protection	±1% of full-scale output
Remote Analog Readback	
Voltage	±1% of full-scale output, 0-10V range
Current	±1% of full-scale output, 0-10V range
Resistive Programming	
Voltage (0-100%)	0-5 kΩ
Current (0-100%)	0-5 kΩ
Voltage Programming	
Voltage (0-100%)	0-5 VDC or 0-10 VDC
Current (0-100%)	0-5 VDC or 0-10 VDC
Oversvoltage Protection (OVP)	0.25-5.5 VDC
Remote Analog Control	
Input to Output Isolation	The control signal return for Non-Isolated Analog programming is connected to the negative output terminal. Negative terminal should not exceed 300V to earth ground. The max. voltage with Remote Isolated Analog programming (option) to the negative output terminal is 600V.
Remote Sensing	
Remote Sensing	Terminals are provided to regulate output voltage at point of load. Maximum line drop is 5% of rated output voltage per line for 40-100V models, 2% of rated output voltage per line for >100V models, 1V for 10-20V, 1.5V for 30V

Physical Specifications				
Dimension	36, 45 & 60kW Models	75, 90 & 105kW Models	120, 135 & 150kW Models	180, 210 & 240kW Models
Width	24 in (55.9 cm)	24 in (55.9 cm)	24 in (55.9 cm)	48 in (122 cm)
Depth	36 in (96.5 cm)	36 in (96.5 cm)	36 in (96.5 cm)	36 in (96.5 cm)
Height	49.5 in (129.73 cm)	73 in (185.42cm)	80 in (203.2cm)	73 in (185.42cm)

Options & Order Information



Options and Accessories	
Input Voltage Options	
E (Standard)	Input Voltage 440/480VAC L-L +/- 10% (396-528VAC L-L)
D (Option)	Input Voltage 380/400VAC L-L +/- 10% (342-440VAC L-L)
C (Option)	Input Voltage 208/230VAC L-L +/- 10% (187-253VAC L-L, power levels up to 75KW)
Remote Control Options	
0A	No Options
1A	IEEE-488.2 + RS-232C (RS-232 comes standard)
1C	Ethernet / RS-232
1D	Isolated Analog Control
2A	Combined Options, 1A + 1D
2G	Combined Options, 1C + 1D
Modifications*	
000	No Options
E00	Addition of AC input circuit breaker and EPO switch with local and remote trip of AC breaker (consult factory for pricing)
OR0	Replace 'L'-mounting brackets with rack slides
00W	Extended Warranty

*Modifications can be ordered in any combination, e.g, ORC = Rack slides and extended warranty options

Models by Voltage and Power:

Rack Size	24U	24U	35U	35U	35U	40U	40U	40U	2 x 36U	2 x 36U	2 x 36U	
	Power	45 kW	60 kW	75 kW	90 kW	105 kW	120 kW	135 kW	150 kW	180 kW	210 kW	240 kW
VOLTAGE	1000	1000 x 45	1000 x 60	1000 x 75	1000 x 90	1000 x 105	1000 x 120	100 x 135	1000 x 150	1000 x 180	1000 x 210	1000 x 240
	800	800 x 56	800 x 75	800 x 94	800 x 112	800 x 131	800 x 150	800 x 168	800 x 187	800 x 224	800 x 262	800 x 300
	600	600 x 75	600 x 100	600 x 125	600 x 150	600 x 175	600 x 200	600 x 225	600 x 250	600 x 300	600 x 350	600 x 400
	500	500 x 90	500 x 120	500 x 150	500 x 180	500 x 210	500 x 240	500 x 270	500 x 300	500 x 360	500 x 420	500 x 480
	400	400 x 114	400 x 152	400 x 190	400 x 228	400 x 266	400 x 304	400 x 342	400 x 380	400 x 456	400 x 532	400 x 608
	330	330 x 135	330 x 180	330 x 225	330 x 270	330 x 315	330 x 360	330 x 405	330 x 450	330 x 540	330 x 630	330 x 720
	300	300 x 150	300 x 200	300 x 250	300 x 300	300 x 350	300 x 400	300 x 450	300 x 500	300 x 600	300 x 700	300 x 800
	250	250 x 180	250 x 240	250 x 300	250 x 360	250 x 420	250 x 480	250 x 540	250 x 600	250 x 720	250 x 840	250 x 960
	200	200 x 225	200 x 300	200 x 375	200 x 450	200 x 525	200 x 600	200 x 675	200 x 750	200 x 900	200 x 1050	200 x 1200
	160	160 x 282	160 x 376	160 x 470	160 x 564	160 x 658	160 x 752	160 x 846	160 x 940	160 x 1128	160 x 1316	160 x 1504
	100	100 x 450	100 x 600	100 x 750	100 x 900	100 x 1050	100 x 1200	100 x 1350	100 x 1500	100 x 1800	100 x 2100	100 x 2400
	80	80 x 564	80 x 752	80 x 940	80 x 1128	80 x 1316	80 x 1504	80 x 1692	80 x 1880	80 x 2256	80 x 2632	80 x 3008
	60	60 x 750	60 x 1000	60 x 1250	60 x 1500	60 x 1750	60 x 2000	60 x 2250	60 x 2500	60 x 3000	60 x 3500	60 x 4000
	50	50 x 900	50 x 1200	50 x 1500	50 x 1800	50 x 2100	50 x 2400	50 x 2700	50 x 3000	50 x 3600	50 x 4200	50 x 4800
	40	40 x 1125	40 x 1500	40 x 1875	40 x 2250	40 x 2625	40 x 3000	40 x 3375	40 x 3750	40 x 4500	40 x 5250	40 x 6000
	30	30 x 1503	30 x 2004	30 x 2505	30 x 3006	30 x 3507	30 x 4008	30 x 4509	30 x 5010	30 x 6000	Cons. Fact	Cons. Fact
	20	20 x 2250	20 x 3000	20 x 3750	20 x 4500	20 x 5250	20 x 6000	Cons. Fact	Cons. Fact	Cons. Fact	Cons. Fact	Cons. Fact
		36 kW	48 kW	60 kW								
15	15 x 2403	15 x 3204	10 x 4005									
10	10 x 3600	10 x 4800	10 x 6000									

- 1) Power factor correction will be standard (included) on all high power systems.
- 2) Cons. Fact. means "consult factory."