Sorensen XHR Series

DC Power Supply

1 kW

7.5–600 V

1.7–130 A

	~	115	230

GPIB RS232

- Universal input 85-250 Vac
- Power Factor Correction (PFC)
- Zero voltage "soft switching"
- Simultaneous front panel display voltage and current
- Constant voltage or constant current operation
- Front and rear connectors
- Remote sense with 5 V line loss compensation
- LabVIEW® and LabWindows® drivers

The Sorensen XHR Series provides 1000 watts of DC power in a compact half-rack package. The supplies are designed for benchtop and system use, and as an ideal companion for other half-rack instruments in a test console. Its unique size also eliminates the need for a blank panel to preserve vertical rack space for OEM applications.

The XHR is power factor corrected for low current draw - only 11 amps at 120 volts AC for 1000 watts - and reduced generation of input current harmonics. Zero voltage or "soft switching" virtually eliminates switching transients for high efficiency, low noise and high reliability. It is also stackable, with a small footprint, front panel binding post connectors, and a low current requirement with universal input, making the XHR ideal for benchtop applications.

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AMETEK®
PROGRAMMABLE POWER

XHR Series : Product Specifications

Common	
Switching Frequency	7.5 V to 300 V models: nominal 125 kHz (250 kHz output ripple); 600 V model: nominal 62.5 kHz (125 kHz output ripple)
Time Delay	4 sec maximum from power on until output stable
Voltage Mode Transient Response Time	1 ms for output voltage to recover within 0.5% of its previous level after a step change in load current of up to 50% of rated output
Maximum Voltage Differential	±600 Vdc from output to safety ground
Remote Start/Stop and Interlock	2.5-15 V signal or TTL-compatible input, selectable logic
Remote Analog Programming	Voltage and current programming inputs (source must be isolated): 0-5 k, 0-10 k resistances; 0-5 V (default), 0-10 V voltage sources
Remote Analog Monitoring	Voltage and current monitor outputs 0-5 V (default), 0-10 V ranges for 0-100% of output
Remote Programming & Monitoring Accuracy	1% zero to full scale output for the default range
Front Panel Voltage and Current Control	10-turn voltage and current potentiometers
Front Panel Voltage Control Resolution	0.02% of maximum voltage
Main Output Connector	7.5 to 40 V models: nickel-plated copper bus bars; 60 to 600 V models: 4-terminal wire clamp connector for DC output and local sense
Protection Features	Over-voltage protection and Over-temperature protection
Approvals	CE-marked units meet: EN61010-1, EN61000-6-2 and EN61000-6-4; CSA C/US certified to UL61010-1B and CSA C22.2 No 1010.1; Meets USA EMC standard: FCC, part 15B, Class A; Meets Canadian EMC standard: ICES-001, Class A.
Environmental	
Operating Temperature	0°C to 40°C
Storage Temperature	-40°C to 85°C
Humidity Range	Up to 80% RH, non-condensing
Physical	
Dimensions	Width: 8.5" (216 mm) Height: 3.4" (86.4 mm) Depth: 18.6" (472.2 mm)
Weight	Approximately 14 lbs. (6.4 kg)
Input	
Voltage Ranges	85-250 VAC, 47-63 Hz, power factor corrected. Derate maximum output power to 900 W for AC input less than 95 V
Phases	
Power Factor	0.99 minimum for full load and 120 Vac input
Current	13 A maximum at 100 Vac; 11 A maximum at 120 Vac; 6 A maximum at 220 Vac
AC Input Connector Type	IEC 320 connector

Output			
Model	**Voltage**	**Current**	**Power**
XHR 7.5-130	0-7.5	0-130	975 W
XHR 20-50	0-20	0-50	1000 W
XHR 33-33	0-33	0-33	1089 W
XHR 40-25	0-40	0-25	1000 W
XHR 60-18	0-60	0-18	1080 W
XHR 100-10	0-100	0-10	1000 W
XHR 150-7	0-150	0-7	1050 W
XHR 300-3.5	0-300	0-3.5	1050 W
XHR 600-1.7	0-600	0-1.7	1020 W

Output : At the front panel binding posts						
Model	**Output Ratings**		**Line Regulation** [2]		**Load Regulation** [3]	
	Voltage (VDC)	**Current (ADC)**	**Voltage**	**Current**	**Voltage**	**Current**
XHR 7.5-130	0-7.5	0-130	3 mV	14 mA	3 mV	66 mA
XHR 20-50	0-20	0-50	4 mV	6 mA	4 mV	26 mA
XHR 33-33	0-33	0-33	5 mV	4.3 mA	5 mV	18 mA
XHR 40-25	0-40	0-25	8 mV	3.5 mA	6 mV	14 mA
XHR 60-18	0-60	0-18	8 mV	2.8 mA	8 mV	10 mA
XHR 100-10	0-100	0-10	12 mV	2 mA	12 mV	6 mA
XHR 150-7	0-150	0-7	17 mV	1.7 mA	17 mV	4.5 mA
XHR 300-3.5	0-300	0-3.5	32 mV	1.3 mA	32 mV	3 mA
XHR 600-1.7	0-600	0-1.7	62 mV	1.2 mA	62 mV	2 mA

Model	**Meter Accuracy**		**Output Noise (0-20 MHz) Voltage (p-p)**	**Output Ripple (rms) Voltage**	**Drift (8 hours)** [4]	
	Voltage (0.5% to 1% of Vmax + 1 count)	**Current** (0.5% of Imax + 1 count)			**Voltage** (0.05% of Vmax)	**Current** (0.1% of Imax)
XHR 7.5-130	0.09 V	1.4 A	70 mV	10 mV	3.75 mV	130 mA
XHR 20-50	0.3 V	0.6 A	70 mV	10 mV	10 mV	50 mA
XHR 33-33	0.43 V	0.43 A	75 mV	7.5 mV	16.5 mV	33 mA
XHR 40-25	0.5 V	0.35 A	75 mV	7.5 mV	20 mV	25 mA
XHR 60-18	0.7 V	0.19 A	75 mV	10 mV	30 mV	18 mA
XHR 100-10	1.1 V	0.11 A	100 mV	10 mV	50 mV	10 mA
XHR 150-7	1.6 V	0.08 A	150 mV	20 mV	75 mV	7 mA
XHR 300-3.5	4 V	0.05 A	250 mV	30 mV	150 mV	3.5 mA
XHR 600-1.7	7 V	0.03 A	500 mV	120 mV	300 mV	1.7 mA

3. For 0-100% load variation, with constant nominal line voltage. Measured at the rear panel output connector unless stated otherwise.
4. Maximum drift over 8 hours with constant line, load, and temperature, after 30-minute warm-up.

XHR Series : Product Specifications

Model	Temperature Coefficient [5]		Maximum Remote Sense Line Drop Compensation [6]	OVP Adjustment Range (5%to 110% of Vmax)	Efficiency [7]
	Voltage (0.02% of Vmax/°C)	Current (0.03% of Imax/°C)			
XHR 7.5-130	1.5 mV	39 mA	3 V / line	0.375-8.25 V	81%
XHR 20-50	4 mV	15 mA	5 V / line	1-22 V	83%
XHR 33-33	6.6 mV	9.9 mA	5 V / line	1.65-36.3 V	83%
XHR 40-25	8 mV	7.5 mA	5 V / line	2-44 V	83%
XHR 60-18	12 mV	5.4 mA	5 V / line	3-66 V	84%
XHR 100-10	20 mV	3 mA	5 V / line	5-110 V	84%
XHR 150-7	30 mV	2.1 mA	5 V / line	7.5-165 V	85%
XHR 300-3.5	60 mV	1.1 mA	5 V / line	15-330 V	85%
XHR 600-1.7	120 mV	0.48 mA	5 V / line	30-660 V	85%

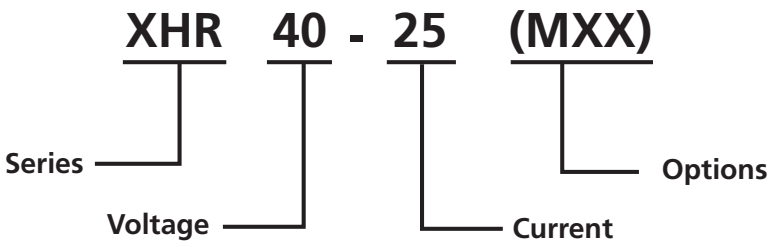
XHR 1 kW Internal Interface Specifications with RS-232 or GPIB Interface Installed [1, 8]

Model	Program Accuracy			Readback Accuracy	
	Voltage (mV)	Current (mA)	OVP (mV)	Voltage	Current
XHR 7.5-130	10 +0.12%	900 +0.1%	80	30 +0.12%	900 +0.1%
XHR 20-50	50 +0.12%	750 +0.1%	200	60 +0.12%	750 +0.1%
XHR 33-33	75 +0.12%	500 +0.1%	330	75 +0.12%	500 +0.1%
XHR 40-25	75 +0.3%	350 +0.15%	400	75 +0.3%	350 +0.1%
XHR 60-18	150 +0.25%	250 +0.1%	600	150 +0.25%	250 +0.1%
XHR 100-10	150 +0.35%	140 +0.15%	800	150 +0.35%	140 +0.15%
XHR 150-7	225 +0.35%	120 +0.1%	1500	225 +0.35%	120 +0.1%
XHR 300-3.5	225 +0.35%	80 +0.1%	3000	225 +0.35%	80 +0.1%
XHR 600-1.7	250 +0.35%	80 +0.1%	6000	300 +0.35%	80 +0.1%

Specifications subject to change without notice.
1. Specifications indicate typical performance at 25°C ± 5°C, nominal line input of 120 Vac.
5. Change in output per °C change in ambient temperature, with constant line and load.
6. Line drop is subtracted from total voltage available at supply output.
7. Typical efficiency at 115 Vac input and rated output power.
8. Apply accuracy specifications according to the following voltage program accuracy example:
   Set a model 20-50 power supply to 10 V. The expected result will be within the range of
   10 V ± 75 mV ± 0.12% of the set voltage of 10 V.

XHR Series

Model Number Description



Options and Accessories

MGA *	GPIB / IEEE 488.1 (up to 300V models)
MRA *	RS-232 interface card (up to 300V models)
MIA *	ISOL interface card provides isolated analog control and readback
RM-XHR	19-inch Rack Mount Kit for up to two XHR power supplies
M13A	Locking knobs for front panel controls
M22A	No front binding post
MGB *	GPIB/IEEE 488.1 (600V models)
MRB *	RS-232 Interface (600V models)

* Options cannot be combined

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