XHR

Voltage Range
0-7.5 VDC to
0-600 VDC

Current Range
0-130 A to
0-1 A

The Xantrex XHR Series provides up to **1000 watts** of programmable DC power in a compact half-rack package. **Ideal for both benchtop and system** use, the XHR is **power factor corrected** for low current draw (only 11 A @ 120 VAC for 1000 watts) and reduced generation of input current harmonics. State-of-the-art zero voltage or **"soft" switching** technology virtually eliminates switching transients and contributes to the efficiency and low-noise performance of this product. The XHR is stackable, with a small footprint, front panel binding post connectors, and a low current requirement that allows it to be plugged into a standard 120 VAC, 15 A circuit, making it the **smart** choice when a programmable high power source is required on the bench. The half-rack XHR is ideal as a "companion" for another half-rack instrument in a test system equipment console, eliminating the need for a blank panel while preserving vertical rack space. With a choice of rear and/or front panel connectors, the XHR offers added system flexibility. Unique features and size make the XHR ideal for OEM applications where high power and wide adjustment of output voltage or current is required and a compact half-rack configuration is advantageous.

XHR

- Eighteen 600 and 1000 watt models
- 85-250 VAC universal input
- Power factor correction (0.99 minimum)
- Zero voltage ("soft") switching for high efficiency and low noise
- Constant voltage or constant current operation with automatic crossover and mode indication
- Stackable half-rack package
- Benchtop and rack mountable
- Front and/or rear connectors
- Analog programming standard, optional ISOL (Isolated programming interface) card
- Optional internal 16-bit GPIB (IEEE-488) and RS-232 control interface cards
- LabView and LabWindows (National Instruments approved) drivers
- OVP, current limit, thermal protection
- Standby mode
- Ten turn front panel knobs for high resolution setting of voltage and current limit
- Front panel button preview of voltage, current, OVP
- Remote/local modes
- Remote sense, 5 V line loss compensation
- CE, CSA approved, UL pending

FIVE YEAR WARRANTY

Two Units Rack Mounted With and Without Front Panel Connectors

Electrical Specifications[1] for the XHR *1 kW* Series (Specifications are subject to change without notice.)

Model	XHR *7.5-130*	XHR *20-50*	XHR *33-33*	XHR *40-25*	XHR *60-18*	XHR *100-10*	XHR *150-7*	XHR *300-3.5*	XHR *600-1.7*
Output Ratings:									
Output Voltage	0-7.5 V	0-20 V	0-33 V	0-40 V	0-60 V	0-100 V	0-150 V	0-300 V	0-600 V
Output Current	0-130 A	0-50 A	0-33 A	0-25 A	0-18 A	0-10 A	0-7 A	0-3.5 A	0-1.7 A
Output Power	975 W	1000 W	1089 W	1000 W	1080 W	1000 W	1050 W	1050 W	1020 W
At the front panel binding posts:									
Output Current	0-30 A	0-30 A	0-30 A	0-25 A	0-18 A	0-10 A	0-7 A	0-3.5 A	0-1.7 A
Output Power	225 W	600 W	990 W	1000 W	1080 W	1000 W	1050 W	1050 W	1020 W
Line Regulation: [2]									
Voltage	1 mV	1 mV	1 mV	1 mV	1.5 mV	1.5 mV	3 mV	10 mV	15 mV
Current	5 mA	2 mA	1 mA	1 mA	1 mA	1 mA	1 mA	1 mA	1 mA
Load Regulation: [3]									
Voltage	1.5 mV	1.5 mV	1.5 mV	1.5 mV	1.5 mV	2.5 mV	4 mV	10 mV	15 mV
Current	50 mA	10 mA	4 mA	3 mA	3 mA	2 mA	2 mA	2 mA	2 mA
Meter Accuracy:									
Voltage (0.5% of Vmax + 1 count)	0.05 V	0.2 V	0.3 V	0.3 V	0.4 V	0.6 V	0.9 V	1.6 V	4 V
Current (0.5% of Imax + 1 count)	0.8 A	0.4 A	0.3 A	0.3 A	0.1 A	0.06 A	0.05 A	0.03 A	0.01 A
Output Noise & Ripple:									
rms	5 mV	5 mV	5 mV	5 mV	5 mV	5 mV	10 mV	15 mV	50 mV
p-p (0-20 MHz)	50 mV	50 mV	50 mV	50 mV	50 mV	50 mV	75 mV	100 mV	300 mV
Drift (8 hours): [4]									
Voltage (0.05% of Vmax)	3.75 mV	10 mV	16.5 mV	20 mV	30 mV	50 mV	75 mV	150 mV	300 mV
Current (0.1% of Imax)	130 mA	50 mA	33 mA	25 mA	18 mA	10 mA	7 mA	3.5 mA	1.7 mA
Temperature Coefficient: [5]									
Voltage (0.02% of Vmax/° C)	1.5 mV	4 mV	6.6 mV	8 mV	12 mV	20 mV	30 mV	60 mV	120 mV
Current (0.03% of Imax/° C)	39 mA	15 mA	9.9 mA	7.5 mA	5.4 mA	3 mA	2.1 mA	1.1 mA	0.48 mA
Maximum Remote Sense									
Line Drop Compensation [6]	3 V/line	5 V/line	5 V/line	5 V/line	5 V/line	5 V/line	5 V/line	5 V/line	5 V/line
OVP Adjustment Range:									
(5% to 110% of Vmax)	0.375-8.25 V	1-22 V	1.65-36.3 V	2-44 V	3-66 V	5-110 V	7.5-165 V	15-330 V	30-660 V
Efficiency: [7]	81%	83%	83%	83%	84%	84%	85%	85%	85%

Interface Specifications[1] for the XHR *1 kW* Series with RS-232 or GPIB Interface Installed (Specifications are subject to change without notice.)

Model	XHR *7.5-130*	XHR *20-50*	XHR *33-33*	XHR *40-25*	XHR *60-18*	XHR *100-10*	XHR *150-7*	XHR *300-3.5*	XHR *600-1.7*
Program Resolution (16 Bit)									
Voltage (mV)	0.13	0.34	0.55	0.67	1.01	1.68	2.52	5.04	10.1
Current (mA)	2.18	0.84	0.55	0.42	0.3	0.17	0.12	0.06	0.03
OVP (mV)	0.13	0.34	0.55	0.67	1.01	1.68	2.52	5.04	10.1
Program Accuracy									
Voltage (mV) (0.2%+10 mV)	25	50	76	90	130	210	310	610	1210
Current (mA) (0.3%+10 mA)	400	160	109	85	64	40	31	21	15
OVP (mV) (0.5%+100 mV)	138	200	265	300	400	600	850	1600	3100
Readback Resolution (16 Bit)									
Voltage (mV)	0.13	0.34	0.55	0.67	1.01	1.68	2.52	5.04	10.1
Current (mA)	2.18	0.84	0.55	0.42	0.3	0.17	0.12	0.06	0.03
Readback Accuracy									
Voltage (mV) (0.2%+20 mV)	35	60	86	100	140	220	320	620	1220
Current (mA) (0.3%+20 mA)	410	170	119	95	74	50	41	31	25

1 Specifications indicate typical performance at 25° C ± 5° C, nominal line input of 120 VAC.
2 For input voltage variation over the AC input voltage range, with constant rated load.
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.
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.

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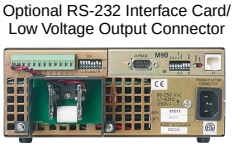
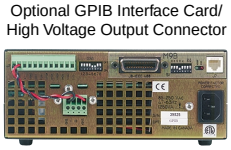
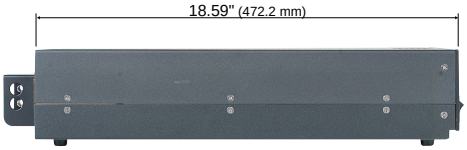
FIVE YEAR WARRANTY







XHR 1 kW General Specifications (Specifications are subject to change without notice.)

Operational AC Input Voltage	85-250 VAC, 47-63 Hz; power factor corrected. Derate maximum output power to 900 W for AC input less than 95 V
Maximum Input Current	13 A maximum at 100 VAC, 11 A maximum at 120 VAC, 6 A maximum at 220 VAC
Power Factor	0.99 minimum for full load and 120 VAC input
Input Harmonic Distortion	Harmonics distortion complies with EN61000-3-2 limits
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	4s 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 and Monitoring Accuracy	<±1% of full scale output for the default range
Operating Temperature Range	0 to 40° C
Storage Temperature Range	–40 to 85° C
Humidity Range	10 to 80% RH, non-condensing
Front Panel Voltage and Current Control	10-turn voltage and current potentiometers
Front Panel Voltage Control Resolution	0.02% of maximum voltage
AC Input Connector Type	IEC 320 connector
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
Weight (one unit)	Approximately 6.4 kg (14 lb.)
Approvals	CE-marked units meet CAN/CSA-22.2 No. 1010.1-92 safety standard and EN50081-2 (Class A) and EN50082-1 EMC standards, CSA certified, UL pending

Consult the Operating Manual for complete product specifications.

XHR 1 kW Options		
	GPIB-XHR	GPIB Interface card (16-bit)
	RS-232-XHR	RS-232 Interface card (16-bit)
	ISOL-XHR	Isolated Interface card provides isolated analog control and readback of output voltage and current
	M13	Locking bushings on front panel controls
	M22a	No front binding posts
	M61	Recessed front panel potentiometers
	RM-XHR	19-inch rack mount kit for two XHR power supplies

Contact Xantrex for custom voltage and current combinations and other options.

Electrical Specifications[1] for the XHR *600 W* Series (Specifications are subject to change without notice.)

Model	XHR *7.5-80*	XHR *20-30*	XHR *33-18*	XHR *40-15*	XHR *60-10*	XHR *100-6*	XHR *150-4*	XHR *300-2*	XHR *600-1*
Output Ratings:									
Output Voltage	0-7.5 V	0-20 V	0-33 V	0-40 V	0-60 V	0-100 V	0-150 V	0-300 V	0-600 V
Output Current	0-80 A	0-30 A	0-18 A	0-15 A	0-10 A	0-6 A	0-4 A	0-2 A	0-1 A
Output Power	600 W	600 W	594 W	600 W	600 W	600 W	600W	600 W	600 W
At the front panel binding posts:									
Output Current	0-30 A	0-30 A	0-18 A	0-15 A	0-10 A	0-6 A	0-4 A	0-2 A	0-1 A
Output Power	225 W	600 W	594 W	600 W	600 W	600 W	600 W	600 W	600 W
Line Regulation: [2]									
Voltage	1 mV	1 mV	1 mV	1 mV	1.5 mV	1.5 mV	3 mV	10 mV	15 mV
Current	2 mA	1 mA	1 mA	1 mA	1 mA	1 mA	1 mA	1 mA	1 mA
Load Regulation: [3]									
Voltage	1.5 mV	1.5 mV	1.5 mV	1.5 mV	1.5 mV	2.5 mV	4 mV	10 mV	15 mV
Current	40 mA	7.5 mA	2 mA	2 mA	2 mA	2 mA	2 mA	2 mA	2 mA
Meter Accuracy:									
Voltage (0.5% of Vmax + 1 count)	0.05 V	0.2 V	0.3 V	0.3 V	0.4 V	0.6 V	0.9 V	1.6 V	4 V
Current (0.5% of Imax + 1 count)	0.5 A	0.3 A	0.1 A	0.09 A	0.06 A	0.04 A	0.03 A	0.02 A	0.006 A
Output Noise & Ripple:									
Voltage rms	4 mV	4 mV	4 mV	4 mV	4 mV	5 mV	7.5 mV	15 mV	50 mV
Voltage p-p (0-20 MHz)	40 mV	40 mV	60 mV	60 mV	60 mV	60 mV	75 mV	100 mV	300 mV
Drift (8 hours): [4]									
Voltage (0.05% of Vmax)	3.75 mV	10 mV	16.5 mV	20 mV	30 mV	50 mV	75 mV	150 mV	300 mV
Current (0.1% of Imax)	80 mA	30 mA	18 mA	15 mA	10 mA	6 mA	4 mA	2 mA	2 mA
Temperature Coefficient: [5]									
Voltage (0.02% of Vmax/° C)	1.5mV	4 mV	6.6 mV	8 mV	12 mV	20 mV	30 mV	60 mV	120 mV
Current (0.03% of Imax/° C)	24 mA	9 mA	5.4 mA	4.5 mA	3 mA	1.8 mA	1.2 mA	0.6 mA	0.3 mA
Maximum Remote Sense									
Line Drop Compensation [6]	3 V/line	5 V/line	5 V/line	5 V/line	5 V/line	5 V/line	5 V/line	5 V/line	5 V/line
OVP Adjustment Range:									
(5% to 110% of Vmax)	0.375-8.25 V	1-22 V	1.65-36.3 V	2-44 V	3-66 V	5-110 V	7.5-165 V	15-330 V	30-660 V
Efficiency: [7]	80%	82%	82%	83%	83%	83%	84%	84%	84%

Interface Specifications[1] for the XHR *600 W* Series with RS-232 or GPIB Interface Installed (Specifications are subject to change without notice.)

Model	XHR *7.5-80*	XHR *20-30*	XHR *33-18*	XHR *40-15*	XHR *60-10*	XHR *100-6*	XHR *150-4*	XHR *300-2*	XHR *600-1*
Program Resolution (16-bit)									
Voltage (mV)	0.13	0.34	0.55	0.67	1.01	1.68	2.52	5.04	10.1
Current (mA)	1.34	0.5	0.3	0.25	0.17	0.1	0.07	0.03	0.02
OVP (mV)	0.13	0.34	0.55	0.67	1.01	1.68	2.52	5.04	10.1
Program Accuracy									
Voltage (mV) (0.2%+10 mV)	25	50	76	90	130	210	310	610	1210
Current (mA) (0.3%+10 mA)	250	100	64	55	40	28	22	16	13
OVP (mV) (0.5%+100 mV)	138	200	265	300	400	600	850	1600	3100
Readback Resolution (16-bit)									
Voltage (mV)	0.13	0.34	0.55	0.67	1.01	1.68	2.52	5.04	10.1
Current (mA)	1.34	0.5	0.3	0.25	0.17	0.1	0.07	0.03	0.02
Readback Accuracy									
Voltage (mV) (0.2%+20 mV)	35	60	86	100	140	220	320	620	1220
Current (mA) (0.3%+20 mA)	260	110	74	65	50	38	32	26	23

1 Specifications indicate typical performance at 25° C ± 5° C, nominal line input of 120 VAC.
2 For input voltage variation over the AC input voltage range, with constant rated load.
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.
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.

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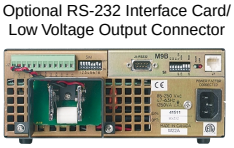

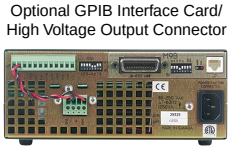

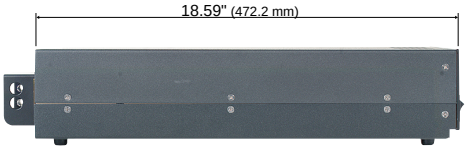

XHR 600 W General Specifications (Specifications are subject to change without notice.)

Operational AC Input Voltage	85-250 VAC, 47-63 Hz; power factor corrected
Maximum Input Current	7.5 A maximum at 100 VAC, 6.3 A maximum at 120 VAC, 3.5 A maximum at 220 VAC
Power Factor	0.99 minimum for full load and 120 VAC input
Input Harmonic Distortion	Harmonics distortion complies with EN61000-3-2 limits
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 s 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 and Monitoring Accuracy	<±1% of full scale output for the default range
Operating Temperature Range	0 to 40° C
Storage Temperature Range	–40 to 85° C
Humidity Range	10 to 80% RH, non-condensing
Front Panel Voltage and Current Control	10-turn voltage and current potentiometers
Front Panel Voltage Control Resolution	0.02% of maximum voltage
AC Input Connector Type	IEC 320 connector
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
Weight (one unit)	Approximately 6.4 kg (14 lb.)
Approvals	CE-marked units meet CAN/CSA-22.2 No. 1010.1-92 safety standard and EN50081-2 (Class A) and EN50082-1 EMC standards, CSA certified, UL pending

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XHR 600 W Options		
	GPIB-XHR	GPIB Interface card (16-bit)
	RS-232-XHR	RS-232 Interface card (16-bit)
	ISOL-XHR	Isolated Interface card provides isolated analog control and readback of output voltage and current
	M13	Locking bushings on front panel controls
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