

# XKW

Voltage Range

0-8 VDC to

0-600 VDC

Current Range

0-350 A to

0-1.7 A



**Xantrex's XKW Series is a proven product, available in nineteen 1000 watt and 3000 watt models.** High frequency conventional PWM switching is used to achieve high power density in compact 19-inch rack packages 1.75 inches (1 U) high for the 1000 watt model and 3.5 inches (2 U) high for the 3000 watt models.

This series is a good choice for research, product development and production test applications such as R&D, magnet control, product design, ATE, process control, electroplating, and burn-in.

The highly dependable XKW Series comes with standard analog control and offers isolated analog (ISOL) and GPIB (IEEE 488) programming options.

The XKW Series is a good choice for OEM applications where high power and wide adjustment of output voltage or current is required in a compact configuration.

Nineteen 1000 and 3000 watt models

Constant voltage or constant current operation with automatic crossover and mode indication

Parallel or series connection of multiple units for increased current or voltage

External shutdown, external indicator signals

Remote/local modes

Remote sense, 1 V line loss compensation

Analog programming standard, optional ISOL (isolated programming card) option

Optional internal GPIB (IEEE-488)

OVP, Current limit, thermal protection

LabView® drivers

IEC, CSA, CE approvals

*Note: As this product was originally designed for exclusive private label sale by a US manufacturer, the XKW Series is not available for purchase in the United States. US customers are referred to the newer XFR Series.*



## Electrical Specifications<sup>1</sup> for the **XKW3 kW** Series (Specifications are subject to change without notice.)

Model	XKW 8-350	XKW 10-300	XKW 12-250	XKW 20-150	XKW 40-75	XKW 55-55	XKW 60-50	XKW 80-37	XKW 150-20	XKW 300-10
<b>Output Ratings:</b>										
Output Voltage	0.8 V	0-10 V	0-12 V	0-20 V	0-40 V	0-55 V	0-60 V	0-80 V	0-150 V	0-300 V
Output Current	0-350 A	0-300 A	0-250 A	0-150 A	0-75 A	0-55 A	0-50 A	0-37 A	0-20 A	0-10 A
Output Power	2800 W	3000 W	3000 W	3000 W	3000 W	3025 W	3000 W	2960 W	3000 W	3000 W
<b>Line Regulation:<sup>2</sup></b>										
Voltage	2 mV	2 mV	2 mV	2 mV	2 mV	2 mV	2 mV	2 mV	7.5 mV	15 mV
Current	15 mA	15 mA	15 mA	15 mA	5 mA	2 mA	2 mA	2 mA	2 mA	2 mA
<b>Load Regulation:<sup>3</sup></b>										
Voltage	5 mV	5 mV	5 mV	5 mV	5 mV	5 mV	5 mV	5 mV	5 mV	15 mV
Current	15 mA	15 mA	15 mA	15 mA	5 mA	5 mA	5 mA	5 mA	5 mA	5 mA
<b>Meter Accuracy:</b>										
Voltage (0.5% of V <sub>max</sub> +1 count)	0.05 V	0.06 V	0.07 V	0.2 V	0.3 V	0.4 V	0.4 V	0.5 V	0.9 V	3 V
Current (0.5% of I <sub>max</sub> +1 count)	3 A	3 A	2 A	0.9 A	0.5 A	0.4 A	0.4 A	0.3 A	0.2 A	0.06 A
<b>Output Noise &amp; Ripple:</b>										
Voltage rms	10 mV	12 mV	12 mV	12 mV	15 mV	15 mV	15 mV	15 mV	20 mV	20 mV
Voltage p-p (20 Hz-20 MHz)	90 mV	90 mV	90 mV	90 mV	100 mV	100 mV	100 mV	150 mV	150 mV	200 mV
<b>Analog Prog. Accuracy:</b>										
Voltage (1% of V <sub>max</sub> )	80 mV	100 mV	120 mV	200 mV	400 mV	550 mV	600 mV	800 mV	1.5 V	3 V
Current (1% of I <sub>max</sub> )	3500 mA	3000 mA	2500 mA	1500 mA	750 mA	550 mA	500 mA	370 mA	200 mA	100 mA
<b>Drift (8 hours):<sup>4</sup></b>										
Voltage (0.05% of V <sub>max</sub> )	4 mV	5 mV	6 mV	10 mV	20 mV	27.5 mV	30 mV	40 mV	75 mV	150 V
Current (0.05% of I <sub>max</sub> )	175 mA	150 mA	125 mA	75 mA	37.5 mA	27.5 mA	25 mA	18.5 mA	10 mA	5 mA
<b>Temperature Coefficient:<sup>5</sup></b>										
Voltage (0.02% of V <sub>max</sub> /°C)	1.6 mV	2 mV	2.4 mV	4 mV	8 mV	11 mV	12 mV	16 mV	30 mV	60 mV
Current (0.03% of I <sub>max</sub> /°C)	105 mA	90 mA	75 mA	45 mA	22.5 mA	16.5 mA	15 mA	11.1 mA	6 mA	3 mA
<b>OVP Adjustment Range:</b>										
(5% to 110% of V <sub>max</sub> )	0.4-8.8 V	0.5-11 V	0.6-13.2 V	1-22 V	2-44 V	2.75-60.5 V	3-66 V	4-88 V	7.5-165 V	15-330 V

## Interface Specifications<sup>1</sup> for the **XKW3 kW** Series with GPIB Interface Installed (Specifications are subject to change without notice.)

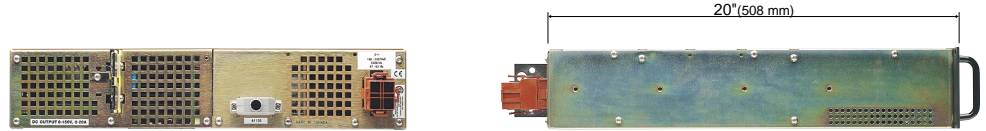
Model	XKW 8-350	XKW 10-300	XKW 12-250	XKW 20-150	XKW 40-75	XKW 55-55	XKW 60-50	XKW 80-37	XKW 150-20	XKW 300-10
<b>Program Resolution</b>										
Voltage (mV)	2.4	3	3.6	6	12	16.5	18	24	45	90
Current (mA)	105	90	75	45	22.5	16.5	15	11.1	6.5	3.3
OVP (mV)	4	5	6	10	20	27.5	30	40	75	150
<b>Program Accuracy</b>										
Voltage (mV)	50	50	50	50	50	75	75	100	180	360
Current (mA)	800	390	330	200	100	75	70	50	50	50
OVP (mV)	80	100	120	200	400	550	600	800	1500	3000
<b>Readback Resolution</b>										
Voltage (mV)	2.4	3	3.6	6	12	16.5	18	24	45	90
Current (mA)	105	90	75	45	22.5	16.5	15	11.1	6.5	3.3
<b>Readback Accuracy</b>										
Voltage (mV)	75	75	75	75	75	100	110	150	280	560
Current (mA)	900	750	600	300	200	150	135	100	100	100

- Specifications indicate typical performance at 25° C ± 5° C, nominal line input of 208 VAC 3ϕ.
- For input voltage variation over the AC input voltage range, with constant rated load.
- For 0-100% load variation, with constant nominal line voltage.
- Maximum drift over 8 hours with constant line, load, and temperature, after 90-minute warm-up.
- Change in output per ° C change in ambient temperature, with constant line and load.

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## XKW 3 kW General Specifications (Specifications are subject to change without notice)

<b>Operational AC Input Voltage</b>	200-250 VAC at 26 Arms 1 $\phi$ , or 190-250 VAC at 16 Arms 3 $\phi$ , 47-63 Hz
<b>Switching Frequency</b>	Nominal 30 kHz (60 kHz output ripple)
<b>Time Delay</b>	5 s maximum from power on until output stable
<b>Voltage Mode Transient Response Time</b>	<1 ms recovery to 1% band for 30% step load change from 70% to 100% or 100% to 70%
<b>Maximum Voltage Differential</b>	$\pm$ 400 VDC from output to safety ground
<b>Remote Start/Stop and Interlock</b>	TTL-compatible input; Contact Closure 12-250 VAC or 12-130 VDC
<b>Remote Analog Programming</b>	Voltage and current programming inputs (source must be isolated): 0-5 k resistances; 0-5 V (default), 0-10 V voltage sources; 0-1 mA sources. OVP programming 0-5 V, 0-10 V voltage sources
<b>Remote Monitoring</b>	Output voltage and current: 0-5 V, 0-10 V. 0 to full scale output 1% accuracy
<b>Maximum Remote Sense Line Drop Compensation</b>	1 V/line (Line drop is subtracted from total voltage available at supply output)
<b>Operating Temperature Range</b>	0 to 50 $^{\circ}$ C
<b>Storage Temperature Range</b>	-55 to 85 $^{\circ}$ C
<b>Humidity Range</b>	0 to 80% RH, non-condensing
<b>Front Panel Voltage and Current Control</b>	10-turn voltage and current potentiometers
<b>AC Input Connector Type</b>	Chassis-Mounted Parts: Housing AMP 641685-1; Contact pins AMP 350821-1 Mating Connector Parts: Housing AMP 643267-2; Contact pins AMP 350821-1
<b>Main Output Connector</b>	Nickel-plated copper bus bars
<b>Weight (one unit)</b>	Approximately 16 kg (35 lb.)
<b>Approvals</b>	CE-marked units comply with the general protection requirements of the European EMC Directive, 89/336/EEC: EN55011 Group 1, Class A, EN50081-2, EN50082-1 and with the European LV Directive 72/23/EEC: IEC 1010-1, IEC 1010-2. CSA certified.

Consult the Operating Manual for complete product specifications.

<b>XKW 3 kW Options</b>	<b>GPIB-XKW3</b>	GPIB Interface card
	<b>ISOL-XKW3</b>	Isolated Interface card allows isolated programming of output voltage or current
	<b>M13</b>	Locking bushings on front panel controls
	<b>SR-XKW3</b>	Output strain relief kit

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

## Electrical Specifications<sup>1</sup> for the **XKW 1 kW** Series (Specifications are subject to change without notice.)

Model	XKW 8-125	XKW 20-50	XKW 33-33	XKW 40-25	XKW 60-18	XKW 80-13	XKW 150-7	XKW 300-3.5	XKW 600-1.7
<b>Output Ratings:</b>									
Output Voltage	0-8 V	0-20 V	0-33V	0-40 V	0-60 V	0-80 V	0-150 V	0-300 V	0-600 V
Output Current	0-125 A	0-50 A	0-33A	0-25 A	0-18 A	0-13 A	0-7 A	0-3.5 A	0-1.7 A
Output Power	1000 W	1000 W	1000 W	1000 W	1080 W	1040 W	1050 W	1050 W	1020 W
<b>Line Regulation:<sup>2</sup></b>									
Voltage	1 mV	1.5 mV	1.5 mV	3 mV	3 mV	3 mV	5 mV	10 mV	20 mV
Current	10 mA	5 mA	3 mA	2 mA	2 mA	2 mA	1 mA	1 mA	1 mA
<b>Load Regulation:<sup>3</sup></b>									
Voltage	3 mV	3 mV	3 mV	5 mV	5 mV	5 mV	5 mV	10 mV	20 mV
Current	20 mA	5 mA	5 mA	5 mA	5 mA	5 mA	5 mA	2 mA	1 mA
<b>Meter Accuracy:</b>									
Voltage (0.5% of Vmax + 1 count)	0.05 V	0.2 V	0.3 V	0.3 V	0.4 V	0.5 V	0.9 V	3 V	4 V
Current (0.5% of Imax + 1 count)	0.7 A	0.4 A	0.3 A	0.2 A	0.1 A	0.08 A	0.05 A	0.03 A	0.01 A
<b>Output Noise &amp; Ripple:</b>									
Voltage rms	7.5 mV	5 mV	5 mV	5 mV	5 mV	5 mV	15 mV	15 mV	75 mV
Voltage p-p (20Hz-20 MHz)	60 mV	60 mV	60 mV	60 mV	60 mV	60 mV	175 mV	175 mV	500 mV
<b>Analog Programming Accuracy:</b>									
Voltage (1% of Vmax)	80 mV	200 mV	330 mV	400 mV	600 mV	800 mV	1.5 V	3 V	6 V
Current (1% of Imax)	1250 mA	500 mA	330 mA	250 mA	180 mA	130 mA	70 mA	35 mA	17 mA
<b>Drift (8 hours):<sup>4</sup></b>									
Voltage (0.05% of Vmax)	4 mV	10 mV	16.5 mV	20 mV	30 mV	40 mV	75 mV	150 mV	300 mV
Current (0.05% of Imax)	62.5 mA	25 mA	16.5 mA	12.5 mA	9 mA	6.5 mA	3.5 mA	1.75 mA	0.85 mA
<b>Temperature Coefficient:<sup>5</sup></b>									
Voltage (0.02% of Vmax/°C)	1.6 mV	4 mV	6.6 mV	8 mV	12 mV	16 mV	30 mV	60 mV	120 mV
Current (0.03% of Imax/°C)	37.5 mA	15 mA	9.9 mA	7.5 mA	5.4 mA	3.9 mA	2.1 mA	1.05 mA	0.51 mA
<b>OVP Adjustment Range:</b>									
(5% to 110% of Vmax)	0.4-8.8 V	1-22 V	1.65-36.3 V	2-44 V	3-66 V	4-88 V	7.5-165 V	15-330 V	30-660 V

## Interface Specifications<sup>1</sup> for the **XKW 1 kW** Series with GPIB Interface Installed (Specifications are subject to change without notice.)

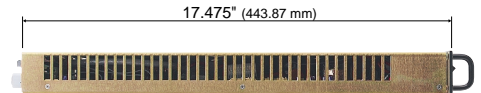
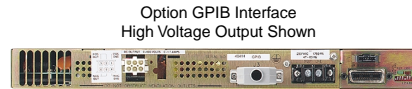
Model	XKW 8-125	XKW 20-50	XKW 33-33	XKW 40-25	XKW 60-18	XKW 80-13	XKW 150-7	XKW 300-3.5	XKW 600-1.7
<b>Program Resolution</b>									
Voltage (mV)	2.4	6	9.9	12	18	24	45	90	180
Current (mA)	37.5	15	9.9	7.5	5.4	3.9	2.1	1.05	0.51
OVP (mV)	4	10	16.5	20	30	40	75	150	300
<b>Program Accuracy</b>									
Voltage (mV)	30	75	75	75	150	150	300	300	750
Current (mA)	500	250	200	140	120	80	40	20	20
OVP (mV)	80	200	330	400	600	800	1500	3000	6000
<b>Readback Resolution</b>									
Voltage (mV)	2.4	6	9.9	12	18	24	45	90	180
Current (mA)	37.5	15	9.9	7.5	5.4	3.9	2.1	1.05	0.51
<b>Readback Accuracy</b>									
Voltage (mV)	30	75	75	75	150	150	300	300	750
Current (mA)	500	250	200	140	120	80	40	20	20

- Specifications indicate typical performance at 25° C ± 5° C, nominal line input of 120 VAC.
- For input voltage variation over the AC input voltage range, with constant rated load.
- For 0-100% load variation, with constant nominal line voltage.
- Maximum drift over 8 hours with constant line, load, and temperature, after 90-minute warm-up.
- Change in output per ° C change in ambient temperature, with constant line and load.

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## XKW 1 kW General Specifications (Specifications are subject to change without notice)

<b>Operational AC Input Voltage</b>	200-250 VAC at 10 Arms 1 $\phi$ , or 100-130 VAC at 20 Arms 1 $\phi$ , 47-63 Hz
<b>Switching Frequency</b>	Nominal 100 kHz, 200 kHz output ripple (>80 V models=80 kHz, 160 kHz output ripple)
<b>Time Delay</b>	2 s maximum from power on until output stable
<b>Voltage Mode Transient Response Time</b>	<1 ms recovery to 1% band for 30% step load change from 70% to 100% or 100% to 70%
<b>Maximum Voltage Differential</b>	$\pm$ 600 VDC from output to safety ground
<b>Remote Start/Stop and Interlock</b>	TTL-compatible input; Contact Closure 12-250 VAC or 12-130 VDC
<b>Remote Analog Programming</b>	Voltage and current programming inputs (source must be isolated): 0-5 k resistances; 0-5 V (default), 0-10 V voltage sources; 0-1 mA sources. OVP programming 0-5 V, 0-10 V voltage sources
<b>Remote Monitoring</b>	Output voltage and current: 0-5 V, 0-10 V. Zero to full scale output 1% accuracy
<b>Maximum Remote Sense Line Drop Compensation</b>	1 V/line (line drop is subtracted from total voltage available at supply output)
<b>Operating Temperature Range</b>	0 to 50 $^{\circ}$ C
<b>Storage Temperature Range</b>	-55 to 85 $^{\circ}$ C
<b>Humidity Range</b>	0 to 80% RH, non-condensing
<b>Front Panel Voltage and Current Control</b>	10-turn voltage and current potentiometers
<b>AC Input Connector Type</b>	Barrier strip #6 screw with cover
<b>Main Output Connector</b>	Nickel-plated copper bus bars
<b>Weight (one unit)</b>	Approximately 8.2 kg (18 lb.)
<b>Approvals</b>	CE-marked units comply with the general protection requirements of the European EMC Directive, 89/336/EEC: EN55011 Group 1, Class A, EN50081-2, EN50082-1 and with the European LV Directive 72/23/EEC: IEC 1010-1, IEC 1010-2. CSA certified

Consult the Operating Manual for complete product specifications.

<b>XKW 1 kW Options</b>	<b>GPIB-XKW1</b>	GPIB Interface card
	<b>ISOL-XKW1</b>	Isolated Interface card allows isolated programming of output voltage or current
	<b>M13</b>	Locking bushings on front panel controls

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