

XKW Series

1 kW and 3 kW in a Low Profile Chassis



Voltage Range: 0-8 DC to 0-600 VDC

Current Range : 0-350 A to 0-1.7 A

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) option
 LabView® drivers
 OVP, current limit, thermal protection
 CE, CSA, IEC approvals

XKW Series is 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.

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

Operational AC Input Voltage	200-250 VAC at 10 Arms 1f, or 100-130 VAC at 20 Arms 1f, 47-63 Hz
Switching Frequency	Nominal 100 kHz, 200 kHz output ripple (>80 V models=80 kHz, 160 kHz output ripple)
Time Delay	2 s maximum from power on until output stable
Voltage Mode Transient Response Time	<1 ms recovery to 1% band for 30% step load change from 70% to 100% or 100% to 70%
Maximum Voltage Differential	±600 VDC from output to safety ground
Remote On/Off and Interlock	TTL-compatible input; Contact Closure 12-250 VAC or 12-130 VDC
Remote Analog Programming	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
Remote Monitoring	Output voltage and current: 0-5 V. Zero to full scale output 1% accuracy
Maximum Remote Sense	
Line Drop Compensation	1 V/line (line drop is subtracted from total voltage available at supply output)
Operating Temperature Range	0 to 50° C
Storage Temperature Range	-55 to 85° C
Humidity Range	0 to 80% RH, non-condensing
Front Panel Voltage and Current Control	10-turn voltage and current potentiometers
AC Input Connector Type	Barrier strip #6 screw with cover
Main Output Connector	Nickel-plated copper bus bars
Weight (one unit)	Approximately 8.2 kg (18 lb.)
Approvals	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

Contact Zentro-Elektrik for complete product specifications.

Laborstromversorgungen

Electrical Specifications¹for 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
Output Ratings:									
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
Line Regulation: 2									
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
Load Regulation: 3									
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
Meter Accuracy:									
Voltage (0.5% of Vmax + 1 count)	0.05 V	0.2 V	0.3 V	0.3 V	0.4 V	0.5 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
Output Noise & Ripple:									
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
Analog Programming Accuracy:									
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
Drift (8 hours): 4									
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
Temperature Coefficient: 5									
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
OVP Adjustment Range:									
(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

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.

4 Maximum drift over 8 hours with constant line, load, and temperature, after 90-minute warm-up.

5 Change in output per ° C change in ambient temperature, with constant line and load.

Options: XKW 1 kW

GPIB-XKW1

ISOL-XKW1

M13A

GPIB Interface card

Isolated Interface card allows isolated programming of output voltage or current

Locking knobs for front panel controls

Contact Zentro-Elektrik for custom voltage and current combinations and other options.

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

Operational AC Input Voltage	200-250 VAC at 26 Arms 1f, or 190-250 VAC at 16 Arms 3f, 47-63 Hz
Switching Frequency	Nominal 30 kHz (60 kHz output ripple)
Time Delay	5 s maximum from power on until output stable
Voltage Mode Transient Response Time	<1 ms recovery to 1% band for 30% step load change from 70% to 100% or 100% to 70%
Maximum Voltage Differential	±400 VDC from output to safety ground
Remote On/Off and Interlock	TTL-compatible input; Contact Closure 12-250 VAC or 12-130 VDC
Remote Analog Programming	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
Remote Monitoring	Output voltage and current: 0-5 V, 0-10 V. 0 to full scale output 1% accuracy
Maximum Remote Sense	
Line Drop Compensation	1 V/line (Line drop is subtracted from total voltage available at supply output)

Operating Temperature Range	0 to 50° C
Storage Temperature Range	–55 to 85° C
Humidity Range	0 to 80% RH, non-condensing
Front Panel Voltage and Current Control	10-turn voltage and current potentiometers
AC Input Connector Type	Chassis-Mounted Parts: Housing AMP 641685-1; Contact pins AMP 350821-1 Mating Connector Parts: Housing AMP 643267-2; Contact pins AMP 350821-1
Main Output Connector	Nickel-plated copper bus bars
Weight (one unit)	Approximately 16 kg (35 lb.)
Approvals	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.

Contact Zentro-Elektrik for complete product specifications.

Electrical Specifications¹ for the XKW 3 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
Output Ratings:										
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
Line Regulation: ²										
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
Load Regulation: ³										
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
Meter Accuracy:										
Voltage (0.5% of V _{max} +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 _{max} +1 count)	0,125	0,125	2 A	0.9 A	0.5 A	0.4 A	0.4 A	0.3 A	0.2 A	0.06 A
Output Noise & Ripple:										
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
Analog Prog. Accuracy:										
Voltage (1% of V _{max})	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 _{max})	3500 mA	3000 mA	2500 mA	1500 mA	750 mA	550 mA	500 mA	370 mA	200 mA	100 mA
Drift (8 hours): ⁴										
Voltage (0.05% of V _{max})	4 mV	5 mV	6 mV	10 mV	20 mV	27.5 mV	30 mV	40 mV	75 mV	150 mV
Current (0.05% of I _{max})	175 mA	150 mA	125 mA	75 mA	37.5 mA	27.5 mA	25 mA	18.5 mA	10 mA	5 mA
Temperature Coefficient: ⁵										
Voltage (0.02% of V _{max} /° 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 _{max} /° C)	105 mA	90 mA	75 mA	45 mA	22.5 mA	16.5 mA	15 mA	11.1 mA	6 mA	3 mA
OVP Adjustment Range:										
(5% to 110% of V _{max})	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

1 Specifications indicate typical performance at 25° C ± 5° C, nominal line input of 208 VAC 3f.

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.

4 Maximum drift over 8 hours with constant line, load, and temperature, after 90-minute warm-up.

5 Change in output per ° C change in ambient temperature, with constant line and load.

Options: XKW 3 kW

GPB-XKW3	GPB Interface card
ISOL-XKW3	Isolated Interface card allows isolated programming of output voltage or current
M13A	Locking knobs for front panel controls
SR-XKW3	Output strain relief kit

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