EK Series 600W Regulated High Voltage DC Power Supplies

1 kV to 60 kV Rack Mount 3.5 Inch Panel Height...

Laboratory Performance...

CE and Semi S2-93 Compliant

The EK family of power supplies are sophisticated, 600 watt high voltage power supplies with low ripple and noise. They are air insulated, fast response units, with tight regulation and extremely low arc discharge currents.

The EK Series are fully compliant with the European Harmonized EMI Directive EN50082-2 and with the European Low Voltage (Safety) Directive, 73/23/EEC.

CE Check the specs... and compare

Models from 0 to 1 kV through 0 to 60 kV, 3.5" H x 20.5" D, 20 lbs.

Features:

Arc Quench. The HV output is inhibited for a short period after each load arc to help extinguish the arc.

Arc Sensing. Internal circuitry constantly senses and integrates arcs that occur over a given time. In the event a system or load arcing problem develops and exceeds factory-set parameters, the power supply will cycle off in an attempt to clear the fault and then automatically restart after a preset "off dwell time".

Pulse-Width Modulation. Off-the-line pulse-width modulation provides high efficiency and a reduced parts count for improved reliability.

Low Ripple. Typically, ripple is less than 0.02% RMS of rated voltage at full load.

Air Insulated. The EK Series features "air" as the primary dielectric medium. No oil or encapsulation is used to impede serviceability or increase weight.

Constant Voltage/Constant Current Operation. Automatic crossover from constant-voltage to constant-current regulation provides protection against overloads, arcs, and short circuits.

Redundant Thermal Overload Protection. Thermostats and fan RPM sensing shut down the power supply due to over temperature or reduced fan speeds.

Tight Regulation. Voltage regulation is better than 0.005% for allowable line and load variations. Current regulation is better than 0.1% from short circuit to rated voltage.

Warranty. Standard power supplies are warranted for three years; OEM and modified power supplies are warranted for one year. A formal warranty statement is available.

Designing Solutions for High Voltage Power Supply Applications

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 Printed in the U.S.A. B 10/22/2002

Specifications

(Specifications apply from 5% to 100% rated voltage. Operation is guaranteed down to zero voltage with a slight degradation of performance.)

Input: 102 - 132 V RMS, single-phase, 48-63 Hz, 1200 VA maximum at full load. Connector per IEC 320/VI with mating line cord, terminated with NEMA 5-15 plug.

Efficiency: Typically greater than 85% at full load.

Output: Continuous, stable, adjustment from 0 to rated voltage or current by panel mounted 10-turn potentiometers with 0.05% resolution, or by external 0 to 10 V signals is provided. Voltage accuracy is 0.5% of setting + 0.2% of rated.

Static Voltage Regulation: Better than ±0.005% for specified line variations and 0.005% + 0.5 mV/mA for no load to full load variations.

Dynamic Voltage Regulation: For load transients from 10% to 99% and 99% to 10%, typical deviation is less than 2% of rated output voltage with recovery to within 1% in 500 ms and recovery to within 0.1% in 1 ms.

Ripple: Better than 0.025% of rated voltage + 0.5 V RMS at full load.

Current Regulation: When in current regulation mode, better than 0.1% from short circuit to rated voltage at any load condition.

Voltage Monitor: 0 to +10 V equivalent to 0 to rated voltage. Accuracy, 0.5% reading + 0.2% rated. Impedance is 10 KΩ.

Current Monitor: 0 to +10 V equivalent to 0 to rated current. Accuracy, 1% reading + 0.05% rated for fixed polarity, 1% reading + 0.1% rated for reversible polarity. Impedance is 10 KΩ.

Stability: 0.01% per hour after 1/2 hour warm-up, 0.05% per 8 hours.

Voltage Rise/Decay Time Constant: The voltage rise time constant is 50 ms typical for all models using either HV enable or remote programming control. The voltage decay time constant is 50 ms with a 30% resistive load for 8 kV to 60 kV models and 50 ms with an 11% resistive load for 1 kV to 6 kV models.

Temperature Coefficient: 0.01% /°C.

Ambient Temperature: -20 to +40° C, operating; -40 to +85° C, storage.

Polarity: Available with either positive, negative or reversible polarity with respect to chassis ground.

Protection: Automatic current regulation protects against all overloads, including arcs and short circuits. Thermal switches and RPM sensing fans protect against thermal overload. Fuses, surge-limiting resistors, and low energy components provide ultimate protection.

Arc Quench: An arc quench feature provides sensing of each load arc and quickly inhibits the HV output for approximately 20 ms after each arc. Standard on 8 - 60 kV models; optional on 1- 6 kV models.

Arc Sensing: Internal circuitry senses the number of arcs caused by external load discharges. If the rate of consecutive arcs exceeds approximately one arc per second for five arcs, the supply will turn off for approximately 5 seconds to allow clearance of the fault. After this period the supply will automatically return to the programmed kV value with the rise time constant indicated. If the load fault still exists, the above cycle will repeat. Standard on 8 - 60 kV models; optional on 1- 6 kV models.

External Interlock: Open = off, closed = on. Normally latching except for blank front panel version where it is non-latching.

Front Panel Elements. The front panel contains all local control functions. These control functions are: AC power on/off switch and pilot light, separate 10-turn controls with locking vernier dials used to set voltage and current levels, and a high voltage ON switch. LED's indicate when high voltage is on, output polarity, and whether the supply is operating in a voltage or current regulating mode. Output levels are indicated by voltage and current digital meters.

Rear Panel Elements. AC power entry connector, fuses, power on indicator, ground stud, HV output connector, and remote interface terminal strip.

The signals provided on the remote interface terminal strip are as follows:

- Inputs: Safety interlock, output voltage and current program signals, and high voltage enable.
- Outputs: Output voltage and current monitor signals, and a +10 V reference source.

Signal common and ground reference terminals are also provided.

Remote HV Enable/Disable: 0 - 1.5 V = OFF, 2.5 - 15 V = ON.

Accessories: Detachable, 8 foot, shielded high voltage coaxial cable (see models chart for cable type) and 6 foot detachable line cord are provided.

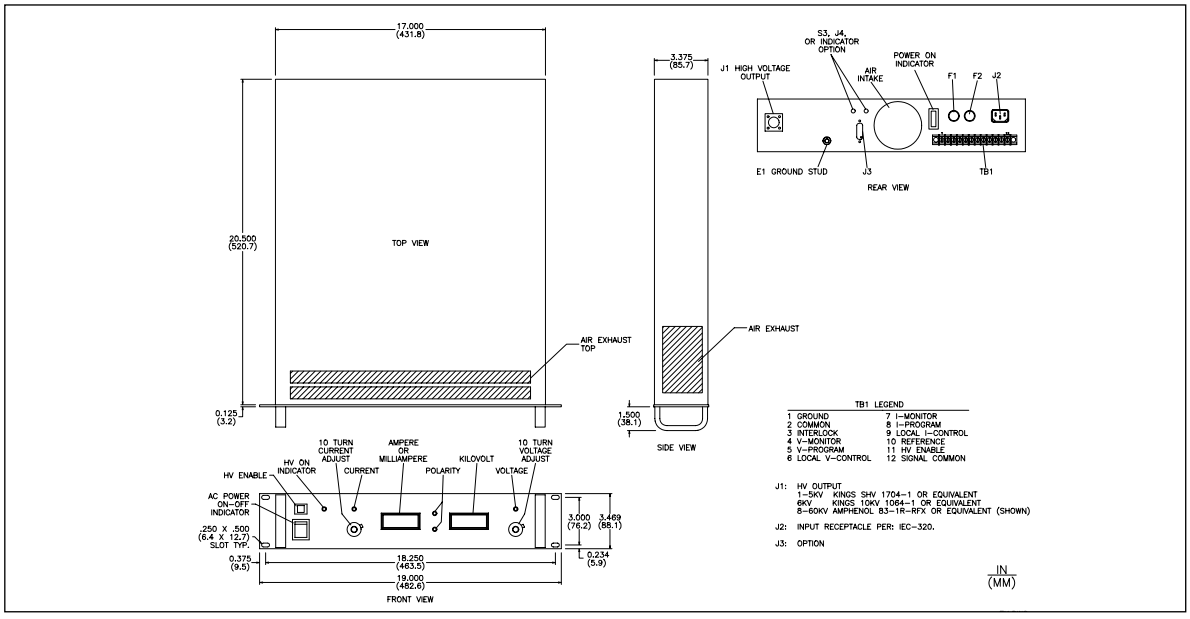
Weight: Approximately 20 lbs.

Options

Symbol	Description
100	100 VAC ± 10%, 48 - 63 Hz, NEMA 5-15 plug.
200	200 VAC ± 10%, 48 - 63 Hz, NEMA 6-15 plug. Derate output current by 10% when combined with PFC option.
220	200 - 264 VAC input, 48-63 Hz. NEMA 6-15 plug.
PFC	Power Factor Corrected. AC Input line rated for 198 - 264 VAC, 48 - 63 Hz, 800 VA maximum. Active correction circuitry achieves an input line current harmonic content well below the maximum specified in EN61000-3-2.
AM	Dual analog front panel meters.
NC	Blank front panel, power switch only.
SS	Slow start ramp. Specify standard times of 1, 2, 3, 5, 10, 15, 20 or 30 sec.+/-20%.
CT	Current trip. The HV output will disable and latch off when the load current reaches the programmed current level. Reset is accomplished by either cycling the AC power/HV ON switches, or by toggling the HV enable signal. A switch located on the rear panel allows the selection of constant current, or current trip.
ZR	Zero start interlock. Voltage control, local or remote, must be at zero before the HV will enable.
5VC	0-5 V voltage and current program/monitor.
ARC	Arc count and quench as described in the specifications for 1 - 6 kV models.

Models

Positive Polarity	Negative Polarity	Reversible Polarity	Output Voltage	Output Current	Stored Energy (J)	Output Cable
Reversible Polarity Only		EK1R600	0 – 1kV	0 - 600mA	0.06	RG - 58U
		EK1.5R400	0 – 1.5kV	0 - 400mA	0.1	RG - 58U
		EK2R300	0 – 2kV	0 - 300mA	0.1	RG - 58U
		EK3R200	0 – 3kV	0 - 200mA	0.2	RG - 58U
		EK5R120	0 – 5kV	0 - 120mA	1.2	RG - 58U
		EK6R100	0 – 6kV	0 - 100mA	1.6	RG - 58U
EK8P75	EK8N75	EK8R75	0 – 8kV	0 - 75mA	0.9	RG - 8U
EK10P60	EK10N60	EK10R60	0 – 10kV	0 - 60mA	1.1	RG - 8U
EK12P50	EK12N50	EK12R50	0 – 12kV	0 - 50mA	1.6	RG - 8U
EK15P40	EK15N40	EK15R40	0 – 15kV	0 - 40mA	1.7	RG - 8U
EK20P30	EK20N30	EK20R30	0 – 20kV	0 - 30mA	1.9	RG - 8U
EK25P24	EK25N24	EK25R24	0 – 25kV	0 - 24mA	1.4	RG - 8U
EK30P20	EK30N20	EK30R20	0 – 30kV	0 - 20mA	2	RG - 8U
EK40P15	EK40N15	EK40R15	0 – 40kV	0 - 15mA	2.7	RG - 8U
EK50P12	EK50N12	EK50R12	0 – 50kV	0 - 12mA	3.4	RG - 8U
EK60P10	EK60N10	EK60R10	0 – 60kV	0 - 10mA	4	RG - 8U



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