

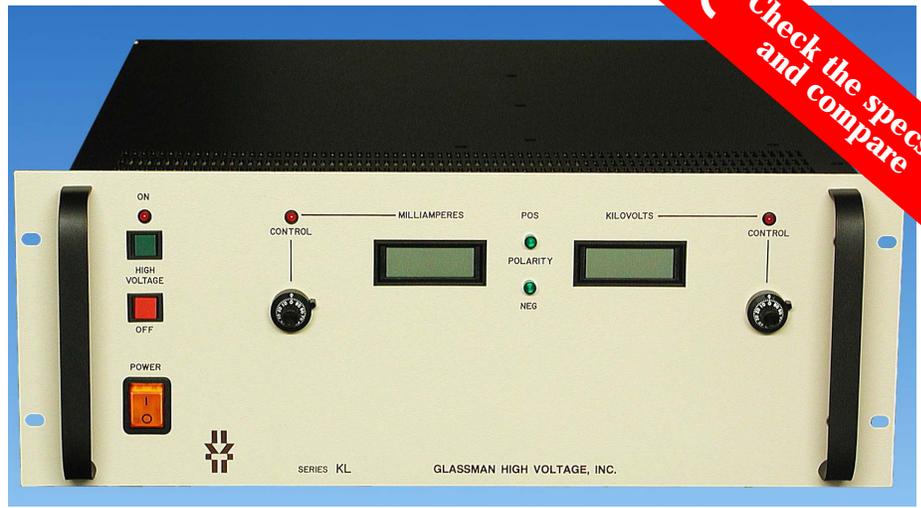
# KL Series 3000 Watt Regulated High Voltage DC Power Supplies

## Power Factor Corrected to >0.99... Well Within EN61000-3-2 Specifications

## High Speed Dynamic Voltage Regulation

## Single-phase, 198-264 V Input, 3500 VA

Fully compliant with the European harmonized EMI directive, EN50082-2, and with the low voltage (safety) directive, 73/23/EEC.



Models from 0 to 1kV through 0 to 30kV, 3kW, PF>0.99. Seven inches high x 19 wide x 20 deep. Total weight less than 50 pounds.

The KL Series...sophisticated, high power, high voltage power supplies...is designed to meet the growing demands from both users and electric utilities for switching power supplies that exhibit improved input power factors. Power factor is defined as the ratio of real power (measured in watts) to apparent power (measured in volt-amperes). A power factor near unity means that the user's supply can develop the maximum possible DC output power from an AC line of a given current rating. A power factor near unity also means that the supply does not distort the AC line voltage to a point where it could affect other equipment on the same line.

### Features:

**Power-factor Corrected.** Active correction circuitry achieves a full load power factor of better than 0.99.

**Low Stored Energy.** Most models exhibit less than 4 joules of stored energy.

**High Speed Dynamic Voltage Regulation.** Rapid responding control circuits provide a typical response of less than 500  $\mu$ s to load transients.

**Single-phase Input.** Full 3kW output from a single-phase, 198-264 V, 48-63 Hz input, 3500 VA maximum.

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

**Air insulated.** The KL Series features "air" as the primary dielectric medium. Assemblies use no oil or encapsulation that could 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.

**Low Ripple.** Ripple is less than 0.02% of rated voltage at full load.

**Tight Regulation.** Voltage regulation is better than 0.005% for allowable line variations and 0.01% for load variations. Current regulation is better than 0.05% from short circuit to rated voltage.

**Front Panel Controls (Digital and Optional Analog Versions.)** Separate 10-turn controls with locking vernier dials are used to set voltage and current levels. A high voltage enable (on) switch, a high voltage disable (off) switch, and an AC power on/off switch complete the panel controls. L.E.D.'s indicate when high voltage is on, the output polarity, and whether the supply is operating in a voltage or current regulating mode. For the blank panel version, only a power on/off switch is provided on the panel.

**Small Size and Weight.** KL Series power supplies occupy only 7 inches of panel height. Net weight is less than 50 pounds.

**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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# Specifications

(From 5 to 100% rated voltage. All units operate down to zero output with very slight degradation of performance.)

**Input:** 198-264 V RMS, single-phase, 48-63 Hz, 3500 VA maximum, <16A at 220 V. A 3-position terminal block with protective cover is provided.

**Efficiency:** Typically 87% at full load. Power factor >0.99.

**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 10V signals is provided. Voltage accuracy is 0.5% of setting + 0.2% of rated. Repeatability is < 0.1% of rated.

**Stored Energy:** See Models chart.

**Static Voltage Regulation:** Better than 0.005% for specified line variations and 0.01% + 0.2 volts per ampere for load variations.

**Dynamic Voltage Regulation:** For load transients from 10% to 100% and 100% to 10%, typical deviation is 2% of output voltage with recovery to within 1% in 500 μs and to 0.1% in 1ms.

**Ripple:** <0.02% of rated voltage + 500 mV RMS.

**Current Regulation:** 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 +0.5% rated.

**Current Monitor:** 0 to + 10 V equivalent to 0 to rated current. Accuracy, 1% reading +0.05% rated for single polarity, 1% reading + 0.1% rated for reversible polarity.

**Stability:** 0.01% per hour after 1/2 hour warmup, 0.05% per 8 hours.

**Voltage Rise/Decay Time Constant:** 50 ms typical with a 10% resistive load using either HV on/off or remote programming control.

**Temperature Coefficient:** 0.01% per degree C.

**Ambient Temperature:** -20 to +40 degree C, operating; -40 to +85 degree 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 shorts. Fuses, surge-limiting resistors, and low energy components provide ultimate protection.

**Remote Controls:** Terminal block is provided for all remote functions including common, +10V reference, interlock, voltage and current program/monitor, HV Enable/Disable, ground, and local control.

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

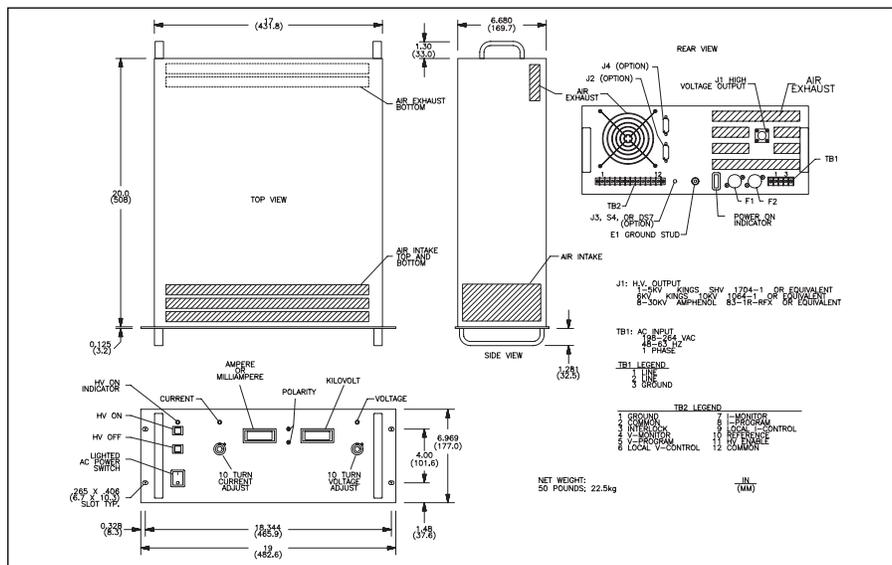
**HV Enable/Disable:** 0-1.5 V off. 2.5-15 V on.

# Options

Symbol	Description
200	200 V ± 10% input, 48-63 Hz. Derate currents by 10%, maximum 2700 W.
AM	Dual analog panel meters.
NC	Blank front panel, power switch only.
CT	Current trip. Power supply trips off when the load current reaches the programmed level. This option has a rear panel switch that selects either "trip" operation or current limiting.
ZR	Zero start interlock. Voltage control, local or remote, must be at zero before accepting an enable signal.
SS	Slow start ramp. Specify standard times of 1,2,3,5,10,15,20, or 30 s ± 20%
5VC	0-5 V voltage and current program/monitor. Other options are available. Please consult factory.

# Models

Positive Polarity	Negative Polarity	Reversible Polarity	Output Voltage (kV)	Output Current (mA)	Stored Energy (J)	Output Cable (8')	
Reversible only			KL1R3000	0-1	0-3000	2.3	RG-58
			KL1.5R2000	0-1.5	0-2000	3.4	RG-58
			KL2R1500	0-2	0-1500	2.7	RG-58
			KL3R1000	0-3	0-1000	2.0	RG-58
			KL5R600	0-5	0-600	2.5	RG-58
KL6R500	0-6	0-500	3.6	RG-58			
KL8P375	KL8N375	KL8R375	0-8	0-375	3.1	RG-8U	
KL10P300	KL10N300	KL10R300	0-10	0-300	2.9	RG-8U	
KL12P250	KL12N250	KL12R250	0-12	0-250	4.2	RG-8U	
KL15P200	KL15N200	KL15R200	0-15	0-200	3.8	RG-8U	
KL20P150	KL20N150	KL20R150	0-20	0-150	4.2	RG-8U	
KL30P100	KL30N100	KL30R100	0-30	0-100	4.9	RG-8U	



Designing Solutions for High Voltage Power Supply Applications



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