

EQ Series

1200 Watt Regulated High Voltage DC Power Supplies

1 to 60kV, 3.5" Panel

Power Factor Corrected to >0.995

Harmonics Well Below EN61000-3-2

Fully RoHS Compliant

The EQ Series are sophisticated, 1.2kW, high voltage power supplies in a small and lightweight package. They are designed to meet the growing demands from both users and electric utilities for switching power supplies with excellent input power factors that draw harmonic currents below those specified in EN61000-3-2.

Fully compliant with the European harmonized EMI directive, EN50082-2, the low voltage (safety) directive, 73/23/EEC and with 2011/65/EU, Restriction of the use of hazardous substances (RoHS).



Models from 0 to 1kV through 0 to 60kV, 3.5" H x 19" W x 20.5" D, 22 lbs.

Features:

Power-factor Corrected. Active correction circuitry achieves an input line current harmonic content well below the maximum specified in EN61000-3-2.

Arc Count. 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 pre-set "off dwell time."

Low Stored Energy. Most models exhibit less than 2 joules of stored energy.

Single-phase Input. Full 1.2kW output from a single-phase, 198-264V, 48-63Hz input, 1420VA maximum.

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

Air Insulated. The EQ 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.

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

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.

Front Panel Controls. Separate 10-turn controls with locking vernier dials are used to set voltage and current levels. A high voltage enable (on) 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. EQ Series power supplies occupy only 3.5 inches of panel height. Net weight is less than 22 pounds.

Warranty. All power supplies are warranted for three years. A formal warranty statement is available.

Specifications

(Specifications apply from 5 to 100% rated voltage. Operation is guaranteed down to 0% of rated voltage with a slight degradation of ripple, regulation, and stability.)

Input: 198-264V RMS, single-phase, 48-63Hz, 1420 VA maximum. <7 A at 220 V. Connector per IEC 320 with mating line cord terminated with NEMA 6-15 plug.

Efficiency: Typically 85% at full load.

Power factor: >0.995.

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 0.005% + 0.5 mV/mA 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 μ s and to 0.1% in 1 ms.

Ripple: <0.02% of rated voltage + 300 mV RMS at full load.

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% of reading + 0.2% rated. Output impedance is 10 k Ω .

Current Monitor: 0 to +10 V equivalent to 0 to rated current. Accuracy: 1% of reading + 0.05% rated for fixed polarity, 1% reading + 0.1% rated for reversible polarity. Output impedance is 10 k Ω .

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 degrees C, operating;

-40 to +85 degrees 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.

Arc Sensing: Internal circuitry senses the number of arcs caused by flawed external load characteristics. If the rate of consec-

utive arcs exceeds approximately 2 per second, the supply will turn off for approximately 2 seconds to allow clearance of the fault and then automatically resume normal operation. Custom modifications of this feature

are available. Consult the factory.

Remote Controls: Terminal block is

provided for all remote functions, including common, +10V reference, interlock, voltage and current program/monitor, HV enable, ground, and local control.

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

Remote HV Enable: 0-1.5 V off, 2.5-15 V on.

Options

Symbol Description

200 200 V \pm 10% input, 48-63 Hz, maximum 1 kW output.

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 HV will enable.

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.

K01 RS-232/USB control and monitor

K02 RS-232/USB/Ethernet control and monitor

Please consult factory for special requirements.

Models

Positive Polarity	Negative Polarity	Reversible Polarity	Output Voltage (kV)	Output Current (mA)	Stored Energy (J)	Output Cable	
Reversible Polarity Only			EQ1R1200	0-1	0-1200	1.0	RG-58
			EQ1.5R800	0-1.5	0-800	1.1	RG-58
			EQ2R600	0-2	0-600	1.0	RG-58
			EQ3R400	0-3	0-400	1.1	RG-58
			EQ5R240	0-5	0-240	1.2	RG-58
EQ6R200	0-6	0-200	1.4	RG-58			
EQ8P150	EQ8N150	EQ8R150	0-8	0-150	1.3	RG-8U	
EQ10P120	EQ10N120	EQ10R120	0-10	0-120	1.6	RG-8U	
EQ12P100	EQ12N100	EQ12R100	0-12	0-100	2.0	RG-8U	
EQ15P80	EQ15N80	EQ15R80	0-15	0-80	1.6	RG-8U	
EQ20P60	EQ20N60	EQ20R60	0-20	0-60	2.0	RG-8U	
EQ30P40	EQ30N40	EQ30R40	0-30	0-40	2.1	RG-8U	
EQ40P30	EQ40N30	EQ40R30	0-40	0-30	2.8	RG-8U	
EQ50P24	EQ50N24	EQ50R24	0-50	0-24	3.4	RG-8U	
EQ60P20	EQ60N20	EQ60R20	0-60	0-20	4.1	RG-8U	

