EV Series 3 kW Regulated DC Power Supplies

750 V to 1500 V Rack Mount

CE Compliant

Fully RoHS Compliant

The EV family of power supplies are sophisticated, 3 kW, power supplies with low ripple and noise. They are air insulated, fast response units, with tight regulation.

Please refer to Technology > Applications page on our web site for typical applications

The EV Series are fully compliant with the following European Directives:

EN61010-1/IEC61010-1, Safety
EN61000-6-4, Conducted and Radiated Emissions
EN61000-6-2, Conducted and Radiated Immunity
2011/65/EU, Restriction of the Use of Hazardous Substances (RoHS)

Models from 0 to 750 V through 0 to 1500 V, 3.5" H x 19" W x 20" D, 19.5 lbs.

Features:

Input. Single phase over the input voltage range of 198 VAC to 264 VAC, with active power factor correction.

Floating Output. Either output terminal may be grounded for operation as a positive or negative supply.

Embedded Microcontroller control. Front panel digital encoders provide high resolution local adjustment of voltage and current program. Integral RS-232, RS-485, USB and optional Ethernet communications provide remote control program and monitor with 12 bit accuracy.

Remote Analog Interface. User selectable 0-5V or 0-10V analog programming and monitors.

Field Strappable Parallel Operation. Up to 4 identical supplies may be operated in parallel with user configurable master and active current sharing

Zero Space Stacking. 2U rack mount supplies may be stacked with no space required between supplies

Low Ripple. Ripple is less than 0.1% RMS of rated voltage at full load up to 1 MHz. Total ripple and noise is less 0.4% p-p of rated voltage up to 20 MHz.

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

Constant Current/Current Trip. A rear panel switch allows selection of either current mode.

Cooling. Forced air with high speed frictionless bearing technology fans. This reduces noise and extends fan life.

Last Setting Memory. The unit stores power supply parameters at each AC turn-off sequence. Stored parameters are: Output Voltage Setting, Output Current Setting, OVP level, UVP level, Address and Baude Rate.

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

Specifications

Input: 198-264 VAC continuous, single-phase, 48-63Hz. The RMS input current at rated power is less than 20 A @ 198 VRMS input.

Inrush Current: 30 A max. peak inrush current, 198 to 264 VAC.

Efficiency: 85% typical at full load.

Power factor: 0.99 typical at full load.

Output: Continuous, stable adjustment, from 0 to rated voltage or current by panel mounted optical rotary encoder or by external, user selectable, 0 to +5V or 0 to +10V signals. Voltage accuracy is 0.5% of setting + 0.2% of rated. Current accuracy is 0.5% of setting + 0.2% of rated. Voltage and Current programming ranges are selected by switches that are accessible from the rear panel. Optical rotary encoder resolution: 1V and 1mA with "Fine Adjustment" mode selected. 10 V and 10 mA with "Coarse Adjustment" mode (default).

Static Line Regulation: Better than 0.01% of the Voltage and Current Ratings for 198-264 VAC line variations, under constant load.

Static Load Regulation: Max. 0.1% of Rating for full load to no load variation.

Current Regulation: Better than 0.02% of the rating + 4mA, for short circuit to rated output voltage variation.The minimum impedance required to meet this specification in short circuit is 1 Ohm

Dynamic Voltage Regulation: Typical deviation is 2.5% of rating with recovery to within .5% of rating in 2ms for load transients from 10% to 100% and 100% to 10%.

Ripple and noise (p-p, up to 20 MHz): Max. 0.4% of rated voltage.

Ripple (RMS, 10 Hz - 1 MHz): Max. 0.1% of rated voltage. The ripple and noise are measured at the output connectors of the supply.

Temperature Coefficient: Max. 100 ppm per deg C following 30 minute warm up.

Stability: Max. 0.05% of rated over 8 hours time interval, following 30 minute warm up.

Voltage Rise Time Constant: Typical 45 ms using any of the HV ON, HV enable, local, the remote serial or the remote analog control.

Voltage Decay Time Constant: Typical 45 ms time constant for an equivalent resistive load at the output of 15% of the rated full load.

Polarity: Output is floating and either (DC+) or (DC -) can be connected to chassis ground for reversible polarity. The sum of the output voltage and the float voltage should not exceed 1500 VDC.

Field Strappable Parallel operation: Up to 4 identical units can be connected in parallel providing active current sharing with user configurable master - slave configuration.

Analog Voltage Monitor: User selectable 0 to +5 V or 0 to +10 V, equals 0 to rated, with an accuracy of .5% of reading + 0.2% of rated.

Analog Current Monitor: User selectable 0 to +5 V or 0 to +10 V, equals 0 to Rated, with an accuracy of .5% of reading + 0.2% of rated.

RS232/485 Programming and Monitor Accuracy:

Resolution: 0.025% of full scale for both the voltage and the current channels.

Remote setting accuracy: Voltage setting accuracy is better than 0.5% of setting + 0.2% of rated. Current setting accuracy is better than 0.5% of setting + 0.2% of rated.

Remote reading accuracy: Voltage reading accuracy is 0.5% of reading + 0.2% of rated. Current reading accuracy is 0.5% of reading + 0.2% of rated.

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

External Interlock: Open = off, closed = on.

Front Panel Elements.

Output Voltage Display: 4 Digits / 0.2% ± 1 count accuracy; 1 V resolution.

Output Current Display: 4 Digits / 0.2% ± 1 count accuracy; 1 mA resolution.

Indicators: Current Mode, Voltage Mode, Fault, Fine Adjustment, Preset, Local/Remote, HV On.

AC Power: Rocker switch with integral indicator.

Switches (momentary): Baud Rate, Address, Local/Remote, Fine Adjust, Preset, HV On, UVP Adjust, OVP Adjust.

Rotary Encoders: Voltage Adjust, Current Adjust.

Rear Panel Elements. AC power IEC inlet connector, AC On indicator, ground stud, HV output connectors, multifunction DIP switch, Analog Interface Connector, RS-232/RS485 connectors, USB, and optional Ethernet connectors.

Control and Status Signals (J1) Implemented with TTL compatible, 0 to 5.5 V CMOS, positive logic circuitry.

LOC/REM Status: LOW/HIGH indicates Local / Remote Control Mode.

ENABLE/REMA Input: Active in Remote Analog control as HV enable. LOW / HIGH for HV OFF / ON. Logic can be reversed by selected switch on the rear panel.

V/I MODE Status: HIGH / LOW indicates that output is in Voltage/ Current Mode.

LOC/REMA Enable: LOW /HIGH sets the power supply in Local / Remote analog mode.

FAULT Status: Active HIGH, indicates a fault condition. Logic can be reversed by selected switch on the rear panel. The continuously monitored faults are: Input Undervoltage, Over Temperature, Over Voltage, Over Current, Interlock and (optional) Arc Fault.

HV Status: LOW /HIGH indicates that HV output is OFF /ON.

Environmental:

Operating Temperature: 0 to +40 deg C, full load.

Operating Humidity: < 90% RH (non-condensing).

Storage Temperature: -20 to +70 deg C.

Storage Humidity: < 95 % RH (non-condensing).

Altitude: For operation above 6500 ft and up to 10,000 ft. MAX, de-rate the output current linearly from 100% to 80% of rated.

Cooling: Forced air cooling with internal fans.

Dimensions (W X H X D): 19" X 3.5" X 20". Refer to the outline drawing.

Weight: 19.5 lbs (8.9 kg)

AC Input: IEC 60320-C20 inlet with mating IEC 60320-C19 to NEMA 6-20P power cord.

HV DC Output: 2 high voltage, HN (UG-496 style) bulkhead connectors. Mating HN cables with 10 feet of RG8U are provided.

Withstand Voltage and Insulation (HI-POT):

Input to Output: 2500 VAC RMS,

Input to Ground: 2000 VAC RMS,

Output to Ground: 2500 VAC RMS,

Input to SELV: 2000 VAC RMS,

Output to SELV: 2500 VAC RMS,

Customer Serial Interface to EV GND: 1000 VAC RMS.

Accessories: 10 foot RS232 null modem cable, 3 foot RS485 daisy chain cable and 10 foot USB cable are provided.

Options

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.

Arc Count: Internal circuitry senses the number of arcs caused by external load discharges. If the rate of consecutive arcs exceeds approximately 2 arcs per second for at least five arcs, the supply will turn off for approximately 2.5 seconds to allow clearance of the fault. After this period, the supply will return automatically to the programmed output voltage value with the voltage rise time constant indicated. If the load fault still exists, the above cycle will be repeated

Latching Arc Count: Same as Arc Count with the exception that the output will be latched off rather than recover automatically after 2.5 s. The Arc Fault is reset by cycling HV Enable OFF/ON either in LOCAL or REMOTE control mode or by cycling AC Power OFF/ON.

ETH - Ethernet: Virtual RS-232 COM port over Ethernet network. (Requires compatible OS (eg Windows) for COM drivers). Note: RS-485 feature is removed when Ethernet option is installed.

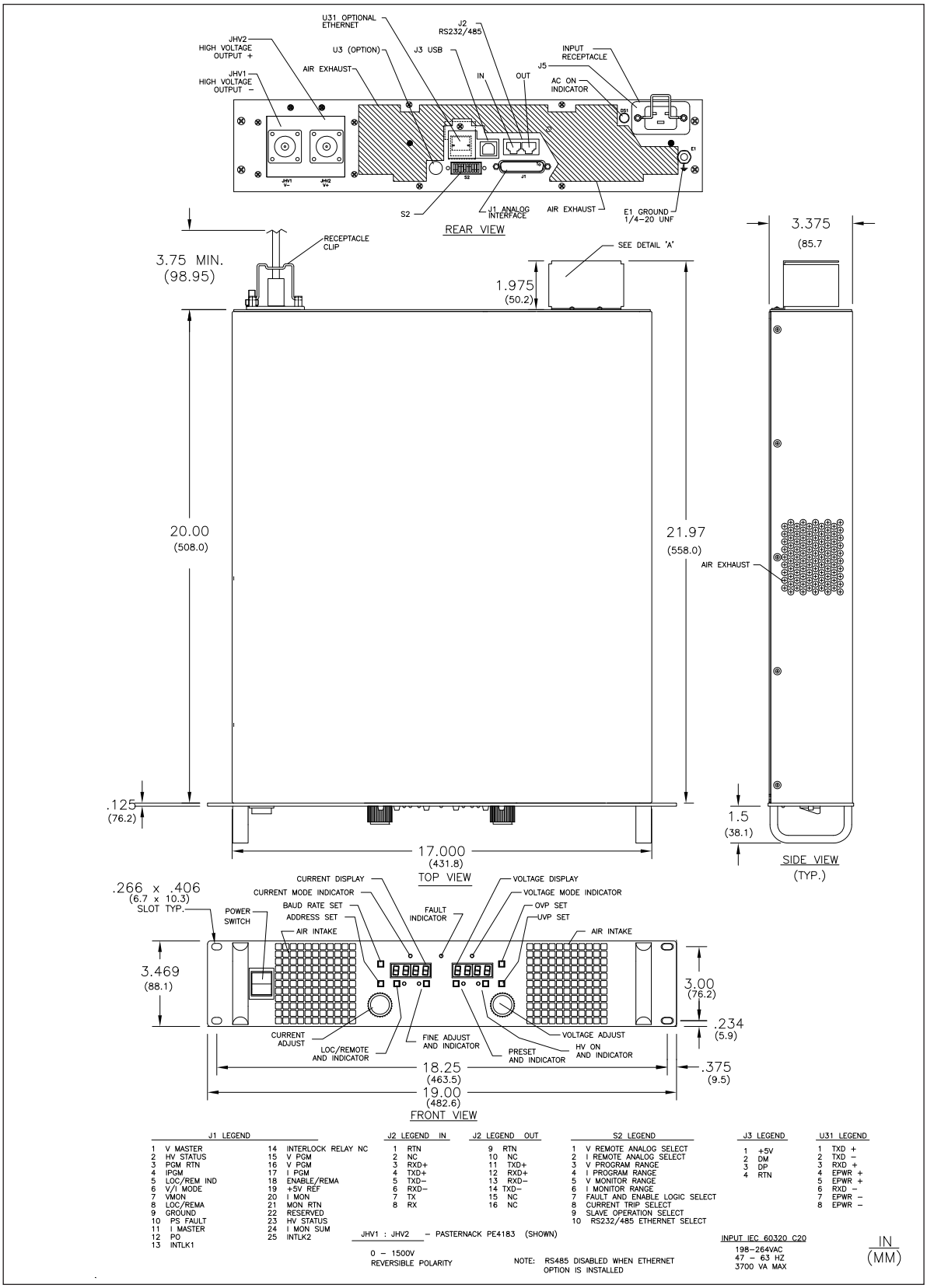
SS - Slow Start Ramp: Specify standard times of 5, 10, 15, 20, or 30 seconds, ±20%.

200 VAC Input: 180 to 220 VRMS, 48-63 Hz. Output power is linearly derated from 100% to 90% between 200 VAC and 180 VAC.

Models

MODEL	VOLTAGE (V)	CURRENT (A)	STORED ENERGY (J)	RIPPLE AND NOISE MAX. (P-P)
EV0.7F4.0	750	4.0	5	3V
EV1.0F3.0	1000	3.0	9	4V
EV1.2F2.4	1250	2.4	14	5V
EV1.5F2.0	1500	2.0	11.3	6V

Outline



J1 LEGEND

1	V MASTER	14	INTERLOCK RELAY NC
2	HV STATUS	15	V PGM
3	PGM RTN	16	V PGM
4	IPGM	17	I PGM
5	LOC/REM IND	18	ENABLE/REMA
6	V/I MODE	19	+5V REF
7	VMON	20	I MON
8	LOC/REMA	21	MON RTN
9	GROUND	22	RESERVED
10	PS FAULT	23	HV STATUS
11	I MASTER	24	I MON SUM
12	PO	25	INTLK2
13	INTLK1		

J2 LEGEND IN

1	RTN
2	NC
3	RXD+
4	TXD+
5	TXD–
6	RXD–
7	TX
8	RX

J2 LEGEND OUT

9	RTN
10	NC
11	TXD+
12	RXD+
13	RXD–
14	TXD–
15	NC
16	NC

S2 LEGEND

1	V REMOTE ANALOG SELECT
2	I REMOTE ANALOG SELECT
3	V PROGRAM RANGE
4	I PROGRAM RANGE
5	V MONITOR RANGE
6	I MONITOR RANGE
7	FAULT AND ENABLE LOGIC SELECT
8	CURRENT TRIP SELECT
9	SLAVE OPERATION SELECT
10	RS232/485 ETHERNET SELECT

J3 LEGEND

1	+5V
2	DM
3	DP
4	RTN

U31 LEGEND

1	TXD +
2	TXD –
3	RXD +
4	EPWR +
5	EPWR +
6	RXD –
7	EPWR –
8	EPWR –

JHV1 : JHV2 – PASTERNACK PE4183 (SHOWN)

0 – 1500V
REVERSIBLE POLARITY

NOTE: RS485 DISABLED WHEN ETHERNET OPTION IS INSTALLED

INPUT IEC 60320 C20
198–264VAC
47 – 63 HZ
3700 VA MAX

IN (MM)