

WJ Series 600W Regulated High Voltage DC Power Supplies

**70 kV to 125 kV
Rack Mount
5.25 Inch Panel
Height...**

**Laboratory
Performance...**

**CE and Semi S2-
93 Compliant**

**Fully RoHS
Compliant**

The WJ Series of 600 watt high voltage supplies feature flexible embedded controls with low ripple and noise. They are air insulated, fast response units, with tight regulation and extremely low arc discharge currents.

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

The WJ Series with F22 option, are fully compliant with the Following European Directives:
EN61000-3-2, Line Harmonics
EN61010/ IEC61010, Safety
EN61000-6-4, Conducted and Radiated Emissions
EN61000-6-2:2005, Conducted and Radiated Immunity
2011/65/EU, Restriction of the use of Hazardous Substances (RoHS)

CE (Meets all applicable directives), UKCA
(Meets all applicable legislation)



Models from 0 to 70 kV through 0 to 125 kV, 5.25" H x 20.5" D, 22 lbs.

Features:

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

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".

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

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

Low Ripple. Typically, ripple is less than 0.1% RMS of rated voltage at full load.

Air Insulated. The WJ 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.

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

Slow Start. Adjustable ramp time from 0 - 30 seconds. Output ramps from 0 V to programmed voltage level.

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 zero voltage with a slight degradation of performance.)

Input: User selectable via rear panel switch, 102 - 132 V RMS or 198 to 264 VRMS single-phase, 48-63 Hz, 1200 VA maximum at full load. C14 connector per IEC 60320 with mating line cords
SHIPPED SET FOR 198 to 264

Efficiency: Typically greater than 85% at full load.

Output: Continuous, stable adjustment, from 0 to rated voltage or current by panel mounted optical rotary encoder or by external +10V signals. Voltage accuracy is 0.5% of setting + 0.2% of rated. Optical rotary encoder resolution: 0.025% with "Fine Adjustment" mode selected. 0.25% with "Coarse Adjustment" mode (default). Repeatability is < 0.1% of rated.

Static Voltage Regulation: Better than $\pm 0.005\%$ for specified line variations and 0.005% 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 us and recovery to within 0.1% in 1 ms.

Ripple: Better than 0.1% of rated voltage 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% of reading + 0.2% of rated. Impedance is 10 K Ω .

Current Monitor: 0 to +10 V equivalent to 0 to rated current. Accuracy: 1% of reading + 0.1% of rated. Impedance is 10 K Ω .

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 400 ms typical for all models using either HV enable or remote programming control. The voltage decay time constant is 400 ms with a 15% resistive load.

Temperature Coefficient: 0.01% / $^{\circ}$ C.

Ambient Temperature: -20 to +40 $^{\circ}$ C, operating; -40 to +85 $^{\circ}$ 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.

Arc Count: 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.

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

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

RS232/USB/Ethernet Programming and Monitor Accuracy:

Resolution: 0.025% of full scale for both the voltage and the current programs. 0.1% of full scale for both the voltage and the current monitors

Remote setting accuracy: Voltage 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 1% of reading + 0.1% of rated.

Front Panel Elements.

Output Voltage & Current Display: 3.5 Digit digital meters. 1250 count maximum.

Indicators: AC Power, Current Mode, Voltage Mode, Pol +, Pol -, Fault, Fine Adjustment, Preset, Control Lock, Remote Enable, Remote Program, HV On.

AC Power: Rocker switch

Switches (momentary): HV On, SS Slope, Standby, Remote Enable, Remote Program, Preset, Fine Adjust, Control Lock.

Rotary Encoders: Voltage Adjust, Current Adjust..

Rear Panel Elements. AC power entry connector, fuses, power on indicator, ground stud, HV output connector, remote interface connector, RS232/USB connectors, and input voltage selector switch.

The signals provided on the remote interface connector are as follows:

Inputs: Safety interlock, output voltage and current program signals, high voltage enable and remote HV on.

Outputs: Output voltage and current monitor signals, HV status, fault status, I/V mode status and a +10 V reference source.

Signal common and ground reference terminals are also provided.

Accessories: Detachable, 10 foot, shielded high voltage coaxial cable (see models chart for cable type), 6 foot NEMA 5-15 line cord, 6 foot NEMA 6-15 line cord, 10 foot null modem cable and 10 foot USB cable are provided.

Weight: Approximately 22 lbs.

Options

Symbol	Description
A	100/200 VAC \pm 10%, 48 - 63 Hz, Selectable. Shipped set for 200 VAC.
F22	Required for CE Compliance - 230 VAC 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. (AC Line voltage selector switch removed.) One NEMA 6-15 cord provided.
NC	Blank front panel, power switch and indicator only.
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.
AC	Arc Count Only
AQ	Arc Quench Only
ETH	Virtual RS-232 COM port over Ethernet network. (Requires compatible OS (eg Windows) for COM drivers)

Models

Positive Polarity	Negative Polarity	Reversible Polarity	Output Voltage	Output Current	MaxStored Energy	Output Cable
WJ70P8.6	WJ70N8.6	WJ70R8.6	0 - 70kV	0 - 8.6mA	8.0 J	DS2121
WJ80P7.5	WJ80N7.5	WJ80R7.5	0 - 80kV	0 - 7.5mA	9.0 J	DS2121
WJ100P6	WJ100N6	WJ100R6	0 - 100kV	0 - 6.0mA	11.0 J	DS2121
WJ125P5	WJ125N5	WJ125R5	0 - 125kV	0 - 5.0mA	15.0 J	DS2121

