FJ Series 120W Regulated High Voltage DC Power Supplies

1 kV to 60 kV Rack Mount 1.75 Inch Panel Height…

Laboratory Performance…

CE and Semi S2-93 Compliant

The FJ Series of 120 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 FJ Series are fully compliant with the Following European Directives:
EN61000-3-2, Line Harmonics
EN61010/ IEC1010, Safety
EN61000-6-4, Conducted and Radiated Emissions, with 22 option
EN61000-6-2:2005, Conducted and Radiated Immunity

Check the specs… and compare

Models from 0 to 1 kV through 0 to 60 kV, 1.75" H x 20.0" D, 12 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 preset "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 0.02% RMS of rated voltage at full load.

Air Insulated. The FJ 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. 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

(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, 300 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 ±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 us and recovery to within 0.1% in 1 ms.

Ripple: Better than 0.02% 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% of reading + 0.2% of rated. Impedance is 10 KΩ .

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 50 ms typical for all models using either HV enable or remote programming control. The voltage decay time constant is 50 ms with an 80% resistive load for 10 kV to 60 kV models and 50 ms with a 10% resistive load for 1 kV to 8 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 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. 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.

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, 8 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.

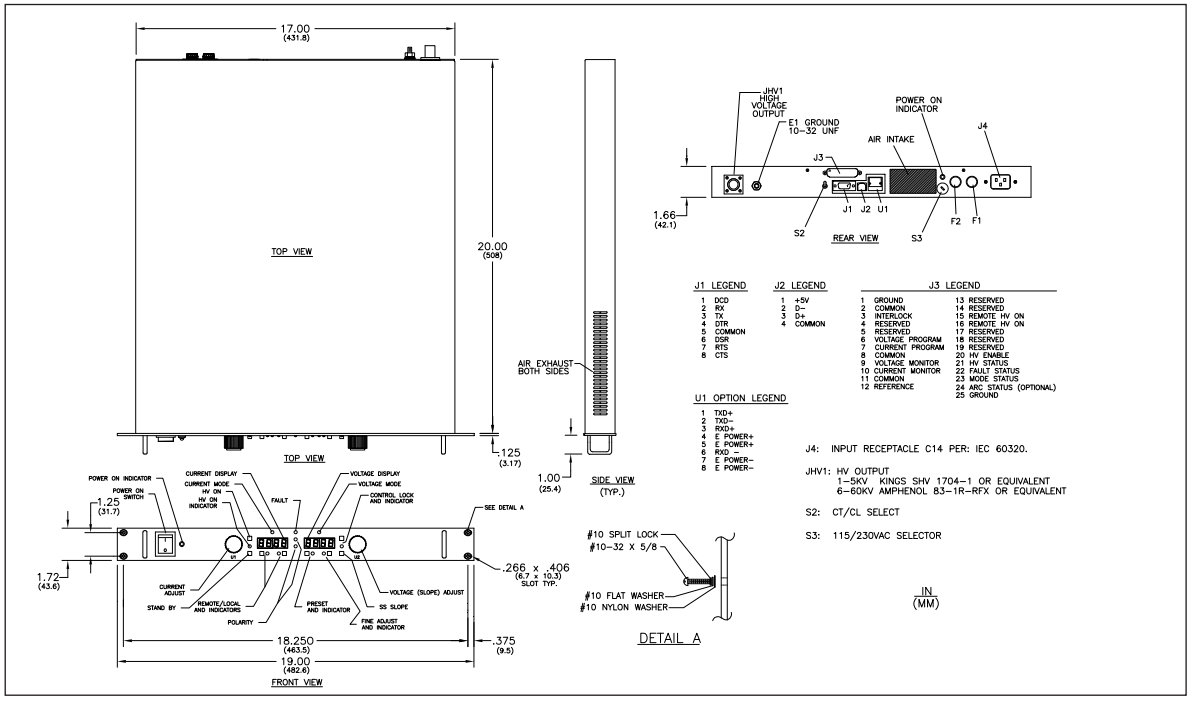
Weight: Approximately 12 lbs.

Options

Symbol	Description
A	100/200 VAC ± 10%, 48 - 63 Hz, Selectable. Shipped set for 200 VAC.
22	Required for CE Compliance - AC Input line rated for 198 - 264 VAC, 48 - 63 Hz. (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.
ARC	Arc count and quench as described in the specifications for 1 - 6 kV models.
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	Max Stored Energy	Output Cable
FJ1P120	FJ1N120	FJ1R120	0 - 1kV	0 - 120mA	0.2 J	RG - 58U
FJ1.5P80	FJ1.5N80	FJ1.5R80	0 - 1.5kV	0 - 80mA	0.45 J	RG - 58U
FJ2P60	FJ2N60	FJ2R60	0 - 2kV	0 - 60mA	0.1 J	RG - 58U
FJ3P40	FJ3N40	FJ3R40	0 - 3kV	0 - 40mA	0.2 J	RG - 58U
FJ5P24	FJ5N24	FJ5R24	0 - 5kV	0 - 24mA	0.3 J	RG - 58U
FJ6P20	FJ6N20	FJ6R20	0 - 6kV	0 - 20mA	0.25 J	RG - 8U
FJ8P15	FJ8N15	FJ8R15	0 - 8kV	0 - 15mA	0.3 J	RG - 8U
FJ10P12	FJ10N12	FJ10R12	0 - 10kV	0 - 12mA	0.4 J	RG - 8U
FJ12P10	FJ12N10	FJ12R10	0 - 12kV	0 - 10mA	0.7 J	RG - 8U
FJ15P8	FJ15N8	FJ15R8	0 - 15kV	0 - 8mA	1.1 J	RG - 8U
FJ20P6	FJ20N6	FJ20R6	0 - 20kV	0 - 6mA	0.85 J	RG - 8U
FJ25P4.8	FJ25N4.8	FJ25R4.8	0 - 25kV	0 - 4.8mA	1.0 J	RG - 8U
FJ30P4	FJ30N4	FJ30R4	0 - 30kV	0 - 4mA	1.0 J	RG - 8U
FJ40P3	FJ40N3	FJ40R3	0 - 40kV	0 - 3mA	1.5 J	RG - 8U
FJ50P2.4	FJ50N2.4	FJ50R2.4	0 - 50kV	0 - 2.4mA	2.0 J	RG - 8U
FJ60P2	FJ60N2	FJ60R2	0 - 60kV	0 - 2mA	2.4 J	RG - 8U



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