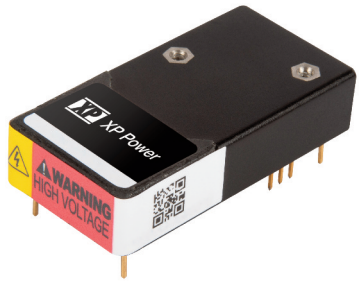
FS Series

DC-HVDC Converter

XP Power

10 Watts



- Output Voltages from 200V to 6kV
- Output Voltage Proportional to Input
- Low Turn-on Voltage 0.7VDC
- Input to Output Isolation <2.5kVDC
- Low Profile 0.5″
- Dual Output Option
- Arc & Short Circuit Protected
- Overtemperature & Overvoltage Protection with Auto Shutdown
- No Minimum Load
- 3 Year Warranty

The FS Series is an isolated, proportional DC to high voltage DC converter offering stout design and enhanced features for excellent long-term reliability. A proprietary, quasi-sinewave, resonant oscillator produces clean high voltage with inherently low ripple, low EMI/RFI, low input ripple current, and low conducted emissions. The internal transformer temperature and input voltage are actively monitored with supervisory circuits and fed into a shutdown circuit, preventing excessive input voltage or over-temperature failures.

This series features sturdy, galvanic input-to-output high voltage isolation, conservatively rated at +/-2.5kV + Vout with less than 100pF of coupling capacitance and less than 100nA of leakage current. Robustness and high reliability have been designed into each model by incorporating output arc surge current limiting and short circuit protection.

Dimensions:

FS Series: 1.12 x 2.25 x 0.50" (28.5 x 57.15 x 12.7mm)

Key Applications:

- Mass Spectrometry
- Electrostatic Chucks
- Electrophoresis
- Capacitor Charging
- Particle Counter
- Isolation Testing
- Medical Laser Treatment

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage	0.7		12, 15, 24, 28	VDC	See Models and Ratings Table.
Input Current			1.5	A	See Models and Ratings Table.

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage			6,000	VDC	See Models and Ratings Table
Output Current			50	mA	See Models and Ratings Table
Output Voltage Tolerance		+5, -5		%	At Max Vout, Full Load
Minimum Load	No minimum load required				
Regulation	Unregulated, Output is proportional to Input. See Application Notes.				
Short Circuit Protection	Protected against short circuit conditionsindefinitely. B versions not included.				
Ripple and Noise	1		6	%	See Models and Ratings Table.

Notes

1. *Maximum rated output current is available at maximum rated output voltage.*
2. *Output voltage is load dependent. Under light or no-load conditions, reduce the input voltage so maximum rated output voltage is not exceeded.*
3. *Specifications after 1 hour warm-up, full load, at 25oC unless otherwise indicated.*
4. *Maximum output power is typically proportional to input voltage from 40% of input voltage to maximum.*
5. *Short circuit protection not available with -B suffix.*
6. *Proper thermal management techniques are required to maintain safe case temperature at maximum power output.*
7. *Ripple specification for center-tapped units applies to the voltage between the positive and negative output terminals.*
8. *Models FS50 and FS60 do not have the arc protection feature.*

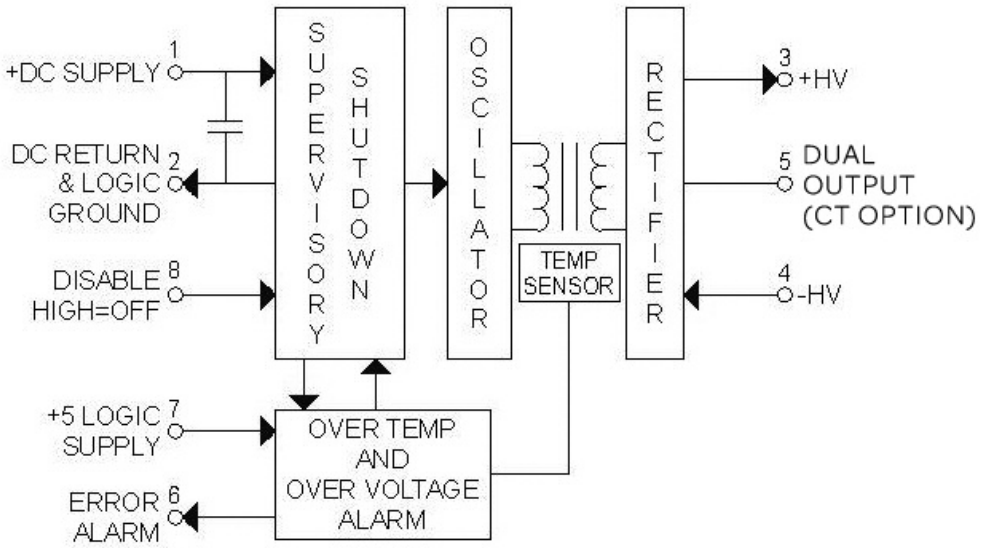
Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature (case)	-25		+75	°C	Standard operating temperature
Operating Temperature (case)	-55		+85	°C	Extended operating temp, -T models
Storage Temperature	-55		+105	°C	
Humidity			95	%RH	Non-condensing
Cooling					Natural Convection

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Isolation: Input to Output			2,500	V	< ±2,500 VDC Bias on Pin 4.
Leakage Current			100	nA	
Switching Frequency	25		125	kHz	Stable frequency over entire output voltage range.
Construction	Solid vacuum encapsulation, UL 94 V-0 rated. Anodized aluminum heatsink surface, two threaded blind inserts.				
Mean Time Between Failure	840			kHrs	Bellcore TR 332

Block Diagram



SMART Protection Features

The FS Series power supplies are provided with internal input over-voltage and over-temperature protection. The internal transformer temperature and input voltage are actively monitored with supervisory circuits and fed into a shutdown circuit, preventing excessive input voltage or over-temperature failures. Should preset limits be exceeded, the power supply will be temporarily disabled. A TTL-compatible, latching alarm signal on Pin 6 transitions from low to high to indicate an alarm condition has occurred. Sustained presence of an input over-voltage may damage input components. The user should respond to the alarm by removing the potentially damaging input.

If/when the fault condition is removed, the unit will recover and restore itself to normal operation, ensuring maximum reliability in the field. However, the pin 6 error signal will remain high to indicate an alarm event has occurred. To clear the alarm output, the +5V logic input must be toggled low for >250ms, then returned high.

The fault monitor circuits are powered by the +5V logic input voltage and draw <25mA.

SMART Protection features are not included with B suffix.