C Series

DC-HVDC Converter

XP Power

1 Watt

- +12VDC Input [11.5 to 16V]
- Voltage Regulated
- Output Voltages from 100V to 8000V
- 0 to 100% Programmable Output
- High Reliability 2.6MHrs MTBF
- <50ppm/°C Temperature Coefficient
- Shielded Case for Low EMI
- Low Ripple - down to 0.002%
- 3 Year Warranty

Dimensions:

C01 - C20: 1.40 x 1.11x 0.50" (35.6 x 28.2 x 12.7mm)
C25 - C40: 1.75 x 1.11 x 0.50" (44.4 x 28.2 x 12.7mm)
C50 - C60: 2.10 x 1.11 x 0.50" (53.3 x 28.2 x 12.7mm)
C80: 2.50 x 1.25 x 0.60" (63.50 x 31.75 x 15.24mm)

The C Series is a line of miniature, regulated high voltage power supplies. Each model is programmed from 0 to 100% of rated output via a 0 to +5 volt, DAC-compatible, high-impedance programming input voltage. An externally accessible potentiometer provides adjustable gain trim, allowing for individual calibration of units.

These converters exhibit very low ripple, noise, and EMI/RFI by utilizing a quasi-sinewave oscillator, shielded transformer, excellent filtering techniques and an isolated steel enclosure featuring a separate grounding pin. A proprietary encapsulation process and a custom UL 94 V-0 listed, high-performance formula are used to achieve excellent high voltage and thermal properties. Temperature drift is typically less than 50ppm/°C.

Key Applications:

- Photo Multiplier Tube
- Solid State Detectors
- Electrophoresis
- Piezo Devices
- Capacitor Charging
- EO Lenses

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	11.5	13.75	16	VDC	Works with nominal 12V or 15V supply
Input Current, Full Load			250	mA	
Input Current, No Load			100	mA	
Programming Inputs	0		5	VDC	Analog DC Voltage Controls Output 0 to 100%
Input Capacitance		440		µA	Low ESR

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage			8000	VDC	See Models and Ratings Table
Output Current			10	mA	See Models and Ratings Table
Output Programming	0		100	%	Output Voltage programmable via Analog DC Programming Voltage Input
Setpoint Accuracy[4]		±1		%	@ Max Vpgm, No Load
Gain Adjust[5]		±5		%	Potentiometer, See Signals & Controls
Linearity: Output vs Program[6]			±1	%	15 to 100% Output
Minimum Load	No minimum load required				
Start Up Response			250	msec	At Max Vout, Full Load
Line Regulation	0.05		1.0	%	100% Vpgm, Full Load, [Min to Max Input]
Load Regulation	0.07		0.75	%	100% Vpgm, 13.75Vin, [NL to FL]
Ripple and Noise	0.002		0.75	%	1MHz bandwidth, See Models and Ratings Table
Temperature Coefficient		50		ppm/°C	
Stability			100	ppm/hr	After 30 minute warm up

Notes

1. *Maximum current is available at maximum output voltage.*
2. *Specifications after 1 hour warm-up, full load, 25°C, unless otherwise noted.*
3. *Proper thermal management techniques are required to maintain safe case temperature.*
4. *SET POINT ACCURACY refers to the ability of the unit to accurately deliver the programmed voltage.*
5. *GAIN ADJUST refers to the ability to alter the gain of the circuit to allow for set-point accuracy error.*
6. *LINEARITY refers to how much the transfer function can deviate from a straight line in the absence of any set-point error.*

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-10		+60	°C	Case Temperature
Storage Temperature	-20		+90	°C	
Humidity			95	%RH	Non-condensing
Cooling					Natural convection
Thermal Shock Limit			1	°C/10sec	Natural convection

Safety Approvals

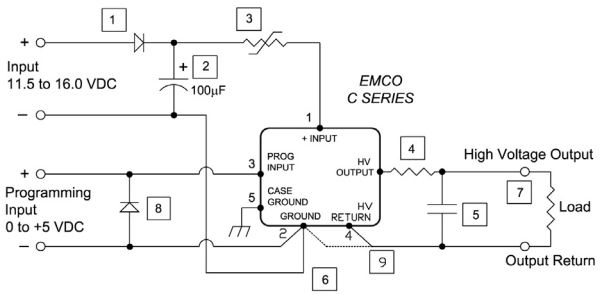
Safety Agency	Safety Standard	Notes & Conditions
UL	IEC/UL/CSA/EN 62368	
CE	CE Directive, RoHs and LVD	Where applicable
RoHS	RoHS 2 and 3 Directive (2011/65/EU)	Where applicable

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Isolation: Input to Output	N/A – Input ground is connected to output ground				
Construction	Case material is zinc plated steel. Solid vacuum encapsulation, UL 94 V-0 rated.				
Switching Frequency	50		350	kHz	
Mean Time Between Failure	2.6			MHrs	Per Bellcore TR 332

Application Notes

Improved Performance and Protection



1. Diode provides reverse polarity protection.
2. Capacitor reduces ripple.
3. Resettable fuse (Raychem P/N RXE020,025 or 030) provides indefinite short circuit protection. *Selection depends on model used, load characteristics and operating temperature range.*
4. Series resistance increases arc protection and reduces ripple (when used with an output capacitor).
5. Capacitor reduces ripple.
6. IMPORTANT: Keep Input, Programming and Output return paths separate to eliminate ground loop accuracy errors.
7. Conformal coating recommended on all exposed high voltage conductors.
8. Diode provides protection against negative programming voltage or negative transient spike.
9. Output circuit return to HV return (pin 4) on C50 - C80. On C01-C40, output circuit return to ground (pin 2).

FUNCTIONAL BLOCK DIAGRAM