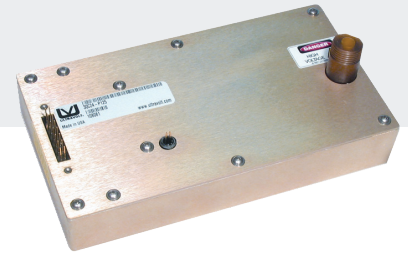


ULTRAVOLT HIGH-POWER C SERIES

HIGH VOLTAGE CAP-CHARGING SUPPLY



The Ultravolt® high-power line of high voltage regulated DC-to-DC converters is an extension of the C series, directly addressing the high power density needs of > 30 W applications. High-power C units provide up to 60/125/250 W. This high power density is especially suited to high-energy systems with large capacitances, fast repetition rates, or high continuous-DC-power requirements.

PRODUCT HIGHLIGHTS

- Seven models from 0 to 125 V through 0 to 6 kV
- 60, 125, or 250 W of output power
- Maximum lout capability down to 0 V
- Maximum lout during charge/rise time
- Output short-circuit protection
- Very fast rise with very low overshoot
- High efficiency
- High power-to-voltage density
- Very low profile
- Output current and voltage monitors
- > 200,000 hour MTBF at 65°C (149°F)
- Fixed-frequency, low-stored-energy design
- UL/CUL recognized component; CE Mark (LVD and RoHS)

TYPICAL APPLICATIONS

- Laser
- Cap charging
- Pulsed power
- Pulse generation
- Test equipment

ULTRAVOLT HIGH-POWER C SERIES

ELECTRICAL SPECIFICATIONS

Parameter		Conditions												Units
Input		All Types												
Voltage Range	Full Power	+23 to 30												VDC
Voltage Range	Derated Power Range	+11 to 32												VDC
Current	Standby/Disable	< 40												mA
Current	Max Load, Max Eout	60 W: 3; 125 W: 6; 250 W: 12												A
Current	No Load, Max Eout	1/8C to 1C: < 300; 2C to 6C: < 500												mA
Output		1/8C			1/4C			1/2C			1C			
Voltage Range	Nominal Input	0 to 125			0 to 250			0 to 500			0 to 1000			VDC
Power	Nominal Input, Max Eout	60	125	250	60	125	250	60	125	250	60	125	250	W
Current	Iout, Entire Output Voltage Range	480	1000	2000	240	500	1000	120	250	500	60	125	250	mA
Current Scale Factor	Full Load	400	833	1667	200	417	833	109	208	417	50	114	227	mA/V
Voltage Monitor Scaling		100:1 ±2% into 10 MΩ												-
Ripple	Full Load, Max Eout, Cload ≥ 0.5 μF	< 1.0												%V p to p
Overshoot	C Load, 0 Eout to Full Eout	< 1												%V pk
Rise Time	Max Iout, Various C Loads and Eout	Figure A (below)												-
Storage Capacitance	Internal	0.90	0.90	1.80	0.90	0.90	1.80	0.43	0.43	0.85	0.019	0.019	0.038	μF
Line Regulation	Nom. Input, Max Eout, Full Power	< 0.01%												VDC
Static Load Regulation	No Load to Full Load, Max Eout	< 0.01%												VDC
Stability	30 Min Warmup, Per 8 h/ Per Day	< 0.01%/< 0.02%												VDC
Programming and Controls		All Types												
Input Impedance	Nominal Input	+output models 1.1 MΩ to GND; -output models 1.1 MΩ to +5 Vref												M
Adjust Resistance	Typical Potentiometer Values	10 to 100 K (pot. across Vref. and signal GND, wiper to adjust)												
Adjust Logic	0 to +5 for +Out, +5 to 0 for - Out	+4.64 VDC for +output or +0.36 for -output = nominal Eout												-
Output Voltage and Impedance	T=+25°C	+5.00 VDC ±2%; Zout = 464 Ω ± 1%												-
Enable/Disable (ON/OFF)		0 to +0.5 disable; +2.4 to 32 enable (default: enable)												VDC

ELECTRICAL SPECIFICATIONS (CONTINUED)

Parameter		Conditions									Units
Input		All Types									
Voltage Range	Full Power	+23 to 30									VDC
Voltage Range	Derated Power Range	+11 to 32									VDC
Current	Standby/Disable	< 40									mA
Current	Max Load, Max Eout	60 W: 3; 125 W: 6; 250 W: 12									A
Current	No Load, Max Eout	1/8C to 1C: < 300; 2C to 6C: < 500									mA
Output		2C			4C			6C			
Voltage Range	Nominal Input	0 to 2000			0 to 4000			0 to 6000			VDC
Power	Nominal Input, Max Eout	60	125	250	60	125	250	60	125	250	W
Current	Iout, Entire Output Voltage Range	30	62	125	15	31	62	10	21	42	mA
Current Scale Factor	Full Load	26	52	104	11.5	26	52	6.2	17.7	35	mA/V
Voltage Monitor Scaling		100:1 ±2% into 10 MΩ									-
Ripple	Full Load, Max Eout, Cload ≥ 0.5 μF	< 1.0									%V p to p
Overshoot	C Load, 0 Eout to Full Eout	< 1									%V pk
Rise Time	Max Iout, Various C Loads and Eout	Figure A (below)									-
Storage Capacitance	Internal	0.90	0.90	1.80	0.90	0.90	1.80	0.43	0.43	0.85	μF
Line Regulation	Nom. Input, Max Eout, Full Power	< 0.01%									VDC
Static Load Regulation	No Load to Full Load, Max Eout	< 0.01%									VDC
Stability	30 Min Warmup, Per 8 h/ Per Day	< 0.01%/< 0.02%									VDC
Programming and Controls		All Types									
Input Impedance	Nominal Input	+output models 1.1 MΩ to GND; -output models 1.1 MΩ to +5 Vref									M
Adjust Resistance	Typical Potentiometer Values	10 to 100 K (pot. across Vref. and signal GND, wiper to adjust)									
Adjust Logic	0 to +5 for +Out, +5 to 0 for - Out	+4.64 VDC for +output or +0.36 for -output = nominal Eout									-
Output Voltage and Impedance	T=+25°C	+5.00 VDC ±2%; Zout = 464 Ω ± 1%									-
Enable/Disable (ON/OFF)		0 to +0.5 disable; +2.4 to 32 enable (default: enable)									VDC

ULTRAVOLT HIGH-POWER C SERIES

ELECTRICAL SPECIFICATIONS (CONTINUED)

Environmental		All Types	
Operating	Full Load, Max Eout, Case Temp.	-40 to +65 (-40 to +149)	°C (°F)
Coefficient	Over the Specified Temperature	±50 (±25 optional)	PPM/°C
Thermal Shock	Mil-Std 810, Method 503-4, Proc. II	-40 to +65 (-40 to +149)	°C (°F)
Storage	Non-Operating, Case Temp.	-55 to +105 (-67 to +221)	°C (°F)
Humidity	All Conditions, Standard Package	0 to 95%, non-condensing	-
Altitude	Standard Package, All Conditions	Sea level through 21,336 m (70,000')	-
Shock	Mil-Std-810, Method 516.5, Proc. IV	20	Gs
Vibration	Mil-Std-810, Method 514.5, Fig.514.5C-3	10	Gs

C = uF
V = Volts
I = mA
T = mS

$$T = \frac{C \times V}{I}$$

C = uF
V = kV
I = mA
F = Hz

$$I = C \times V \times F$$

C = uF
V = kV
I = mA
F = Hz

$$F = \frac{I}{C \times V}$$

C = uF
E² = kV
J = Ws

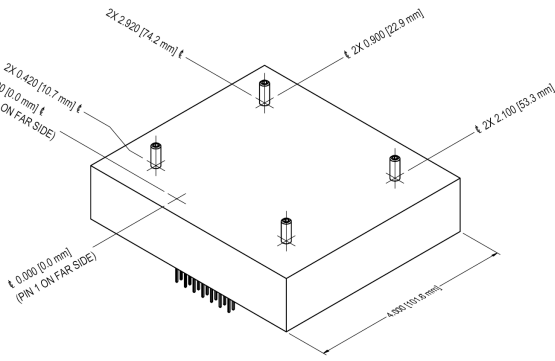
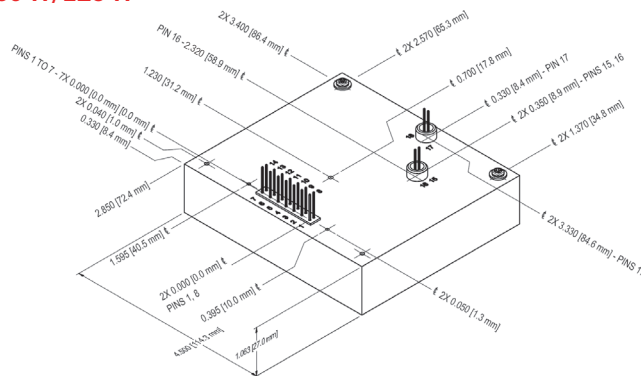
$$J = \frac{C \times E^2}{2}$$

Figure A - Rise time formulas

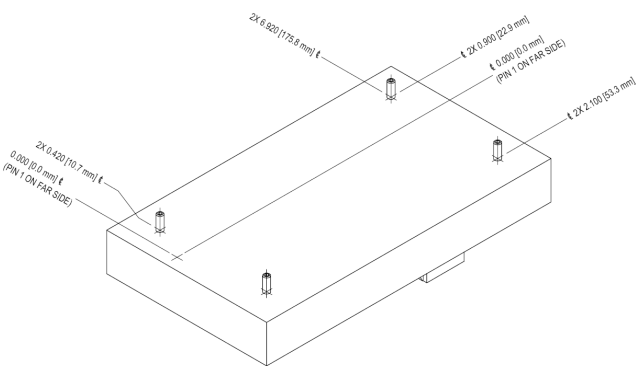
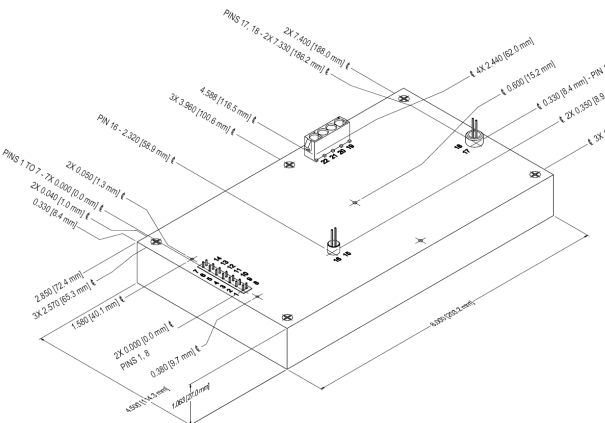
Capacitance must include HVPS internal capacitance.

MECHANICAL SPECIFICATIONS

60 W/125 W



250 W



Volumes and Weights	60 W/125 W		250 W	
	cm ³	in ³	cm ³	in ³
Volume	317	19.35	634	38.7
	kg	lb	kg	lb
Weight	0.64	1.4	1.8	2.6

Construction	
Case	RTV-silicone filled aluminum box (epoxy optional)
	Chem film per MIL-A-8625 type II (anodizing)

For detailed outline drawings and 3D STEP files, please visit www.advanced-energy.com/en/High_Voltage.html.

INTERFACE

Connections	
Pin	Function
1 and 8	Input power ground return
2 and 9	Positive power input
3	Iout monitor
4	Enable/disable
5	Signal ground return
6	Remote adjust input
7	+5 VDC reference output
10, 11, 12, and 13	N/C
14	Eout monitor
15 and 16	HV ground return
17 and 18	HV output

All grounds joined internally. Power supply mounting points isolated from internal grounds by > 100 kΩ, 0.01 μF/50 V (max).

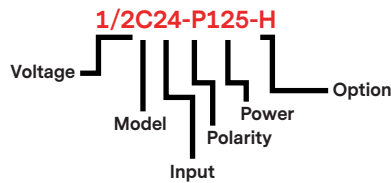
HIGH-POWER PIN Connections (250 w units)	
Pin	Function
2, 9, and 10	N/C
19 and 20	Positive Power Input
21 and 22	Input Power Ground Return

ORDERING INFORMATION

Options		
Type	0 to 125 VDC Output	1/8C
	0 to 250 VDC Output	1/4C
	0 to 500 VDC Output	1/2C
	0 to 1000 VDC Output	1C
	0 to 2000 VDC Output	2C
	0 to 4000 VDC Output	4C
	0 to 6000 VDC Output	6C
Input	24 VDC Nominal	24
Polarity	Positive Output	-P
	Negative Output	-N
Power	60 W Output	60
	125 W Output	125
	250 W Output	250
Heat Sink	1.02 cm (0.400) high (sized to fit case)	-H
PCB Support	(5 or 7) 0.47 cm (0.187) standoffs on top cover	-Z11
Enhanced Interface	5 V Control and Monitors	-I5
	10 V Control and Monitors	-I10
Options	25 PPM Temperature Coefficient	-25PPM

Popular accessories ordered with this product include CONN-KIT-HP250, CONN-KIT-HP, and the BR-7 and BR-8 mounting bracket kits.

For more information on the enhanced interface options, download the I5/I10 option datasheet.





For international contact information,
visit advanced-energy.com.

uv-ca@aei.com
+1.970.221.0108

ABOUT ADVANCED ENERGY

Since 1981, UltraVolt® — now part of the Advanced Energy (AE) family — has perfected how power performs for its customers. For both end users and OEMs, AE's comprehensive portfolio of standard and custom high voltage components precisely match system specifications to deliver unparalleled energy, quality, and performance. Through close customer collaboration, design expertise, application insight, and world-class support, AE creates successful partnerships and enables customers to push the boundaries of innovation and stay ahead of evolving market needs.

PRECISION | POWER | PERFORMANCE



CAUTION:
High Voltage

Read and understand all documentation before you install, operate, or maintain Advanced Energy high voltage power supplies. Follow all safety instructions and precautions to protect against property damage and serious or possibly fatal bodily injury. Never defeat safety interlocks or grounds.

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