



# MODULES

## PRODUCT CATALOG 2012

SINGLE OUTPUT - MULTI-OUTPUT - ISOLATED LOW VOLTAGE - AMPLIFIERS - TEST FIXTURES - FILAMENT

# TABLE OF CONTENTS

## SINGLE OUTPUT HIGH VOLTAGE POWER SUPPLIES

### STANDARD



AA Series	Reduced-size product line with enhanced features . . . . .	4
	High-voltage bias from 0 to 62V through 0 to 6kV @ 0 to 4W, 20W & 30W	
A Series	High-voltage bias from 0 to 62V through 0 to 6kV @ 0 to 4W, 20W & 30W . . . . .	6
C Series	Fast-rise / low-overshoot capacitor charging, HV amp, or DC Bias . . . . .	8
	0 to 125V through 0 to 6kV @ 0 to 20W & 30W	
High Power C Series	Fast-rise / low-overshoot capacitor charging, HV amp, or DC Bias . . . . .	10
	0 to 125V through 0 to 6kV @ 0 to 60, 125 & 250W	
High Power 8C-30C Series	Fast-rise / low-overshoot capacitor charging, HV amp, or DC Bias . . . . .	12
	0 to 8kV through 0 to 30kV @ 0 to 60 and 125W	
10A-25A Series	High-voltage bias from 0 to 10kV through 0 to 25kV @ 0 to 4W, 15W & 30W . . . . .	15
30A-40A Series	High-voltage bias from 0 to 30kV through 0 to 40kV @ 0 to 4W, 15W & 30W . . . . .	18

### PRECISION



E Series	Precision high-voltage module 0 to 15kV @ 4W, 15/20W, and 30W . . . . .	21
	10PPM temperature coefficient & <10PPM ripple	

### MICROSIZE/MICROPOWER




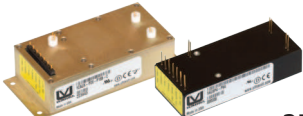
XS Series	Extra-small high-voltage bias from 0 to 100V @ 100mW. . . . .	23
	Volume is only 0.08in <sup>3</sup>	
US Series	High-voltage bias from 0 to 500V @ 0 to 100mW . . . . .	25
	Volume is only 0.35in <sup>3</sup>	
V Series	Small-footprint high-voltage bias from 0 to 600V through 0 to 1.5kV @ 0 to 1W . . .	27
	Volume is only 0.84in <sup>3</sup>	
M Series	Compact low profile high-voltage bias from 0 to 600V thru 0 to 1.5kV @ 0 to 1W. . .	29
	Volume is only 1.00in <sup>3</sup>	
D Series	Low profile high-voltage bias from 0 to 1kV through 0 to 6kV @ 0 to 6W. . . . .	31
	Volume starting at 2.22in <sup>3</sup>	

### CONSTANT POWER



CP Series	Operates in constant-voltage, constant-current, or constant-power modes . . . . .	33
	0 to 1kV through 0 to 15kV @ 10W of output power	

 Failure to operate UltraVolt High Voltage Power Supplies correctly and to follow all operating instructions may create an electrical shock hazard, which can result in personal injury or loss of life, and/or damage to equipment or other property.



# MULTI-OUTPUT HIGH VOLTAGE MODULES

Dual Output Aux	Adds a second HV output to A & C Series 4W to 30W units + or - fixed output from 47VDC to 1,050VDC @ 1 or 2mA	.35
Triple Output Aux	Adds second & third HV outputs to 10A through 40A Series units + outputs adjustable from 0 to 500VDC through 1,050VDC @ 25uA	.37
Bipolar C Series	Dual independent HV outputs from 0 to $\pm 125$ VDC through 0 to $\pm 6$ kV Fast-rise / low-overshoot capacitor charging, HV amp, or DC Bias @ 0 to 125W (62W x 2), and 250W (125W x 2)	.39



# HIGH VOLTAGE AMPLIFIERS

HVA Series	Precision high-voltage amplifier line Bipolar outputs 0 to $\pm 5$ kV @ 1W, Unipolar outputs 0 to 10kV @ 1W	.41
------------	--	-----



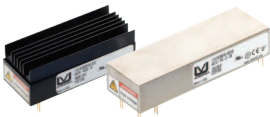
# ISOLATED LOW VOLTAGE POWER SUPPLIES

FL Series	Floating Hot Deck isolation module with <10nA leakage @15kV Includes analog I/O, digital I/O & LVPS all isolated to 15kV	.44
EFL Series	Floating Hot Deck isolation module with 150G $\Omega$ isolation resistance @15kV or 2G $\Omega$ isolation resistance @ 30kV. Provides an additional isolated analog I/O channel	.48



# LOW VOLTAGE FILAMENT SUPPLY

FIL Series	Non-isolated precision filament supply from 0 to 5VDC @ 0 to 3A	.52
------------	---	-----



# OPTIONS AND ACCESSORIES

Accessories & Connectors	Standard accessories such as mounting plates, heatsinks, mu-metal shields, etc. Milspec, industry-standard, low-voltage connectors & kits, HV & LV wire harness, PCB & flying lead connectors	.54
-F Option	Ripple Stripper® Output Filter for A Series units Reduces HV output ripple by 10 to 100 times	.59
-I5/I10 Options	Enhanced interface options for AA Series, 10A Series and High Power C Series +5V/+10V control and monitoring and constant voltage/current auto-crossover	.61

# SAFETY, COMPLIANCES, & WARRANTY

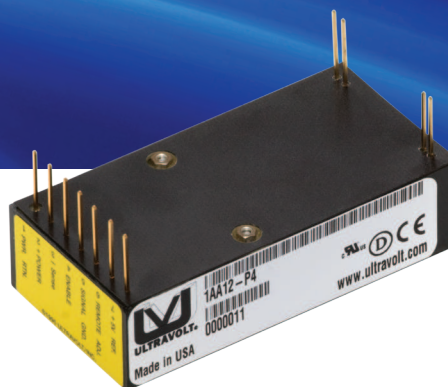
Safety and compliance information along with warranty & repair policy	.63
---	-----

# AA SERIES

## High Voltage Biasing Supply

The AA Series of high-voltage regulated DC-DC converters addresses the needs of the miniature PCB-mount regulated high voltage power supply user. Designed and built utilizing state-of-the-art power-conversion topology, these units feature surface-mount technology and encapsulation techniques that provide high reliability and performance. Typical applications for the AA Series include the following: bias supplies, detectors, piezos, amplifiers, and photomultiplier tubes (PMT).

- 22% smaller than standard A Series
- 8 models from 0 to 62V through 0 to 6kV
- 4, 20 or 30 watts of output power
- Maximum Iout capability down to 0 Volts
- Wide input voltage range



- Indefinite output short-circuit protection
- Output current & voltage monitors
- Fixed-frequency, low-stored-energy design
- >1,250,000 hour MTBF @65°C
- UL, cUL, CE, IEC-60950-1, and Demko Recognized

PARAMETER	CONDITIONS	MODELS																								UNITS
INPUT		12V												24V												
Voltage Range	Full Power	+ 11 to 16												+ 23 to 30												VDC
Voltage Range	Derated Power Range	+ 9 to 32												+ 9 to 32												VDC
Current	Standby / Disable	< 30												< 30												mA
Current	No Load, Max Eout	< 100												< 90												mA
Current	Max Load, Max Eout	~ 400												~ 1350												mA
AC Ripple Current	Nominal Input, Full Load	< 80												< 80												mA p-p
OUTPUT		1/16AA			1/8AA			1/4AA			1/2AA			1AA			2AA			4AA			6AA			
Voltage Range	Nominal Input	0 to 62			0 to 125			0 to 250			0 to 500			0 to 1,000			0 to 2,000			0 to 4,000			0 to 6,000			VDC
Nominal Input Voltage / Model		12	24	24	12	24	24	12	24	24	12	24	24	12	24	24	12	24	24	12	24	24	12	24	24	VDC
Power	Nominal Input, Max Eout	4	20	30	4	20	30	4	20	30	4	20	30	4	20	30	4	20	30	4	20	30	4	20	30	Watts
Current	Iout Entire Output Voltage Range	64	320	480	32	160	240	16	80	120	8	40	60	4	20	30	2	10	15	1	5	7.5	0.67	3.3	5	mA
Current Scale Factor	Full Load	42.67	969.7	960	11.64	237	258	3.27	70.48	72.7	.79	17.78	17.65	.37	4.60	4.62	.192	1.52	1.52	.090	.752	.76	.066	.490	.50	mA/V
Voltage Monitor Scaling		10:1 ± 2% into 10MΩ												100:1 ± 2% into 10MΩ												-
Ripple	Full Load, Max Eout	0.03	0.06	0.15	0.03	0.038	0.038	0.023	0.04	0.05	0.01	0.01	0.011	0.026	0.048	0.073	0.01	0.011	0.046	0.042	0.050	0.070	0.035	0.024	0.046	%V p-p
Dynamic Load Regulation	½ to Full Load, Max Eout per .1mA	<.12	<.12	<.12	<.12	<.12	<.12	<.20	<.20	<.20	<.50	<.50	<.50	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<6.0	<6.0	<6.0	V pk
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 hr/ per day	< 0.01% / < 0.02%																								VDC
PROGRAMMING & CONTROLS		ALL TYPES																								
Input Impedance	Nominal Input	+ Output Models 1.1MΩ to GND, - Output Models 1.1MΩ to +5 Vref																								MΩ
Adjust Resistance	Typical Potentiometer Values	10K to 100K (Pot across Vref. & Signal GND, Wiper to Adjust)																								Ω
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 & Impedance	T=+25°C	+ 5.00VDC ± 2%, Zout = 464Ω ± 1%																								-
Enable/Disable		0 to +0.5 Disable, +2.4 to 32 Enable (Default = Enable)																								VDC
ENVIRONMENTAL		ALL TYPES																								
Operating	Full Load, Max Eout, Case Temp.	-40 to +65																								°C
Coefficient	Over the Specified Temperature	±50																								PPM/°C
Thermal Shock	Mil-Std 810, Method 503-4, Proc. II	-40 to +65																								°C
Storage	Non-Operating, Case Temp.	-55 to +105																								°C
Humidity	All Conditions, Standard Package	0 to 95% non-condensing																								-
Altitude	Standard Package, All Conditions	Sea Level through Vacuum																								-
Shock	Mil-Std-810, Method 516.5, Proc. IV	20																								G's
Vibration	Mil-Std-810, Method 514.5, Fig.514.5C-3	10																								G's

Specifications subject to change without notice.



*Making High Voltage Easier!®*

**Higher Service, Higher Performance, Higher Reliability**

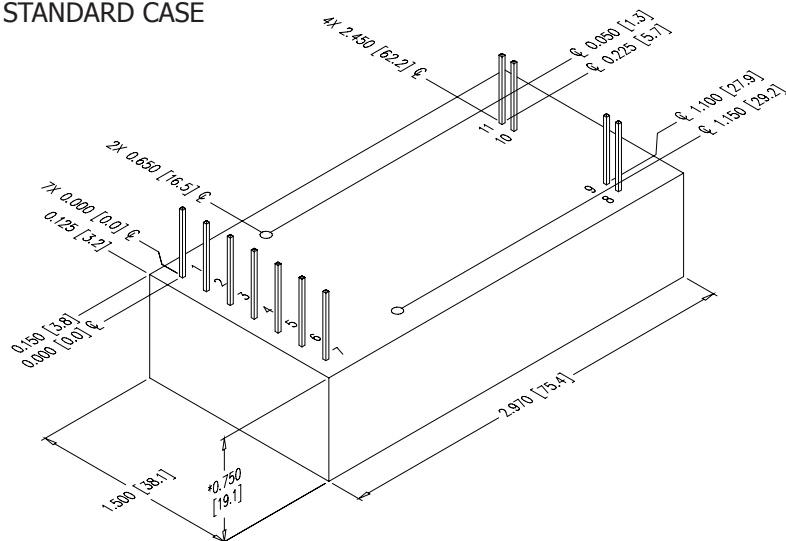
©2011, UltraVolt Inc. All rights reserved.



# AA SERIES

## High Voltage Biasing Supply

### STANDARD CASE



### CONSTRUCTION

Epoxy-filled DAP box certified to ASTM-D-5948

### SIZE

Volume 3.34in<sup>3</sup> (54.8 cc)

Weight 4.0oz (114g)

### TOLERANCE

Overall  $\pm 0.050''$  (1.27)

Pin to Pin  $\pm 0.015''$  (0.38)

Mounting hole location  $\pm 0.025''$  (0.64)

### NOTES

20W and 30W versions are an additional 0.062" (1.57) in height.

-M equipped units are an additional 0.030" (0.76) for all dimensions. Contact UltraVolt's Customer Service Department for drawings of models equipped with -E or -H options.

Downloadable drawings (complete with mounting & pin information) and 3D models are available online.

CONNECTIONS	
PIN	FUNCTION
1	Input-Power Ground Return
2	Positive Power Input
3	Iout Monitor
4	Enable/Disable
5	Signal Ground Return
6	Remote Adjust Input
7	+5VDC Reference Output
8	HV Ground Return
9	Eout Monitor
10 & 11	HV Output

All grounds joined internally. Power-supply mounting points isolated from internal grounds by  $>100k\Omega$ , .01uF / 50V (Max) on all models except -M (20W and above), -M-E, and -M-H configurations which are  $0\Omega$ .

ORDERING INFORMATION		
Type	0 to 62 VDC Output	1/16AA
	0 to 125 VDC Output	1/8AA
	0 to 250 VDC Output	1/4AA
	0 to 500 VDC Output	1/2AA
	0 to 1,000 VDC Output	1AA
	0 to 2,000 VDC Output	2AA
	0 to 4,000 VDC Output	4AA
	0 to 6,000 VDC Output	6AA
Input	12VDC Nominal	12
	24VDC Nominal	24
Polarity	Positive Output	-P
	Negative Output	-N
Power	Watts Output (12 V Only)	4
	Watts Output (24 V Only)	20
	Watts Output (24 V Only)	30
Case	Plastic Case - Diallyl Phthalate	(Standard)
	'Eared' Chassis Mounting Plate	-E
Heat Sink	.400" High (sized to fit case)	-H
Shield	Six-sided Mu-Metal Shield	-M
Temp. Coefficient	25PPM Temperature Coefficient	-25PPM
Enhanced Interface	5V Control and Monitors	-I5
	10V Control and Monitors (24Vin only)	-I10

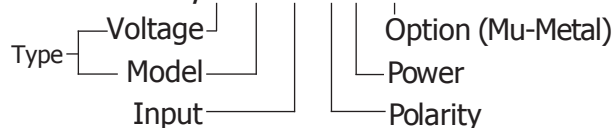
Note: For more information on the enhanced interface options, download the [I5/I10 Option datasheet](#).



Non-RoHS compliant units are available. Please contact the factory for more information.



Example: 1/2AA24-P30-M



Popular accessories ordered with this product include CONN-KIT and BR-18 mounting bracket kit.



Making High Voltage Easier!®

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 [www.ultravolt.com](http://www.ultravolt.com)

# A SERIES

## High Voltage Biasing Supply

The A Series of high-voltage regulated DC-DC converters addresses the needs of the miniature PCB-mount regulated high voltage power supply user. Designed and built utilizing state-of-the-art power-conversion topology, these units feature surface-mount technology and encapsulation techniques that provide high reliability and performance. Typical applications for the A Series include the following: bias supplies, electrostatic detectors, mass spectrometry, and photomultiplier tubes (PMTs).

- 8 models from 0 to 62V through 0 to 6kV
- 4, 20 or 30 watts of output power
- Maximum Iout capability down to 0 Volts
- Wide input voltage range
- Available with Ripple Stripper® Filter (-F Option)



- Indefinite output short-circuit protection
- Output current monitor
- Fixed-frequency, low-stored-energy design
- >430,000 hour MTBF @65°C
- UL, cUL, CE, IEC-60950-1, and Demko Recognized

PARAMETER	CONDITIONS	MODELS																								UNITS
INPUT		12V												24V												
Voltage Range	Full Power	+ 11 to 16												+ 23 to 30												VDC
Voltage Range	Derated Power Range	+ 9 to 32												+ 9 to 32												VDC
Current	Standby / Disable	< 30												< 30												mA
Current	No Load, Max Eout	< 100												< 90												mA
Current	Max Load, Max Eout	~ 400												~ 1350												mA
AC Ripple Current	Nominal Input, Full Load	< 80												< 80												mA p-p
OUTPUT		1/16A			1/8A			1/4A			1/2A			1A			2A			4A			6A			
Voltage Range	Nominal Input	0 to 62			0 to 125			0 to 250			0 to 500			0 to 1,000			0 to 2,000			0 to 4,000			0 to 6,000			VDC
Nominal Input Voltage		12	24	24	12	24	24	12	24	24	12	24	24	12	24	24	12	24	24	12	24	24	12	24	24	VDC
Power	Nominal Input, Max Eout	4	20	30	4	20	30	4	20	30	4	20	30	4	20	30	4	20	30	4	20	30	4	20	30	Watts
Current	Iout Entire Output Voltage Range	64	320	480	32	160	240	16	80	120	8	40	60	4	20	30	2	10	15	1	5	7.5	0.67	3.3	5	mA
Current Monitor Scaling	Full Load	0.985	3.90	7.40	438.4	1860.5	2891.5	213.3	1000	1481.5	123.1	506.3	740.7	55.56	243.9	400	31.75	129.9	211.3	16.4	66.7	85.2	12.9	48.5	56.8	mAV
Voltage Monitor Scaling	With -Y5 option	10:1 ± 2% into 10MΩ												100:1 ± 2% into 10MΩ												-
Ripple	Full Load, Max Eout	.02	.03	.05	.013	.015	.016	.01	.04	.048	.001	.02	.017	.038	.071	.15	.01	.05	.065	.019	.057	.022	.018	.073	.112	%V p-p
Ripple with -F-M Option*	Full Load, Max Eout, 300pF bypass Cap	.002	.004	.006	.0048	.0056	.006	.0052	.0028	.005	.001	.0138	.0016	.001	.0008	.002	.0007	.0038	.004	.0004	.0088	.0026	.0003	.0012	.004	%V p-p
Dynamic Load Regulation	½ to Full Load, Max Eout per .1mA	<.12	<.12	<.12	<.12	<.12	<.12	<.20	<.20	<.20	<.50	<.50	<.50	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<6.0	<6.0	<6.0	V pk
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 hr/ per day	< 0.01% / < 0.02%																								VDC
PROGRAMMING & CONTROLS		ALL TYPES																								
Input Impedance	Nominal Input	+ Output Models 1.1MΩ to GND, - Output Models 1.1MΩ to +5 Vref																								MΩ
Adjust Resistance	Typical Potentiometer Values	10K to 100K (Pot across Vref. & Signal GND, Wiper to Adjust)																								Ω
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 & Impedance	T=+25°C	+ 5.00VDC ± 2%, Zout = 464Ω ± 1%																								-
Enable/Disable		0 to +0.5 Disable, +2.4 to 32 Enable (Default = Enable)																								VDC
ENVIRONMENTAL		STANDARD												-25PPM OPTION												
Operating	Full Load, Max Eout, Case Temp.	-40 to +65												+10 to +45												°C
Coefficient	Over the Specified Temperature	±50												+25												PPM/°C
Thermal Shock	Mil-Std 810, Method 503-4, Proc. II	-40 to +65																								°C
Storage	Non-Operating, Case Temp.	-55 to +105																								°C
Humidity	All Conditions, Standard Package	0 to 95% non-condensing																								-
Altitude	Standard Package, All Conditions	Sea Level through Vacuum (Vacuum may require -P2 option, contact factory for details.)																								-
Shock	Mil-Std-810, Method 516.5, Proc. IV	20 (Standard), 40 (-C Option)																								G's
Vibration	Mil-Std-810, Method 514.5, Fig.14.5C-3	10 (Standard), 20 (-C Option)																								G's

\*Note: For additional information on the reduced ripple option, see -F Option datasheet.

Specifications subject to change without notice.



**Making High Voltage Easier!®**

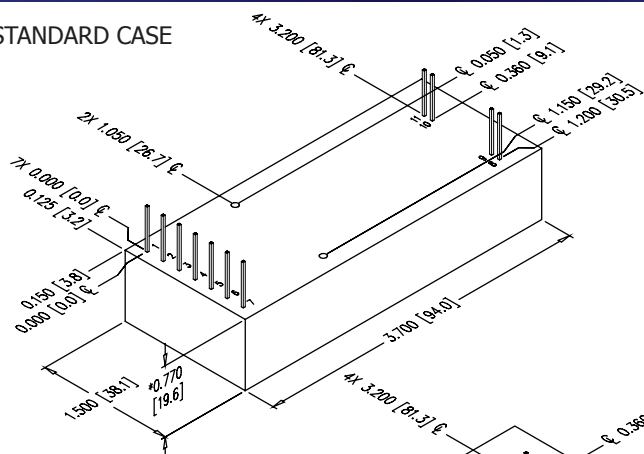
**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved.

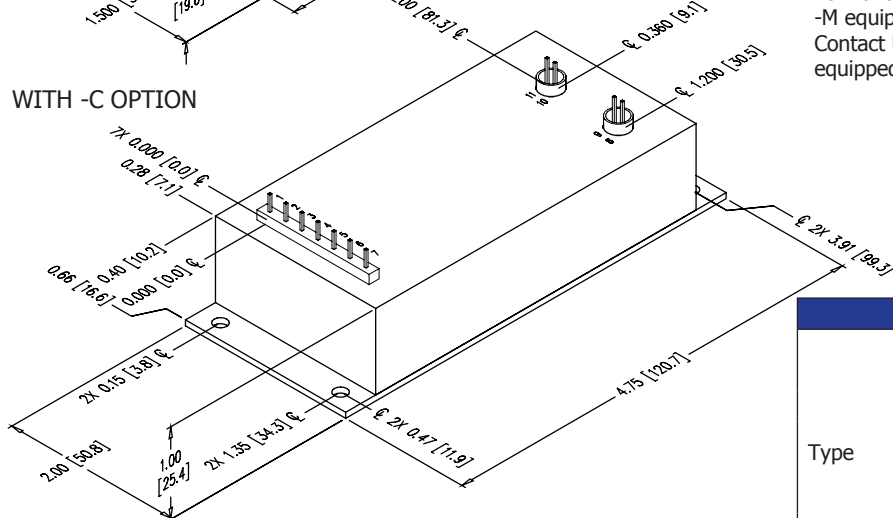
# A SERIES

## High Voltage Biasing Supply

### STANDARD CASE



### WITH -C OPTION



PROUDLY



MADE IN THE USA



Non-RoHS compliant units are available. Please contact the factory for more information.

### CONNECTIONS

PIN	FUNCTION
1	Input-Power Ground Return
2	Positive Power Input
3	Iout Monitor
4	Enable/Disable
5	Signal Ground Return
6	Remote Adjust Input
7	+5VDC Reference Output
8	HV Ground Return
9	HV Ground Return or Eout Monitor (-Y5)
10 & 11	HV Output

All grounds joined internally. Power-supply mounting points isolated from internal grounds by  $>100k\Omega$ ,  $.01\mu F / 50V$  (Max) on all models except -M (20W and above), -M-E, -M-C, and -M-H configurations which are  $0\Omega$ .

Popular accessories ordered with this product include CONN-KIT and BR-1 mounting bracket kit.

### CONSTRUCTION

Epoxy-filled DAP box certified to ASTM-D-5948 with -C Option:  
Aluminum Alloy 5052-H32, Finish: MIL-A-8625 Type II (Anodizing)

### SIZE

Volume  $4.30in^3$  (70.5cc), w/ -C Option:  $8.00in^3$  (131.1cc)  
Weight 5.0oz (142g), w/ -C Option: 10.0oz (284g)

### TOLERANCE

Overall  $\pm 0.050"$  (1.27)  
Pin to Pin  $\pm 0.015"$  (0.38)  
Mounting hole location  $\pm 0.025"$  (0.64)

### NOTES

20W and 30W versions are an additional 0.062" (1.57) in height.  
-M equipped units are an additional 0.030" (0.76) for each dimension.  
Contact [UltraVolt's Customer Service Department](#) for drawings of models equipped with -E or -H options.

[Downloadable drawings \(complete with mounting & pin information\) and 3D models are available online.](#)

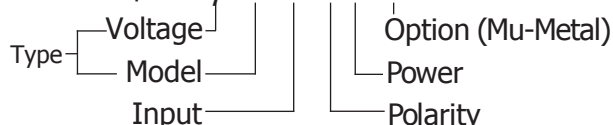


### ORDERING INFORMATION

Type	0 to 62 VDC Output	1/16A
	0 to 125 VDC Output	1/8A
	0 to 250 VDC Output	1/4A
	0 to 500 VDC Output	1/2A
	0 to 1,000 VDC Output	1A
	0 to 2,000 VDC Output	2A
	0 to 4,000 VDC Output	4A
	0 to 6,000 VDC Output	6A
Input	12VDC Nominal	12
	24VDC Nominal	24
Polarity	Positive Output	-P
	Negative Output	-N
Power	Watts Output (12 V Only)	4
	Watts Output (24 V Only)	20
	Watts Output (24 V Only)	30
Case	Plastic Case - Diallyl Phthalate	(Standard)
	'Eared' Chassis Mounting Plate	-E
	RF-Tight Aluminum Case	-C
Heat Sink	.400" High (sized to fit case)	-H
Ripple Stripper®	Integral Output Filter*	-F
Shield	Six-sided Mu-Metal Shield	-M
Voltage Monitor	Optional Eout Monitor	-Y5
Iout Monitor Boost	Boosted Iout Monitor Signal Level	-Y10
Temp. Coefficient	25PPM Temperature Coefficient	-25PPM

\*Note: For additional information on the reduced ripple option, see [-F Option datasheet](#).

Example: 1/2A12-P4-M



Rev. AB 9/11



**Making High Voltage Easier!®**

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 [www.ultravolt.com](http://www.ultravolt.com)



# C SERIES

## High Voltage Cap-Charging Supply

The C Series of high-voltage regulated DC-DC converters are designed for fast rise-time/charging applications utilizing state-of-the-art power conversion topology. Surface-mount technology and encapsulation techniques provide high reliability and low cost. See Application Note 10 for more charging information. Typical applications for the C Series include the following: cap-charging, pulsed power, test equipment, mass spectrometry and automated test equipment (ATE).

- 8 models from 0 to 62 Volts through 0 to 6kV
- 20 or 30 watts of output power
- Maximum Iout capability down to 0 Volts
- Maximum Iout during charge/rise time
- Indefinite output short-circuit protection

- Very fast rise with very low overshoot
- Output voltage and current monitors
- >400,000 hour MTBF @65°C
- Fixed-frequency, low-stored-energy design
- UL, cUL, CE, IEC-60950-1, and Demko Recognized

PARAMETER	CONDITIONS	MODELS																UNITS
INPUT		ALL TYPES																
Voltage Range	Full Power	+ 23 to 30																VDC
Voltage Range	Derated Power Range	+ 9 to 32																VDC
Current	Standby / Disable	< 30																mA
Current	No Load, Max Eout	< 90																mA
Current	Max Load, Max Eout	20W: 950, 30W: 1425																mA
AC Ripple Current	Nominal Input, Full Load	< 80																mA p-p
OUTPUT		1/16C		1/8C		1/4C		1/2C		1C		2C		4C		6C		
Voltage Range	Nominal Input	0 to 62		0 to 125		0 to 250		0 to 500		0 to 1,000		0 to 2,000		0 to 4,000		0 to 6,000		VDC
Power	Nominal Input, Max Eout	20	30	20	30	20	30	20	30	20	30	20	30	20	30	20	30	Watts
Current	Iout, Entire Output Voltage Range	320	480	160	240	80	120	40	60	20	30	10	15	5	7.5	3.3	5	mA
Current Scale Factor	Full Load	TBD	TBD	2540	4210	1096	2000	1142	1667	307	476	159	259	94	112	51	86	mA/V
Voltage Monitor Scaling		100:1 ± 2% into 10MΩ																-
Ripple	Full Load, Max Eout, Cload ≥0.5uF	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	V p-p
Overshoot	C Load, 0 Eout to Full Eout	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 4.0	< 6.0	< 6.0	V pk
Rise Time	Max Iout, Various C Loads & Eout	Figure A																-
Storage Capacitance	Internal	TBD	TBD	0.50	0.50	0.15	0.15	0.16	0.16	0.033	0.018	0.009	0.009	0.010	0.010	0.0064	0.0064	uF
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 hr/ per day	< 0.01% / < 0.02%																VDC
PROGRAMMING & CONTROLS		ALL TYPES																
Input Impedance	Nominal Input	+ Output Models 1.1MΩ to GND, - Output Models 1.1MΩ to +5 Vref																MΩ
Adjust Resistance	Typical Potentiometer Values	10K to 100K (Pot across Vref. & Signal GND, Wiper to Adjust)																Ω
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 & Impedance	T=+25°C	+ 5.00VDC ± 2%, Zout = 464Ω ± 1%																-
Enable/Disable		0 to +0.5 Disable, +2.4 to 32 Enable (Default = Enable)																VDC
ENVIRONMENTAL		STANDARD								-25PPM OPTION								
Operating	Full Load, Max Eout, Case Temp.	-40 to +65								+10 to +45								°C
Coefficient	Over the Specified Temperature	±50								±25								PPM/°C
Thermal Shock	Mil-Std 810, Method 503-4, Proc. II	-40 to +65																°C
Storage	Non-Operating, Case Temp.	-55 to +105																°C
Humidity	All Conditions, Standard Package	0 to 95% non-condensing																-
Altitude	Standard Package, All Conditions	Sea Level through Vacuum (Vacuum may require -P2 option, contact factory for details)																-
Shock	Mil-Std-810, Method 516.5, Proc. IV	20 (Standard), 40 (-C Option)																G's
Vibration	Mil-Std-810, Method 514.5, Fig.514.5C-3	10 (Standard), 20 (-C Option)																G's

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

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

Specifications subject to change without notice.

Figure A - Rise Time Formulas

NOTES: Capacitance must include HVPS internal Capacitance.



**Making High Voltage Easier!®**

**Higher Service, Higher Performance, Higher Reliability**

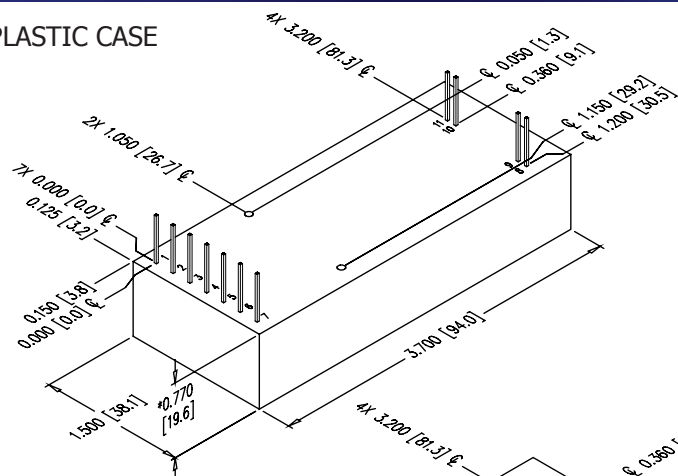
©2011, UltraVolt Inc. All rights reserved.



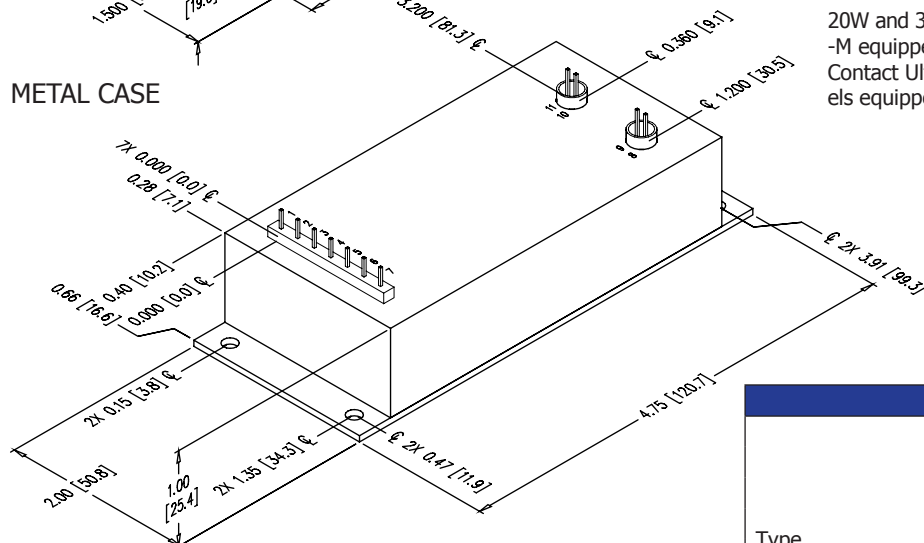
# C SERIES

## High Voltage Cap-Charging Supply

### PLASTIC CASE



### METAL CASE



PROUDLY



Non-RoHS compliant units are available. Please contact the factory for more information.

### CONNECTIONS

PIN	FUNCTION
1	Input-Power Ground Return
2	Positive Power Input
3	Iout Monitor
4	Enable/Disable
5	Signal Ground Return
6	Remote Adjust Input
7	+5VDC Reference Output
8	HV Ground Return
9	Eout Monitor
10 & 11	HV Output

All grounds joined internally. Power-supply mounting points isolated from internal grounds by >100kΩ, .01uF / 50V (Max) on all models except -M, -M-C, -M-E, and -M-H configurations which are 0Ω.

### CONSTRUCTION

Epoxy-filled DAP box certified to ASTM-D-5948  
With -C option, Aluminum box, Chem film per MIL-A-8625 Type II (Anodizing)

### SIZE

Volume 4.30in<sup>3</sup> (70.5cc), w/ -C Option: 8.00in<sup>3</sup> (131.1cc)  
Weight 5.0oz (142g), w/ -C Option: 10.0oz (284g)

### TOLERANCE

Overall ±0.050" (1.27), Pin to Pin ±0.015" (0.38), Mounting hole location ±0.025" (0.64) (Plastic case)  
Overall ±0.025" (0.64), Pin to Pin ±0.015" (0.38), Hole to Hole location ±0.025" (0.64) (Metal case)

### NOTES

20W and 30W versions are an additional 0.062" (1.57) in height.  
-M equipped units are an additional 0.030" (0.76) for each dimension.  
Contact UltraVolt's Customer Service Department for drawings of models equipped with -E or -H options.

Downloadable drawings (complete with mounting & pin information) and 3D models are available online.

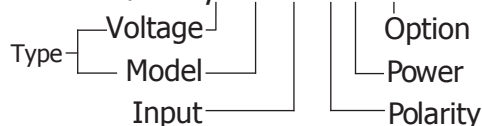


### ORDERING INFORMATION

Type	0 to 62 VDC Main Output	1/16C
	0 to 125 VDC Main Output	1/8C
	0 to 250 VDC Main Output	1/4C
	0 to 500 VDC Main Output	1/2C
	0 to 1,000 VDC Main Output	1C
	0 to 2,000 VDC Main Output	2C
	0 to 4,000 VDC Main Output	4C
	0 to 6,000 VDC Main Output	6C
Input	24VDC Nominal (20W & 30W)	24
Polarity	Positive Output	-P
	Negative Output	-N
Power	Watts Output	20
	Watts Output	30
Case	Plastic Case - Diallyl Phthalate	(Standard)
	'Eared' Heatsink Plate (plastic case)	-E
	RF-Tight Aluminum Case	-C
Heatsink	.400" High (sized to fit case)	-H
Shield	Six-sided Mu-Metal Shield	-M
Temp. Coefficient	25PPM Temperature Coefficient	-25PPM

Contact the factory for boosted current monitor options.

Example: 1/2C24-P20-C



Popular accessories ordered with this product include CONN-KIT and BR-1 mounting bracket kit.



Making High Voltage Easier!®

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com

# HIGH POWER C SERIES

## High Voltage Cap-Charging Supply

This 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 watt applications. High Power C units provide up to 60/125/250 watts. This high power density is especially suited to high-energy systems with large capacitances, fast repetition rates, or high continuous-DC-power requirements. See Application Note 10 for more charging information. Typical applications for the High Power C Series include the following: laser, cap-charging, pulsed power, pulse generator, and test equipment.

- 7 models from 0 to 125 Volts through 0 to 6kV
- 60, 125, or 250 watts of output power
- Maximum Iout capability down to 0 Volts
- Maximum Iout 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 & voltage monitors
- >200,000 hour MTBF @65°C
- Fixed-frequency, low-stored-energy design
- UL, cUL, CE, IEC-60950-1, and Demko Recognized

PARAMETER	CONDITIONS																			UNITS
<b>INPUT</b>		<b>ALL TYPES</b>																		
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	60W: 3, 125W: 6 250W: 12																		A
Current	No Load, Max Eout	1/8C to 1C: < 300, 2C to 6C: < 500																		mA
AC Ripple Current	Nominal Input, Full Load	< 50																		mA p-p
<b>OUTPUT</b>		<b>1/8C</b>		<b>1/4C</b>		<b>1/2C</b>		<b>1C</b>		<b>2C</b>		<b>4C</b>		<b>6C</b>						
Voltage Range	Nominal Input	0 to 125		0 to 250		0 to 500		0 to 1,000		0 to 2,000		0 to 4,000		0 to 6,000						VDC
Power	Nominal Input, Max Eout	60	125	250	60	125	250	60	125	250	60	125	250	60	125	250	60	125	250	Watts
Current	Iout, Entire Output Voltage Range	480	1000	2000	240	500	1000	120	250	500	60	125	250	30	62	125	15	31	62	mA
Current Scale Factor	Full Load	400	833	1667	200	417	833	109	208	417	50	114	227	26	52	104	11.5	26	52	mA/V
Voltage Monitor Scaling		100:1 ±2% into 10MΩ																		-
Ripple	Full Load, Max Eout, Cload ≥0.5uF	< 1.0																		%V p-p
Overshoot	C Load, 0 Eout to Full Eout	< 1																		%V pk
Rise Time	Max Iout, Various C Loads & Eout	Figure A																		-
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	0.019	0.019	0.038	0.013	0.013	0.026	uF
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 hr/ per day	< 0.01% / < 0.02%																		VDC
<b>PROGRAMMING &amp; CONTROLS</b>		<b>ALL TYPES</b>																		
Input Impedance	Nominal Input	+ Output Models 1.1MΩ to GND, - Output Models 1.1MΩ to +5 Vref																		MΩ
Adjust Resistance	Typical Potentiometer Values	10K to 100K (Pot across Vref. & Signal GND, Wiper to Adjust)																		Ω
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 & Impedance	T=+25°C	+ 5.00VDC ± 2%, Zout = 464Ω ± 1%																		-
Enable/Disable (ON/OFF)		0 to +0.5 Disable, +2.4 to 32 Enable (Default = Enable)																		VDC
<b>ENVIRONMENTAL</b>		<b>ALL TYPES</b>																		
Operating	Full Load, Max Eout, Case Temp.	-40 to +65																		°C
Coefficient	Over the Specified Temperature	±50																		PPM/°C
Thermal Shock	Mil-Std 810, Method 503-4, Proc. II	-40 to +65																		°C
Storage	Non-Operating, Case Temp.	-55 to +105																		°C
Humidity	All Conditions, Standard Package	0 to 95% non-condensing																		-
Altitude	Standard Package, All Conditions	Sea Level through 70,000																		ft
Shock	Mil-Std-810, Method 516.5, Proc. IV	20																		G's
Vibration	Mil-Std-810, Method 514.5, Fig.514.5C-3	10																		G's

$$C = \mu F$$

$$V = \text{Volts}$$

$$I = \text{mA}$$

$$T = \text{ms}$$

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

$$C = \mu F$$

$$V = \text{kV}$$

$$I = \text{mA}$$

$$F = \text{Hz}$$

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

$$C = \mu F$$

$$V = \text{kV}$$

$$I = \text{mA}$$

$$F = \text{Hz}$$

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

Specifications are subject to change without notice.

$$C = \mu F$$

$$E^2 = \text{kV}$$

$$J = \text{Ws}$$

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

Figure A - Rise Time Formulas

NOTE: Capacitance must include HVPS internal Capacitance.



**Making High Voltage Easier!®**

**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved.

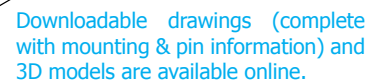
## High Voltage Cap-Charging Supply

[illegible][illegible]

Epoxy-filled Aluminum Box  
Chem film per MIL-A-8625 Type II  
(Anodizing)

Volume:  
60W/125W: 19.35in<sup>3</sup> (317cc)  
250W: 38.7in<sup>3</sup> (634cc)  
Weight:  
60W/125W: 1.4 lbs (.64kg)  
250W: 2.6 lbs (1.18kg)

Overall  $\pm 0.025''$  (0.64)  
Pin to Pin  $\pm 0.015''$  (0.38)  
Hole to Hole location  $\pm 0.025''$  (0.64)



HIGH POWER PIN CONNECTIONS (250 WATT UNITS)	
PIN	FUNCTION
2, 9, & 10	N/C
19 & 20	Positive Power Input
21 & 22	Input Power Ground Return



Non-RoHS compliant units are available. Please contact the factory for more information.

ORDERING INFORMATION		
Type	0 to 125 VDC Output	1/8C
	0 to 250 VDC Output	1/4C
	0 to 500 VDC Output	1/2C
	0 to 1,000 VDC Output	1C
	0 to 2,000 VDC Output	2C
	0 to 4,000 VDC Output	4C
	0 to 6,000 VDC Output	6C
Input	24VDC Nominal	24
Polarity	Positive Output	-P
	Negative Output	-N
Power	60 Watts Output	60
	125 Watts Output	125
	250 Watts Output	250
Heat Sink	.400" High (sized to fit case)	-H
PCB Support	(5 or 7) 0.187" standoffs on top cover	-Z11
Enhanced Interface	5V Control and Monitors	-I5
	10V Control and Monitors	-I10

Note: For more information on the enhanced interface options, download the [I5/I10 Option datasheet](#).

All grounds joined internally. Power-supply mounting points isolated from internal grounds by  $>100\text{k}\Omega$ ,  $.01\mu\text{F}$  / 50V (Max).

Rev. U 9/11



Example: 1/2C24-P125

Type — Voltage — Model — Power —  
Input — Polarity

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



***Making High Voltage Easier!®***

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 [www.ultravolt.com](http://www.ultravolt.com)



# HIGH POWER 8C-30C SERIES

## 8kV to 30kV High Voltage Cap-Charging Supplies

This 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 watt applications. High Power 8C - 30C units provide up to 60/125 watts. This high power density is especially suited to high-energy systems with large capacitances, fast repetition rates, or high continuous-DC-power requirements. See Application Note 10 for more changing information. Typical applications for the High Power 8C-30C Series include the following: laser, cap-charger, pulse generators, Q-switch, and TDR test equipment.

- 7 models from 0 to 8kV through 0 to 30kV
- 60 or 125 watts of output power
- Maximum Iout capability down to 0 Volts
- Maximum Iout 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 & voltage monitors
- >200,000 hour MTBF @65°C
- Fixed-frequency, low-stored-energy design
- UL, cUL, CE, IEC-60950-1, and Demko Recognized

PARAMETER	CONDITIONS	ALL TYPES														UNITS
INPUT																
Voltage Range	Full Power	+ 23 to 30														VDC
Voltage Range	Derated Power Range	+ 11 to 30														VDC
Current	Standby / Disable	< 40														mA
Current	No Load, Max Eout	8C to 15C < 500, 20C to 25C < 600														mA
Current	Max Load, Max Eout	60W: 3, 125W: 6														A
AC Ripple Current	Nominal Input, Full Load	< 50														mA p-p
OUTPUT		8C		10C		12C		15C		20C		25C		30C		
Voltage Range	Nominal Input	0 to 8,000		0 to 10,000		0 to 12,000		0 to 15,000		0 to 20,000		0 to 25,000		0 to 30,000		VDC
Power	Nominal Input, Max Eout	60	125	60	125	60	125	60	125	60	125	60	125	60	125	Watts
Current	Iout, Entire Output Voltage Range	7.5	15.5	6	12.5	5	10.5	4	8.3	3	6.25	2.4	5	2	4.17	mA
Current Scale Factor	Full Load	4.7	14.2	4.1	10.9	4.0	7.4	4.0	7.5	.65	.653	.65	.650	.65	.642	mA/V
Voltage Monitor Scaling		1000:1 ± 2% into 10MΩ														-
Internal Capacitance	Capacitance / 95% Decay (50Meg Load)	2800/700		2000/575		2000/650		2000/650		1600/240		1600/240		1600/240		pF/mS
Ripple	Full Load, Max Eout	< 1.0 (Cload ≥ 0.05uF)										< 1.0 (Cload ≥ 0.01uF)				V p-p
Rise Time	Max Iout, Various C Loads & Eout	Figure A														-
Storage Capacitance	Internal	2800	2800	2000	2000	2000	2000	2000	2000	782	1182	710	1110	710	1110	pF
Overshoot	C Load, 0 Eout to Full Eout	< 0.1 %														V pk
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 hr/ per day	< 0.01% / < 0.02%														VDC
PROGRAMMING & CONTROLS		ALL TYPES														
Input Impedance	Nominal Input	+ Output Models 1.1MΩ to GND, - Output Models 1.1MΩ to +5 Vref														MΩ
Adjust Resistance	Typical Potentiometer Values	10K to 100K (Pot across Vref. & Signal GND, Wiper to Adjust)														Ω
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 & Impedance	T=+25°C	+ 5.00VDC ± 2%, Zout = 464Ω ± 1%														-
Enable/Disable		0 to +0.5 Disable, +2.4 to 32 Enable (Default = Enable)														VDC
ENVIRONMENTAL		ALL TYPES														
Humidity	All Conditions, Standard Package	0 to 95% non-condensing														-
Coefficient	Over the Specified Temperature	± 50														PPM/°C
Thermal Shock	Mil-Std-810, Method 503-4, Proc. II	-40 to +65														°C
Storage	Non-Operating, Case Temp.	-55 to +105														°C
Humidity	All Conditions, Standard Package	0 to 95% non-condensing														-
Altitude	Standard Package, All Conditions	Sea Level through 70,000														ft
Shock	Mil-Std-810, Method 516.5, Proc. IV	20														G's
Vibration	Mil-Std-810, Method 514.5, Fig.514.5C-3	10														G's

C =  $\mu$ F  
V = Volts  
I = mA  
T = mS

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

C =  $\mu$ F  
V = kV  
I = mA  
F = Hz

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

C =  $\mu$ F  
V = kV  
I = mA  
F = Hz

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

Specifications subject to change without notice.

$$C = uF$$

$$E^2 = kV$$

$$J = Ws$$

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

### Figure A - Rise Time Formulas

NOTES: Capacitance must include HVPS internal Capacitance.



***Making High Voltage Easier!®***

**Higher Service. Higher Performance. Higher Reliability**

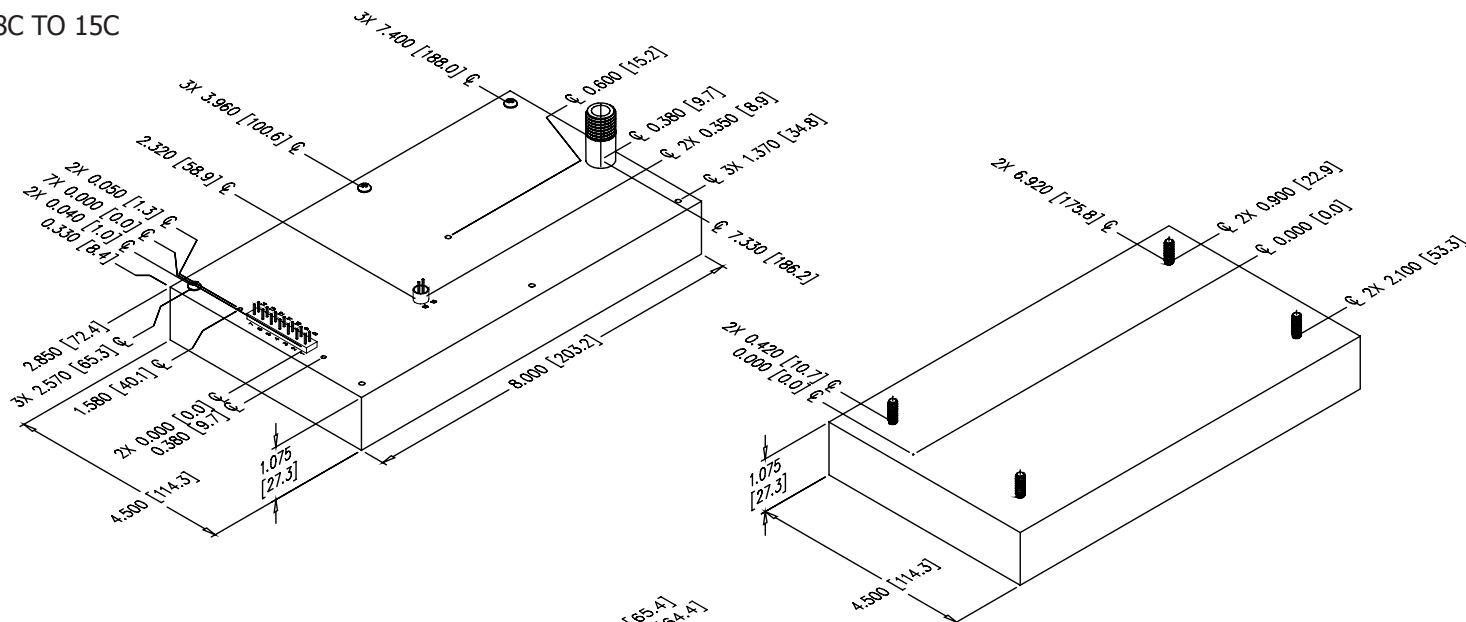
©2011. UltraVolt Inc. All rights reserved.



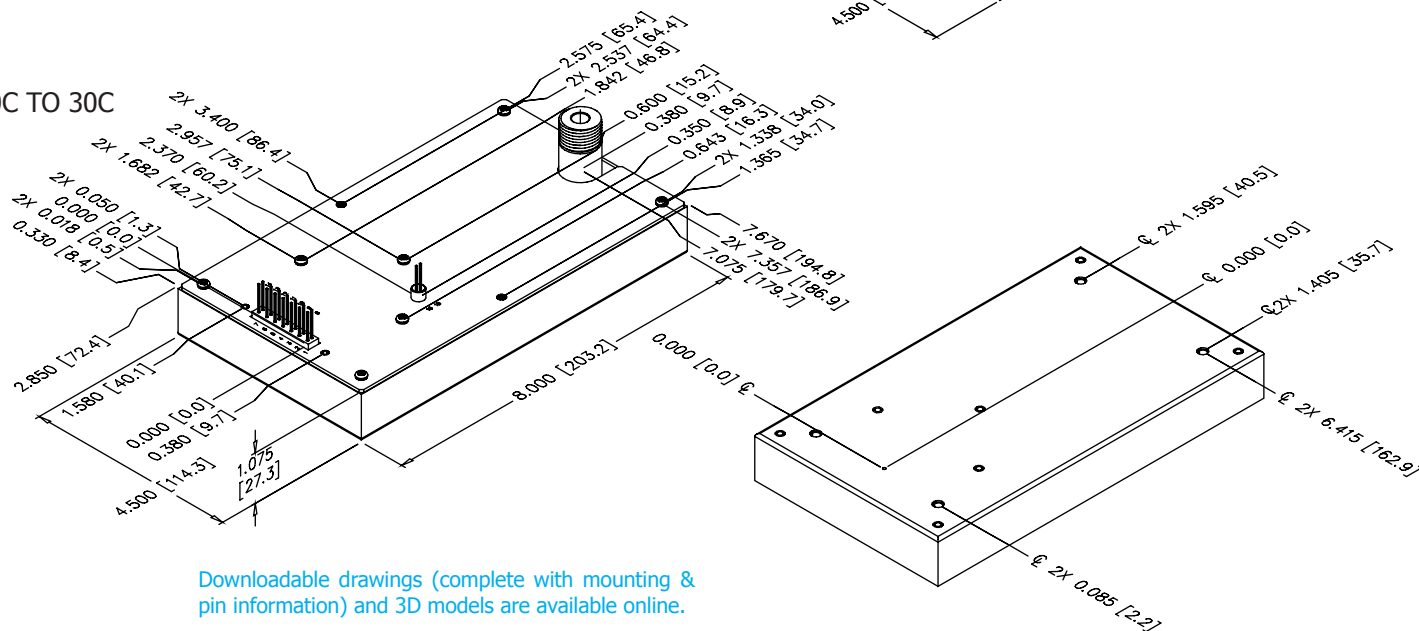
# HIGH POWER 8C-30C SERIES

8kV to 30kV High Voltage Cap-Charging Supplies

## 8C TO 15C



## 20C TO 30C



Downloadable drawings (complete with mounting & pin information) and 3D models are available online.

## CONSTRUCTION

Epoxy-filled Aluminum Box  
Chem film per MIL-A-8625 Type II (Anodizing)

## SIZE

Volume 38.7 in<sup>3</sup> (634cc)  
Weight 2.6 lbs. (1.18kg)

## TOLERANCE

Overall  $\pm 0.025"$  (0.64)  
Pin to Pin  $\pm 0.015"$  (0.38)  
Hole to hole location  $\pm 0.025"$  (0.64)

## PINS

Gold-plated 0.025 (0.64) sq.  
The center of the pins and mounting holes are located from the center of pin 1  
Pins 1 thru 14 spacing 0.100 (2.54) x 0.200 (5.08) on center, height from cover 0.280 (7.11) min  
Pins 15 and 16 spacing 0.100 (2.54) on center, height from cover 0.450 (11.43) min

## HV OUTPUT CONNECTION

Unit requires an LGH flying lead connector for proper operation:  
8C to 15C = CA-20KV-1000  
20C to 30C = CA-40KV-1000



*Making High Voltage Easier!®*

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 [www.ultravolt.com](http://www.ultravolt.com)

# HIGH POWER 8C-30C SERIES

8kV to 30kV High Voltage Cap-Charging Supplies

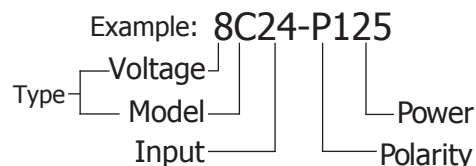
CONNECTIONS	
PIN	FUNCTION
1 & 8	Input-Power Ground Return
2 & 9	Positive Power Input
3	Iout Monitor
4	Enable/Disable
5	Signal Ground Return
6	Remote Adjust Input
7	+5VDC Reference Output
10, 11, 12, & 13	N/C
14	Eout Monitor
15 & 16	HV Ground Return

All grounds joined internally. Power-supply mounting points isolated from internal grounds by  $>100k\Omega$ ,  $.01\mu F$  / 500V (Max).

ORDERING INFORMATION		
Type	0 to 8,000 VDC Output	8C
	0 to 10,000 VDC Output	10C
	0 to 12,000 VDC Output	12C
	0 to 15,000 VDC Output	15C
	0 to 20,000 VDC Output	20C
	0 to 25,000 VDC Output	25C
	0 to 30,000 VDC Output	30C
Input	24VDC Nominal	24
Polarity	Positive Output	-P
	Negative Output	-N
Power	60 Watts Output	60
	125 Watts Output	125
Heat Sink	.400" High (sized to fit case)	-H
PCB Support	(5) 0.187" standoffs on top cover	-Z11



Non-RoHS compliant units are available. Please contact the factory for more information.



Popular accessories ordered with this product include CONN-KIT-HP, BR-7 and BR-8 mounting bracket kits and our full range of high voltage output connectors (see Accessories & Connectors datasheet).



# 10A-25A SERIES

## 10kV to 25kV High Voltage Biasing Supplies

The 10A-25A Series of regulated, high-voltage DC-DC converters are an extension of the A Series, directly addressing the needs of the miniature PCB or chassis-mount  $\geq 10\text{kV}$  application. Designed and built utilizing state-of-the-art power conversion topology, these units feature surface-mount technology and encapsulation techniques providing high reliability and low cost. Typical applications for the 10A-25A Series include the following: electrophoresis, mass spectroscopy, electron microscopes, plasma and cathode ray tubes (CRT).

- 0 to 10kV, 15kV, 20kV, or 25kV output
- 4, 15 or 30 watts of output power
- Maximum Iout capability down to 0 Volts
- Wide input voltage range
- Indefinite output short-circuit protection



- Output current & voltage monitors
- Fixed-frequency, low-stored-energy design
- >450,000 hour MTBF @65°C
- UL, cUL, CE, IEC-60950-1, and Demko Recognized

PARAMETER	CONDITIONS	MODELS												UNITS
INPUT		12V				24V								
Voltage Range	Full Power	+ 11 to 16				+ 23 to 30								VDC
Voltage Range	Derated Power Range	+ 9 to 32				+ 9 to 32								VDC
Current	Standby / Disable	< 30				< 30								mA
Current	No Load, Max Eout	10A < 0.20, 15A/20A/25A < 0.25				10A < 0.17, 15A < 0.20, 20A < 0.21, 25A < 0.25								A
Current	Max Load, Max Eout	~ 500				~ 1600								mA
AC Ripple Current	Nominal Input, Full Load	< 80				< 80								mA p-p
OUTPUT		10A			15A			20A			25A			
Voltage Range	Nominal Input	0 to 10,000			0 to 15,000			0 to 20,000			0 to 25,000			VDC
Nominal Input Voltage		12	24	24	12	24	24	12	24	24	12	24	24	VDC
Power	Nominal Input, Max Eout	4	15	30	4	15	30	4	15	30	4	15	30	Watts
Current	Iout Entire Output Voltage Range	0.40	1.5	3.0	0.26	1.0	2.0	0.20	0.75	1.5	0.16	0.60	1.2	mA
Current Scale Factor	Full Load	0.167	0.184	0.381	0.158	0.181	0.378	0.152	0.178	0.184	0.145	0.175	0.183	mA/V
Voltage Monitor Scaling		1000:1 $\pm 2\%$ into 10M $\Omega$												-
Ripple	Full Load, Max Eout, 300pF bypass Cap.	0.012	0.039	0.076	0.024	0.043	0.080	0.020	0.031	0.080	0.020	0.080	0.051	%V p-p
Ripple with -F-M Option	Full Load, Max Eout, 300pF bypass Cap.	0.008	0.034	0.072	0.021	0.028	0.073	0.010	0.018	0.039	0.010	0.040	0.040	%V p-p
Dynamic Load Regulation	1/2 to Full Load, Max Eout per 0.1mA	<5.0	<5.0	<5.0	<7.5	<7.5	<7.5	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	V pk
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 hr/ per day	< 0.01% / < 0.02%												VDC
PROGRAMMING & CONTROLS		ALL TYPES												
Input Impedance	Nominal Input	+ Output Models 1.1M $\Omega$ to GND, - Output Models 1.1M $\Omega$ to +5 Vref												M $\Omega$
Adjust Resistance	Typical Potentiometer Values	10K to 100K (Pot across Vref. & Signal GND, Wiper to Adjust)												$\Omega$
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 & Impedance	T=+25°C	+ 5.00VDC $\pm 2\%$ , Zout = 464 $\Omega \pm 1\%$												-
Enable/Disable		0 to +0.5 Disable, +2.4 to 32 Enable (Default = Enable)												VDC
ENVIRONMENTAL		STANDARD						-25PPM						
Operating	Full Load, Max Eout, Case Temp.	-40 to +65						+10 to +45						°C
Coefficient	Over the Specified Temperature	$\pm 50$						$\pm 25$						PPM/°C
Thermal Shock	Mil-Std 810, Method 503-4, Proc. II	-40 to +65												°C
Storage	Non-Operating, Case Temp.	-55 to +105												°C
Humidity	All Conditions, Standard Package	0 to 95% non-condensing												-
Altitude	Standard Package, All Conditions	Sea Level through Vacuum (Vacuum may require -P2 option, contact factory for details.)												-
Shock	Mil-Std-810, Method 516.5, Proc. IV	20 (Standard), 40 (-C Option)												G's
Vibration	Mil-Std-810, Method 514.5, Fig.514.5C-3	10 (Standard), 20 (-C Option)												G's

Specifications subject to change without notice.



*Making High Voltage Easier!®*

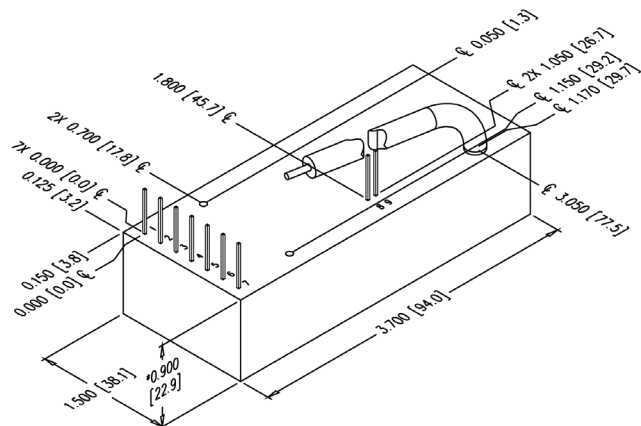
**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved.

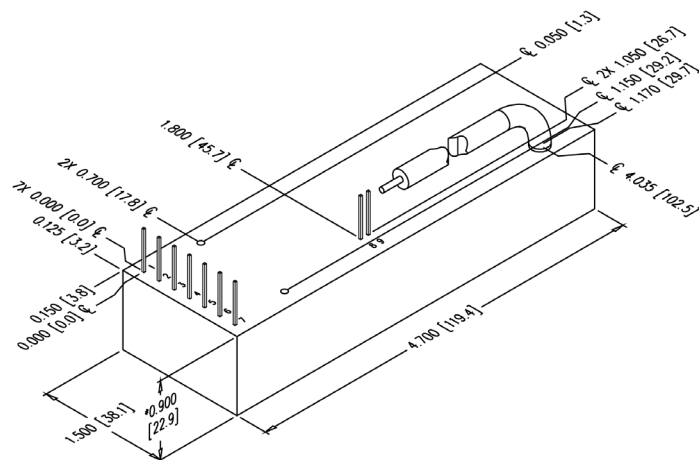
# 10A-25A SERIES

## 10kV to 25kV High Voltage Biasing Supplies

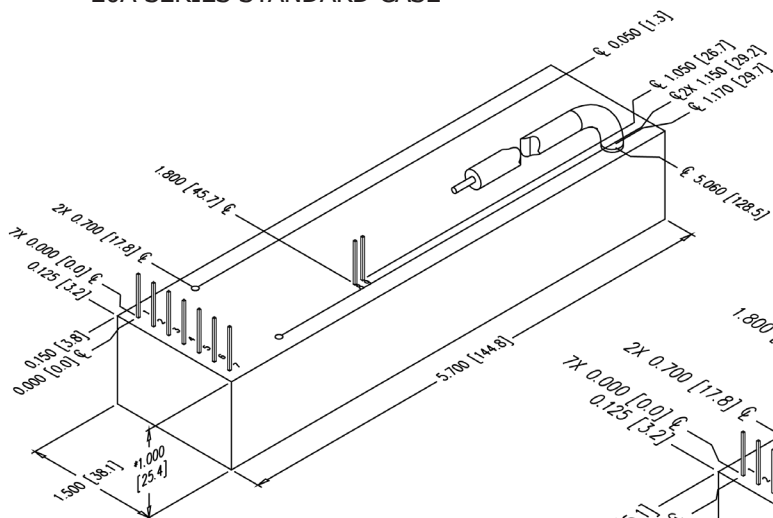
10A SERIES STANDARD CASE



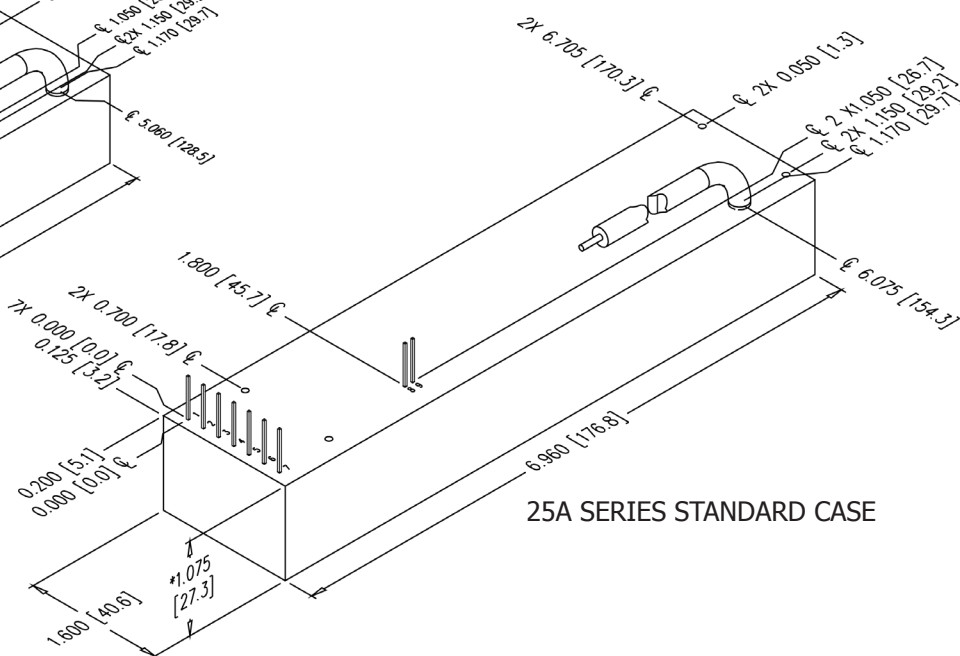
15A SERIES STANDARD CASE



20A SERIES STANDARD CASE



25A SERIES STANDARD CASE



### CONSTRUCTION

Epoxy-filled DAP box certified to ASTM-D-5948 with -C Option:  
Aluminum Alloy 5052-H32, Finish: MIL-A-8625 Type II (Anodizing)

### SIZE

Volume:

10A: 4.90 in<sup>3</sup> (80.31cc), w/-C Option 8.80 in<sup>3</sup> (144.23cc)  
15A: 6.35 in<sup>3</sup> (104.08cc), w/-C Option 11.00 in<sup>3</sup> (180.29cc)  
20A: 8.55 in<sup>3</sup> (140.13cc), w/-C Option 14.40 in<sup>3</sup> (236.02cc)  
25A: 11.70 in<sup>3</sup> (191.76cc), w/-C Option 20.00 in<sup>3</sup> (327.80cc)

Weight:

10A: 6.00 oz (170.10g), w/-C Option 11.50 oz (326.02g)  
15A: 8.00 oz (226.80g), w/-C Option 14.00 oz (396.89g)  
20A: 11.00 oz (311.84g), w/-C Option 19.00 oz (538.64g)  
25A: 15.00 oz (425.24g), w/-C Option 22.00 oz (623.69g)

### TOLERANCE

Overall  $\pm 0.050$ " (1.27)  
Pin to Pin  $\pm 0.015$ " (0.38)  
Mounting hole locations  $\pm 0.025$ " (0.64)

### NOTES

Standard case length, width, and height specs are  $\pm 0.050$ " (1.27)  
-C Option case length, width and height specs are  $\pm 0.025$ " (0.635)  
15W and 30W versions are an additional 0.070" (1.78) in height.  
-M equipped units are an additional 0.030" (0.76) for each dimension.  
Contact [UV Customer Service](#) for drawings of models equipped with -E, -C, or -H options.

[Downloadable drawings \(complete with mounting & pin information\) and 3D models are available online.](#)



**Making High Voltage Easier!®**

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 [www.ultravolt.com](http://www.ultravolt.com)



# 10A-25A SERIES

## 10kV to 25kV High Voltage Biasing Supplies

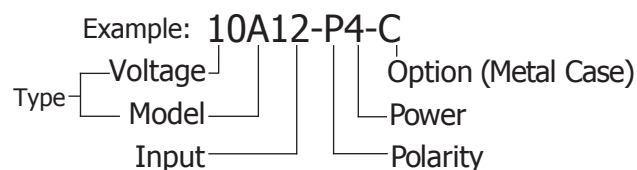
CONNECTIONS	
PIN	FUNCTION
1	Input-Power Ground Return
2	Positive Power Input
3	Iout Monitor
4	Enable/Disable
5	Signal Ground Return
6	Remote Adjust Input
7	+5VDC Reference Output
8	HV Ground Return
9	Eout Monitor

All grounds joined internally. Power-supply mounting points isolated from internal grounds by  $>100k\Omega$ ,  $.01\mu F$  / 50V (Max) on all models except -M (15W and above), -M-E, -M-C, and -M-H configurations which are  $0\Omega$ .



Non-RoHS compliant units are available. Please contact the factory for more information.

ORDERING INFORMATION		
Type	0 to 10,000 VDC Output	10A
	0 to 15,000 VDC Output	15A
	0 to 20,000 VDC Output	20A
	0 to 25,000 VDC Output	25A
Input	12VDC Nominal (4W only)	12
	24VDC Nominal (15W and 30W only)	24
Polarity	Positive Output	-P
	Negative Output	-N
Power	Watts Output (12Vin Only)	4
	Watts Output (24Vin Only)	15
	Watts Output (24Vin Only)	30
Case	Plastic Case - Diallyl Phthalate	(Standard)
	'Eared' Chassis Mounting Plate (Plastic Case)	-E
	RF-Tight Aluminum Enclosure	-C
Heat Sink	.400" High (sized to fit case)	-H
Shield	Six-sided Mu-Metal Shield	-M
Ripple Stripper®	Integral Output Filter (See -F Option Datasheet) and Mu-Metal	-F-M
Lead Options	Shielded Flying Lead	-AS
	Protected Flying Lead	-AP
	Terminated Flying Lead (Contact Customer Service)	-ATxx
Temp. Coefficient	25PPM Temperature Coefficient	-25PPM
Enhanced Interface (10A models only)	5V Control and Monitors	-I5
	10V Control and Monitors	-I10



Popular accessories ordered with this product include CONN-KIT, BR-2, BR-3, and BR-5 mounting bracket kits, and our full range of high voltage output connectors (see Accessories & Connectors datasheet).



# 30A-40A SERIES

## 30kV to 40kV High Voltage Biasing Supplies

The 30A-40A Series of regulated, high-voltage DC-DC converters are an extension of the A Series, directly addressing the needs of the miniature PCB or chassis-mount  $\geq 30\text{kV}$  application. Designed and built utilizing state-of-the-art power conversion topology, these units feature surface-mount technology and encapsulation techniques providing high reliability and low cost. Typical applications for the 30A-40A Series include the following: electrostatic discharge testers, plasma, electrostatic, x-ray, and wire testers.

- 0 to 30kV, 35kV or 40kV output
- 4, 15 or 30 watts of output power
- Maximum Iout capability down to 0 Volts
- Wide input voltage range
- Indefinite output short-circuit protection



- Output current & voltage monitors
- Fixed-frequency, low-stored-energy design
- >400,000 hour MTBF @65°C
- UL, cUL, CE, IEC-60950-1, and Demko Recognized

PARAMETER	CONDITIONS	MODELS									UNITS
INPUT		12V			24V						
Voltage Range	Full Power	+ 11 to 16			+ 23 to 30						VDC
Voltage Range	Derated Power Range	+ 9 to 32			+ 9 to 32						VDC
Current	Standby / Disable	< 30			< 30						mA
Current	No Load, Max Eout	30A < 0.25, 35A < 0.35, 40A < 0.38			30A < 0.30, 35A < 0.20, 40A < 0.38						A
Current	Max Load, Max Eout	~ 800			~1800						mA
AC Ripple Current	Nominal Input, Full Load	< 80			< 80						mA p-p
OUTPUT		30A			35A			40A			
Voltage Range	Nominal Input	0 to 30,000			0 to 35,000			0 to 40,000			VDC
Nominal Input Voltage / Model		12	24	24	12	24	24	12	24	24	VDC
Power	Nominal Input, Max Eout	4	15	30	4	15	30	4	15	30	Watts
Current	Iout Entire Output Voltage Range	0.13	0.50	1.0	0.11	0.42	0.86	0.10	0.37	0.75	mA
Current Scale Factor	Full Load	.140	.173	.181	.158	.179	.184	.077	.089	.092	mA/V
Voltage Monitor Scaling		1000:1 ± 2% into 10MΩ									-
Ripple	Full Load, Max Eout, 300pF bypass Cap.	0.021	0.039	0.048	0.016	0.034	0.040	0.030	0.060	0.064	%V p-p
Ripple with -F-M Option	Full Load, Max Eout, 300pF bypass Cap.	0.025	0.028	0.058	0.025	0.040	0.075	0.007	0.025	0.053	%V p-p
Dynamic Load Regulation	½ to Full Load, Max Eout per 0.1mA	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	V pk
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 hr/ per day	< 0.01% / < 0.02%									VDC
PROGRAMMING & CONTROLS		ALL TYPES									
Input Impedance	Nominal Input	+ Output Models 1.1MΩ to GND, - Output Models 1.1MΩ to +5 Vref									MΩ
Adjust Resistance	Typical Potentiometer Values	10K to 100K (Pot across Vref. & Signal GND, Wiper to Adjust)									Ω
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 & Impedance	T=+25°C	+ 5.00VDC ± 2%, Zout = 464Ω ± 1%									-
Enable/Disable		0 to +0.5 Disable, +2.4 to 32 Enable (Default = Enable)									VDC
ENVIRONMENTAL		STANDARD			-25PPM						
Operating	Full Load, Max Eout, Case Temp.	-40 to +65			+10 to +45						°C
Coefficient	Over the Specified Temperature	± 50			± 25						PPM/°C
Thermal Shock	Mil-Std 810, Method 503-4, Proc. II	-40 to +65									°C
Storage	Non-Operating, Case Temp.	-55 to +105									°C
Humidity	All Conditions, Standard Package	0 to 95% non-condensing									-
Altitude	Standard Package, All Conditions	Sea Level through Vacuum (Vacuum may require -P2 option, contact factory for details.)									-
Shock	Mil-Std-810, Method 516.5, Proc. IV	20 (Standard), 40 (-C Option)									G's
Vibration	Mil-Std-810, Method 514.5, Fig.514.5C-3	10 (Standard), 20 (-C Option)									G's

Specifications subject to change without notice.



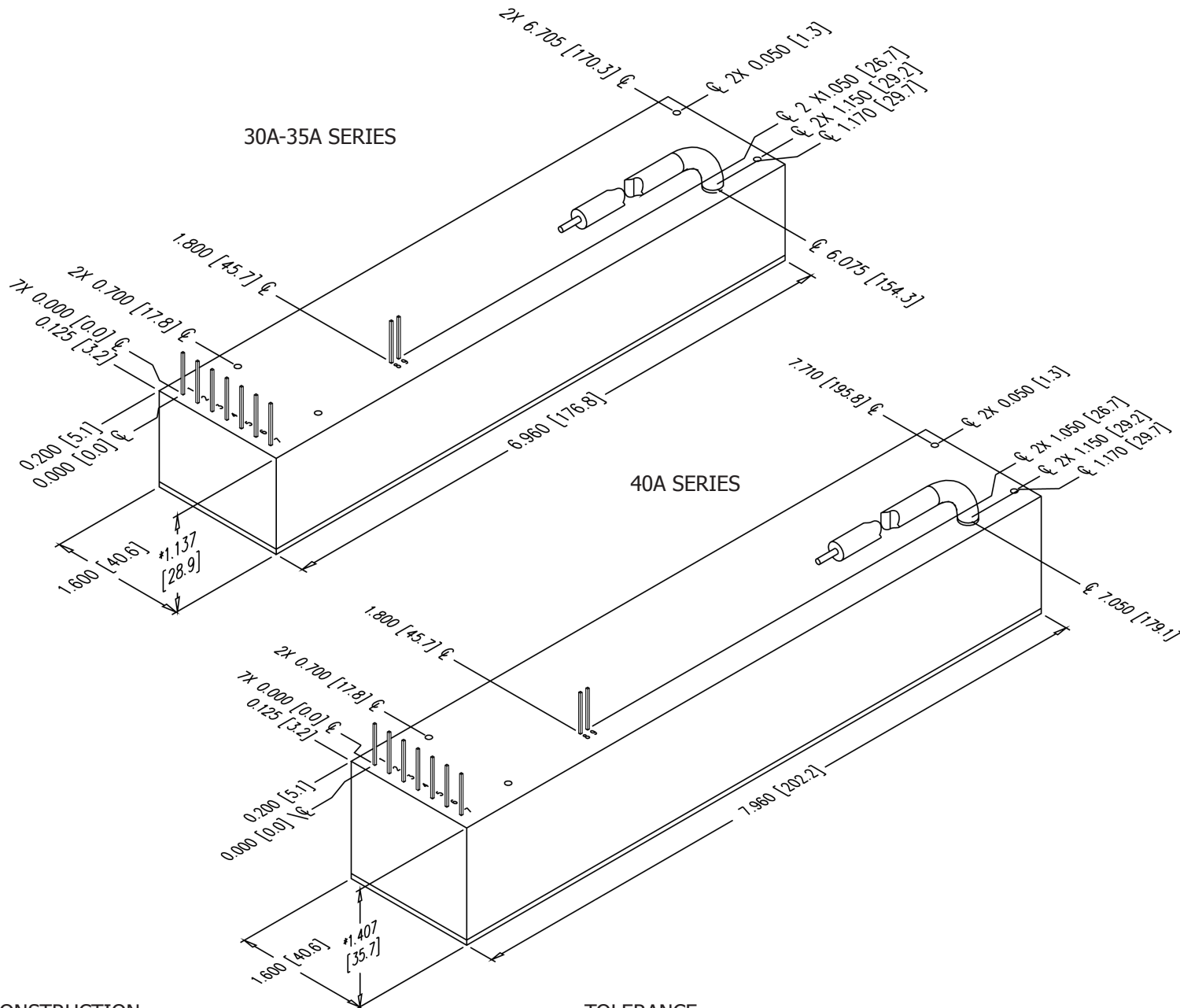
**Making High Voltage Easier!®**

**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved.

# 30A-40A SERIES

30kV to 40kV High Voltage Biasing Supplies



## CONSTRUCTION

Epoxy-filled DAP box certified to ASTM-D-5948 with -C Option:  
Aluminum Alloy 5052-H32, Finish: MIL-A-8625 Type II (Anodizing)

## SIZE

Volume:  
30A/35A: 12.66 in<sup>3</sup> (207.46cc), w/-C Option 20.00 in<sup>3</sup> (327.80cc)  
40A: 17.92 in<sup>3</sup> (293.66cc), w/-C Option 27.00 in<sup>3</sup> (442.53cc)  
Weight:  
30A/35A: 15.00 oz (425.24g), w/-C Option 22.00 oz (623.69g)  
40A: 21.00 oz (595.34g), w/-C Option 30.00 oz (850.49g)

## TOLERANCE

Overall  $\pm 0.050''$  (1.27)  
Pin to Pin  $\pm 0.015''$  (0.38)  
Mounting hole locations  $\pm 0.025''$  (0.64)

## NOTES

-M equipped units are an additional 0.030'' (0.76) for each dimension.  
Contact [UV Customer Service](#) for drawings of models equipped with -E, -C, or -H options.

[Downloadable drawings \(complete with mounting & pin information\) and 3D models are available online.](#)



*Making High Voltage Easier!®*

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 [www.ultravolt.com](http://www.ultravolt.com)

# 30A-40A SERIES

## 30kV to 40kV High Voltage Biasing Supplies

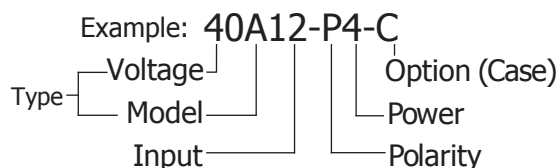
CONNECTIONS	
PIN	FUNCTION
1	Input-Power Ground Return
2	Positive Power Input
3	Iout Monitor
4	Enable/Disable
5	Signal Ground Return
6	Remote Adjust Input
7	+5VDC Reference Output
8	HV Ground Return
9	Eout Monitor

All grounds joined internally. Power-supply mounting points isolated from internal grounds by  $>100k\Omega$ ,  $.01\mu F$  / 50V (Max) on all models except -M (15W and above), -M-E, -M-C, and -M-H configurations which are  $0\Omega$ .



Non-RoHS compliant units are available. Please contact the factory for more information.

ORDERING INFORMATION		
Type	0 to 30,000 VDC Output	30A
	0 to 35,000 VDC Output	35A
	0 to 40,000 VDC Output	40A
Input	12VDC Nominal (4W only)	12
	24VDC Nominal (15W and 30W only)	24
Polarity	Positive Output	-P
	Negative Output	-N
Power	Watts Output (12 V Only)	4
	Watts Output (24 V Only)	15
	Watts Output (24 V Only)	30
Case	Plastic Case - Diallyl Phthalate	(Standard)
	'Eared' Heatsink Plate (Plastic Case)	-E
	RF-Tight Aluminum Enclosure	-C
Heatsink	.400" High (sized to fit case)	-H
Shield	Six-sided Mu-Metal Shield	-M
Ripple Stripper®	Integral Output Filter (See -F Option Data Sheet) and Mu-Metal	-F -M
Lead Options	Shielded Flying Lead	-AS
	Protected Flying Lead	-AP
	Terminated Flying Lead (Contact Customer Service)	-ATxx
Temp. Coefficient	25PPM Temperature Coefficient	-25PPM



Popular accessories ordered with this product include CONN-KIT, BR-5 and BR-9 mounting bracket kits, and our full range of high voltage output connectors (see Accessories & Connectors datasheet).

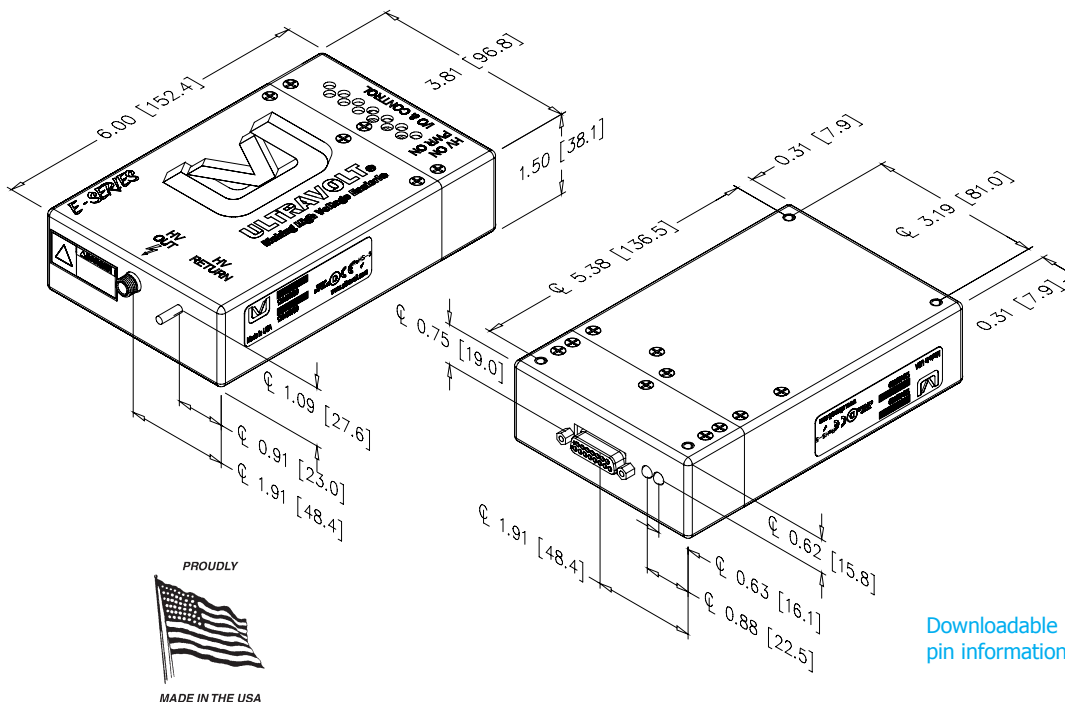






# E SERIES

## Precision High Voltage Power Supply



Non-RoHS compliant units are available. Please contact the factory for more information.



E SERIES INPUT CONNECTOR PINOUT AND FUNCTIONS		
PIN	DESCRIPTION	FUNCTION
1	Reference Voltage	(+)10.00V precision reference
2	Voltage Programming -	0 to 10 volts to program full output voltage
3	Voltage Programming +	Programming input is differential between pins 2 and 3
4	Voltage Monitor	0 to +10 volts represents 0 to full output voltage
5	Voltage Mode Indicator	Open drain active low when in voltage control
6	Signal Ground	Reference all control signals here
7	Input Power	+23 to +30V
8	Input Power	Input Power Return
9	Power Ground	
10	Power Ground	
11	Enable	TTL high to enable, low to disable, default is OFF
12	Current Monitor	0 to +10 volts represents 0 to full output current
13	Current Programming	0 to +10 volts sets current from 0 to full rated output current
14	Current Mode Indicator	Open drain active low when in current control
15	Signal Ground	Reference all control signals here

NOTE: Use stud next to High Voltage output connector as HV Return, a secure ground connection here is critical to safety and proper operation.

Rev. F 8/11

### CONSTRUCTION

Material: Aluminum Alloy 5052-H32  
Finish: Anodize MIL-A-8625E Blue

### SIZE

Volume 34.29 in<sup>3</sup> (561.9cc)  
Weight 2.4lbs (1.1kg)

### TOLERANCE

Overall  $\pm 0.030"$  (1.27)  
Pin to Pin  $\pm 0.015"$  (0.38)  
Mounting Hole Location  $\pm 0.025"$  (0.64)

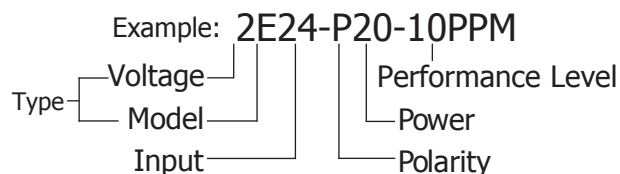
### CONNECTIONS

D-Sub 15 Pin Female  
HV Connector, LGH1/2L  
HV Return, #6-32 x 0.437 Long Threaded Post

Downloadable drawings (complete with mounting & pin information) and 3D models are available online.

### ORDERING INFORMATION

Type	0 to 1,000 VDC Output	1E
	0 to 2,000 VDC Output	2E
	0 to 4,000 VDC Output	4E
	0 to 6,000 VDC Output	6E
	0 to 10,000 VDC Output	10E
	0 to 15,000 VDC Output	15E
Input	Positive Output	-P
	Negative Output	-N
Power	4 Watts Output	4
	15 Watts Output (1kV to 6kV only)	15
	20 Watts Output (10kV & 15kV only)	20
	30 Watts Output	30
Performance Level	10ppm Line/Load Regulation, Stability, and Temp. Co.	-10PPM
	25ppm Line/Load Regulation, Stability, and Temp. Co.	-25PPM
Connectors	LGH	(Standard)
	5kV, SHV Type	-SHV-5KV
	10kV, BNC Type	-BNC-10KV
	20kV, BNC Type	-BNC-20KV



Popular accessories ordered with this product include our full range of high voltage output connectors (see Accessories & Connectors data sheet).



Making High Voltage Easier!®

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com

# XS SERIES

## Extra-small High Voltage Biasing Supply

The XS Series of extra-small high-voltage power supplies is the smallest **regulated** DC-DC high-voltage power supply for applications that require a bias voltage ranging from 0 to 100V. At only 0.08in<sup>3</sup> (1.3cc), these modules are ideal for use in size-critical applications.

- Output from 0 to 100V
- 100 milliwatts of output power
- Tight line/load regulation
- Output current limit protection
- 5 Volts DC Input
- Extra-small and lightweight
- PCB flat mounting
- Temperature coefficient <50ppm/°C
- Low ripple (<50mV peak to peak)
- Low noise due to metal shielding



Typical applications for the XS Series include the following:

Bias Supplies	Thin-film
Avalanche Photo Diodes (APD)	Ultrasonic
Silicon Photomultipliers (SiPM)	
Multi-pixel Photon Counter (MPPC)	

Please contact UltraVolt's customer service department for an analysis of your requirements.

PARAMETER	SPECIFICATION	UNITS
Input voltage Vin (pins 1 & 2)	5VDC $\pm 0.5$ (recommended) maximum: 12Vdc (reverse: -0.2V)	VDC
Input current	For 0V output voltage: <1.6 For 100V, no load: <3 At full output voltage, full load: <50	mA
HV output Vout (pin 4)	0 to 100 programmable	VDC
Output Power	0 to 100	mW
Polarity	Fixed positive or negative	-
HV setting (pin 3)	Via external voltage source 0/2.5V Accuracy: $\pm 2\%$ at full scale	-
Max. output current Iout	1 nominal	mA
Load voltage regulation	$\pm 0.01\%$ of full output voltage for no load to full load	-
Line voltage regulation	$\pm 0.01\%$ of full output voltage over specified input voltage range	-
Residual ripple	<50mV peak-to-peak – ripple can be reduced to less than 10mV by adding an external 100nF small CMS capacitor	-
Temperature coefficient	<50	PPM/°C
Output HV monitoring	Not available on this product	-
Output reference voltage	Not available on this product	-
HV power ON/OFF	Not available on this product	-
Operating temperature	-10 to +65, Full load, Max Eout, Case Temp	°C
Storage temperature	-10 to +70	°C
Safeguards	<ul style="list-style-type: none"> <li>• Output current internally limited</li> <li>• Soft start feature: low overshoot</li> </ul>	-
Shielding	Ground return is to metal enclosure	-

Specifications subject to change without notice.



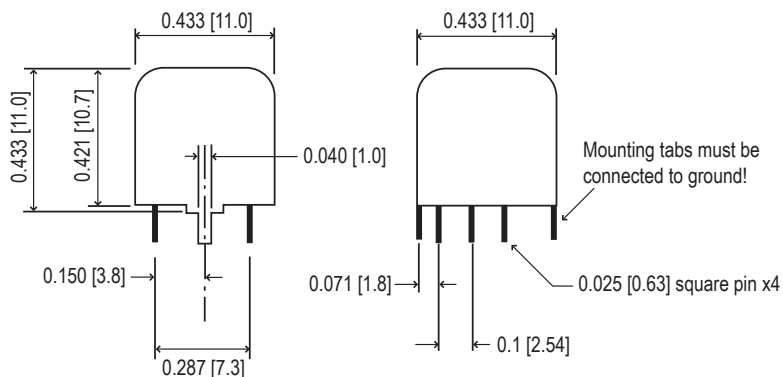
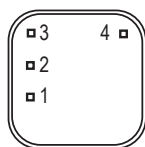
*Making High Voltage Easier!®*

**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved.

# XS SERIES

## Extra-small High Voltage Biasing Supply



### CONSTRUCTION

Tin steel plate, thickness 0.02" (0.5)  
Insulation: fully potted in an epoxy resin

### SIZE

Volume: 0.081in<sup>3</sup> (1.331cc)  
Weight: 0.176oz (5g)

### TOLERANCE

Overall  $\pm 0.0039"$  (0.1)  
Pin to Pin  $\pm 0.0039"$  (0.1)  
Tabs location  $\pm 0.0079"$  (0.2)

### PINS

Gold Plated 0.025" (0.63) sq.  
Length > 0.079" (2)  
Spacing 0.1" (2.54)

CONNECTIONS	
PIN	FUNCTION
1	Positive Power Input
2	Ground Return
3	Remote Adjust Input
4	HV Output

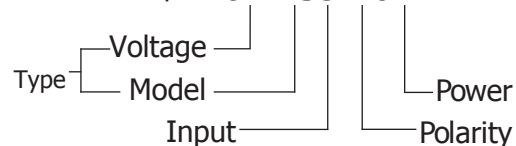
Note: Mounting tabs must be connected to ground.

ORDERING INFORMATION		
Type	0 to 100 VDC Output	0.1XS
Input	5VDC Nominal	5
Power	Watts Output	0.1
Case	Tin Steel Case	(Standard)
Polarity	Positive Output	-P
	Negative Output	-N



Non-RoHS compliant units are available. Please contact the factory for more information.

Example: 0.1XS5-P0.1



Popular accessories ordered with this product include the PCB-CONN-XS.

Rev. C 03/12

\*The XS Series is not available in all territories. Please contact an UltraVolt Applications Engineer for details concerning sales in your area.



**Making High Voltage Easier!®**

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 [www.ultravolt.com](http://www.ultravolt.com)



# US SERIES

## Microsize, Micropower High Voltage Power Supply

At only 0.35in<sup>3</sup> (5.75cc), the highly-compact microsize US Series is specially designed to meet the needs of design engineers working with commercial, military, industrial, and research applications. These modules allow customers with critical size requirements access to voltages up to 500V.

- 4 models from 0 to 200V, 300V, 400V, or 500V
- 100 milliwatts of output power
- Tight line/load regulation
- Arc and short circuit protection
- 5 or 12 Volts DC Input
- TTL enable/disable
- Miniature and lightweight
- PCB flat mounting
- Temperature coefficient of 50ppm/°C
- Optional flying lead for HV output



- Low ripple
- Low noise due to metal shielding
- 2.5V reference

Typical applications for the US Series include the following:

Bias Supplies	Fiber-optic Telecommunications
Avalanche Photo Diodes (APD)	Particle Physics
Silicon Photomultipliers (SiPM)	Laser Range Finders

Please contact UltraVolt's customer service department for an analysis of your requirements.

PARAMETER	SPECIFICATION				UNITS
Input voltage $V_{in}$ (pins 1 & 2)	5VDC $\pm 0.5$ or 12 to 15 $\pm 0.5$				VDC
Input current	Inhibition mode: $<5$ at full output voltage, full load:				mA
	$<65$ (200Vout)	$<60$ (300Vout)	$<55$ (400Vout)	$<50$ (500Vout)	mA
Polarity	Fixed positive or negative				
Output Voltage	0 to 200	0 to 300	0 to 400	0 to 500	VDC
Output Current	500	330	250	200	$\mu$ A
HV setting (pin 3)	Via external potentiometer, minimum resistance 10k $\Omega$ or Via external voltage source 0/2.5V $\pm 0.5\%$ at full scale, and input impedance $>1M\Omega$				-
Load voltage regulation	$\pm 0.01\%$ of full output voltage for no load to full load				-
Line voltage regulation	$\pm 0.01\%$ of full output voltage over specified input voltage range				-
Residual ripple	$<0.01\%$ peak-to-peak at full output voltage and current				-
Temperature coefficient	$<50$				PPM/°C
Output HV monitoring (pin 2)	0/2.5V signal Accuracy : $\pm 0.2\%$ Output impedance : 1k $\Omega$				-
Output reference voltage (pin 4 - optional)	2.5V $\pm 0.5\%$ , TC: 50ppm/°C, Max. output current : 1mA				-
HV power ON/OFF (pin 5)	ON: 0 volt, connected to ground OFF: not connected Open collector compatible				-
Operating temperature	-10 to +65, Full load, Max Eout, Case Temp				°C
Storage temperature	-40 to +70				°C
Safeguards	Output current internally limited Soft start feature: the start is guaranteed with no overshoot				-

Specifications subject to change without notice.



*Making High Voltage Easier!®*

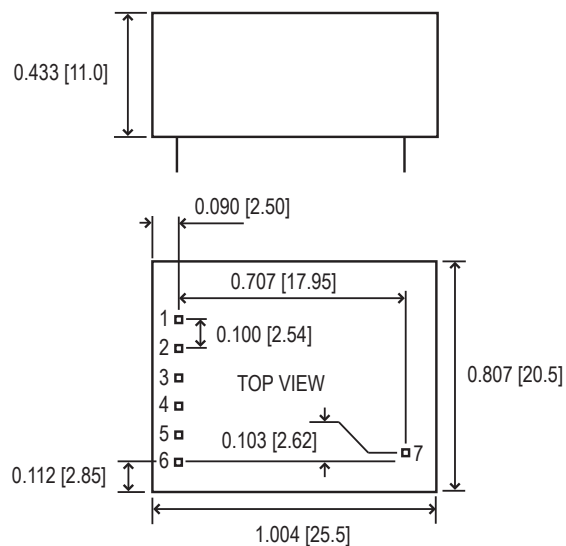
**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved.

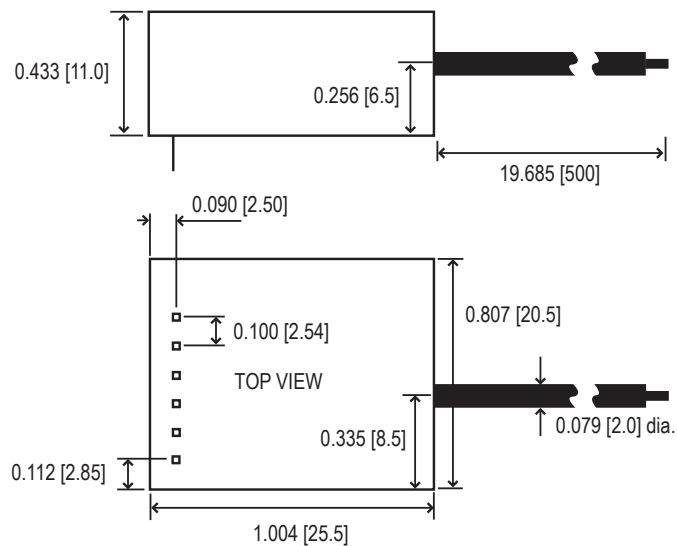
# US SERIES

## Microsize, Micropower High Voltage Power Supply

### STANDARD



### WITH -W OPTION



### CONSTRUCTION

Tin steel plate, thickness 0.02" (0.5)  
Insulation: fully potted in an epoxy resin

### SIZE

Volume: 0.351in<sup>3</sup> (5.750cc)  
Weight: 0.459oz (13g)

### TOLERANCE

Overall  $\pm 0.0039"$  (0.1)  
Pin to Pin  $\pm 0.0039"$  (0.1)  
Case to Pin  $\pm 0.0197"$  (0.5)

### NOTES

Pin length > 0.078" (2), spacing 0.1" (2.54)  
Optional lead: coaxial cable (RG178), diameter = 0.079" (2), length = 19.685" (500)

### ORDERING INFORMATION

Type	0 to 200 VDC Output	0.2US
	0 to 300 VDC Output	0.3US
	0 to 400 VDC Output	0.4US
	0 to 500 VDC Output	0.5US
Input	5VDC Nominal	5
	12VDC Nominal	12
Power	Watts Output	0.1
Case	Tin Steel Case	(Standard)
Polarity	Positive Output	-P
	Negative Output	-N
Option	Output voltage lead wire	-WS

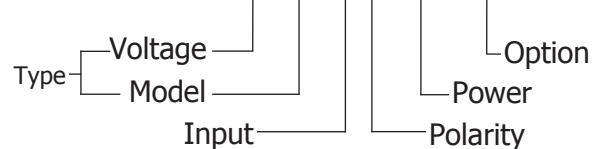
CONNECTIONS	
PIN	FUNCTION
1	Positive Power Input
2	Power Ground
3	Remote Adjust Input
4	+2.5VDC Reference Output
5	Enable/Disable
6	Eout Monitor
7	HV Output

Note: Mounting tabs must be connected to ground.



Non-RoHS compliant units are available. Please contact the factory for more information.

Example: 0.5US5-P0.1-WS



Popular accessories ordered with this product include the PCB-CONN-US.



\*The US Series is not available in all territories. Please contact an UltraVolt Applications Engineer for details concerning sales in your area.



*Making High Voltage Easier!®*

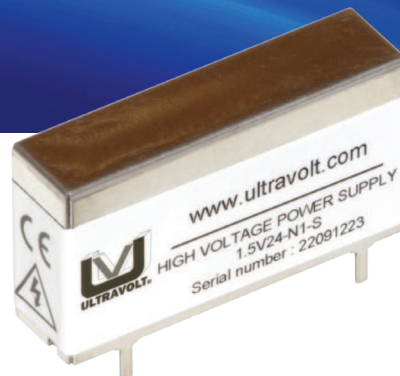
1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com

# V SERIES

## Vertical, Microsize High Voltage Biasing Supply

The vertical, microsize V Series is the ideal solution for applications that require a bias voltage ranging from 0 to 3000V and very small current, at only 0.84in<sup>3</sup> (13.8cc). With a footprint under 1in<sup>2</sup> (2.54cm<sup>2</sup>), these modules are perfect for applications with limited board space.

- 7 models from 0 to 600V, 1000V, 1250V, 1500V, 2000V, 2500V, or 3000V
- 0.5, 0.8, or 1 watt of output power
- Tight line/load regulation
- Arc and continuous short circuit protection
- Self restoring output voltage
- Low cost
- Miniature and lightweight
- Voltage monitoring
- Low ripple (0.01% peak to peak)
- Optional flying lead for HV output



Typical applications for the V Series include the following:

- |                              |                                     |
|------------------------------|-------------------------------------|
| Bias Supplies                | Scanning Electron Microscopes (SEM) |
| Avalanche Photo Diodes (APD) | Photomultiplier Tubes (PMT)         |

Please contact UltraVolt's customer service department for an analysis of your requirements.

PARAMETER	SPECIFICATION												UNITS
Input voltage Vin (pins 1 & 2)	5 ± 0.5 (2-3kV ONLY) 12 ± 1, 15 ± 1 (600V-1.5kV ONLY), or 24 ± 2												VDC
Input Voltage	5 (2-3kV Only)			12			15 (600V-1.5kV ONLY)			24			V
Input Current	No load: 55, Full load: 450			No load: 45, Full load: 200			No load: 40, Full load: 190			No load: 35, Full load: 160			mA
Polarity	Fixed positive and fixed negative												-
Output Voltage	0 to 600			0 to 1000			0 to 1250			0 to 1500			VDC
Input Voltage	12	15	24	12	15	24	12	15	24	12	15	24	VDC
Output Power	0.5	0.8	1	0.5	0.8	1	0.5	0.8	1	0.5	0.8	1	W
Output Current	0.83	1.33	1.67	0.5	0.8	1	0.4	0.64	0.8	0.33	0.53	0.67	mA
Output Voltage	0 to 2000			0 to 2500			0 to 3000						VDC
Input Voltage	5	12	24	5	12	24	5	12	24	5	12	24	VDC
Output Power	0.5	0.8	1	0.5	0.8	1	0.5	0.8	1	0.5	0.8	1	W
Output Current	0.25	0.40	0.50	0.20	0.32	0.40	0.167	0.267	0.333				mA
HV setting	10K to 100K (Potentiometer Across Vref. & Signal Ground, Wiper to Adjust)												-
Load voltage regulation	<0.01% of full output voltage for no load to full load												VDC
Line voltage regulation	<0.01% of full output voltage over specified input voltage range												VDC
Residual ripple	<0.01% at full load												Vpk-pk
Temperature coefficient	100ppm/°C for the maximum output voltage after starting and over temperature range 0 to 50°C												-
Output Voltage Monitor (600V-1500V)	+1V/1kV max. or -1V/-1kV max. according to model polarity output impedance = 200kΩ ±1%												-
Output Voltage Monitor (2kV-3kV)	12-24V Input Only: 0 to +5V±2% 5V Inputs: 0 to +2.5V±2%												VDC
Reference Voltage	12-24V Input Only: 5V ±1%, TC:100ppm/°C, max. output current: 1mA 5V Inputs: 2.5V ±1%, TC:100ppm/°C, max. output current: 1mA												-
Operating temperature	-10 to +65, Full load, Max Eout, Case Temp												°C
Storage temperature	-20 to +70												°C
Safeguards	Arc and short circuit protection												-
Options	• Flying wire for HV output • Suitable for use with an external potentiometer												-
Enhanced Interface (-EI) Option (2kV-3kV Only)	Enable/Disable (ON/OFF): 0V to +0.5V Enable, +2.4V to V_input Disable (Default = Disable)												-
	Output Current Monitor (5V Input Only): 0 to +2.5V±2% Output Current Monitor (12-24V Input): 0 to +5.0V±2%												-

Specifications subject to change without notice.



*Making High Voltage Easier!®*

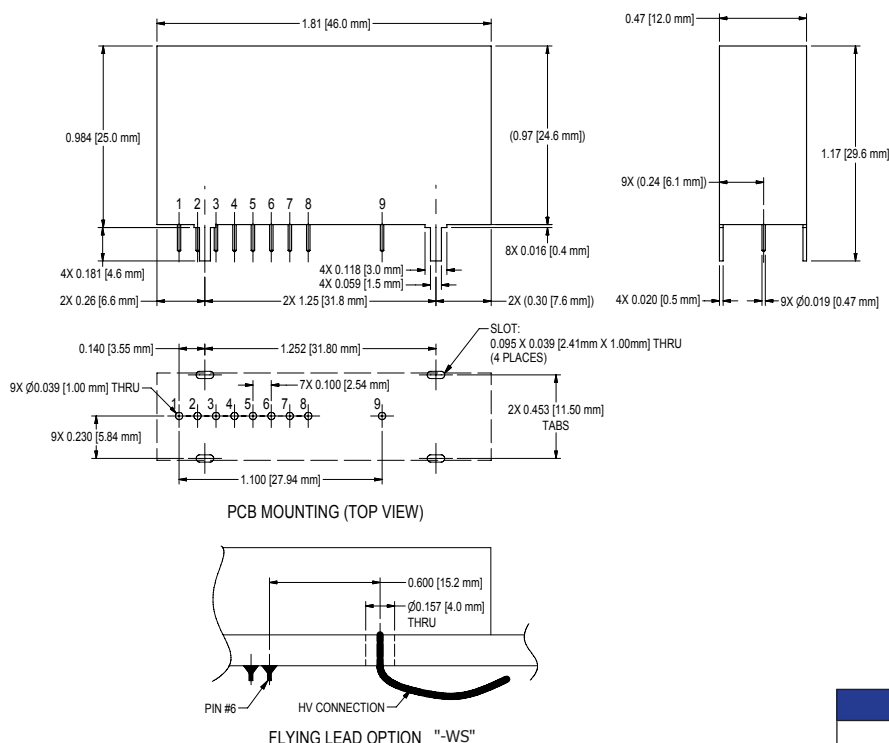
**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved.

# V SERIES

## Vertical, Microsize High Voltage Biasing Supply

Note: Pins 7 & 8 are available for 2k-3kV units with Enhanced Interface option ONLY



PCB MOUNTING (TOP VIEW)

FLYING LEAD OPTION "-WS"

CONNECTIONS	
PIN	FUNCTION
1	Positive Power Input
2	Power Ground
3	Signal Ground
4	Remote Adjust Input
5	Reference Voltage
6	Voltage Monitor
7	Current Monitor (Available with -EI Option ONLY)
8	Enable (Available with -EI Option ONLY)
9	HV Output

Note: Mounting tabs must be connected to ground.



Non-RoHS compliant units are available. Please contact the factory for more information.



### CONSTRUCTION

Steel, tin plated, thickness 0.02" (0.5)  
Insulation: fully potted in an epoxy resin

### SIZE

Volume: 0.84in<sup>3</sup> (13.8cc)  
Weight: 1.23oz (35g)

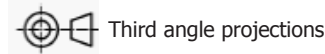
### TOLERANCE

Overall  $\pm 0.0030"$  (0.76)  
Pin to Pin  $\pm 0.015"$  (0.38)  
Tabs location  $\pm 0.020"$  (0.51)  
Tab to Tab  $\pm 0.010"$  (0.25)

### NOTES

0.019" (0.47) round pins, length: 0.12" (3),  
spacing: 0.1" (2.54)  
PCB mounting through 4 mounting tabs:  
Length: 0.2" (5), width: 0.059" (1.5),  
thickness: 0.02" (0.5)  
Optional flying lead for HV output:  
Coaxial cable (RG178), diameter = 0.079" (2)  
length = 19.685" (500)

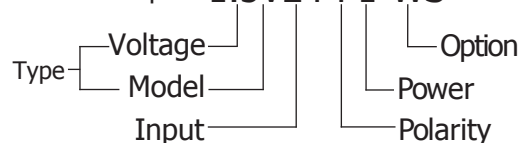
### DRAWING VIEWS



### ORDERING INFORMATION

Type	0 to 600 VDC Output	0.6V
	0 to 1,000 VDC Output	1V
	0 to 1,250 VDC Output	1.25V
	0 to 1,500 VDC Output	1.5V
	0 to 2,000 VDC Output	2V
	0 to 2,500 VDC Output	2.5V
	0 to 3,000 VDC Output	3V
Input	5VDC Nominal (2-3kV Only)	5
	12VDC Nominal	12
	15VDC Nominal (600V-1.5kV Only)	15
	24VDC Nominal	24
Power	0.5 Watt Output	0.5
	0.8 Watt Output	0.8
	1 Watt Output	1
Case	Tin Steel Case	(Standard)
Polarity	Positive Output	-P
	Negative Output	-N
Option	Flying Lead for HV Output	-WS
	Current Monitor/Enable Pin (2-3kV Only)	-EI

Example: 1.5V24-P1-WS



Popular accessories ordered with this product include the PCB-CONN-M/V.

\*The V Series is not available in all territories. Please contact an UltraVolt Applications Engineer for details concerning sales in your area.



*Making High Voltage Easier!®*

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com



# M SERIES

## Miniature, Microsize High Voltage Biasing Supply

The miniature, microsize M Series is the ideal solution for applications that need a biasing voltage ranging from 0 to 3000V and very small current, at only 1.00in<sup>3</sup> (16.4cc). At less than 0.5in (12.7mm) in height, these modules are ideal for low profile applications.

- 7 models from 0 to 600V, 1000V, 1250V, or 1500V, 2000V, 2500V, 3000V
- 0.5, 0.8, or 1 watt of output power
- Tight line/load regulation
- Arc and continuous short circuit protection
- Self restoring output voltage
- Low cost
- Miniature and lightweight
- Voltage monitoring
- Low ripple (0.01% peak to peak)
- Optional flying lead for HV output



Typical applications for the M Series include the following:

- |                              |                               |
|------------------------------|-------------------------------|
| Bias Supplies                | Electrostatic chuck (E-chuck) |
| Avalanche Photo Diodes (APD) | Photomultiplier Tubes (PMT)   |

Please contact UltraVolt's customer service department for an analysis of your requirements.

PARAMETER	SPECIFICATION												UNITS
Input Voltage Vin (pins 1 & 2)	5 ±0.5 (2kV-3kV ONLY), 12 ±1, 15 ±1 (600V-1.5kV ONLY), or 24 ±2												VDC
Input Voltage	5 (2kV-3kV ONLY)			12			15 (600V-1.5kV ONLY)			24			V
Input Current	No load: 55, Full load: 450			No load: 45, Full load: 200			No load: 40, Full load: 190			No load: 35, Full load: 160			mA
Polarity	Fixed positive and fixed negative												-
Output Voltage	0 to 600			0 to 1000			0 to 1250			0 to 1500			VDC
Input Voltage	12	15	24	12	15	24	12	15	24	12	15	24	VDC
Output Power	0.5	0.8	1	0.5	0.8	1	0.5	0.8	1	0.5	0.8	1	W
Output Current	0.83	1.33	1.67	0.5	0.8	1	0.4	0.64	0.8	0.33	0.53	0.67	mA
Output Voltage	0 to 2000			0 to 2500			0 to 3000						VDC
Input Voltage	5	12	24	5	12	24	5	12	24	5	12	24	VDC
Output Power	0.5	0.8	1	0.5	0.8	1	0.5	0.8	1	0.5	0.8	1	W
Output Current	0.25	0.40	0.50	0.20	0.32	0.40	0.167	0.267	0.333				mA
HV setting	10K to 100K (Potentiometer Across Vref. & Signal Ground, Wiper to Adjust)												-
Load voltage regulation	<0.01% of full output voltage for no load to full load												VDC
Line voltage regulation	<0.01% of full output voltage over specified input voltage range												VDC
Residual ripple	<0.01% at full load												Vpk-pk
Temperature coefficient	100ppm/°C for the maximum output voltage after starting and over temperature range 0 to 50°C												-
Output Voltage Monitoring (600V-1500V)	+1V/1kV max. or -1V/-1kV max. according to model polarity output impedance = 200kΩ ±1%												-
Output Voltage Monitoring (2kV-3kV)	12-24V Input Only: 0 to +5V±2% 5V Inputs: 0 to +2.5V±2%												VDC
Reference voltage	12-24V Input Only: 5V ±1%, TC:100ppm/°C, max. output current: 1mA 5V Inputs: 2.5V ±1%, TC:100ppm/°C, max. output current: 1mA												-
Operating temperature	-10 to +65, Full Load, Max Eout, Case Temp												°C
Storage temperature	-40 to +70												°C
Safeguards	Arc and short circuit protection												-
Options	● Flying Lead for HV output ● Suitable for use with an external potentiometer												
Enhanced Interface (-EI) Option (2kV-3kV Only)	Enable/Disable (ON/OFF): 0V to +0.5V Enable, +2.4V to V_input Disable (Default = Disable)												-
	Output Current Monitor (5V Input Only): 0 to +2.5V±2% Output Current Monitor (12-24V Input): 0 to +5.0V±2%												-

Specifications subject to change without notice.



*Making High Voltage Easier!®*

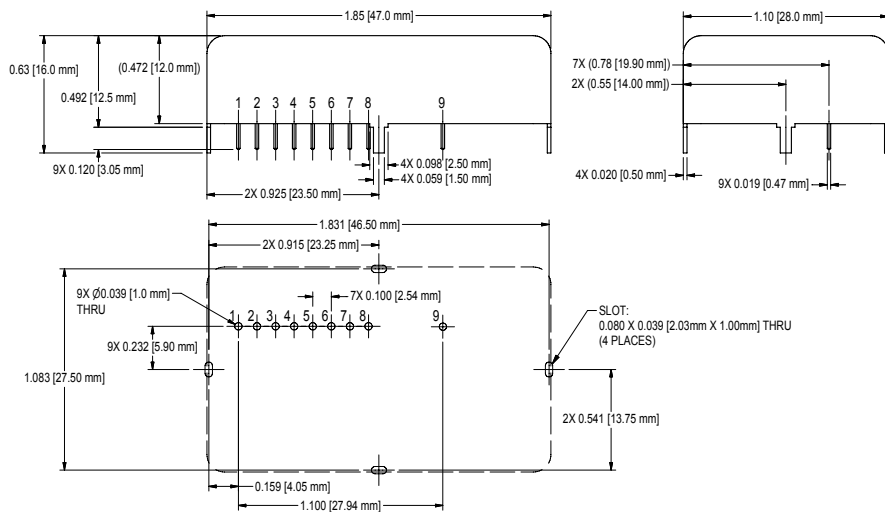
**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved.

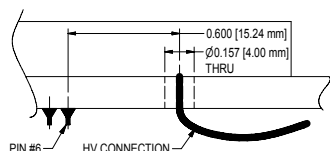
# M SERIES

## Miniature, Microsize High Voltage Biasing Supply

Note: Pins 7 & 8 are available for 2k-3kV units with Enhanced Interface option ONLY



PCB MOUNTING (TOP VIEW)



FLYING LEAD OPTION "-WS"

CONNECTIONS	
PIN	FUNCTION
1	Positive Power Input
2	Power Ground
3	Signal Ground
4	Remote Adjust Input
5	Reference Voltage
6	Voltage Monitor
7	Current Monitor (Available with -EI Option ONLY)
8	Enable (Available with -EI Option ONLY)
9	HV Output

Note: mounting tabs must be connected to ground.



Non-RoHS compliant units are available. Please contact the factory for more information.

### CONSTRUCTION

Steel, tin plated thickness 0.02" (0.5)

Insulation: fully potted in an epoxy resin

### SIZE

Volume: 1.00in<sup>3</sup> (16.4cc)

Weight: 1.23oz (35g)

### TOLERANCE

Overall  $\pm 0.030$ " (0.76)

Pin to Pin  $\pm 0.015$ " (0.38)

Pin to Tab  $\pm 0.020$ " (0.51)

Tab to Tab  $\pm 0.010$ " (0.25)

### NOTES

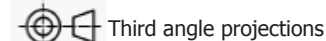
0.019" (0.47) round pins, length: 0.12" (3), spacing: 0.1" (2.54)

PCB mounting through 4 mounting tabs: Length: 0.2" (5), width: 0.059" (1.5), thickness: 0.02" (0.5)

Optional flying lead for HV output:

Coaxial cable (RG178), diameter = 0.079" (2), length = 19.685" (500)

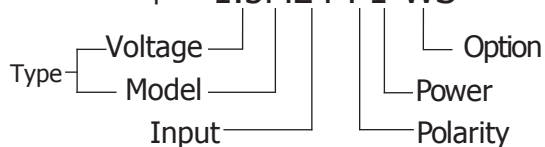
### DRAWING VIEWS



### ORDERING INFORMATION

Type	0 to 600 VDC Output	0.6M
	0 to 1,000 VDC Output	1M
	0 to 1,250 VDC Output	1.25M
	0 to 1,500 VDC Output	1.5M
	0 to 2,000 VDC Output	2M
	0 to 2,500 VDC Output	2.5M
	0 to 3,000 VDC Output	3M
Input	5VDC Nominal (2-3kV Only)	5
	12VDC Nominal	12
	15VDC Nominal (600V-1.5kV Only)	15
	24VDC Nominal	24
Power	0.5 Watt Output	0.5
	0.8 Watt Output	0.8
	1 Watt Output	1
Case	Tin Steel Case	(Standard)
Polarity	Positive Output	-P
	Negative Output	-N
Option	Output Voltage Lead Wire	-WS
	Current Monitor/Enable Pin (2-3kV Only)	-EI

Example: 1.5M24-P1-WS



Popular accessories ordered with this product include the PCB-CONN-M/V.



\*The M Series is not available in all territories. Please contact an UltraVolt Applications Engineer for details concerning sales in your area.



*Making High Voltage Easier!®*

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com

# D SERIES

## Microsize High Voltage Biasing Supply

The D Series of high voltage power supplies is designed to meet the needs of customers with low-profile applications. These ultra-compact modules are adapted to controlling photo detectors that require high-bias voltages and currents. D Series PCB-mount high-voltage power supplies feature a lightweight design, state-of-the-art surface-mount technology, and five-sided metal enclosures.



- 4 models from 0 to 1kV through 0 to 6kV
- 1, 2, 4 or 6 watts of output power
- 15 or 24 Volts DC Input
- Low profile and lightweight
- PCB flat mounting
- Adjustable from 0 to full output
- Tight line/load regulation
- Output current limit protection
- Low ripple (<0.02% peak to peak)
- Buffered voltage and current monitoring

Typical applications for the D Series include:

Avalanche Photo Diodes (APD)	Image Intensifiers (II)
Electrostatic Chuck (E-chuck)	Insulator Testing
E-Beam Lithography and Welding	Lithography
Focused Ion Beam (FIB)	Microchannel Plates (MCP)
Gas Chromatography	Photodiodes (PD)
Geiger Muller Tubes (GM Tubes)	Photomultiplier Tubes (PMT)
General Laboratory	Scanning Electron Microscopes
High Voltage Testing	Spectrometer

Please contact UltraVolt's customer service department for an analysis of your requirements.

PARAMETERS	SPECIFICATIONS																UNITS
Input voltage $V_{in}$ (pins 2 & 3)	15VDC $\pm 1.5V$ or 24VDC $\pm 2V$ , according to type																VDC
Input current	Example for a 15VDC, output 6000V, 1mA model: inhibition mode: 27mA at no load & HV = 6000V 46mA, at full load < 630mA																-
Polarity	fixed positive or negative																-
Output Voltage	0 to 1000				0 to 2000				0 to 4000				0 to 6000				VDC
Output Power	1	2	4	6	1	2	4	6	1	2	4	6	1	2	4	6	W
Output Current	1	2	4	6	0.5	1	2	3	0.25	0.5	1	1.5	0.17	0.33	0.67	1	mA
Programming (pins 4 & 6)	Via external voltage source 0 to +5V $\pm 0.1\%$ at full scale, and input impedance = 94k $\Omega$																-
Max. output current $I_{out}$	Limited to 110% of nominal current																-
Load voltage regulation	$\pm 0.01\%$ of full output voltage for no load to full load																-
Line voltage regulation	$\pm 0.01\%$ of full output voltage over specified input voltage range																-
Residual ripple	< 0.02% peak-to-peak at full load																-
Temperature coefficient	100																PPM/ $^{\circ}C$
Output HV monitoring (pin 7) {still operating in inhibition mode}	Analog 0 to +5V buffered output signal, accuracy $\pm 0.2\%$ Output impedance = 1k $\Omega$ Temperature coefficient: 50ppm/ $^{\circ}C$ for $\leq 4kV$ units, 100ppm/ $^{\circ}C$ for 6kV units																-
Output current monitoring (pin 5) {still operating in inhibition mode}	Analog 0 to +5V buffered output signal, accuracy $\pm 2\%$ Output impedance = 1k $\Omega$ Temperature coefficient: 100ppm/ $^{\circ}C$																-
HV ON/OFF (pin 1)	To disable (opened remote interlock) or enable (closed remote interlock)																-
Operating temperature	-10 to +65, Full load, Max $E_{out}$ , Case Temp																$^{\circ}C$
Storage temperature	-10 to +70																$^{\circ}C$
Safeguards	<ul style="list-style-type: none"> <li>• Protected against reverse <math>V_{in}</math></li> <li>• Auto inhibition if <math>T_{case} &gt; 75^{\circ}C</math></li> <li>• Soft start feature: the start is guaranteed with no overshoot</li> <li>• HV setting internally limited to 5.3V</li> </ul>																-

Specifications subject to change without notice.



*Making High Voltage Easier!®*

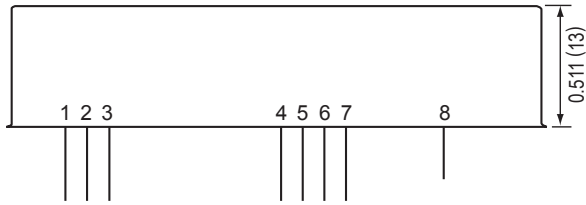
**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved..

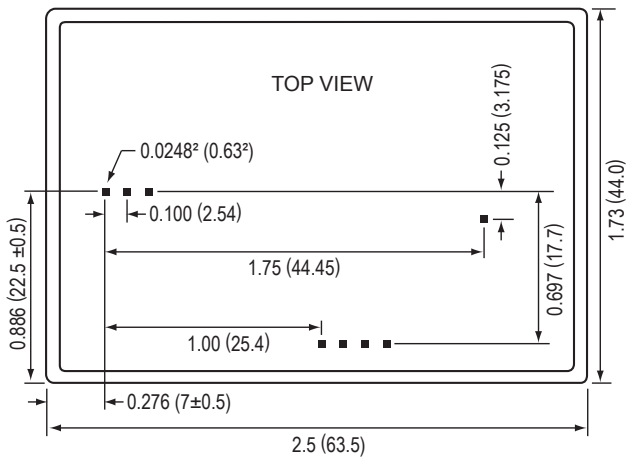
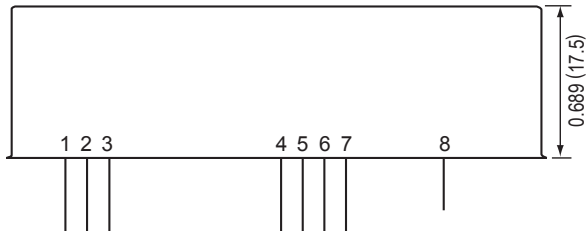
# D SERIES

## Microsize High Voltage Biasing Supply

1-4KV, 1-4W



1-4KV, 6W AND 1-6KV, 1-6W



CONNECTIONS	
PIN	FUNCTION
1	Enable/Disable
2	Power Ground
3	Positive Power Input
4	Signal Ground
5	Iout Monitor
6	Remote Adjust Input
7	Eout Monitor
8	HV Output

### CONSTRUCTION

Tin Steel Plate, thickness 0.5mm  
Insulation: fully potted in an epoxy resin

### SIZE

Volume:  
1-4kV, 1-4W: 8.55 in<sup>3</sup> (140.13cc)  
1-4kV, 6W and 1-6kV, 1-6W: 11.70 in<sup>3</sup> (191.76cc)  
Weight:  
1-4kV, 1-4W: 2.54 oz (72g)  
1-4kV, 6W and 1-6kV, 1-6W: 3.00 oz (85g)

### TOLERANCE

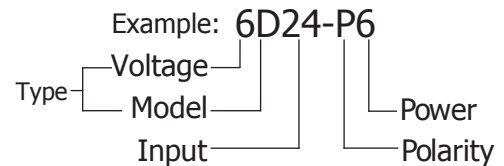
Overall  $\pm 0.0118"$  (0.3)  
Pin to pin  $\pm 0.0039"$  (0.1)  
Case to pin  $\pm 0.0591"$  (1.5)

### NOTES

Standard case length, width, and height specs are  $\pm 0.050"$  (1.27)  
Pin length  $> 0.24"$  (6), spacing 0.1" (2.54)

### ORDERING INFORMATION

Type	0 to 1,000 VDC Output	1D
	0 to 2,000 VDC Output	2D
	0 to 4,000 VDC Output	4D
	0 to 6,000 VDC Output	6D
Input	15VDC Nominal	15
	24VDC Nominal	24
Power	Watts Output	1
	Watts Output	2
	Watts Output	4
	Watts Output	6
Case	Tin Steel Case	(Standard)
Polarity	Positive Output	-P
	Negative Output	-N



Non-RoHS compliant units are available. Please contact the factory for more information.

Rev. C 03/12

\*The D Series is not available in all territories. Please contact an UltraVolt Applications Engineer for details concerning sales in your area.



**Making High Voltage Easier!®**

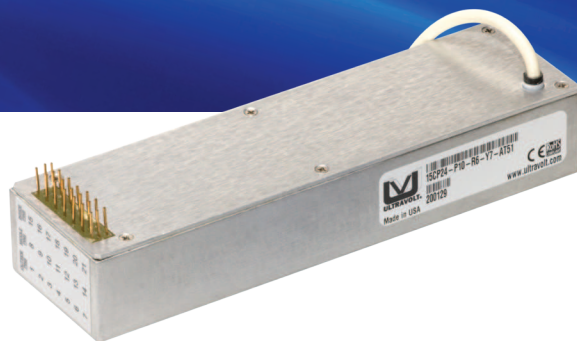
1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 [www.ultravolt.com](http://www.ultravolt.com)



# CP SERIES

## Constant Power High Voltage Supply

The CP series of high-voltage regulated DC-DC converters is optimized for “tri-mode” operation in bias applications, charging applications, and pulsed power applications and provides excellent line and load regulation, dynamic response, and stability. The CP Series operates in constant-voltage, constant-current, or constant-power modes and features buffered current, voltage, and power monitors. Typical applications for these modules include strike-and-run, plasma, and electrophoresis.



- 6 models from 0 to 1kV through 0 to 15kV
- 10W maximum output power level
- 0 to +10V remote programming for all modes
- +10V compensated reference

- Tight line and load regulation
- Operates in constant-voltage, constant-current, or constant-power modes

PARAMETER	CONDITIONS	MODELS						UNITS
<b>INPUT</b>		<b>ALL TYPES</b>						
Voltage Range	Full Power	+24 ± 10%						VDC
Current	Standby / Disable	< 70						mA
Current	Full Load, Max Eout	< 925						mA
Current	No Load, Max Eout	< 375						mA
AC Ripple Current	Nominal Input, Full Load	< 30						mA p-p
<b>OUTPUT</b>		<b>1CP</b>	<b>2CP</b>	<b>4CP</b>	<b>6CP</b>	<b>10CP</b>	<b>15CP</b>	
Voltage Range		0 to 1,000	0 to 2,000	0 to 4,000	0 to 6,000	0 to 10,000	0 to 15,000	VDC
Power	Nominal Input, Max Eout	10						W
Current	Iout Max	100	50	25	16.7	10	6.7	mA
Ripple	Full load, Max Vout	TBD	TBD	TBD	TBD	50	55	V p-p
Ripple	Full load, Max Iout	TBD	TBD	TBD	TBD	60	55	V p-p
Line Regulation	Vin Min to Vin Max, Max Eout	< 0.01 %						VDC
Load Regulation	No Load to Full Load, Max Eout	< 0.01%						VDC
<b>PROGRAMMING &amp; CONTROLS</b>		<b>ALL TYPES</b>						
Input Impedance	Normal Operating Conditions, All Inputs	10						MΩ
Enable/Disable		0 to +2 Disable, +3 to 10 Enable (Default = Enable)						VDC
Output Voltage	T=+25°C, Initial Value	10.5 ± 0.2%						VDC
Output Impedance	T=+25°C	Buffered, low impedance, 3mA max						-
Stability	Over Full Temperature	5						PPM/°C
<b>ENVIRONMENTAL</b>		<b>ALL TYPES</b>						
Operating	Full Load, Max Eout, Case Temp.	-40 to +65						°C
Coefficient	Over the Specified Temperature	±100						PPM/°C
Thermal Shock	Mil-Std 810, Method 503-4, Proc. II	-40 to +65						°C
Storage	Non-Operating, Case Temp.	-55 to +105						°C
Humidity	All Conditions, Standard Package	0 to 95% non-condensing						-
Altitude	Standard Package, All Conditions	Sea Level through Vacuum						-
Shock	Mil-Std-810, Method 516.5, Proc. IV	20						G's
Vibration	Mil-Std-810, Method 514.5, Fig.14.5C-3	10						G's

Specifications subject to change without notice.



*Making High Voltage Easier!®*

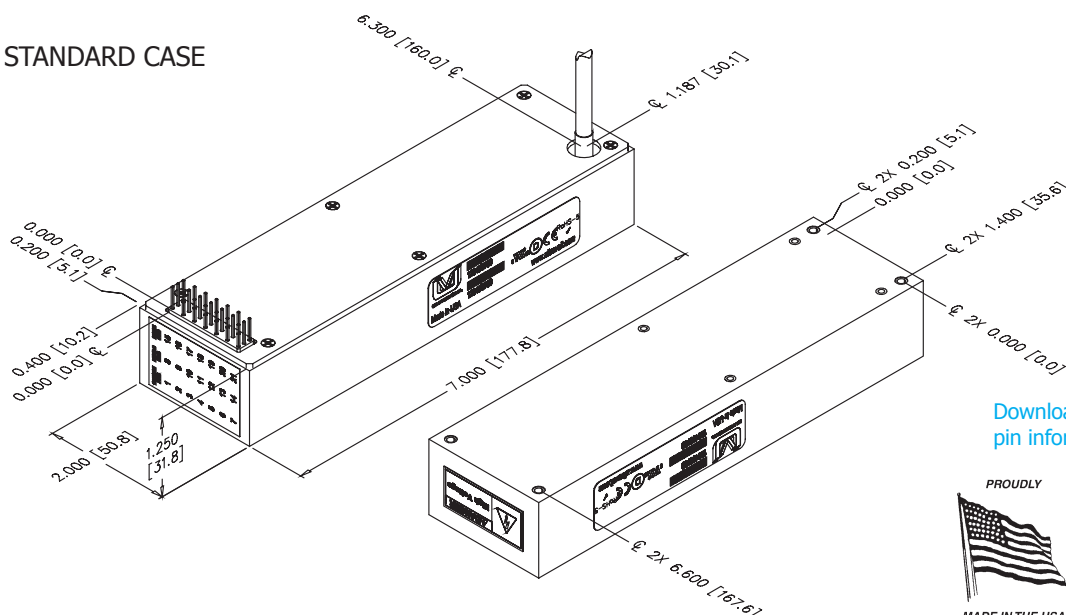
**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved..

# CP SERIES

## Constant Power High Voltage Supply

### STANDARD CASE



### CONSTRUCTION

Epoxy-filled Aluminum Alloy Box,  
Anodized Gold

### SIZE

Volume 17.5in<sup>3</sup> (286.77 cc)  
Weight 1.4lb (0.64kg)

### TOLERANCE

Overall  $\pm 0.050$ " (1.27)  
Pin to Pin  $\pm 0.015$ " (0.38)  
Mounting hole location  $\pm 0.025$ " (0.64)

Downloadable drawings (complete with mounting & pin information) and 3D models are available online.



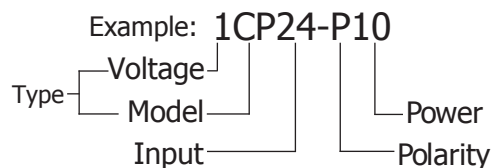
Non-RoHS compliant units are available. Please contact the factory for more information.

### CP SERIES PIN ASSIGNMENTS AND FUNCTIONS

PIN	FUNCTION	DESCRIPTION
1	Power Ground	Input Power Return
2	Input Power	Input Power (+24V $\pm$ 10%)
3	Current Monitor	0 to 10V is equal to 0 to full rated output current
4	Enable	High to enable, low to disable, default or open is enabled
5	Signal Ground	Monitor and Programming Return, return the monitor and programming circuitry to this pin
6	Voltage Programming	0 to 10V programs 0 to full rated output voltage
7	Reference Voltage	10.5V precision voltage reference
8	Power Ground	Input Power Return
9	Input Power	Input Power (+24V $\pm$ 10%)
10	N/C	
11	Current Mode Indicator	Open drain indicator, active (pulled low) when unit is in current regulation
12	Voltage Mode Indicator	Open drain indicator, active (pulled low) when unit is in voltage regulation
13	Current Programming	0 to 10V programs 0 to full rated output current
14	Voltage Monitor	0 to 10V is equal to 0 to full rated output voltage
15, 16, 17, & 18	N/C	
19	Power Mode Indicator	Open drain indicator, active (pulled low) when unit is in power regulation
20	Power Monitor	0 to 10V is equal to 0 to full rated power
21	Power Programming	0 to 10V programs 0 to full rated output power

### ORDERING INFORMATION

Type	0 to 1,000 VDC Output	1CP
	0 to 2,000 VDC Output	2CP
	0 to 4,000 VDC Output	4CP
	0 to 6,000 VDC Output	6CP
	0 to 10,000 VDC Output	10CP
	0 to 15,000 VDC Output	15CP
Input	24VDC Nominal	24
Polarity	Positive Output	-P
	Negative Output	-N
Power	10 Watt Output	10



Popular accessories ordered with this product include CONN-KIT-CP and our full range of high voltage output connectors (see Accessories & Connectors datasheet).

Rev. C 9/11



Making High Voltage Easier!®

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com

# DUAL OUTPUT AUX SERIES

## High Voltage Biasing Supply

The AUX Series accessory provides a second fixed HV output in addition to the adjustable main high-voltage power-supply output. This second output is set for a specific fixed voltage at the factory. The AUX output is achieved by adding a daughter board inside either 1/16A to 6A or 1/16C to 6C high-voltage power supplies.

This AUX board is encapsulated with the main high voltage power supply. All of the advantages of the base power supply remain. Typical applications include the following: Bipolar outputs, ionization/strike, trigger coils, pulse generator or amplifiers, tube elements such as G1, G2, cathode, and spark gap initiator.

- Adds a second + or - HV output
- Fixed regulated output
- Encapsulated with A or C Series HVPS
- Creates a 4.9 in<sup>3</sup> dual-output supply

### HIGH VOLTAGE AUX OUTPUT

The AUX output is a non-isolated, unipolar output. Positive or negative output must be specified. The polarity of this AUX is not dependent on the polarity of the base HVPS.

Full capability is available over an input range of 12 to 15VDC  $\pm 10\%$  for 4W units and 24 to 28VDC  $\pm 5\%$  for 20W/30W units. The AUX fixed output is fully functional when the main output voltage is adjusted from 100% to 75%. As the main output is adjusted from 75% to 50% the AUX output current is reduced from 100% to 0%. The manufactured tolerance on the fixed output is  $\pm 5\%$ . Line regulation error is  $< 0.1\%$ ; load regulation error is  $< 0.1\%$  per 100uA. The output has a temperature co-efficient of  $\pm 0.11\%$  per  $^{\circ}\text{C}$ .



- Fixed-frequency, low-stored-energy design
- High power density
- Output short-circuit protected
- UL, cUL, CE, IEC-60950-1, and Demko Recognized

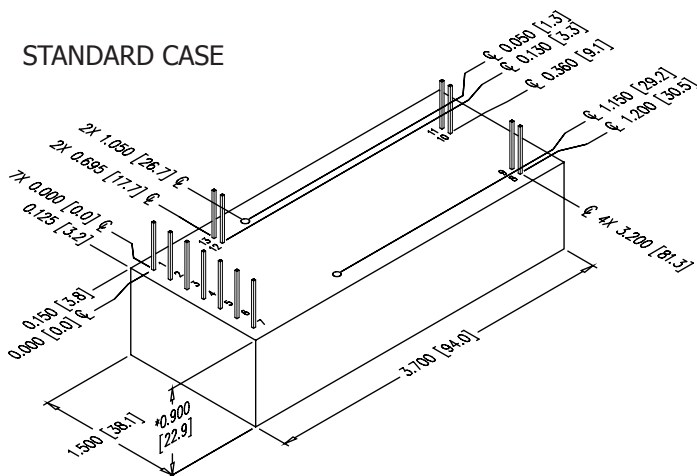
Fixed outputs available are:

47V @ 2mA	450V @ 1mA
94V @ 2mA	600V @ 1mA
141V @ 2mA	750V @ 1mA
188V @ 2mA	900V @ 1mA
235V @ 2mA	1050V @ 1mA
282V @ 2mA	
329V @ 2mA	

Note: Specified AUX output should be  $< 40\%$  of the main output.

The AUX HV output connection is via an additional pair of standard .025in (0.635mm) square IDC pins. These pins can be used for PCB mounting or direct wiring. High voltage connector and cable options are available.

### STANDARD CASE



### CONSTRUCTION

Epoxy-filled DAP box, certified to ASTM-D-5948  
Plastic box

### TOLERANCE

Overall  $\pm 0.050"$  (1.27)  
Pin to Pin  $\pm 0.015"$  (0.38)  
Mounting hole location  $\pm 0.025"$  (0.64)

### NOTES

20W and 30W versions are an additional 0.062" (1.57) in height.  
-M equipped units are an additional 0.030" (0.76) for each dimension.  
Contact UltraVolt's Customer Service Department for drawings of models equipped with -E or -H options.

Specifications subject to change without notice.



*Making High Voltage Easier!®*

**Higher Service, Higher Performance, Higher Reliability**  
©2011, UltraVolt Inc. All rights reserved.

## High Voltage Biasing Supply

WITH -C OPTION

Downloadable drawings  
pin information) and 3D m

Overall  $\pm 0.025''$  (0.64)  
Pin to Pin  $\pm 0.015''$  (0.38)  
Mounting hole location  $\pm 0.025''$  (0.64)

Downloadable drawings (complete with mounting & pin information) and 3D models are available online.



**RoHS**  
**COMPLIANT**

Non-RoHS compliant units are available. Please contact the factory for more information.

CONNECTIONS	
PIN	FUNCTION
1	Input-Power Ground Return
2	Positive Power Input
3	Iout Monitor
4	Enable/Disable
5	Signal Ground Return
6	Remote Adjust Input
7	+5VDC Reference Output
8	HV Ground Return
9	HV Ground Return or Eout Monitor (-Y5 only)
10 & 11	HV Output
12 & 13	AUX HV Output

All grounds joined internally. Power-supply mounting points isolated from internal grounds by  $>100\text{k}\Omega$ ,  $.01\mu\text{F}$  / 50V (Max) on all models except -M (20W and above), -M-E, -M-C, and -M-H configurations which are 0Ω.

Rev. M 9/11

Type	0 to 62 VDC Main Output	1/16AUX or 1/16CAUX
	0 to 125 VDC Main Output	1/8AUX or 1/8CAUX
	0 to 250 VDC Main Output	1/4AUX or 1/4CAUX
	0 to 500 VDC Main Output	1/2AUX or 1/2CAUX
	0 to 1,000 VDC Main Output	1AUX or 1CAUX
	0 to 2,000 VDC Main Output	2AUX or 2CAUX
	0 to 4,000 VDC Main Output	4AUX or 4CAUX
	0 to 6,000 VDC Main Output	6AUX or 6CAUX
AUX Output	2mA @ 47, 94, 141, 188, 235, 282, 329	-VVV
	1mA @ 450, 600, 750, 900, 1050	
Polarity	Positive Output	-P
	Negative Output	-N
Power	Watts Output (12 V Only)	4
	Watts Output (24 V Only)	20
	Watts Output (24 V Only)	30
Case	Plastic Case - Diallyl Phthalate	(Standard)
	'Eared' Heatsink Plate (plastic case)	-E
	RF-Tight Aluminum Case	-C
Heat Sink	.400" High (sized to fit case)	-H
Shield	Six-sided Mu-Metal Shield	-M
Voltage Monitor	Optional Eout Monitor (A Series only)	-Y5

\*Optional boosted current monitor available. Contact the factory for more details.

Example: 2AUX-P4-N450-C

```

graph LR
    A[Main Output Polarity] --> B[Type]
    A --> C[Main Output Power]
    B --> D[Voltage]
    B --> E[Model]
    C --> F[Option Case]
    C --> G[AUX Output Voltage]
    C --> H[AUX Output Polarity]
  
```

Popular accessories ordered with this product include CONN-KIT-F and BR-1 mounting bracket kit.



***Making High Voltage Easier!®***

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 [www.ultravolt.com](http://www.ultravolt.com)



# TRIPLE OUTPUT AUX SERIES

## High Voltage Biasing Supply

The AUX Series accessory provides second and third adjustable positive HV outputs in addition to the adjustable main positive high-voltage power supply output. The AUX outputs are set for a specific voltage range at the factory. One output is referred to as the Focus, one as the Grid. The AUX is achieved by adding a daughter board inside the 10A-35A high-voltage power supply. This AUX board is encapsulated with the main high-voltage power supply in a special taller enclosure to accommodate the height of the adjust pots. Typical applications are: CRT Raster Display, X-Y CRT Display, and E Beam Bias.

- Adds Focus and Grid outputs
- Encapsulated within 10A-35A Series
- Adjustable regulated outputs
- Creates a 6.5 in<sup>3</sup> triple output supply

### HIGH VOLTAGE AUX OUTPUTS

The AUX outputs are non-isolated, positive, unipolar outputs. Full capability is available over an input range of 12 to 15VDC  $\pm 10\%$  for 4W units and 24 to 28VDC  $\pm 5\%$  for 15W/30W units. The Focus AUX output voltage is fully functional when the main output is within the range specified on the ordering information table. The manufactured tolerance on the output voltage range provided is  $\pm 5\%$ . Line regulation error is  $< 0.1\%$ . Load regulation error is 0.5V per  $\mu A$ . The outputs have a temperature co-efficient of  $+0.11\%$  per  $^{\circ}C$ . Each AUX output has a current capability of 0 to  $\pm 25\mu A$ , contact factory for higher current. Each AUX output can be adjusted using an internal single-turn potentiometer. The potentiometer adjusts from a factory-set voltage down to 450VDC lower.



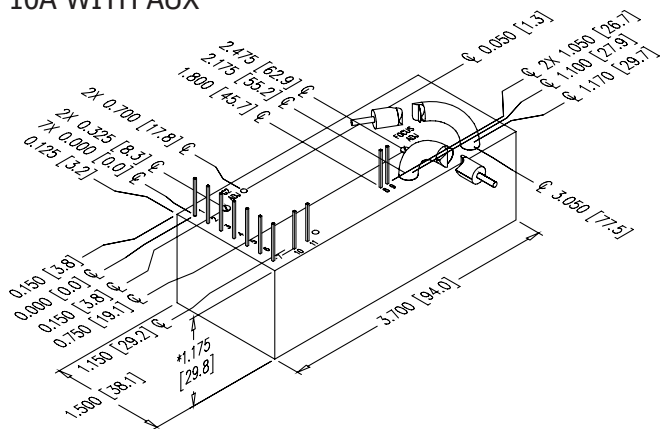
- Fixed-frequency, low-stored-energy design
- High power density
- Indefinite output short-circuit protection
- UL, cUL, CE, IEC-60950-1, and Demko Recognized

Specific outputs available are:

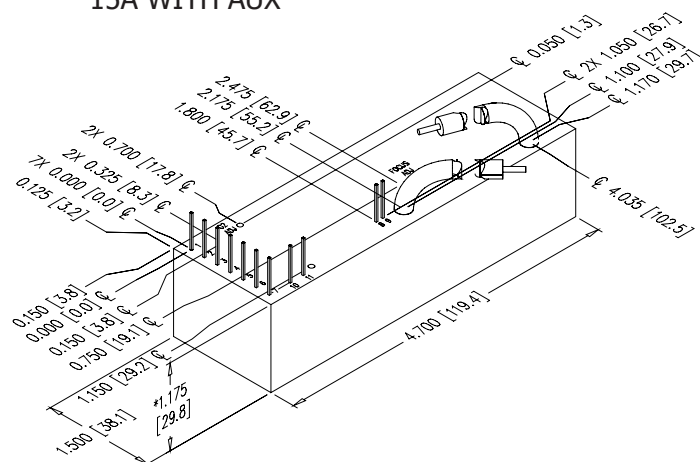
Standard TC:	Compensated TC:
300V	500V $\pm 200PPM$
450V	650V $\pm 408PPM$
600V	800V $\pm 537PPM$
750V	950V $\pm 626PPM$
900V	1100V $\pm 690PPM$
1050V	

The AUX Grid HV output is via pin 10 on an additional pair of standard .025in (0.635mm) square IDC pins. These pins can be used for PCB mounting or direct wiring. The AUX Focus HV output is via an 18" long flying lead. High voltage connector and cable options are available.

10A WITH AUX



15A WITH AUX



Specifications subject to change without notice.



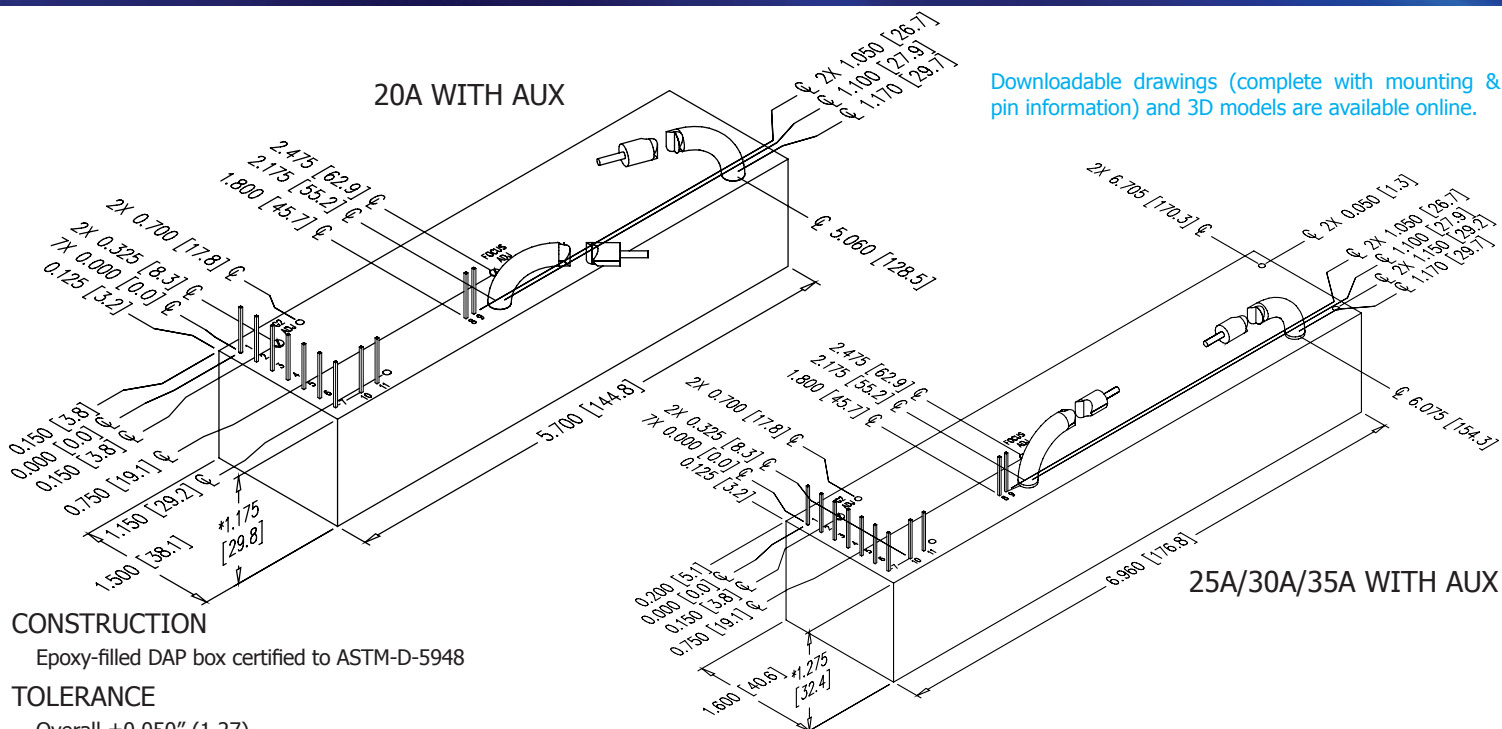
*Making High Voltage Easier!®*

**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved.

# TRIPLE OUTPUT AUX SERIES

## High Voltage Biasing Supply



Downloadable drawings (complete with mounting & pin information) and 3D models are available online.

### CONSTRUCTION

Epoxy-filled DAP box certified to ASTM-D-5948

### TOLERANCE

Overall  $\pm 0.050$ " (1.27)

Pin to Pin  $\pm 0.015$ " (0.38)

Mounting hole location  $\pm 0.025$ " (0.64)

### NOTES

20W and 30W versions are an additional 0.062" (1.57) in height. -M equipped units are an additional 0.030" (0.76) for each dimension.

Contact UltraVolt's Customer Service Department for drawings of models equipped with -E or -H options.



Non-RoHS compliant units are available. Please contact the factory for more information.

CONNECTIONS	
PIN	FUNCTION
1	Input-Power Ground Return
2	Positive Power Input
3	Iout Monitor
4	Enable/Disable
5	Signal Ground Return
6	Remote Adjust Input
7	+5VDC Reference Output
8	HV Ground Return
9	Eout Monitor
10	AUX Grid HV Output
11	Spare

All grounds joined internally. Power-supply mounting points isolated from internal grounds by  $>100k\Omega$ ,  $.01\mu F$  / 50V (Max) on all models except -M (15W and above), -M-C, -M-E, and -M-H configurations which are  $0\Omega$ .

### ORDERING INFORMATION

Type	0 to 10.7kVDC Main Output (Focus AUX Operational 8kV to 10.7kV)	10AUX
	0 to 16.1kVDC Main Output (Focus AUX Operational 11kV to 16.1kV)	15AUX
	0 to 21.5kVDC Main Output (Focus AUX Operational 16kV to 21.5kV)	20AUX
	0 to 26.8kVDC Main Output (Focus AUX Operational 21.5kV to 26.8kV)	25AUX
	0 to 32.2kVDC Main Output (Focus AUX Operational 26.8kV to 32.2kV)	30AUX
	0 to 37.6kVDC Main Output (Focus AUX Operational 28.2kV to 37.6kV)	35AUX
Focus Output	See Table on Pg. 1	-Fvv
Grid Output	See Table on Pg. 1	-Gvv
Power	Temperature Compensated AUX	-TC
	Watts Output (12 V Only)	4
	Watts Output (24 V Only)	20
	Watts Output (24 V Only)	30
Case	Plastic Case - Diallyl Phthalate	(Standard)
	RF Tight Aluminum Case	-C
	'Eared' Heatsink Plate (Plastic Case)	-E
Heat Sink	.400" High (sized to fit case)	-H
Shield	Six-sided Mu-Metal Shield	-M
Wire Options	Anode Flying Lead Terminated with Connector	-ATxx
	Anode Flying Lead Shielded	-AS
	Anode Flying Lead Protected	-AP
	Focus Flying Lead Terminated with Connector	-FTxx

\*Optional boosted current monitor available. Contact the factory for more details.

Example: 15AUX4-F1200-G450-C

Type — Voltage — Model — Option (Case) — Grid Output Voltage — Focus Output Voltage

Main Output Power

Popular accessories ordered with this product include CONN-KIT-F and BR-6 mounting bracket kit.



Making High Voltage Easier!®

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com





# BIPOLAR HIGH POWER C SERIES

## Dual-Output High Voltage Power Supply

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

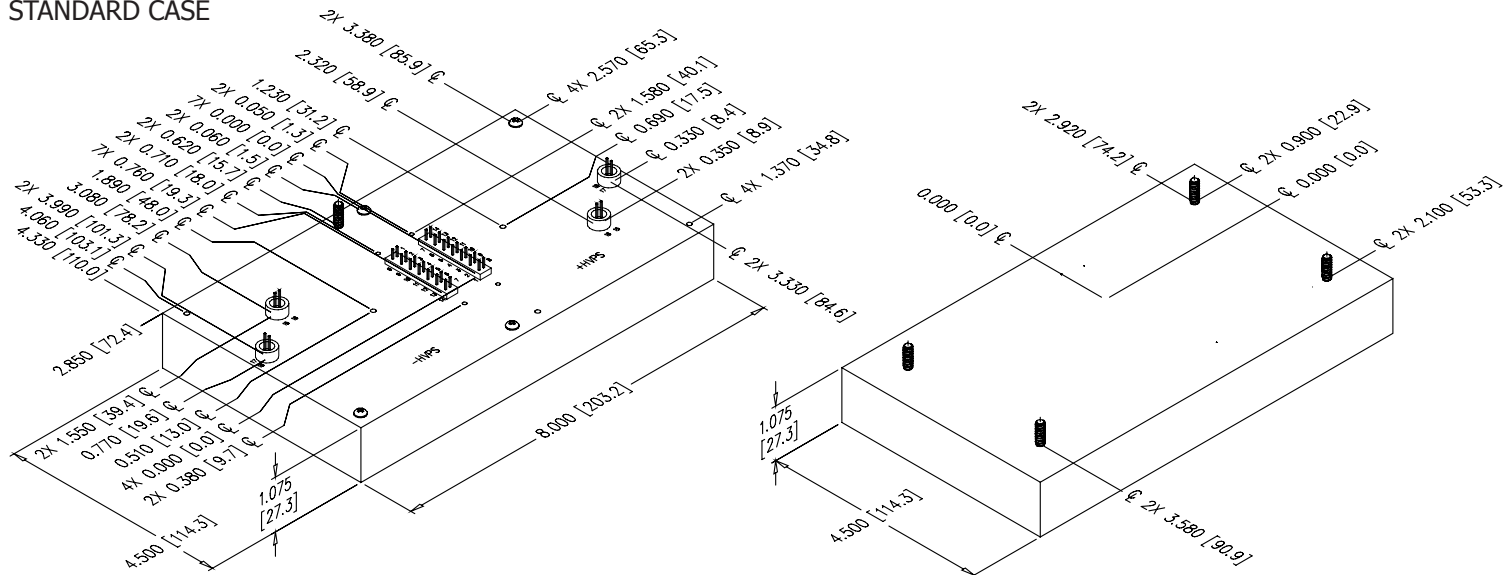
$$F = \frac{I}{C \times V}$$

C = uF  
E<sup>2</sup> = kV  
J = Ws

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

Figure A - Rise Time Formulas  
NOTES: Capacitance must include HVPS internal Capacitance.

### STANDARD CASE



### CONSTRUCTION

Epoxy-filled Aluminum Box  
Chem film per MIL-A-8625 Type II (Anodizing)

### SIZE

Volume 38.7in<sup>3</sup> (634 cc)  
Weight 2.45lbs (1.1kg)

### TOLERANCE

Overall ±0.025" (0.64)  
Pin to Pin ±0.015" (0.38)  
Hole to hole location ±0.025" (0.64)

+ HVPS CONNECTIONS	
1 & 8 - Input Power Ground Return	
3 - Iout Monitor	
4 - Enable/Disable	
5 - Signal Ground Return	
6 - Remote Adjust Input	
7 - +5 VDC Reference Output	
2, 9, & 10 - Positive Power Input	
11, 12, & 13 - N/C	
14 - Eout Monitor	
15 & 16 - HV Ground Return	
17 & 18 - HV Output	
All grounds joined internally. Power supply mounting points isolated from internal grounds by >100kW, .01uF / 50V (Max)	

- HVPS CONNECTIONS	
1 & 8 - Input Power Ground Return	
3 - Iout Monitor	
4 - Enable/Disable	
5 - Signal Ground Return	
6 - Remote Adjust Input	
7 - +5 VDC Reference Output	
2, 9, & 10 - Positive Power Input	
11, 12, & 13 - N/C	
14 - Eout Monitor	
15 & 16 - HV Ground Return	
17 & 18 - HV Output	
All grounds joined internally. Power supply mounting points isolated from internal grounds by >100kW, .01uF / 50V (Max)	

Downloadable drawings (complete with mounting & pin information) and 3D models are available online.

ORDERING INFORMATION		
Type	0 to 125 VDC Output	1/8C
	0 to 250 VDC Output	1/4C
	0 to 500 VDC Output	1/2C
	0 to 1,000 VDC Output	1C
	0 to 2,000 VDC Output	2C
	0 to 4,000 VDC Output	4C
	0 to 6,000 VDC Output	6C
Input	24VDC Nominal	24
Polarity	Negative & Positive Output	-NP
Power	125 Watts Output	125 (60Wx2)
	250 Watts Output	250 (125Wx2)
Heat Sink	.400" High (sized to fit case)	-H
PCB Support	(7) 0.187" Standoffs on top cover	-Z11

Rev. K 8/10



Non-RoHS compliant units are available. Please contact the factory for more information.



Example: 1/2C24-NP125(60Wx2)

Type — Voltage — Model — Input — Total Output Power — Polarity

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



Making High Voltage Easier!®

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com





# HVA SERIES

## Precision High-Voltage Amplifier

Sample "HVA" Series Waveforms:

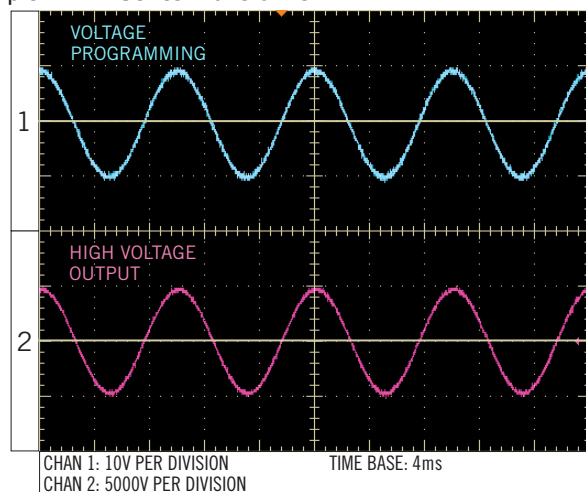


Figure A:  
5HVA24-BP1 Sine Wave Input

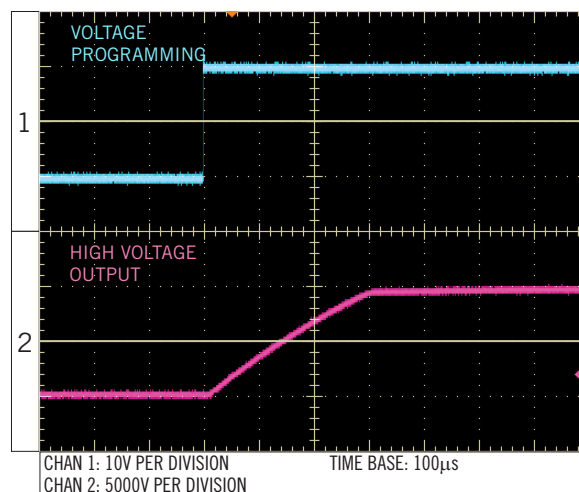


Figure B:  
5HVA24-BP1 10kV Step Wave Input w/ No Load

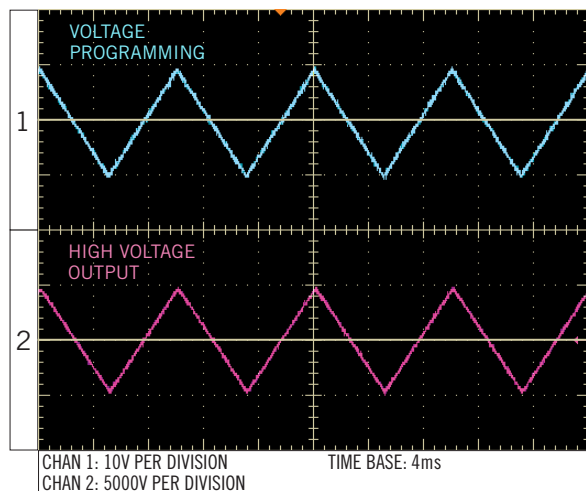


Figure C:  
5HVA24-BP1 Triangle Wave Input

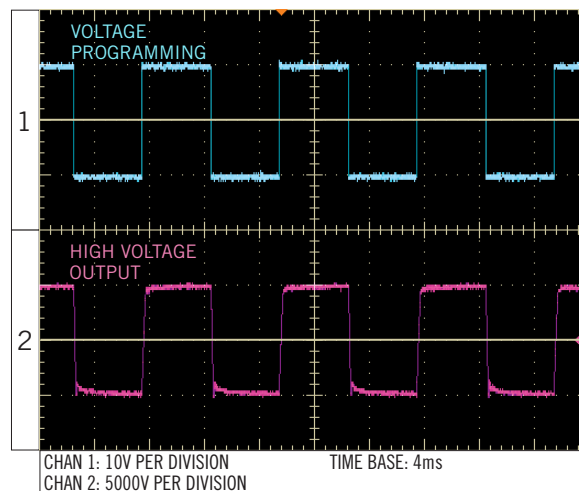


Figure D:  
5HVA24-BP1 Square Wave Input

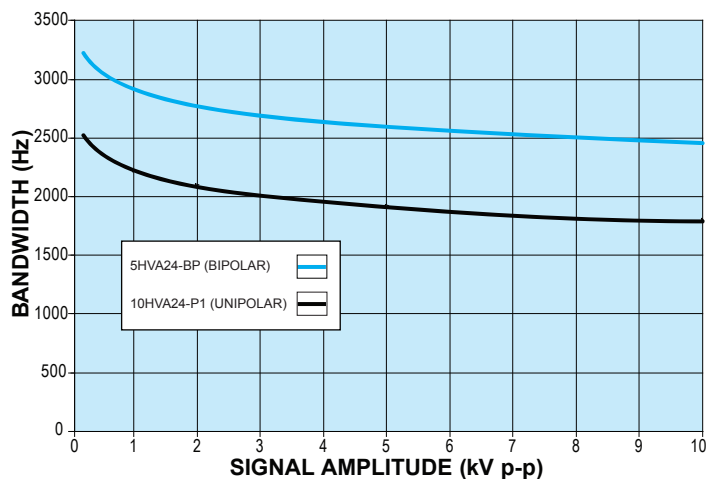


Figure E:  
Bandwidth vs. Signal Amplitude with No Load

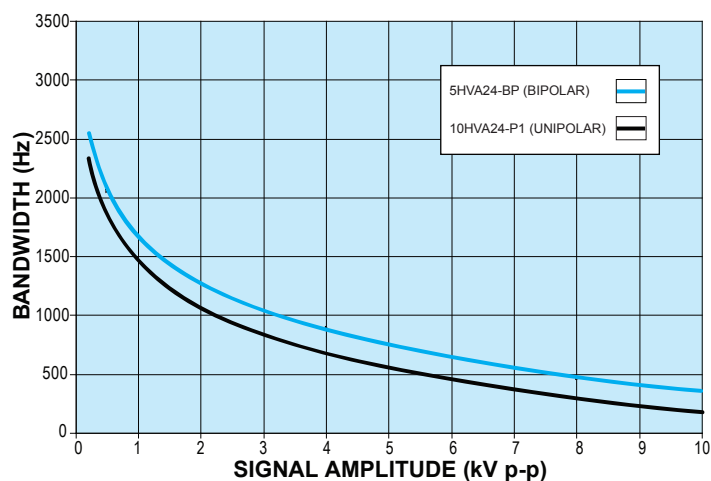


Figure F:  
Bandwidth vs. Signal Amplitude with 100pF Load



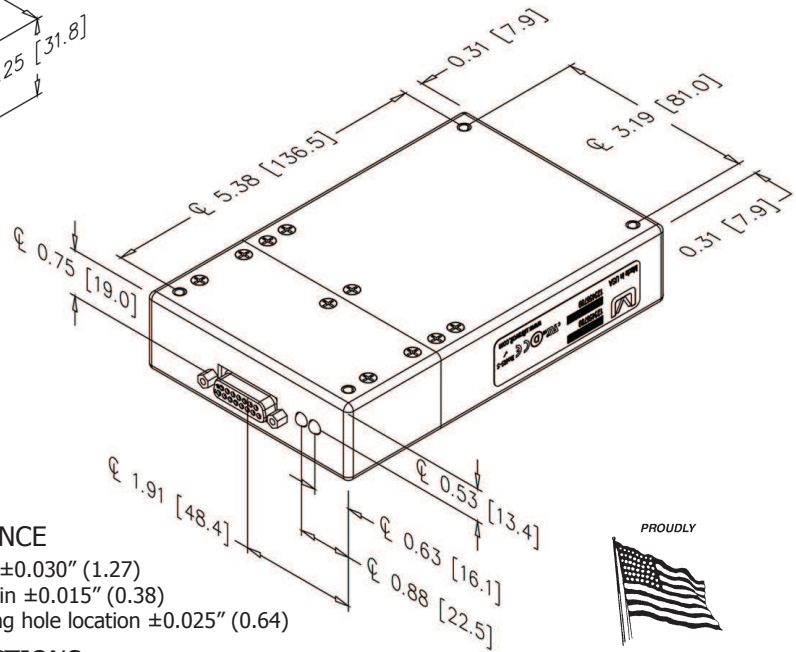
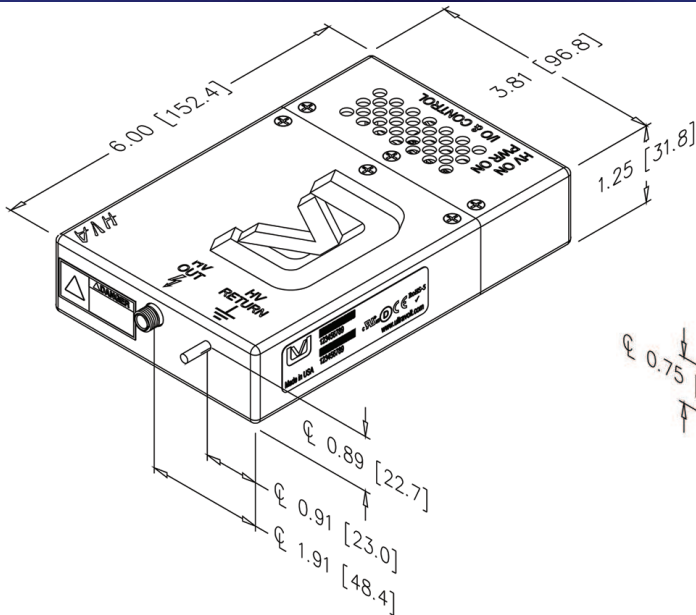
*Making High Voltage Easier!®*

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 [www.ultravolt.com](http://www.ultravolt.com)

# HVA SERIES

## Precision High-Voltage Amplifier

Downloadable drawings (complete with mounting & pin information) and 3D models are available online.



### CONSTRUCTION

Material: Aluminum Alloy 5052-H32  
Finish: Anodize MIL-A-8625E Blue

### SIZE

Volume 28.58 in<sup>3</sup> (468.34cc)  
Weight 1.5 lbs. (0.68kg)

### TOLERANCE

Overall  $\pm 0.030"$  (1.27)  
Pin to Pin  $\pm 0.015"$  (0.38)  
Mounting hole location  $\pm 0.025"$  (0.64)

### CONNECTIONS

D-Sub 15 Pin Female  
HV Connector, LGH1/2L  
HV Return, #6-32 x 0.437 Long  
Threaded Post



Non-RoHS compliant units are available. Please contact the factory for more information.

### UV-HVA INPUT CONNECTOR PINOUT FUNCTIONS

PIN	DESCRIPTION	FUNCTION
1	Reference Voltage	+10.00V precision reference
2	Voltage Programming -	0 to +10V or 0 to -10V to program full output voltage, depending on polarity. Programming input is differential between pins 2 and 3.
3	Voltage Programming +	
4	Voltage Monitor	0 to $\pm 10V$ represents 0 to $\pm$ full output voltage
5	N/C	No connection
6	Signal Ground	Reference all control signals here
7	Input Power	+24V Input Power
8	Input Power	
9	Power Ground	Input power return
10	Power Ground	
11	Enable	TTL high to enable, low to disable, default is OFF
12	Current Monitor	0 to $\pm 10V$ represents 0 to $\pm$ full output current
13	Current Limit Adjust	0 to +10V sets current limit from 0 to full rated output current
14	N/C	No connection
15	Signal Ground	Reference all control signals here

### ORDERING INFORMATION

Type	0 to 1,000 VDC Output	1HVA
	0 to 2,000 VDC Output	2HVA
	0 to 4,000 VDC Output	4HVA
	0 to 5,000 VDC Output (Bipolar Only)	5HVA
	0 to 6,000 VDC Output (Unipolar Only)	6HVA
	0 to 10,000 VDC Output (Unipolar Only)	10HVA
Input	24VDC Nominal	24
Polarity	Positive Output	-P
	Negative Output	-N
	Bipolar Output	-BP
Power	1 Watt Output	1
Option	Ripple Stripper® Output Filter	-F
	15ppm temperature coefficient	-15PPM
Connections	LGH	Standard
	5kV SHV Type	-SHV-5kV
	10kV, BNC Type	-BNC-10kV

Example: 1HVA24-P1-F

Voltage  
Model  
Option  
Power  
Polarity  
Input

Popular accessories ordered with this product include our full range of high voltage output connectors (see Accessories & Connectors datasheet).

Rev. F 1/12



Making High Voltage Easier!®

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com



# FL SERIES

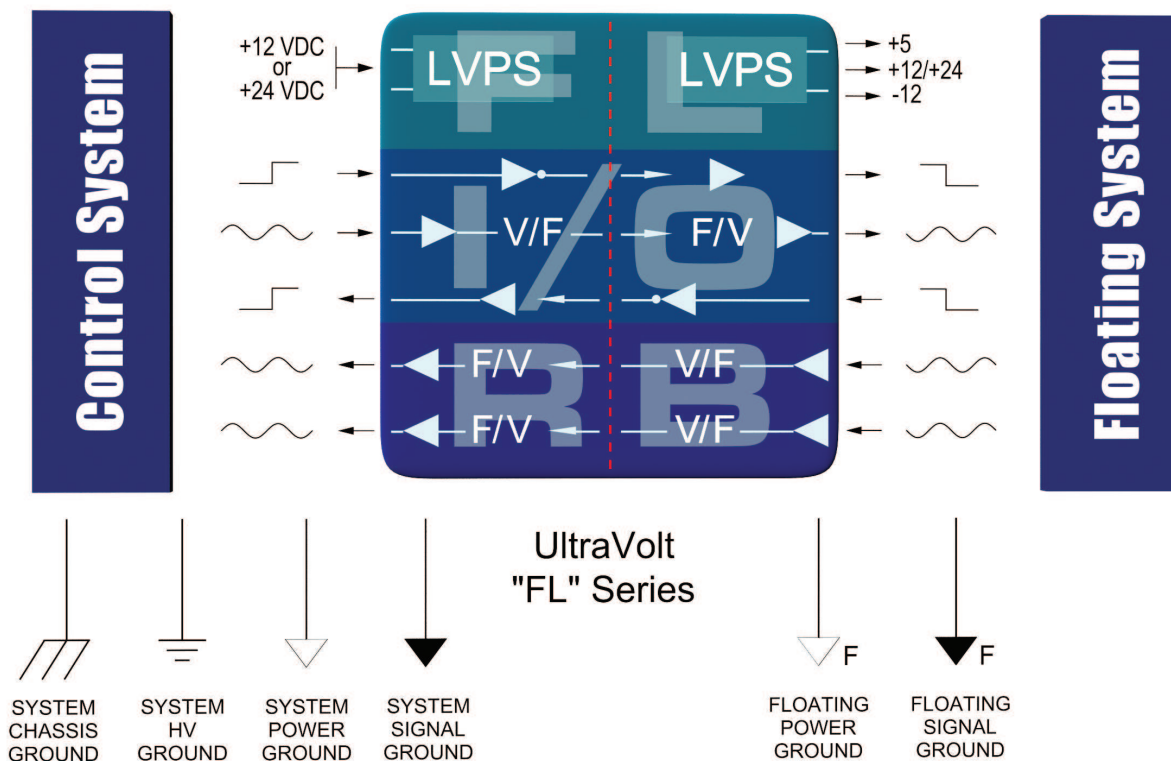
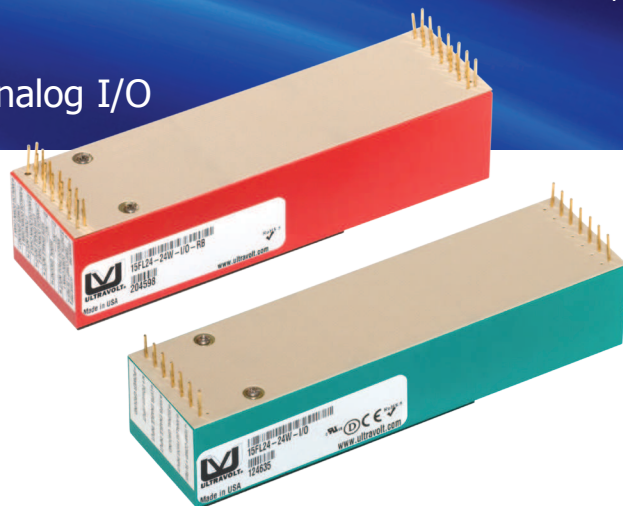
## Floating Hot Deck LVPS With Isolated Digital and Analog I/O

The FL Series of floating-hot-deck, low-voltage power supplies offers an integrated solution for systems requiring LV power & controls with high-voltage isolation. Combining a highly isolated, DC-to-DC, multi-output low-voltage power supply (LVPS) with an advanced isolated digital & analog I/O topology, the FL sub-system provides both power and controls to floating-hot-deck circuitry. This solution, when combined with one or more UV HVPS or other circuitry, can provide high-performance solutions for applications such as:

Floating/Stacked Ion or E-Beam Biases	Floating Filament Bias
Floating Pulsers & Gated Grids	Floating Capacitance Meters
Floating High Side Current Monitors	Floating Leakage Testers

Please contact UltraVolt's customer service department for an analysis of your requirements.

- Isolated up to 15kV
- DC leakage current of <10nA
- AC leakage capacitance of <40pF
- 3 regulated floating LV power outputs
- Isolated digital I/O to and from floating hot deck
- Isolated analog I/O to and from floating hot deck
- UL, cUL, IEC-60950-1, and Demko Recognized



Specifications subject to change without notice.



*Making High Voltage Easier!®*

**Higher Service, Higher Performance, Higher Reliability**  
©2011, UltraVolt Inc. All rights reserved.



# FL SERIES

## Floating Hot Deck LVPS With Isolated Digital and Analog I/O

PARAMETER	CONDITIONS	MODELS		UNITS
<b>INPUT POWER:</b>		<b>12V MODELS</b>	<b>24V MODELS</b>	
Voltage Range	Full Power	+12 $\pm$ 5%	+24 $\pm$ 5%	VDC
Voltage Range	Derated Power Range	+10.8 to +16	+21.6 to +30	VDC
Current	Standby ( Disabled )	< 90	< 50	mA
Current	No Load	< 0.15	< 0.15	A
Current	Max Load	< 1.60	< 1.40	A
AC Ripple Current	Nominal Input, Full Load	< 80	< 100	mA p-p
<b>LOCAL CONTROLS: REFERENCE</b>		<b>ALL TYPES</b>		
Output Voltage	T = +25°C, Initial value	+5.1 $\pm$ 1%		VDC
Output Impedance	T = +25°C	464 $\pm$ 1%		$\Omega$
Stability	Over full temperature range	0.2		mV/°C
<b>LOCAL CONTROLS: LVPS ENABLE / DISABLE</b>		<b>ALL TYPES</b>		
Power supply on	Open, or a voltage above TTL high	+2.4 to 32		VDC
Power supply off	Grounded, or a voltage below TTL low	0 to +0.7 $\pm$ 0.2 (Isink 1mA minimum)		VDC
<b>INPUT / OUTPUT ISOLATION:</b>		<b>12V MODELS</b>	<b>24V MODELS</b>	
Isolation Voltage	Continuous	15	15	kV
Leakage Current	All inputs to all outputs	< 10 std, < 100 “-E”	< 10 std, < 100 “-E”	nA
Leakage Capacitance	All inputs to all outputs	< 40 std, < 50 “-E”	< 50 std or “-E”	pF
<b>ISOLATED POWER OUTPUTS:</b>		<b>15FL12-12W</b>	<b>15FL24-24W</b>	
Output #1 Power	Nominal input, max lout	12	24	W
Output #1 Voltage	Nominal input voltage range	+12 $\pm$ 2%	+24 $\pm$ 2%	VDC
Output #1 Current	Minimum to Maximum	0 to 1	0 to 1	A
Output #1 Line Regulation	Nominal input range, full load	< 0.1%	< 0.1%	VDC
Output #1 Load Regulation	No load to full load	< 0.1%	< 0.1%	VDC
Output #1 Ripple	Full load	< 2%	< 1%	V p-p
Output #2 Voltage	Nominal input voltage range	-15 $\pm$ 1	-15 $\pm$ 1	VDC
Output #2 Current	Minimum > Maximum	0 to 10	0 to 10	mA
Output #2 Line Regulation	Nominal input range, full load	< 0.1%	< 0.1%	VDC
Output #2 Load Regulation	No load to full load	< 2%	< 2%	VDC
Output #2 Ripple	Full load	< 2%	< 2%	V p-p
Output #3 Voltage	Nominal input voltage range	+5.6 $\pm$ 5%	+5.6 $\pm$ 5%	VDC
Output #3 Current	Minimum > Maximum	0 to 10	0 to 10	mA
Output #3 Line Regulation	Nominal input range, full load	< 1 %	< 1 %	VDC
Output #3 Load Regulation	No load to full load	< 1 %	< 1 %	VDC
Output #3 Ripple	Full load	< 1 %	< 1 %	V p-p
<b>ISOLATED CONTROLS: TTL CHANNEL “UP”</b>		<b>ALL TYPES WITH “-I/O” OPTION</b>		
Local input	Source voltage, sink current	10M $\Omega$ internal pull up to +15V <1V low, >2.5V high		VDC
Isolated output	Inverted & buffered TTL	Open collector with internal 1k $\Omega$ pull up to +5V Can sink 10mA max		VDC
Baud Rate	Varying duty cycle	DC to >300		kHz
<b>ISOLATED CONTROLS: ANALOG CHANNEL “UP”</b>		<b>ALL TYPES WITH “-I/O” OPTION</b>		
Local input voltage	Range	0 to +5		VDC
Local input impedance		10 Meg		$\Omega$
Isolated output voltage	Range	0 to +5		VDC
Isolated output impedance		Buffered low impedance		-
Initial offset error		< $\pm$ 1%		mV
Gain error	Full scale	< $\pm$ 2%		VDC
Linearity error	0 to full scale	< $\pm$ 1%		VDC
Stability	30 min. warm-up, per 8 hrs / per day	< 0.01% / < 0.02%		VDC
Temperature Coefficient	0 to +55°C	< $\pm$ 50		ppm/°C
Bandwidth	Symmetric or asymmetric signal	DC to 30 (-3dB point is 47 Hz)		Hz



*Making High Voltage Easier!®*

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com

# FL SERIES

## Floating Hot Deck LVPS With Isolated Digital and Analog I/O

### '-RB' ISOLATED CONTROLS: TTL CHANNEL "DOWN"

PARAMETER	CONDITIONS	ALL TYPES WITH "-I/O-R/B" OPTION	UNITS
Isolated 'Hot Deck' Input	Source voltage, sink current	10M $\Omega$ internal pull up to +15V <1V low, >2.5V high	VDC
Local output	Inverted & Buffered TTL	Open collector with internal 1k $\Omega$ pull up to +5V Can sink 10mA max	VDC
Bandwidth	Varying duty cycle	DC to >300	kHz

### ISOLATED CONTROLS: ANALOG CHANNELS #1 & #2 "DOWN"

PARAMETER	CONDITIONS	ALL TYPES WITH "-I/O-R/B" OPTION	UNITS
Isolated 'Hot Deck' +Input	Range	0 to +5, 0 to +10 with >+15VDC input power	VDC
Isolated 'Hot Deck' -Input	Range	0 to -5, 0 to -10 with >+15VDC input power	VDC
Isolated 'Hot Deck' + or - Input impedance	Signal source	> 10 Meg	$\Omega$
Local output +voltage	Range	0 to +5, 0 to +10 with >+15VDC input power	VDC
Local output -voltage	Range	0 to -5, 0 to -10 with >+15VDC input power	VDC
Local output impedance	Signal source	Buffered low impedance	$\Omega$
Initial offset error	Signal source	< $\pm 5$	mVDC
Gain error	Full scale	< $\pm 1\%$	VDC
Linearity error	0 to full scale	< $\pm 1\%$	VDC
Stability	30 min. warm-up, per 8 hrs / per day	< 0.01% / < 0.02%	VDC
Temperature Coefficient	-20 °C to +55 °C	< $\pm 50$	ppm/°C
Bandwidth	Symmetric or asymmetric signal	DC to 30 (-3dB point is 47Hz)	Hz

TEMPERATURE:	CONDITIONS	ALL TYPES	
Operating	Full load, case measurement	-20 to +55	°C
Storage	Non-operating, case measurement	-55 to +85	°C
Thermal shock	Mil-Std-810, Method 503-4, Proc. II	-20 to +55	°C

ALTITUDE:		ALL TYPES	
Operating	All operating conditions	Sea level to Vacuum	
Storage	Non-operating	Sea level to Vacuum	

SHOCK & VIBRATION:		STANDARD	- R/B OPTION	
Shock	Mil-Std-810, Method 516.5, Proc IV	20	20	G's
Vibration	Mil-Std-810, Method 514.5, Fig. 514.5C-3	10	10	G's

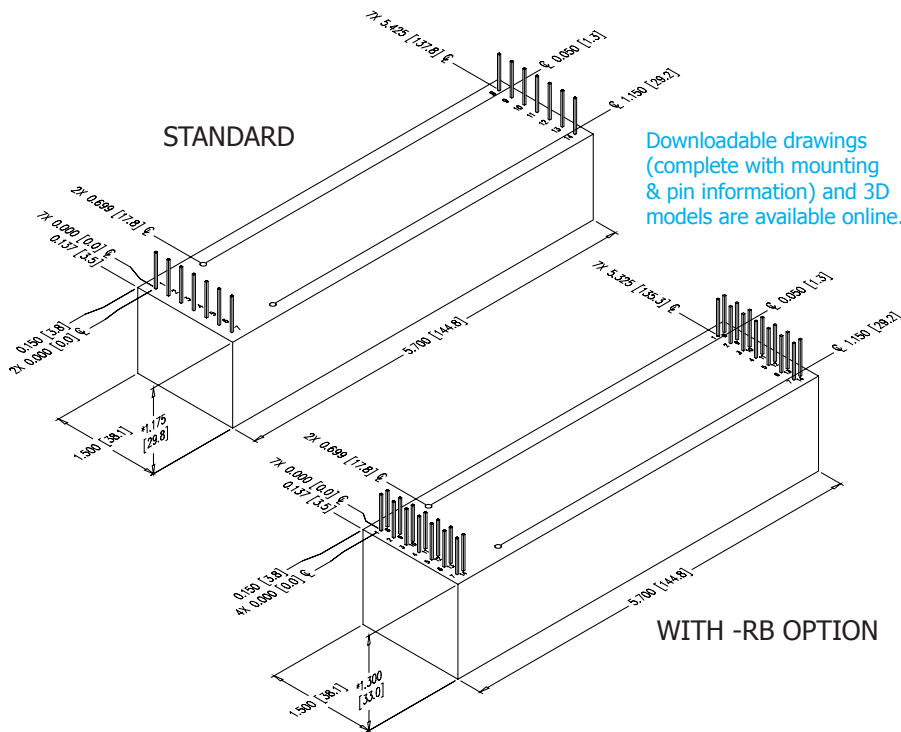


*Making High Voltage Easier!®*

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com

# FL SERIES

## Floating Hot Deck LVPS With Isolated Digital and Analog I/O



### CONSTRUCTION

Epoxy-filled DAP box certified to ASTM-D-5948

### SIZE

Volume: Standard: 10 in<sup>3</sup> (163.9cc)

-R/B Option: 11.1 in<sup>3</sup> (182cc)

Weight: Standard: 12.0 oz (340.2g)

-R/B Option: 13.3 oz (377.1g)

### TOLERANCE

Overall  $\pm 0.050$ " (1.27)

Pin to Pin  $\pm 0.015$ " (0.38)

Mounting hole locations  $\pm 0.025$ " (0.64)

### NOTES

24-watt versions are an additional 0.062" (1.57) in height.

-M equipped units are an additional 0.030" (0.76) in height.

Contact UV Customer Service for drawings of models equipped with -E options.



Non-RoHS compliant units are available. Please contact the factory for more information.

LOCAL CONNECTIONS	
PIN	FUNCTION
1	Input Power Ground Return
2	Positive Power Input
3	LVPS Enable/Disable Input
4	TTL Up/HVPS Enable/Disable (-I/O Only)
5	Signal Ground Return
6	Analog Up/ HVPS Remote Programming Input (-I/O Only)
7	+5V Reference Output

ADDITIONAL LOCAL CONNECTIONS (-R/B OPTION)	
PIN	FUNCTION
8	+Iout monitor output (Analog Down Channel 1)
9	-Iout monitor output (Analog Down Channel 1)
10	+Eout monitor output (Analog Down Channel 2)
11	-Eout monitor output (Analog Down Channel 2)
12 & 13	N/C (reserved for future use)
14	TTL output (Digital Down Channel 1)

ISOLATED/FLOATING CONNECTIONS	
PIN	FUNCTION
8	Floating PWR Ground Return
9	Floating +12VDC or +24VDC Output
10	Floating -15VDC Output
11	Floating TTL Up/HVPS Enable/Disable (-I/O Only)
12	Floating Signal Ground Return
13	Floating Analog Up/HVPS Remote Programming Input (-I/O Only)
14	Floating +5.6V Reference Output

ADDITIONAL ISOLATED CONNECTIONS (-R/B ONLY)	
PIN	FUNCTION
1	Floating +Iout monitor input (Analog Down Channel 1)
2	Floating -Iout monitor input (Analog Down Channel 1)
3	Floating +Eout monitor input (Analog Down Channel 2)
4	Floating -Eout monitor input (Analog Down Channel 2)
5 & 6	N/C (reserved for future use)
7	Floating TTL input (Digital Down Channel 1)

ORDERING INFORMATION		
Type	15kV Isolation	15FL
Input	12VDC Nominal	12
Voltage	24VDC Nominal	24
Power	Watts Output (12 V Only)	-12W
	Watts Output (24 V Only)	-24W
Options	(1) Digital Up Channel & (1) Analog Up Channel	-I/O
	(1) Digital Down Channel & (2) Analog Down Channels	-RB
	Partial Mu-Metal Shield	-M
Case	Plastic Case - Diallyl Phthalate	Standard
	'Eared' Chassis Mounting Plate	-E



Example: 15FL12-12W-I/O

Type — Isolation — Model — Option — Power

Rev. M 9/11



Making High Voltage Easier!®

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com

# EFL SERIES

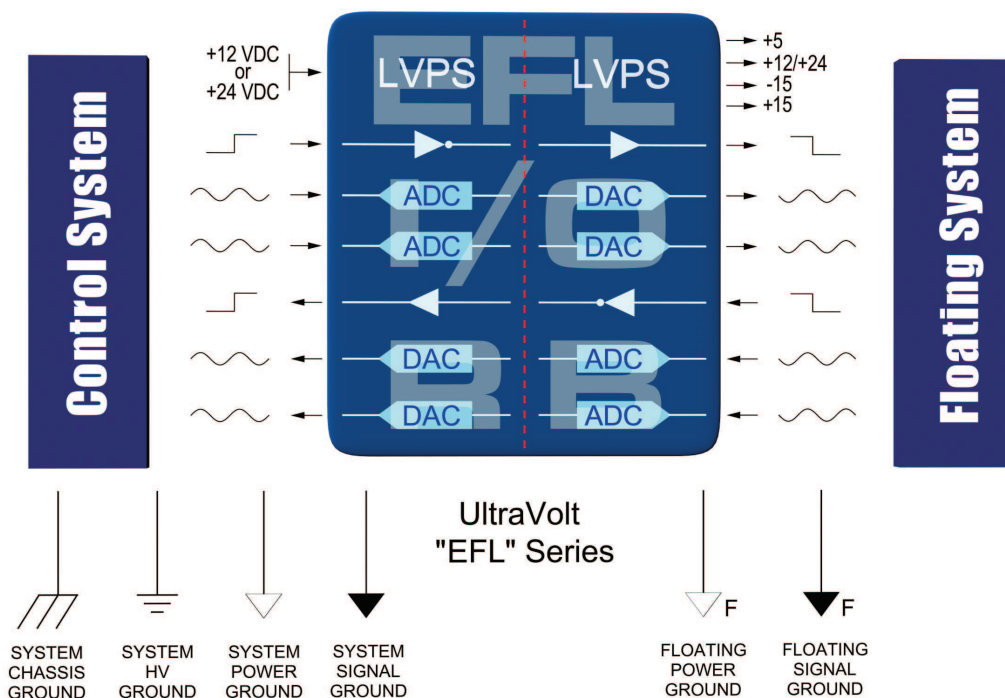
## Enhanced Floating Hot Deck LVPS With Isolated Digital and Analog I/O

The EFL Series of floating-hot-deck, low-voltage power supplies offers an integrated solution for systems requiring LV power & controls with high-voltage isolation. Combining a highly isolated, DC-to-DC, multi-output low-voltage power supply (LVPS) with an advanced isolated digital & analog I/O topology, the EFL sub-system provides both power and controls to floating-hot-deck circuitry. This solution, when combined with one or more UV HVPS or other circuitry, can provide high-performance solutions for applications such as:



Floating/Stacked Ion or E-Beam Biases	Floating Filament Bias
Floating Pulsers & Gated Grids	Floating Capacitance Meters
Floating High Side Current Monitors	Floating Leakage Testers

- Precision analog control
- Linearity of  $\pm 0.05\%$  and accuracy of  $\pm 0.2\%$
- 10ppm temperature coefficient
- Isolated up to 15kV or 30kV
- Isolation resistance of 150G $\Omega$  (15kV) or 2G $\Omega$  (30kV)
- 4 regulated floating LV power outputs
- Isolated digital and analog I/O to and from floating hot deck



### NORMAL, HALF QUIET, AND QUIET MODES:

All EFLs feature a mode control. Three different models, Normal, Half-Quiet, and Quiet, are selectable via the voltage level at the mode pin. A voltage between -1.0V and +0.8V keeps the unit in Normal mode; the up and down analog channels follow their inputs. If the mode feature is not used, the mode pin must be grounded for the EFL to operate properly.

A voltage more negative than -4.00V places the EFL in Half-Quiet mode. The up channels do not respond to changes in their inputs in Half-Quiet mode.

A voltage greater than +3.75V and less than +5.0V places the EFL in Quiet mode. In Quiet mode, the up and down channels do not respond to changes in their inputs.

The voltage level at the mode pin must not exceed +5.0V at any time. Please contact UltraVolt's customer service department for an analysis of your requirements.

Note: If a voltage  $> 0.8V$  is applied to the mode pin, it must source less than 400 $\mu A$ .

Specifications subject to change without notice.



*Making High Voltage Easier!®*

**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved.



# EFL SERIES

## Enhanced Floating Hot Deck LVPS With Isolated Digital and Analog I/O

PARAMETER	CONDITIONS	MODELS			UNITS
INPUT POWER		12W	24W	36W (15kV only)	
Voltage Range	Full Power	+12 ± 5%	+24 ± 10%	+24 ± 10%	VDC
Current	Standby ( Disabled )	< 150	< 100	< 100	mA
Current	No Load	< 0.50	< 0.50	< 0.50	A
Current	Max Load	< 2.50	< 2.30	< 3.00	A
AC Ripple Current	Nominal Input, Full Load	< 50	< 50	< 50	mA p-p
LOCAL CONTROLS: REFERENCE		ALL TYPES			
Output Voltage	T = +25°C, Initial value	+5.1 ± 2%			VDC
Output Impedance	T = +25°C	464 ± 1%			Ω
Stability	Over full temperature range	0.4			mV/°C
LOCAL CONTROLS: LVPS ENABLE / DISABLE		ALL TYPES			
Power supply on	Open, or a voltage above TTL high (Isourcing <400uA)	+3.2 to 5			VDC
Power supply off	Grounded, or a voltage below TTL low	< 0.8 (Isinking 1mA minimum)			VDC
INPUT / OUTPUT ISOLATION:		15EFL	30EFL		
Isolation Voltage	Continuous	15	30		kV
Isolation Resistance	All inputs to all outputs	150	2		GΩ
Leakage Capacitance	All inputs to all outputs	< 40 std, < 50 "E"	< 40 std.		pF
ISOLATED POWER OUTPUTS:		12W	24W	36W (15kV only)	
Output #1 Power	Nominal input, max lout	12	24	36	W
Output #1 Voltage	Nominal input voltage range	+12 ± 2%	+24 ± 2%	+24 ± 2%	VDC
Output #1 Current	Minimum to Maximum	0 to 1	0 to 1	0 to 1.5	A
Output #1 Line Regulation	Nominal input range, full load	< 0.1 %	< 0.1 %	< 0.1 %	VDC
Output #1 Load Regulation	No load to full load	< 0.25 %	< 0.30 %	< 0.40 %	VDC
Output #1 Ripple	Full load	< 2.5 %	< 1.5 %	< 1.5 %	V p-p
Output #2 & #4 Voltage	Nominal input voltage range	±15 ± 5 %	±15 ± 5 %	±15 ± 5 %	VDC
Output #2 & #4 Current	Minimum to Maximum	0 to 50	0 to 50	0 to 50	mA
Output #2 & #4 Line Regulation	Nominal input range, full load	< 0.3 %	< 0.3 %	< 0.3 %	VDC
Output #2 & #4 Load Regulation	No load to full load	< 5 %	< 1 %	< 1 %	VDC
Output #2 & #4 Ripple	Full load	< 2.5 %	< 2.5 %	< 2.5 %	V p-p
Output #3 Voltage	Nominal input voltage range	+5.1 ± 1%	+5.1 ± 1%	+5.1 ± 1%	VDC
Output #3 Current	Minimum to Maximum	500	500	500	mA
Output #3 Line Regulation	Nominal input range, full load	< 1 %	< 1 %	< 1 %	VDC
Output #3 Load Regulation	No load to full load	< 1 %	< 1 %	< 1 %	VDC
Output #3 Ripple	Full load	< 4 %	< 4 %	< 4 %	V p-p
ISOLATED CONTROLS: TTL CHANNEL "UP"		ALL TYPES			
Local input	Source voltage, sink current	0 ≤ 0.5 (Isink 3mA minimum) 1 ≥ 2.4 (300uA max or open collector)			VDC
Isolated output	Inverted & buffered TTL	1 ≥ 2.4, 0 ≤ 0.55 ± (Sources 0.8 mA, Sinks 3 mA)			VDC
Baud Rate	Duty cycle	< 15			ms
ISOLATED CONTROLS: ANALOG CHANNEL "UP"*		12V	24V		
Local input voltage	Range	0 to + 5	0 to + 10		VDC
Isolated output voltage	Range	0 to + 5	0 to + 10		VDC
Local input impedance		20.0 K			Ω
Initial offset error		< ± 2			mV
Gain error	Full scale	< ± 0.2 %			VDC
Linearity error	Full scale	< ± 0.05 %			VDC
Stability	30 min. warm-up, per 8 hrs / per day	< 0.02%			VDC
Temperature Coefficient	0 to +55 °C	< ± 10			ppm/°C
Bandwidth	Symmetric or asymmetric signal	DC to 4			Hz

\*Note: Analog Channel UP parameters are valid for outputs in the range of 10% to 100% of maximum.



*Making High Voltage Easier!®*

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com

# EFL SERIES

## Enhanced Floating Hot Deck LVPS With Isolated Digital and Analog I/O

### '-RB' ISOLATED CONTROLS: TTL CHANNEL "DOWN"

PARAMETER	CONDITIONS	ALL TYPES	UNITS
Isolated 'Hot Deck' Input	Source voltage, sink current	0 ≤ 0.5 (Isink 1mA Minimum) 1 ≥ 2.4 (300uA max or open collector)	VDC
Local output	Inverted & Buffered TTL	1 > 2.4 (Sources 0.8mA) 0 < 0.55 (Sinks 10mA)	VDC
Propagation Delay	Duty cycle	< 15	ms

### ISOLATED CONTROLS: ANALOG CHANNELS #1 & #2 "DOWN"\*\*\*

PARAMETER	CONDITIONS	ALL TYPES	UNITS
Isolated 'Hot Deck' +Input	Range	0 to +5 for 12V and 0 to +10 for 24V	VDC
Isolated 'Hot Deck' -Input	Range	0 to -5 for 12V and 0 to -10 for 24V	VDC
Isolated 'Hot Deck' + or - Input impedance	Signal source	> 10	MΩ
Local output +voltage	Range	0 to +5 for 12V and 0 to +10 for 24V	VDC
Local output -voltage	Range	0 to -5 for 12V and 0 to -10 for 24V	VDC
Initial offset error	Signal source	< ± 2	mVDC
Gain error	Full scale	< ± .2%	VDC
Linearity error	Full scale	< ± .05%	VDC
Stability	30 min. warm-up, per 8 hrs / per day	< 0.01% / < 0.02%	VDC
Temperature Coefficient	-20 °C to +55 °C	< ± 10	ppm/°C
Bandwidth	Symmetric or asymmetric signal	DC to 4	Hz

### TEMPERATURE:

PARAMETER	CONDITIONS	ALL TYPES	UNITS
Operating	Full load, case measurement	-20 to +55	°C
Storage	Non-operating, case measurement	-55 to +85	°C
Thermal shock	Mil-Std-810, Method 503-4, Proc. II	-20 to +55	°C

### ALTITUDE:

PARAMETER	CONDITIONS	ALL TYPES	UNITS
Operating	All operating conditions	Sea level to Vacuum	-
Storage	Non-operating	Sea level to Vacuum	-

### SHOCK & VIBRATION:

PARAMETER	CONDITIONS	ALL TYPES	UNITS
Shock	Mil-Std-810, Method 516.5, Proc IV	20	G's
Vibration	Mil-Std-810, Method 514.5, Fig. 514.5C-3	10	G's

\*\*\*Note: Analog Channels #1 & #2 DOWN parameters are valid for outputs in the range of 10% to 100% of maximum.

LOCAL CONNECTIONS	
PIN	FUNCTION
1	Input Power Ground Return
2	Positive Power Input
3	LVPS Enable/Disable/Sync In
4	TTL Up
5	Signal Ground Return
6	Analog Up Channel 1
7	+5V Reference Output
8	Analog Down Channel 1, +
9	Analog Down Channel 1, -
10	Analog Down Channel 2, +
11	Analog Down Channel 2, -
12	Analog Up Channel 2
13	Mode
14	TTL Output (Inverted Digital Down Channel 1)

ISOLATED/FLOATING CONNECTIONS	
PIN	FUNCTION
1	Analog Down Channel 1, +
2	Analog Down Channel 1, -
3	Analog Down Channel 2, +
4	Analog Down Channel 2, -
5	+15VDC Output
6	Analog Up Channel 2
7	Floating TTL input (Digital Down Channel 1)
8	Floating PWR Ground Return
9	Floating +12VDC or +24VDC Output
10	Floating -15VDC Output
11	Floating TTL Up
12	Floating Signal Ground Return
13	Floating Analog Up Channel 1
14	Floating +5.1VDC Reference Output



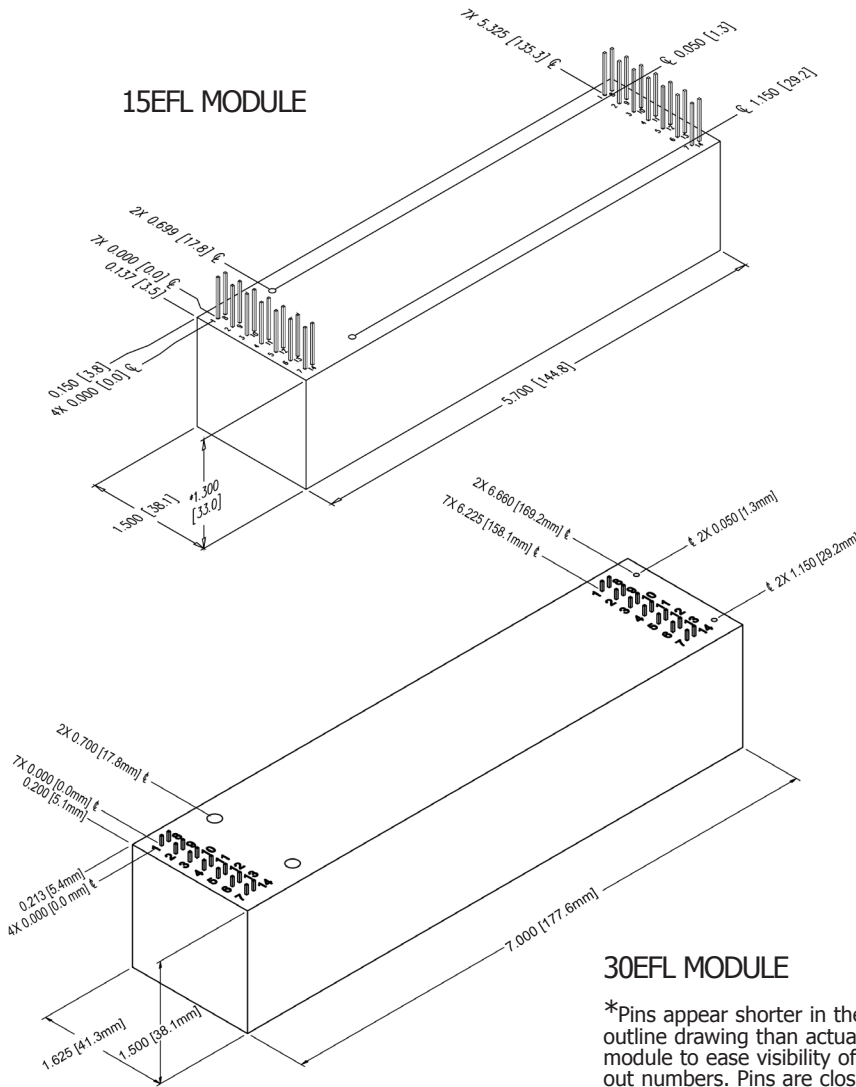
*Making High Voltage Easier!®*

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com

# EFL SERIES

## Enhanced Floating Hot Deck LVPS With Isolated Digital and Analog I/O

### 15EFL MODULE



### 30EFL MODULE

\*Pins appear shorter in the outline drawing than actual module to ease visibility of pin out numbers. Pins are closer to 0.025 in (0.64) in length.

### CONSTRUCTION

Epoxy-filled DAP box certified to ASTM-D-5948

### SIZE

Volume:

15EFL: 11.1 in<sup>3</sup> (181.9cc)

30EFL: 16.8 in<sup>3</sup> (275.3cc)

Weight:

15EFL: 13.3 oz (377.1g)

30EFL: 20.1 oz (569.8g)

### TOLERANCE

Overall  $\pm 0.050$ " (1.27)

Pin to Pin  $\pm 0.015$ " (0.38)

15EFL: Mounting hole locations  $\pm 0.025$ " (0.64)

30EFL: Mounting hole locations  $\pm 0.030$ " (0.76)

### NOTES

15EFL: 24W and 36W versions are an additional 0.062" (1.57) in height. Contact UV Customer Service for drawings of models equipped with -E option.

30EFL: 24W version is an additional 0.073" (1.85) in height. All Types: -M equipped units are an additional 0.030" (0.76) in height.

Downloadable drawings (complete with mounting & pin information) and 3D models are available online.



Non-RoHS compliant units are available. Please contact the factory for more information.

### ORDERING INFORMATION

Type	15kV Isolation	15EFL
	30kV Isolation	30EFL
Input Voltage	12VDC Nominal	12
	24VDC Nominal	24
Power	Watts Output (12Vin Only)	-12W
	Watts Output (24Vin Only)	-24W
	Watts Output (15kVout, 24Vin Only)	-36W
Standard Features	(1) Digital Up Channel & (2) Analog Up Channels	-I/O
	(1) Digital Down Channel & (2) Analog Down Channels	-R/B
Options	Partial Mu-Metal Shield	-M
Case	Plastic Case - Diallyl Phthalate	Standard
	'Eared' Chassis Mounting Plate (15kV only)	-E

Example: 15EFL12-12W-I/O-RB

Type — Isolation — Model — Input — Power

Rev. F 11/11



Making High Voltage Easier!®

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com

# FIL SERIES

## Precision Filament Supply

The FIL Series is a non-isolated precision filament supply. This line of regulated DC-DC converters addresses the needs of the high precision and high stability power supply user. Designed and built utilizing a state-of-the-art power-conversion topology, these units feature surface-mount technology and encapsulation techniques that provide high reliability and low cost. The FIL Series supply allows users to properly operate the filament to maximize performance and extend its life. Typical applications for this series include precision filaments for mass spectrometry, electron beams, and test equipment.



- High precision and high stability
- 15PPM temperature coefficient
- 0 to 5VDC
- 0 to 3 Amps of current
- Maximum Iout capability down to 0 Volts
- Programmable voltage and current controls
- Indefinite output short-circuit protection
- Buffered output current & voltage monitors
- Excellent linearity & accuracy of control
- Current mode and voltage mode indicator
- Synchronizable

PARAMETER	CONDITIONS	MODELS	UNITS
<b>INPUT</b>		<b>ALL TYPES</b>	
Operating Range	All Conditions	+24 ± 10	VDC
Current	Full Load Output	900mA Typical	mA
<b>OUTPUT</b>		<b>ALL TYPES</b>	
Voltage Range	Nominal Input	0 to 5	VDC
DC Current Range	Nominal Input	0 to 3	Amps
Voltage Range	Derated	0 to 5.7	VDC
DC Current Range	Derated	0 to 3.3	Amps
Voltage Monitor Scaling	Full Load	10	VDC
Current Monitor Scaling	Full Load	10	VDC
<b>PROGRAMMING &amp; CONTROLS</b>		<b>ALL TYPES</b>	
Input Impedance	Nominal Input	+ Output Models 10MΩ to GND	MΩ
Adjust Resistance	Typical Potentiometer Values	10K to 100K (Pot across Vref. & Signal GND, Wiper to Adjust)	Ω
Adjust Voltage	Referenced to signal ground	0 to +10 VDC	VDC
Accuracy	In current control	±0.1%	Amps
Offset	Voltage control	0.04%	VDC
Offset	Current control	0.001%	Amps
Output Voltage	T=+25°C, Initial Value	+10.0V ± 0.05%	VDC
Enable/Disable		0 to +0.5 Disable, +2.4 to 10 Enable (Default = Enable)	VDC
<b>ENVIRONMENTAL</b>		<b>ALL TYPES</b>	
Operating	Full Load, Max Eout, Case Temp.	+10 to +45	°C
Coefficient	Over the Specified Temperature	≤ 15	PPM/°C
Thermal Shock	Mil-Std 810, Method 503-4, Proc. II	-40 to +65	°C
Storage	Non-Operating, Case Temp.	-55 to +85	°C
Altitude	Standard Package, All Conditions	Sea Level through Vacuum	-
Shock	Mil-Std-810, Method 516.5, Proc. IV	20	G's
Vibration	Mil-Std-810, Method 514.5, Fig.514.5C-3	10	G's

Specifications subject to change without notice.



*Making High Voltage Easier!®*

**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved.

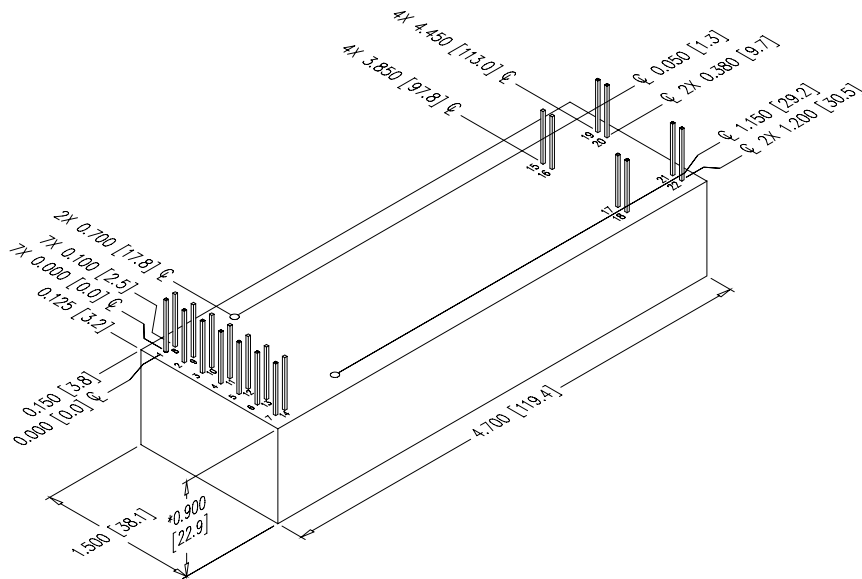
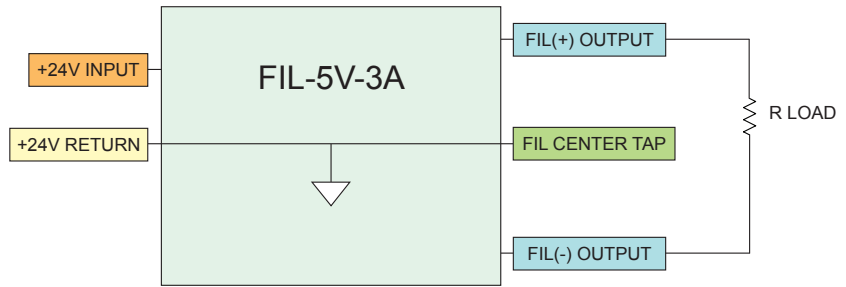


# FIL SERIES

## Precision Filament Supply

### INPUT/OUTPUT WIRING DIAGRAM

The filament power supply load should be connected between the FIL(+) output and the FIL(-) output, load current should not flow through the center tap, which is common with the (+)24V return. The FIL(-) or FIL(+) outputs should not be grounded.



### CONSTRUCTION

Epoxy-filled DAP box certified to ASTM-D-5948

### SIZE

Volume:  
6.35 in<sup>3</sup> (104cc)  
Weight:  
6.75 oz (191g)

### TOLERANCE

Overall  $\pm 0.050''$  (1.27)  
Pin to Pin  $\pm 0.015''$  (0.38)  
Mounting hole locations  $\pm 0.025''$  (0.64)

### NOTES

-M equipped units are an additional 0.030" (0.76) in height.  
Contact UV Customer Service for drawings of models equipped with -E or -H options.

[Downloadable drawings \(complete with mounting & pin information\) and 3D models are available online.](#)

CONNECTIONS	
PIN	FUNCTION
1 & 8	Input-Power Ground
2 & 9	Positive Power Input
3	Iout Monitor
4	Enable/Disable
5	Signal Ground
6	Voltage Programming
7	+10.0V Reference Output
10	Sync In
11	Imode Indicator
12	Vmode Indicator
13	Current Programming
14, 17, & 18	Vout Monitor
15 & 16	Fil Output (-)
19 & 20	Fil Output (+)
21 & 22	Center Tap

All grounds joined internally.



Non-RoHS compliant units are available. Please contact the factory for more information.

ORDERING INFORMATION		
Type	0 to 5 VDC Output	FIL-5V
Current	Current Output (0 to 3A)	-3A
Case	'Eared' Chassis Mounting Plate	-E
Heat Sink	.400" High (sized to fit case)	-H
Shield	Six-sided Mu-Metal Shield	-M

Example: **FIL-5V-3A-M**



# ULTRAVOLT PRODUCT OPTIONS



## -H: HEAT SINK

For PCB-mounted A and C Series plastic package units in extended temperature environments.



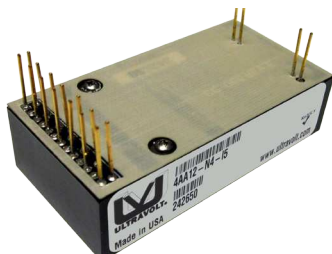
## -E: "EARED" MOUNTING PLATE

For chassis mounting any A, AA, or C Series plastic package unit. Requires additional length, but no additional width.



## -25PPM: REDUCED TEMP. COEFFICIENT

Maintains a 25PPM temperature coefficient on both the output voltage and output voltage monitor (when present). Available on A, AA, C, and 10A-40A Series units.



## -I5/-I10: ENHANCED INTERFACE OPTIONS

For the AA and High Power C Series. Enhanced interface options that feature a +5V/+10V control and monitoring and constant voltage/constant current auto-crossover.



## -C: RF-TIGHT ALUMINUM ENCLOSURE

For ruggedized PCB or chassis mounting of any A or C Series unit. At frequencies greater than 500kHz, this option will reduce radiated RFI emissions 2-3 orders of magnitude.



## -M: SIX-SIDED MU-METAL SHIELD

Six-sided wrap-around feature is compatible with all accessories. At frequencies from 1Hz through 600Hz, this option will reduce radiated RFI & EMI emissions by 4-5 orders of magnitude.



## -F: RIPPLE STRIPPER® OUTPUT FILTER

For the A, 10A-25A, or 30A-40A Series units. Reduces ripple 10 to 100 times. For greater performance, the -M Option should be used.

Specifications subject to change without notice.

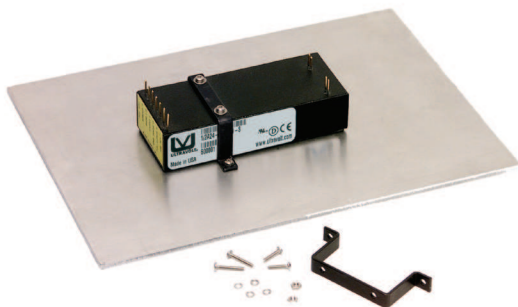


*Making High Voltage Easier!®*

**Higher Service, Higher Performance, Higher Reliability**  
©2011, UltraVolt Inc. All rights reserved.

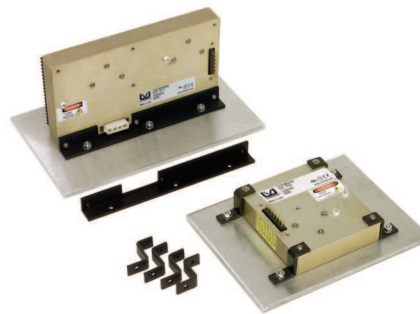
# ULTRAVOLT PRODUCT ACCESSORIES

## PRODUCT ACCESSORIES



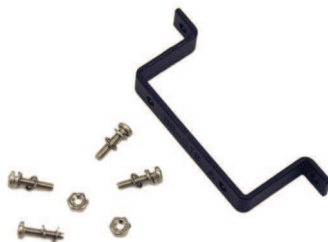
### BR-1 & BR-2: BRACKET KITS

For chassis mounting any A or C Series plastic package unit. Requires additional width, but no additional length.



### BR-7 & BR-8: BRACKET KITS

For chassis mounting High Power C Series units.



### BR-18: BRACKET KIT

For chassis mounting any AA Series plastic package unit. Requires additional width, but no additional length.

## SYSTEM ACCESSORIES



### USB-HV-RACK

USB control for an HV Rack® system. Enables users to control and monitor an HV Rack system via a PC.



*Making High Voltage Easier!®*

**Higher Service, Higher Performance, Higher Reliability**  
©2011, UltraVolt Inc. All rights reserved.

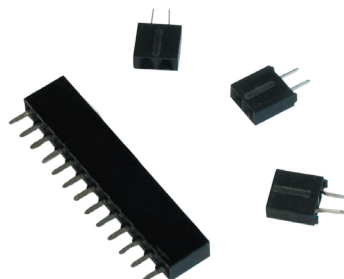


# LOW VOLTAGE CONNECTORS & KITS



## CONN-KIT-FL

Wire Harness Kit for FL Series Units  
AMP#2-87499-3 Qty 2, #1-87309-4 Qty 15



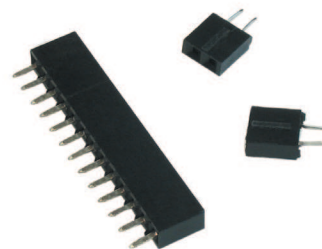
## PCB-CONN-F

PCB-Mount Connector Kit  
Allows HVPS to be mounted after PCB assembly.  
AMP#534998-1 Qty 3, #1-535541-1 Qty 1



## CONN-KIT-HP250

Wire Harness Kit for 250W C Series Units  
AMP#2-87456-2 Qty 1, #87499-3 Qty 2, #1-87309-4 Qty 18,  
#1-480702-0 Qty 1, #350705-1 Qty 4



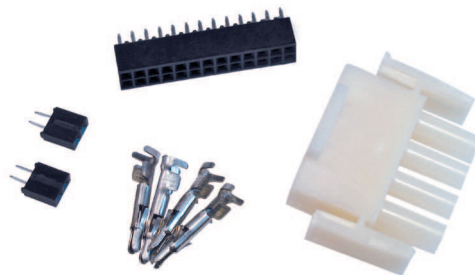
## PCB-CONN-STD

PCB-Mount Connector Kit  
Allows HVPS to be mounted after PCB assembly.  
AMP#534998-1 Qty 2, #1-535541-1 Qty 1



## CONN-KIT-HP

Wire Harness Kit for 60W/125W C Series Units  
AMP#2-87456-2 Qty 1, #87499-3 Qty 2, #1-87309-4 Qty 18



## PCB-CONN-HP

PCB-Mount Connector Kit  
AMP#1-534998-3 Qty 1, #534998-1 Qty 2,  
#1-480702-0 Qty 1, #350705-1 Qty 4



## CONN-KIT-F

Wire Harness for -F Equipped Units  
AMP#2-87499-3 Qty 1, #87499-3 Qty 3, #1-87309-4 Qty 14



## CONN-KIT

Wire Harness for A and C Series Units  
AMP#2-87499-3 Qty 1, #87499-3 Qty 2, #1-87309-4 Qty 12



*Making High Voltage Easier!®*

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 [www.ultravolt.com](http://www.ultravolt.com)



# HIGH VOLTAGE CONNECTORS & CABLES

## Industry Standard Connectors & Cables



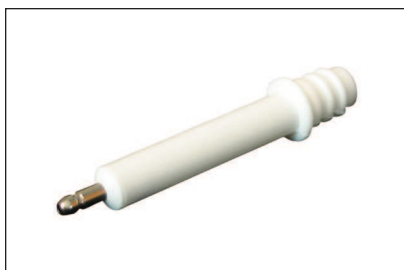
UV Option Part #: -AT20  
UV Connector Part #: CN-20KV-1000  
Manufacturer: Alden  
Manufacturer Part #: A000.140  
Mates to: CA-15KV-1000



UV Option Part #: -AT24  
UV Connector Part #: CN-35KV-1000  
Manufacturer: Alden  
Manufacturer Part #: F311-1  
Mates to: CA-30KV-1000 or CN-35KV-1001



UV Option Part #: -AT50  
UV Connector Part #: CN-30KV-1001  
Manufacturer: Caton  
Manufacturer Part #: 14203-LX  
Mates to: N/A



UV Option Part #: -AT21  
UV Connector Part #: CN-30KV-1000  
Manufacturer: Alden  
Manufacturer Part #: F800.165  
Mates to: CA-30KV-1001 or CN-35KV-1000



UV Cable Assembly Part #: CA-40KV-1002  
Manufacturer: Alden  
Manufacturer Part #: B110YX10  
Mates to: CN-40KV-1000



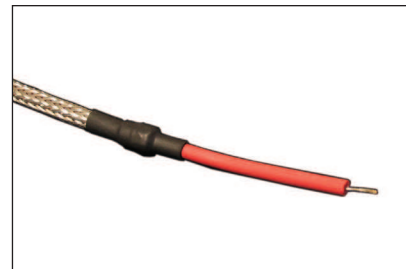
-AP Option  
Anode Lead Protective Wrap:  
Expandable, non-fraying, braided  
sleeving over HV flying lead



UV Option Part #: -AT23  
UV Connector Part #: CN-35KV-1001  
Manufacturer: Alden  
Manufacturer Part #: F800.187  
Mates to: CA-30KV-1001 or CN-35KV-1000



UV Cable Assembly Part #: CA-30KV-1001  
Manufacturer: Alden  
Manufacturer Part #: F404B9  
Mates to: CN-30KV-1000 or CN-35KV-1001



-AS Option  
Anode Lead Shield:  
Braided shield over HV flying lead



UV Option Part #: -AT22  
UV Connector Part #: CN-40KV-1000  
Manufacturer: Alden  
Manufacturer Part #: B200.200  
Mates to: CA-40KV-1002



UV Cable Assembly Part #: CA-15KV-1000  
Manufacturer: Alden  
Manufacturer Part #: A400B  
Mates to: CN-20KV-1000



UV Option Part #: -AT6  
UV Connector Part #: LR-1000  
Manufacturer: Amp or Jetron  
Manufacturer Part #: 8-34142-1  
Mates to: #6 stud



*Making High Voltage Easier!®*

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 [www.ultravolt.com](http://www.ultravolt.com)

# HIGH VOLTAGE CONNECTORS & CABLES

MILSPEC/Ruggedized High Altitude Connectors



UV Option Part #: -AT10  
UV Connector Part #: CN-10KV-1000  
Manufacturer: Amp or Jetron  
Manufacturer Part #: LGH1/2  
Mates to: N/A



UV Option Part #: -AT14  
UV Connector Part #: CN-30KV-1002  
Manufacturer: Amp or Jetron  
Manufacturer Part #: LGH2  
Mates to: CA-30KV-1002CA-30KV-1002



UV Cable Assembly Part #:  
CA-20KV-1000  
Manufacturer: Jetron  
Manufacturer Part #: 56-185-14  
Mates to: CN-20KV-1001



UV Option Part #: -AT11  
UV Connector Part #: CN-15KV-1000  
Manufacturer: Amp or Jetron  
Manufacturer Part #: LGH1/2L  
Mates to: CA-17205-L4



UV Option Part #: -AT15  
UV Connector Part #: CN-40KV-1002  
Manufacturer: Amp or Jetron  
Manufacturer Part #: LGH3  
Mates to: CA-40KV-1000 or CA-40KV-1006



UV Cable Assembly Part #:  
CA-25KV-1000  
Manufacturer: Jetron  
Manufacturer Part #: 56-335-2  
Mates to: CN-25KV-1000



UV Option Part #: -AT12  
UV Connector Part #: CN-20KV-1001  
Manufacturer: Amp or Jetron  
Manufacturer Part #: LGH1  
Mates to: CA-20KV-1001 or CA-20KV-1000



UV Option Part #: -AT16  
UV Connector Part #: CN-50KV-1000  
Manufacturer: Amp or Jetron  
Manufacturer Part #: LGH4  
Mates to: CA-50KV-1000 or CA-50KV-1002



UV Cable Assembly Part #:  
CA-40KV-1000  
Manufacturer: Jetron  
Manufacturer Part #: 56-158  
Mates to: CN-40KV-1002



UV Option Part #: -AT13  
UV Connector Part #: CN-25KV-1000  
Manufacturer: Amp or Jetron  
Manufacturer Part #: LGH1L  
Mates to: CA-25KV-1000



UV Cable Assembly Part #:  
CA-17205-L4  
Manufacturer: Jetron  
Manufacturer Part #: 57-119-3  
Mates to: CN-15KV-1000



UV Cable Assembly Part #:  
CA-50KV-1000  
Manufacturer: Jetron  
Manufacturer Part #: 56-155  
Mates to: CN-50KV-1000

Rev. N 8/11



*Making High Voltage Easier!®*

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 [www.ultravolt.com](http://www.ultravolt.com)

# -F OPTION

## Ripple Stripper® Output Filter

The -F Option Ripple Stripper® Output Filter features a ripple-reduction circuit added internally to 62V through 6kV A Series high-voltage power supply modules prior to encapsulation at the factory.

While adding a minimum of output capacitance and output impedance, output ripple is reduced >10 times! Output voltage regulation remains at <0.01% no load to full load. Also included is an Output Voltage Monitor. For greater performance the optional, wrap-around Mu-Metal shield should be used. The Ripple Stripper® accessory is also available on the [10A-25A Series](#) and [30A-40A Series](#). Please see the corresponding data sheets for specifications.

- Ripple Stripper® Output Filter
- Ultra-low output ripple
- Output voltage monitor
- Encapsulated with A Series power supplies
- Fixed-frequency, low-stored-energy design
- >400,000 Hrs MTBF @ 65°C
- UL, cUL, CE, IEC-60950-1, and Demko Recognized

### HIGH VOLTAGE OUTPUT

Square .025in (0.635mm) pins are used for high-voltage output and high-voltage return. These pins can be used for PCB mounting or for direct wiring. High voltage connector and cable options are available.

### OUTPUT VOLTAGE MONITOR

The -F Option features a 100:1 voltage monitor on pins 12 and 13 referenced to Signal Ground pin 5. The monitor output impedance is calibrated for use with a 10 MegΩ input impedance meter. Units 2kV or higher have a 100 MegΩ/1.1 MegΩ divider; units below 2kV use a 10 MegΩ/102k divider. Overall accuracy is ± 2.5% with a temperature coefficient of ±200 ppm per °C.

For applications requiring a different scale factor, such as an ADC compatible design, an external resistor may be added in parallel with the output.

### OUTPUT CURRENT MONITOR

Iout Monitor Scale Factors for -F Option units are:

MODEL W/ -F OPTION	4 WATT	20 WATT	30 WATT
1/16A with -F	-	-	-
1/8A with -F	438.4mA/V	1860mA/V	2891.6mA/V
1/4A with -F	213.3mA/V	1000mA/V	1481.5mA/V
1/2A with -F	123mA/V	506mA/V	740.7mA/V
1A with -F	55.6mA/V	243.9mA/V	400mA/V
2A with -F	31.7mA/V	129.9mA/V	211.3mA/V
4A with -F	15.6mA/V	66.7mA/V	85.2mA/V
6A with -F	11.3mA/V	48.5mA/V	56.8mA/V

\*Contact the factory for boosted current monitor options.



Typical applications include scanning electron microscopes (SEM), photomultiplier tubes (PMT), particle accelerators and channel electron multipliers.

### HIGH VOLTAGE OUTPUT RIPPLE LEVELS

The -F Option strips the typical output ripple on A Series high-voltage power supplies down to:

MODEL	VOLTAGE	POWER	WITH -F	WITH -F-M	50% LOWER THAN -F-M RIPPLE W/ EXT. CAP
1/16A12	62V	4W	<0.002%	<0.002%	.5uF / Metal Film
1/16A24	62V	20W	<0.003%	<0.004%	.5uF / Metal Film
1/16A24	62V	30W	<0.006%	<0.006%	.5uF / Metal Film
1/8A12	125V	4W	<0.002%	<0.0048%	.5uF / Metal Film
1/8A24	125V	20W	<0.008%	<0.0056%	.5uF / Metal Film
1/8A24	125V	30W	<0.006%	<0.006%	.5uF / Metal Film
1/4A12	250V	4W	<0.0012%	<0.0052%	.047uF / Metal Film
1/4A24	250V	20W	<0.004%	<0.0028%	.047uF / Metal Film
1/4A24	250V	30W	<0.0032%	<0.005%	.047uF / Metal Film
1/2A12	500V	4W	<0.0006%	<0.001%	.022uF / Metal Film
1/2A24	500V	20W	<0.002%	<0.0138%	.022uF / Metal Film
1/2A24	500V	30W	<0.025%	<0.0016%	.022uF / Metal Film
1A12	1kV	4W	<0.0010%	<0.0010%	.05uF / Metal Film
1A24	1kV	20W	<0.0010%	<0.0008%	.05uF / Metal Film
1A24	1kV	30W	<0.003%	<0.002%	.05uF / Metal Film
2A12	2kV	4W	<0.0036%	<0.0007%	4700pF/X7R
2A24	2kV	20W	<0.0063%	<0.0038%	4700pF/X7R
2A24	2kV	30W	<0.015%	<0.004%	4700pF/X7R
4A12	4kV	4W	<0.0063%	<0.0004%	1500pF/X7R
4A24	4kV	20W	<0.0051%	<0.0088%	1500pF/X7R
4A24	4kV	30W	<0.0094%	<0.0026%	1500pF/X7R
6A12	6kV	4W	<0.0135%	<0.0003%	1500pF/X7R
6A24	6kV	20W	<0.0086%	<0.0012%	1500pF/X7R
6A24	6kV	30W	<0.02%	<0.004%	1500pF/X7R

Specifications subject to change without notice.



*Making High Voltage Easier!®*

**Higher Service, Higher Performance, Higher Reliability**

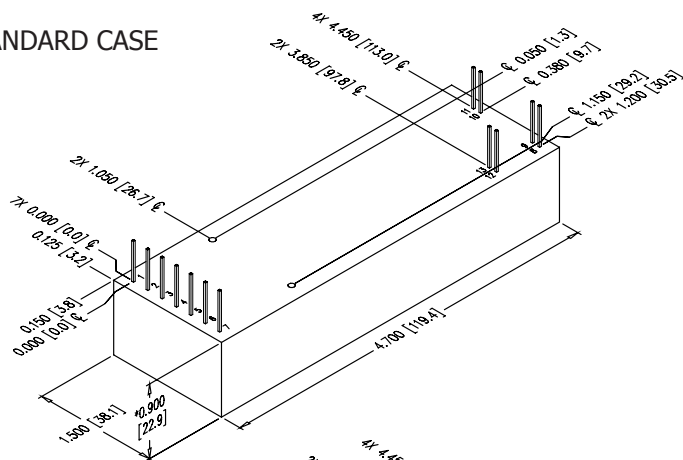
©2011, UltraVolt Inc. All rights reserved.



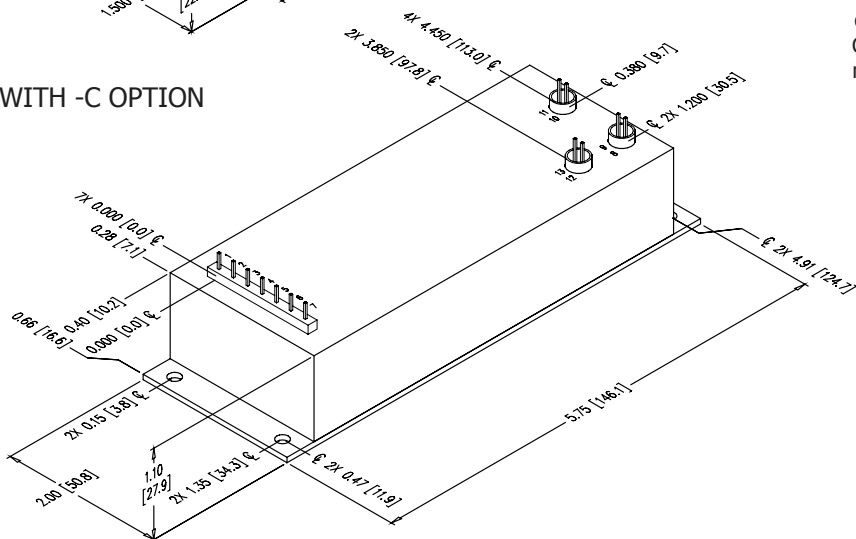
# -F OPTION

## Ripple Stripper® Output Filter

### STANDARD CASE



### WITH -C OPTION



CONNECTIONS	
PIN	FUNCTION
1	Input Power Ground Return
2	Positive Power Input
3	Iout Monitor
4	Enable/Disable
5	Signal Ground Return
6	Remote Adjust Input
7	+5VDC Reference Output
8 & 9	HV Ground Return
10 & 11	HV Output
12 & 13	Eout Monitor

All grounds joined internally. Power-supply mounting points isolated from internal grounds by >100kΩ, .01uF / 50V (Max) on all models except -M, -C, and -M-E configurations which are 0Ω.

### CONSTRUCTION

Epoxy-filled DAP box certified to ASTM-D-5948 with -C Option: Aluminum Alloy 5052-H32, Finish: MIL-A-8625 Type II (Anodizing)

### SIZE

Volume 4.30in<sup>3</sup> (70.5 cc), w/ -C Option: 8.00in<sup>3</sup> (131.1 cc)  
Weight 5.0oz (142g), w/ -C Option: 10.0oz (284g)

### TOLERANCE

Overall ±0.050" (1.27)  
Pin to Pin ±0.015" (0.38)  
Mounting hole location ±0.025" (0.64)

### NOTES

20W and 30W versions are an additional 0.062" (1.57) in height.  
-M equipped units are an additional 0.030" (0.76) for each dimension.

Contact [UltraVolt's Customer Service Department](#) for drawings of models equipped with -E or -H options.

Downloadable drawings (complete with mounting & pin information) and 3D models are available online.



Non-RoHS compliant units are available. Please contact the factory for more information.

### ORDERING INFORMATION

Accessory	Ripple Stripper® Output Filter	-F
-----------	--------------------------------	----

\*Compatible with all standard module options. See [Options & Accessories data sheet](#) for more information..

Example: 1/2A12-P4-F

Ripple Stripper®  
Output Filter

Popular accessories ordered with this product include CONN-KIT-F and BR-2 mounting bracket kit.

Rev. B 8/11



Making High Voltage Easier!®

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 [www.ultravolt.com](http://www.ultravolt.com)



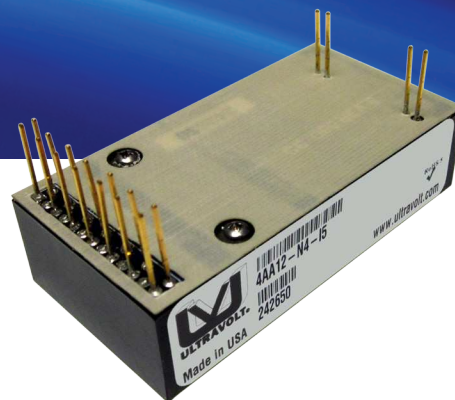
# -I5 OPTION & -I10 OPTION

## Enhanced Interface Options

The -I5 and -I10 enhanced interface options further standardize and simplify the process of interfacing control electronics, both analog and digital, to an UltraVolt high voltage power supply. The interface features fixed ranges of calibrated control voltages and buffered monitor signals, eliminating the need for external scaling resistors or op-amps to achieve standard control ranges. Therefore, output control is always 0 to +5VDC (-I5) or 0 to +10VDC (-I10) for 0 to full scale output of positive or negative models. Likewise, output monitors are always 0 to +5VDC (-I5) or 0 to +10VDC (-I10) for 0 to full scale output. The current monitor is nulled to eliminate currents related to HV regulation and monitoring circuits. In conjunction with features such as constant current programming and constant voltage/constant current (CV/CC) auto crossover critical applications can be supported without additional circuitry.

The -I5 Option and -I10 Option are available on AA Series, High Power C Series, and 10A Series modules. Either option fits within the standard package size of the modules. On the AA Series and 10A Series models a double row header replaces the single row of pins.

For additional information on interfacing with the -I5 Option and -I10 Option, please review the [-I5/-I10 Options Technical Note](#).



- Buffered, low output impedance and nulled current monitor
- Buffered, low output impedance voltage monitor
- Programming accuracy of  $\pm 1\%$
- 0 to +5V or 0 to +10V remote programming for all polarities
- 0 to +5V or 0 to +10V remote programming for all modes
- +5V or +10V reference,  $\pm 0.05\%$  PPM/ $^{\circ}\text{C}$
- Constant voltage / constant current (CVCC) auto-crossover
- Current and voltage mode indicators

Typical applications for the -I5 Option or -I10 Option include: bias supplies, detectors, piezos, amplifiers, photomultiplier tubes (PMT), laser, cap-charging, pulsed power, pulse generators, test equipment, high pot testers, automated test equipment (ATE), and electrostatic precipitators.

PARAMETER	CONDITIONS	MODELS		UNITS
OUTPUT		-I5	-I10 (24Vin ONLY)	
Current Monitor Scale Factor	0 to Full Scale	0 to +5 $\pm 1\%$	0 to +10 $\pm 1\%$	VDC
Voltage Monitor Scale Factor	0 to Full Scale	0 to +5 $\pm 1\%$	0 to +10 $\pm 1\%$	VDC
PROGRAMMING & CONTROLS		ALL TYPES		
Input Impedance	Nominal Input	10M $\Omega$ to GND	10M $\Omega$ to GND	-
Adjust Resistance	Typical Potentiometer Values	10K to 100K (Pot across Vref. & Signal GND, Wiper to Adjust)		$\Omega$
Adjust Logic	0 to 100%	0 to +5.00	0 to +10.00	VDC
Reference Voltage	T=+25 $^{\circ}\text{C}$	+ 5.00 $\pm 0.1\%$	+10.00 $\pm 0.1\%$	VDC
Enable/Disable (ON/OFF)		0 to +0.5 Disable, +2.4 to 32 Enable (Default Open Circuit= Disabled)		VDC
Current Mode Indicator		Open drain indicator, active (pulled low) when unit is in current regulation, 100mA max current sink		-
Voltage Mode Indicator		Open drain indicator, active (pulled low) when unit is in voltage regulation, 100mA max current sink		-
Output Voltage Offset		0.2% of Max Vout		-

\*All other specifications are in accordance with the specific model base datasheet. Specifications are subject to change without notice.

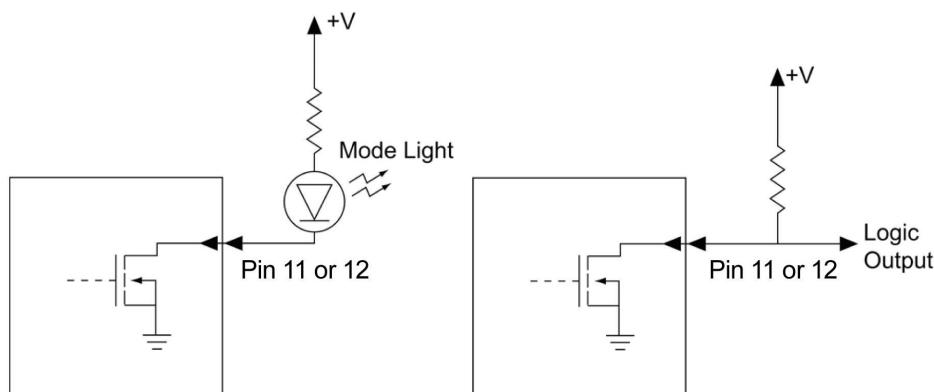


Figure 1: Typical Mode Indicator on the -I5 Option and -I10 Option



*Making High Voltage Easier!®*

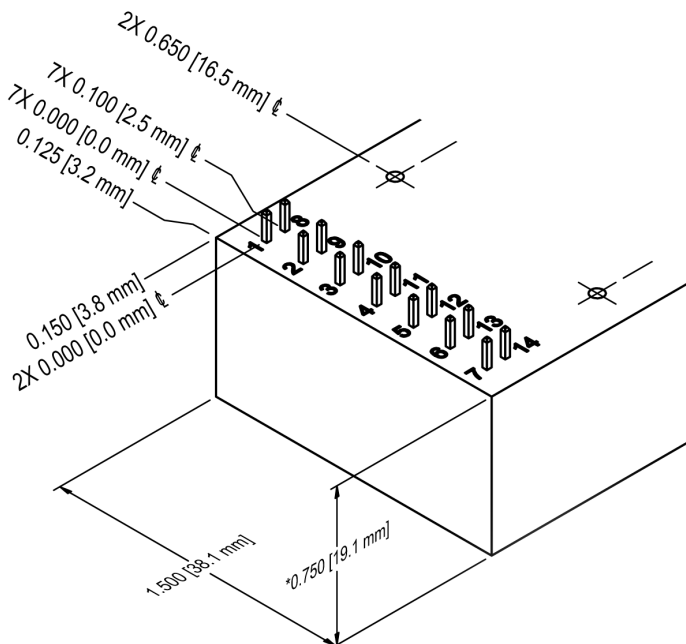
**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved.

# -I5 OPTION & -I10 OPTION

## Enhanced Interface Options

### I5/I10 ON AA SERIES & 10A SERIES

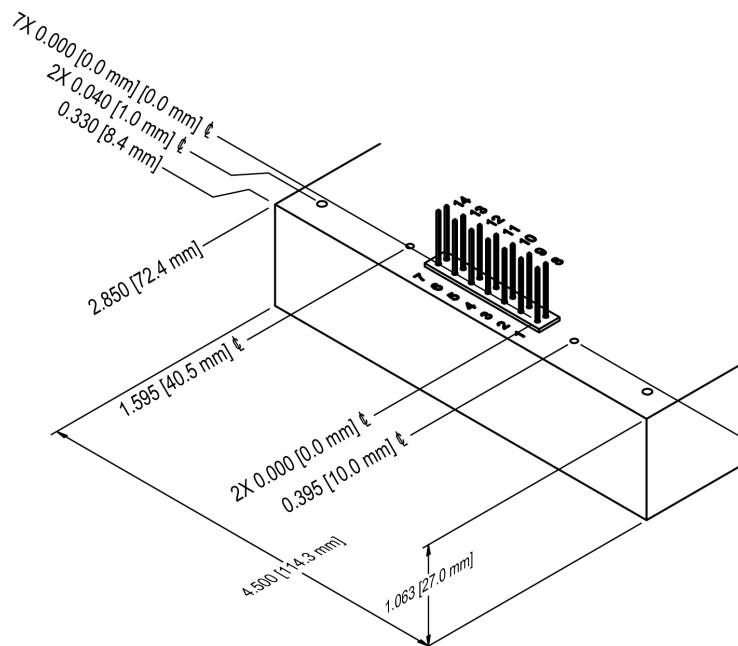


Downloadable drawings (complete with mounting & pin information) and 3D models are available online.



Non-RoHS compliant units are available. Please contact the factory for more information.

### I5/I10 ON HIGH POWER C SERIES



#### CONNECTIONS

PIN	FUNCTION
1	Power Ground
2	Input Power
3	Buffered Current Monitor (5mA Maximum)
4	Enable (ON/OFF)
5	Signal Ground
6	Voltage Programming
7	Reference Voltage (5mA Maximum Sourcing)
8	Power Ground/HV Return
9	Input Power
10	N/C
11	Current Mode Indicator
12	Voltage Mode Indicator
13	Current Programming
14	Buffered Voltage Monitor (5mA Maximum)
15 & 16	HV Ground Return
17 & 18	HV Output

#### ORDERING INFORMATION

5V Control & Monitors	-I5
10V Control & Monitors (24Vin only)	-I10

\*The -I5 option and -I10 option are compatible with all standard module options.

Example: 1AA24-P20-I10

Option (Enhanced Interface)

Rev. C 6/12



Making High Voltage Easier!®

1800 Ocean Avenue, Ronkonkoma, NY 11779  
Phone: 1-631-471-4444 Fax: 1-631-471-4696 www.ultravolt.com

# SAFETY AND COMPLIANCES

## Certifications & Standards



IEC 60950-1, IEC 6110-1, EN 60950-1, IPC-A-610, J-STD-001

MIL-I-45208, MIL-Q-9858, MIL-STD-45662, ASTM B488, AMS 2422, IPC-2221, IPC-2222, IPC-2615, IPC-4101, IPC-4562, IPC-6012, IPC-9252, IPC-A-600, IPC-CM-770, IPC-D-325, IPC-SM-782, IPC-SM-840, J-STD-003, and MIL-STD-1686

## WARRANTY AND REPAIR POLICY

UltraVolt understands working in high voltage with new applications and new staff is sometimes unpredictable and can lead to damaged hardware. To support our customers' efforts, UltraVolt established a policy noting if a customer manages to cause one of our units to fail, UltraVolt will repair/replace the first unit accidentally damaged at no charge. If additional units are damaged during the warranty period, UltraVolt will provide replacements at half price. This is just another way UltraVolt is "Making High Voltage Easier!"®

### ULTRAVOLT, INC. WARRANTY

Warranty: The Seller warrants all goods supplied hereunder will conform to any sample approved by the parties and will be the kind described herein or in any specification, performance requirement, or drawing approved by the Seller, and will be of merchantable quality and free from defects in material or workmanship under normal use and prescribed maintenance for a period of one (1) year from the date of shipment. To the extent the Buyer does not furnish the Seller with written specifications, the goods will be manufactured in accordance with the standards recommended by the IPC-Association Connecting Electronics Industries. This warranty shall not apply to any goods delivered hereunder that have been damaged or subjected to alteration nor shall it apply to negligible treatment after delivery or to any defects attributed to artwork or drawings furnished by the Buyer. Also, unless specifically stated, the warranty does not extend to the electrical performance of any assemblies or subassemblies to which the goods furnished hereunder are affixed, but restricted to the electrical continuity properties of such goods.

The Seller's only obligation for breach of this warranty shall be the repair or replacement, without charge, of any goods or parts thereof that within such one (1) year period is proven to the Seller's satisfaction to have been defective, provided (1) the Buyer shall have notified the Seller of the defect within such one (1) year period and (2) the Seller shall have the option of requiring the return of the defective material or goods at the Buyer's expense to establish the claim provided; however, the Seller will bear any transportation costs incurred in repairing or replacing any goods that are shown to be defective during the warranty period. The cost of any repairs made by the Seller to goods no longer covered by this warranty shall be borne by the Buyer. The Buyer must contact the UltraVolt Customer Service Department prior to the return of any material(s) to obtain an RMA number which will be used to track the material. Material found to be out of warranty will be repaired or replaced at the Seller's discretion based on quantity (please contact the Customer Service Department for more information). The Seller shall in no event be liable for the Buyer's manufacturing costs, lost profits, good will, or any other special, consequential, incidental, or other damages resulting from a breach of the foregoing warranty. There are no other warranties expressed or implied (including the warranty of merchantability) that extend beyond the warranty set forth herein or that extend beyond the description of the goods contained herein.

Specifications subject to change without notice.



*Making High Voltage Easier!®*

**Higher Service, Higher Performance, Higher Reliability**

©2011, UltraVolt Inc. All rights reserved.