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2011 PRODUCT CATALOG

1-800-9HV-POWER +1 631-471-4444 CSD@ULTRAVOLT.COM

• HIGH VOLTAGE MODULES • PRECISION HV POWER SUPPLIES • HV AMPLIFIERS • MICROSIZE/MICROPOWER HV • HV SYSTEMS • TEST FIXTURES •

Making High Voltage Easier!®

ULTRAVOLT®

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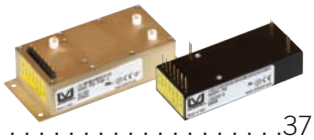
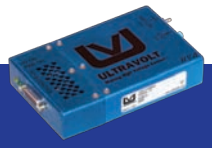
⚠ Failure to operate UltraVolt High Voltage Power Supplies correctly and to follow all operating instructions may create an electrical shock hazard, which can result in personal injury or loss of life, and/or damage to equipment or other property.

MULTI-OUTPUT HIGH VOLTAGE MODULES



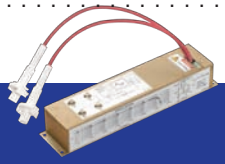


HIGH VOLTAGE AMPLIFIERS

HIGH VOLTAGE POWER SYSTEMS

ISOLATED LOW VOLTAGE POWER SUPPLIES

LOW VOLTAGE FILAMENT SUPPLY



TEST FIXTURES

OPTIONS AND ACCESSORIES

SAFETY, COMPLIANCES, & WARRANTY

QUICK SELECT CHART - HIGH VOLTAGE MODULES

MICROSIZE SINGLE OUTPUT MODULES

Model Number	Output Voltage (kV)	100 mW (mA)
0.1XS5	0 to 0.1	1
0.2US5	0 to 0.2	.500
0.2US12		.500
0.3US5	0 to 0.3	.330
0.3US12		.330
0.4US5	0 to 0.4	.250
0.4US12		.250
0.5US5	0 to 0.5	.200
0.5US12		.200

Model Number	Model Number	Output Voltage (kV)	500 mW (mA)	880 mW (mA)	1 Watt (mA)
0.6V12	0.6M12	0 to 0.6	.830		
0.6V15	0.6M15			1.33	
0.6V24	0.6M24				1.66
1V12	1M12	0 to 1.0	.500		
1V15	1M15			.800	
1V24	1M24				1.00
1.25V12	1.25M12	0 to 1.25	.400		
1.25V15	1.25M15			.640	
1.25V24	1.25M24				.800
1.5V12	1.5M12	0 to 1.5	.330		
1.5V15	1.5M15			.530	
1.5V24	1.5M24				.660

Model Number	Output Voltage (kV)	1 Watt (mA)	2 Watt (mA)	4 Watt (mA)	6 Watt (mA)
1D15	0 to 1	1	2	4	6
1D24		1	2	4	6
2D15	0 to 2	.500	1	2	3
2D24		.500	1	2	3
4D15	0 to 4	.250	.500	1	1.5
4D24		.250	.500	1	1.5
6D15	0 to 6	.166	.333	.666	1
6D24		.166	.333	.666	1

STANDARD SINGLE OUTPUT MODULES

Model Number		Output Voltage (kV)	4 Watt (mA)	20 Watt (mA)	30 Watt (mA)	60 Watt (mA)	125 Watt (mA)	250 Watt (mA)	PCB Mount Plastic Case	Chassis Mount Metal Case
1/16A12	1/16AA12	0 to .062	64						STD	
1/16A24	1/16AA24			320	480				STD	
1/16C24				320	480				STD	
1/8A12	1/8AA12	0 to .125	32						STD	
1/8A24	1/8AA24			160	240				STD	
1/8C24				160	240				STD	
1/8C24						480	1000	2000		STD
1/4A12	1/4AA12	0 to .250	16						STD	
1/4A24	1/4AA24			80	120				STD	
1/4C24				80	120				STD	
1/4C24						240	500	1000		STD
1/2A12	1/2AA12	0 to .500	8						STD	
1/2A24	1/2AA24			40	60				STD	
1/2C24				40	60				STD	
1/2C24						120	250	500		STD
1A12	1AA12	0 to 1	4						STD	
1A24	1AA24			20	30				STD	
1C24				20	30				STD	
1C24						60	125	250		STD
1E24			4	20	30					STD
2A12	2AA12	0 to 2	2						STD	
2A24	2AA24			10	15				STD	
2C24				10	15				STD	
2C24						30	62	125		STD
2E24			2	10	15					STD
4A12	4AA12	0 to 4	1						STD	
4A24	4AA24			5	7.5				STD	
4C24				5	7.5				STD	
4C24						15	31	62		STD
4E24			1	5	7.5					STD
6A12	6AA12	0 to 6	.660						STD	
6A24	6AA24			3.3	5				STD	
6C24				3.3	5				STD	
6C24						10	21	41		STD
6E24			.667	3.3	5					STD

Model Number	Output Voltage (kV)	4 Watt (mA)	15 Watt (mA)	30 Watt (mA)	60 Watt (mA)	125 Watt (mA)	PCB Mount Plastic Case	Chassis Mount Metal Case
8C24	0 to 8				7.5	15.5		STD
10A24			5	3			STD	
10C24					6	12.5		STD
10E24	0 to 10	.400	1.5	3				STD
12C24	0 to 12				5	10		STD
15A12	0 to 15	.260					STD	
15A24			1	2			STD	
15C24					4	8.3		STD
15E24		.267	1	2				STD
20A12	0 to 20	.200					STD	
20A24			.750	1.5			STD	
20C24					3	6.25		STD
25A12	0 to 25	.160					STD	
25A24			.600	1.2			STD	
25C24					2.4	5		STD
30A12	0 to 30	.133					STD	
30A24			.500	1			STD	
30C24					2	4.17		STD
35A12	0 to 35	.110					STD	
35A24			.420	.840			STD	
40A12	0 to 40	.100					STD	
40A24			.375	.750			STD	

Specifications subject to change without notice.

QUICK SELECT CHART - SPECIALTY PRODUCTS

HIGH VOLTAGE AMPLIFIERS		
Model	**Output Voltage**	**Features**
1HVA	0 to 1kV, 0 to ±1kV	Unipolar or Bipolar Precision HV Amplifier
2HVA	0 to 2kV, 0 to ±2kV	Unipolar or Bipolar Precision HV Amplifier
4HVA	0 to 4kV, 0 to ±4kV	Unipolar or Bipolar Precision HV Amplifier
5HVA	0 to ±5kV	Bipolar Precision HV Amplifier
6HVA	0 to 6kV	Unipolar Precision HV Amplifier
10HVA	0 to 10kV	Unipolar Precision HV Amplifier

CONSTANT POWER HIGH VOLTAGE		
Model	**Output Voltage**	**Features**
1CP	0 to 1kV	Constant 10W from 0.1kV to 1kV
2CP	0 to 2kV	Constant 10W from 0.2kV to 2kV
4CP	0 to 4kV	Constant 10W from 0.4kV to 4kV
6CP	0 to 6kV	Constant 10W from 0.6kV to 6kV
10CP	0 to 10kV	Constant 10W from 1kV to 10kV
15CP	0 to 15kV	Constant 10W from 1.5kV to 15kV

BIPOLAR HVPS			
Model	**Output Voltage**	**Output Power**	**Features**
1/8C to 6C	0 to ±125V to 0 to ±6kV	NP-125 & NP-250	Independently controllable dual outputs

FILAMENT SUPPLIES	
Model	**Features**
FIL-5V-3A	Output load regulation is <0.5% in constant voltage mode, no load to full load; <0.05% in constant current mode, short circuit to full load. Output line regulation is <0.01% in CV or CC mode (+21.6VDC to +26.4VDC). Accuracy ±0.1% & linearity error of <0.01%.

ISOLATED LOW VOLTAGE POWER SUPPLIES		
Model	**Floating Output Voltage**	**Features**
15FL12	+12VDC, -12VDC, +5VDC	Floating Low Voltage Power Supply & Analog/Digital Controls
15FL24	+24VDC, -12VDC, +5VDC	Floating Low Voltage Power Supply & Analog/Digital Controls
15EFL12	+12VDC, +15VDC, -15VDC, +5.1VDC	Enhanced Floating Low Voltage Power Supply & Analog/Digital Controls
15EFL24	+24VDC, +15VDC, -15VDC, +5.1VDC	Enhanced Floating Low Voltage Power Supply & Analog/Digital Controls

TEST FIXTURES	
Model	**Features**
40TF-DCD	Precision 10,000:1 divider, ±1%, ±25PPM per °C, voltage coefficient is <1% per 40kV. DC Loading is 1 GigΩ.
40TF-ACV&DCD	1:1 AC viewing capacitor, 35Hz to 10Mhz (Monitor 10Hz to 20Mhz), 1mV to 75V Pk, 1000:1 DC divider, ±2%, ±100 PPM per °C. DC Loading is 2 GigΩ. Capacitive loading is < 50pF
40TF-CDCD&CLOAD	Compensated 1,000:1 DC Divider, ±2%, ±100 PPM per °C, showing Trise, Tfall, overshoot & settling over a bandwidth of 35Hz to 10Mhz (Monitor 10Hz to 20MHz), 300pF capacitive load, DC Loading is 1 GigΩ.

HIGH VOLTAGE SYSTEMS		
Model	**Model**	**Features**
HV-RACK-1-250	HV-RACK-4-250	19" Rack with 1 to 4 channels of meters & controls. Individual CV/CC controls & limits. Floating channel configuration available. Wide selection of HV output connectors. Available with USB Interface and Labview drivers. Configurable product to meet project-specific needs.
HV-RACK-2-250	HV-RACK-4-500	
HV-RACK-2-500	HV-RACK-4-750	
HV-RACK-3-250	HV-RACK-4-1000	
HV-RACK-3-500		
HV-RACK-3-750		
Model		**Features**
MMS-EB		Provides Beam, Filament, Suppressor, Extractor, and Lens bias supplies. Precision control & monitoring, Low ripple & noise, tight stability. Convection cooled design for mounting near the source. Integral HV cables to reduce cost and increase reliability.Configurable product to meet product-specific needs.
Model	**Model**	**Features**
BT-2-XXXX	BT-10-XXXX	Compact high voltage AC-DC bench-top power supply with adjustable output voltage. Single positive or negative output. Available in either analog or digital. Universal input 85-264VAC. Configurable with microsize/micropower product line (XS, US, V, M, or D Series). *When ordering, XXXX in the model number should be replaced by the selected UltraVolt HV power supply part number.
BT-4-XXXX	BT-RS-XXXX	
BT-5-XXXX	BT-USB-XXXX	

Rev. A 6/10

1800 Ocean Avenue, Ronkonkoma, NY 11779
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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 (Vacuum may require -P1 or -S1 options, contact factory for details)																								-
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

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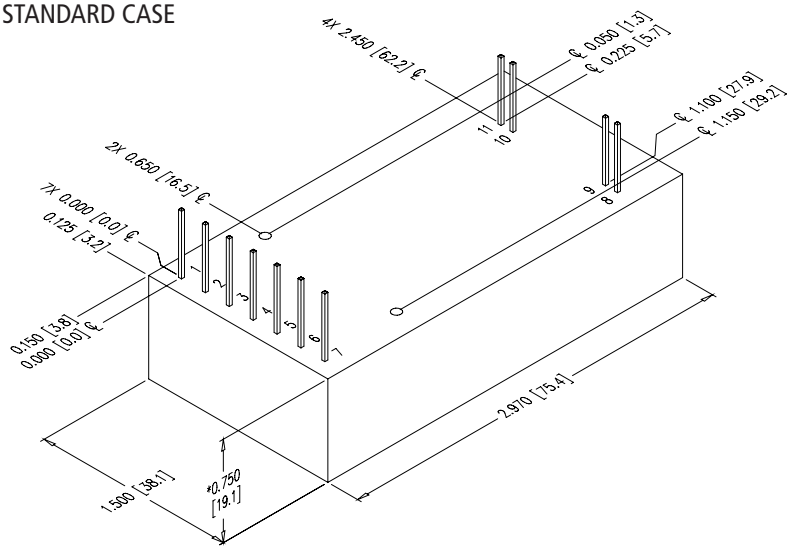
AA SERIES
High Voltage Biasing Supply

STANDARD CASE



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

SIZE
Volume 3.34in^3 (54.8 cc)
Weight 4.0oz (114g)

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 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 >100kΩ, .01uF / 50V (Max) on all models except -M, -C, and -M-E configurations which are 0Ω.

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**

IEC-60950-1

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

PROUDLY
MADE IN THE USA

Example: 1/2AA24-P30-M

Type — Voltage — Model — Input — Option (Mu-Metal) — Power — Polarity

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

Rev. S 10/10

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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

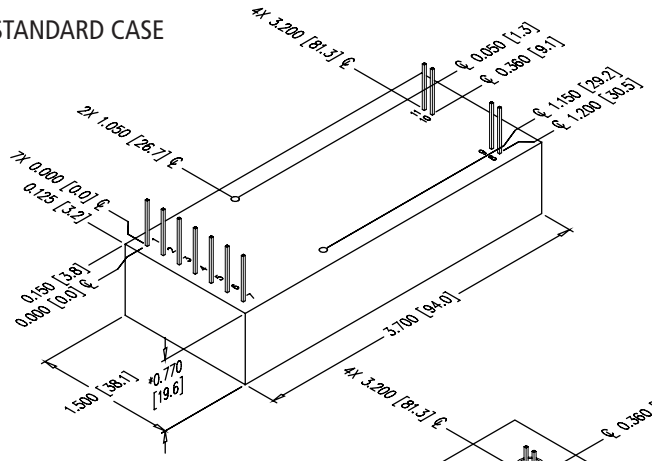
PARAMETER	CONDITIONS	MODELS																								UNITS
INPUT		12V												24V												
Voltage Range	Full Power	+ 11 to 16												+ 23 to 30												VDC
Voltage Range	Derated Power Range	+ 9 to 32												+ 9 to 32												VDC
Current	Standby / Disable	< 30												< 30												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	TBD	TBD	TBD	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	mA/V
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	<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		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 -P1 or -S1 options, 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.

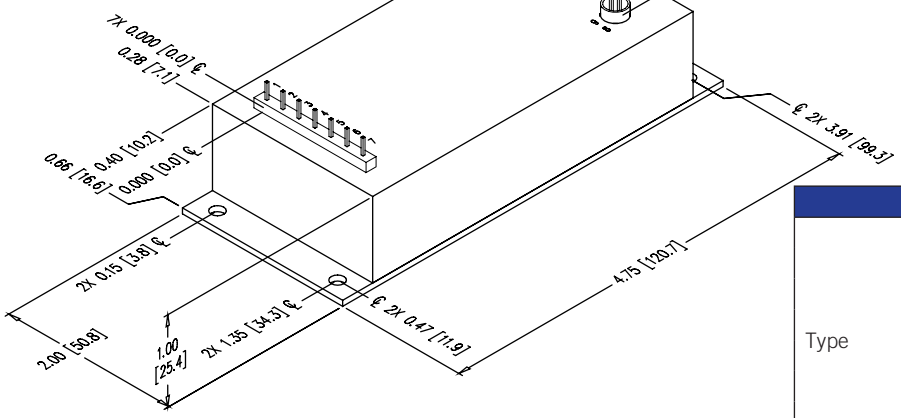
Specifications subject to change without notice.

A SERIES
High Voltage Biasing Supply

STANDARD CASE



WITH -C OPTION



PROUDLY

MADE IN THE USA

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)
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, -C, and -M-E configurations which are 0Ω.

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 ±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.

CE c UL us D
IEC-60950-1

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
Type — Voltage — Model — Input — Option (Mu-Metal) — Power — Polarity

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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 -P1 or -S1 options, 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.

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^2 = kV
J = Ws

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

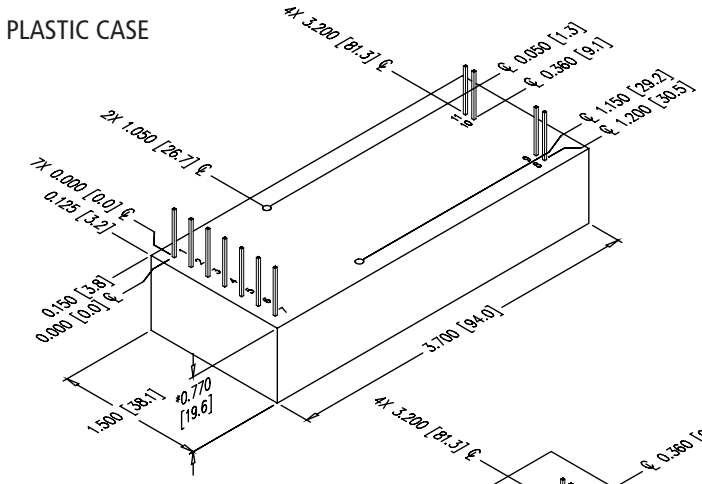
Figure A - Rise Time Formulas

NOTES: Capacitance must include HVPS internal Capacitance.

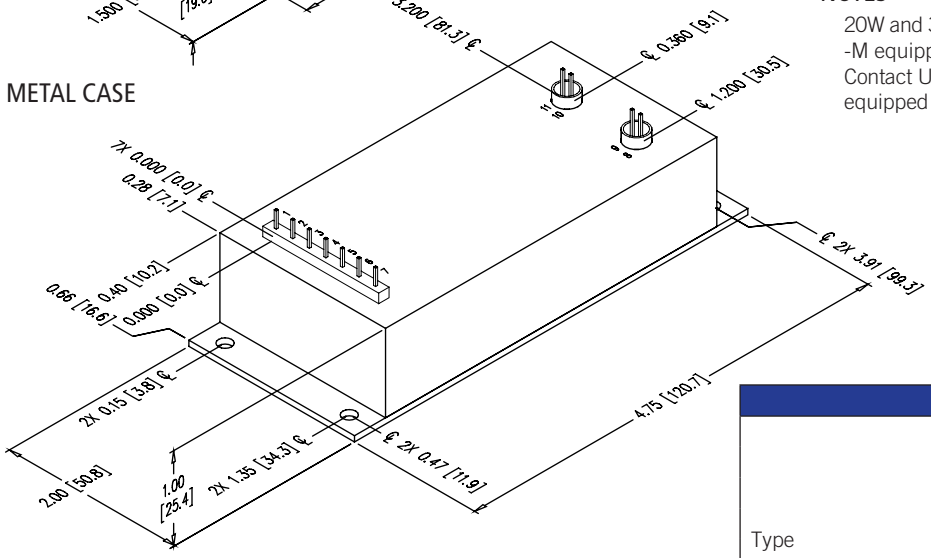
C SERIES

High Voltage Cap-Charging

PLASTIC CASE



METAL CASE



PROUDLY

MADE IN THE USA

RoHS COMPLIANT

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

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^3 (70.5cc), w/ -C Option: 8.00in^3 (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.

CE cULus IEC-60950-1

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, -C, and -M-E configurations which are 0Ω.

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

Type — Voltage — Model — Input — Option — Power — Polarity

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

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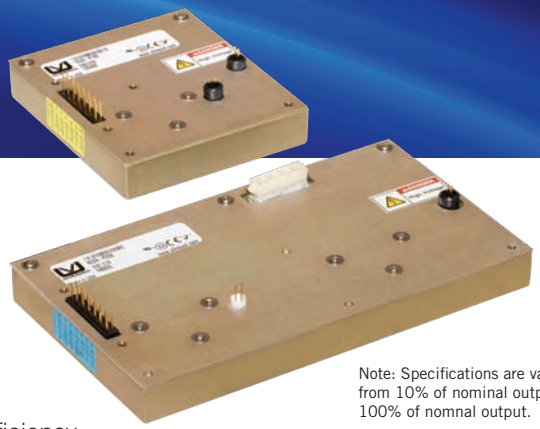
HIGH POWER C SERIES

High Voltage Cap-Charging Supply



Note: Specifications are valid from 10% of nominal output to 100% of nomnal output.

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
INPUT		**ALL TYPES**																					
Voltage Range	Full Power	+ 23 to 30																					VDC
Voltage Range	Derated Power Range	+ 11 to 32																					VDC
Current	Standby / Disable	< 75																					mA
Current	Max Load, Max Eout	60W: 3.3, 125W: 6.9, 250W: 13.8																					A
Current	No Load, Max Eout	1/8C to 1C: < 500, 2C to 6C: < 500																					mA
AC Ripple Current	Nominal Input, Full Load	< 250																					mA p-p
OUTPUT		**1/8C**			**1/4C**			**1/2C**			**1C**			**2C**			**4C**			**6C**			
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	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	10	21	42	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	6.2	17.7	35	mA/V
Voltage Monitor Scaling		100:1 ±2% into 10MΩ																					-
Ripple	Full Load, Max Eout	< 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	< 5			< 1			< 1			< 1			< 1			< 1			< 1			%V pk
Rise Time	Max Iout, Various C Loads & Eout	Figure A																					-
Storage Capacitance	Internal	0.66	0.66	1.80	0.20	0.20	1.80	0.094	0.094	0.85	0.036	0.036	0.038	0.019	0.019	0.038	0.013	0.013	0.026	0.013	0.013	0.026	uF
Line Regulation	Nom. Input, Max Eout, Full Power	< 0.1%																					VDC
Static Load Regulation	No Load to Full Load, Max Eout	< 0.1%																					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 ± 1%, Zout = 464Ω ± 1%																					-
Enable/Disable		0 to +0.8 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 (Vacuum may require -P1 or -S1 options, contact factory for details.)																					-
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 = 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 are subject to change without notice.

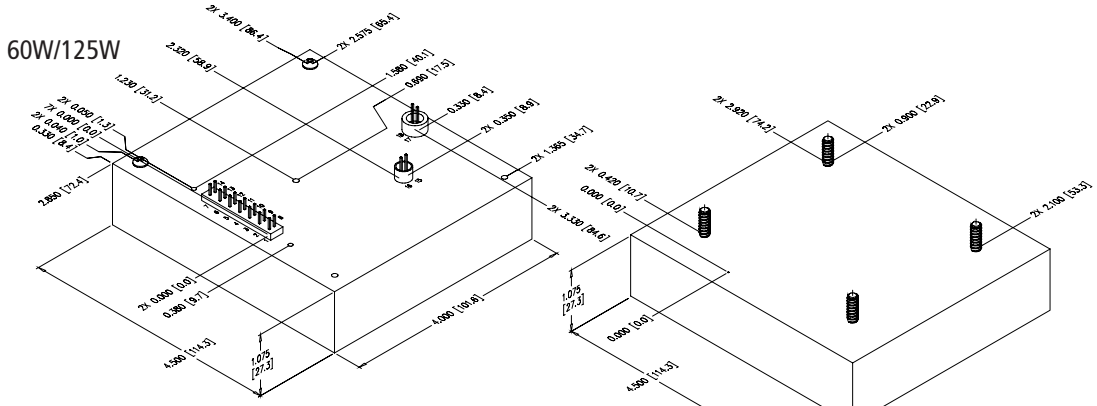
Figure A - Rise Time Formulas

NOTES: Capacitance must include HVPS internal Capacitance.

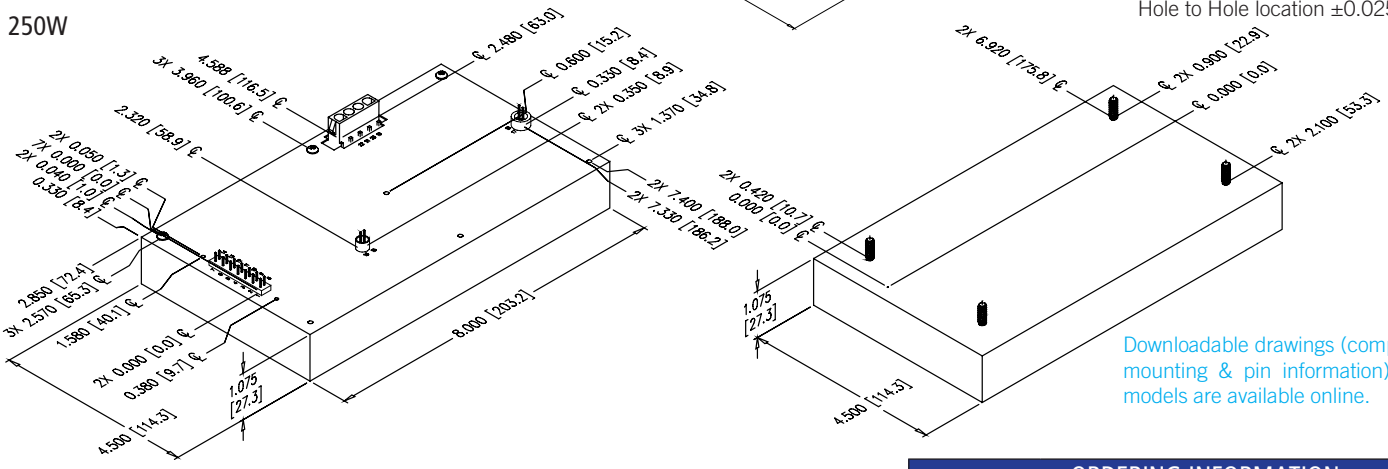
HIGH POWER C SERIES

High Voltage Cap-Charging Supply

60W/125W



250W



CONSTRUCTION

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

SIZE

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

TOLERANCE

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

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

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
17 & 18	HV Output

All grounds joined internally. Power-supply mounting points isolated from internal grounds by >100kΩ, .01uF / 50V (Max).

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

IEC-60950-1

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**
Case	Plastic Case - Diallyl Phthalate	**(Standard)**
	'Eared' Chassis Mounting Plate	**-E**
Heat Sink	.400" High (sized to fit case)	**-H**
PCB Support	(5 or 7) 0.187" standoffs on top cover	**-Z11**

Example: 1/2C24-P125
Type — Voltage — Model — Input — Power — Polarity

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

Rev. T 10/10

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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														UNITS
INPUT		**ALL TYPES**													
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 = 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^2 = kV
J = Ws

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

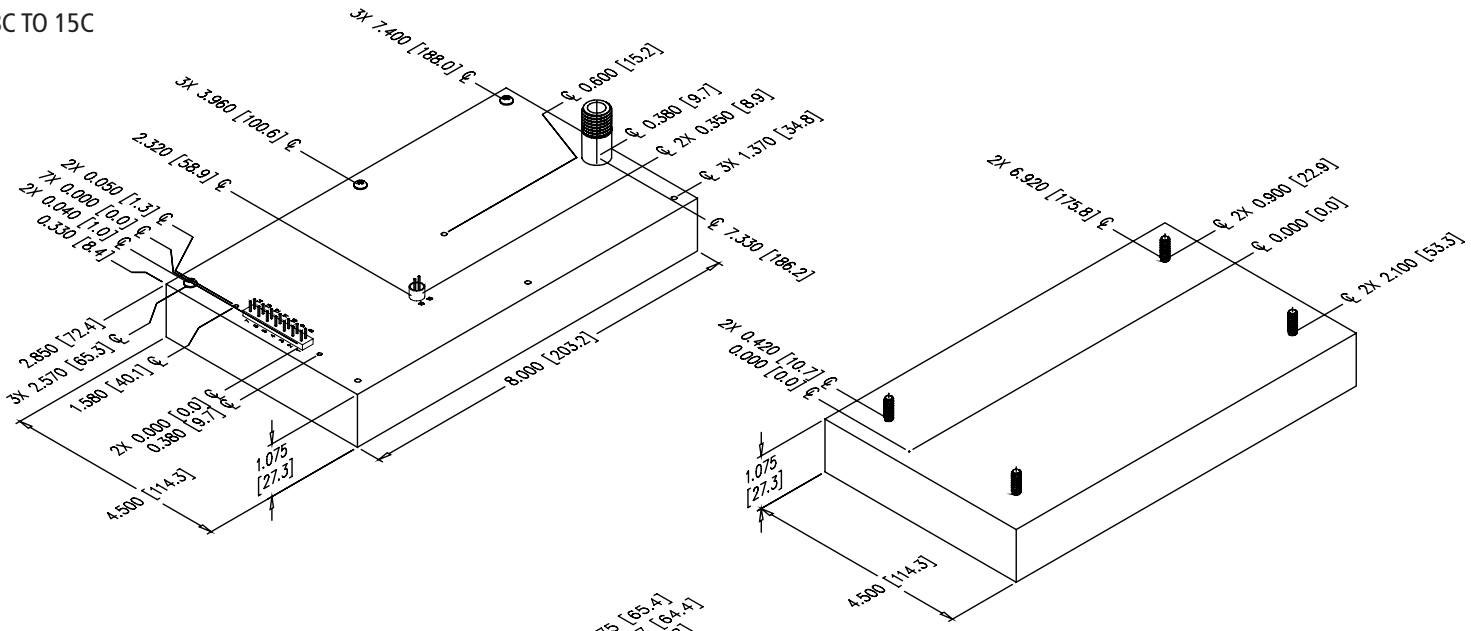
Specifications subject to change without notice.

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

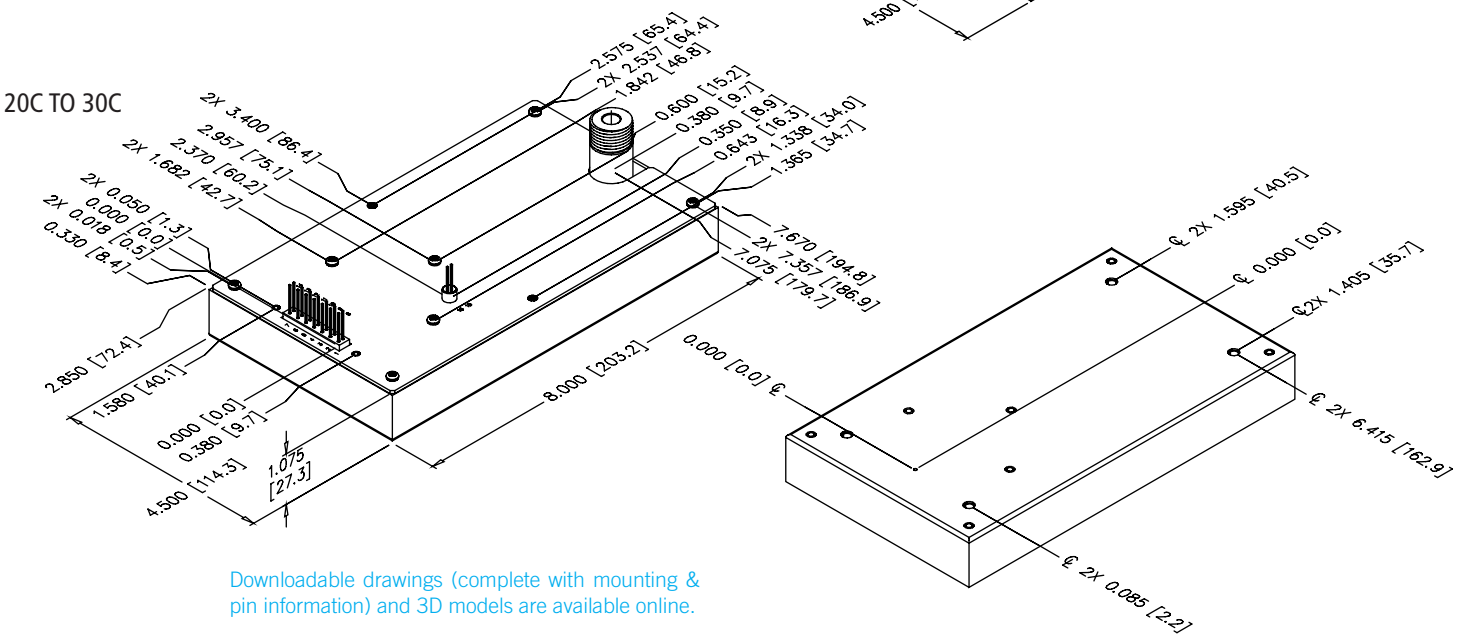
HIGH POWER 8C-30C SERIES

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 in³ (634cc)
Weight 2.6 lbs. (1.18kg)

TOLERANCE

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

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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 >100kΩ, .01uF / 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**

PROUDLY

MADE IN THE USA

IEC-60950-1

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

Example: 8C24-P125

Type — Voltage — Model — Input — Power — Polarity

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).

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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 ≥10kV 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

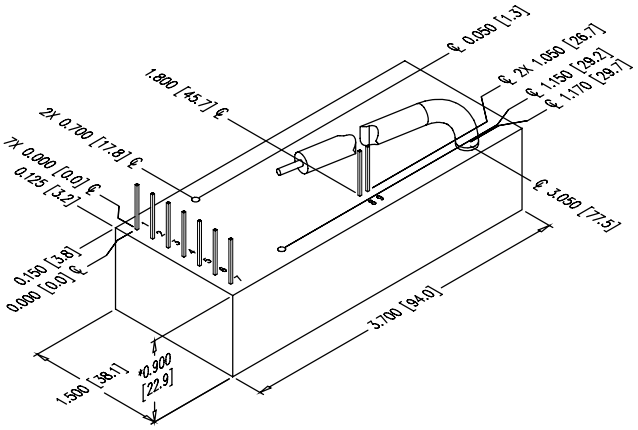
PARAMETER	CONDITIONS	MODELS												UNITS
INPUT		12V						24V						
Voltage Range	Full Power	+ 11 to 16						+ 23 to 30						VDC
Voltage Range	Derated Power Range	+ 9 to 32						+ 9 to 32						VDC
Current	Standby / Disable	< 30						< 30						mA
Current	No Load, Max Eout	10A < 0.20, 15A/20A/25A < 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 ± 2% into 10MΩ												-
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	½ 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 1.1MΩ 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 -P1 or -S1 options, 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.

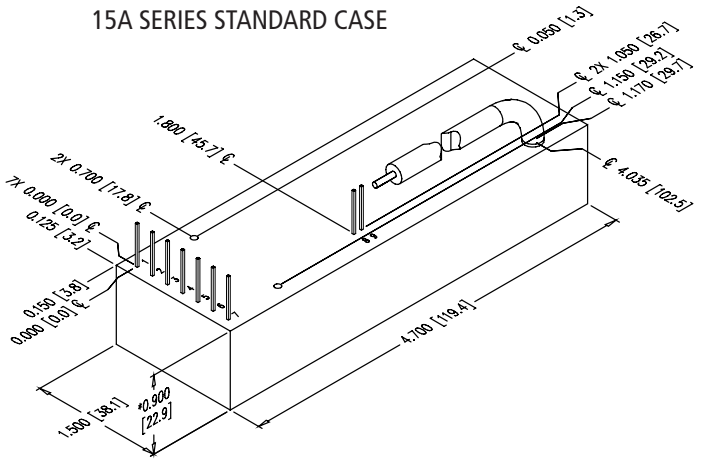
10A-25A SERIES

10kV to 25kV High Voltage Biasing Supplies

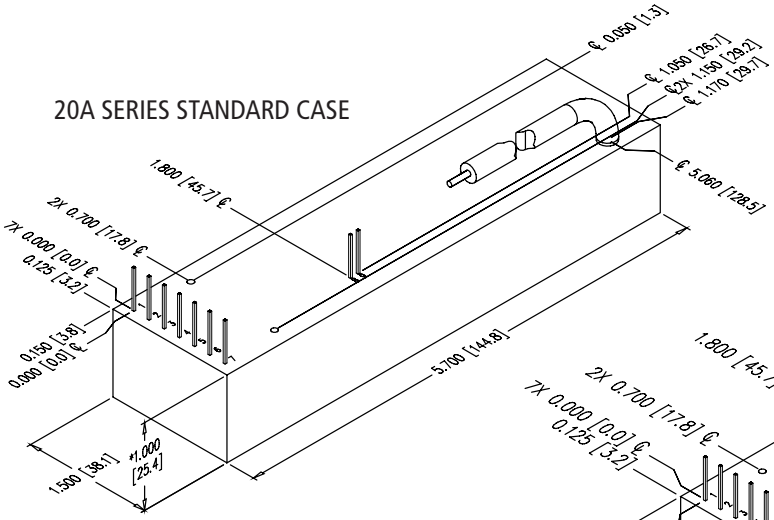
10A SERIES STANDARD CASE



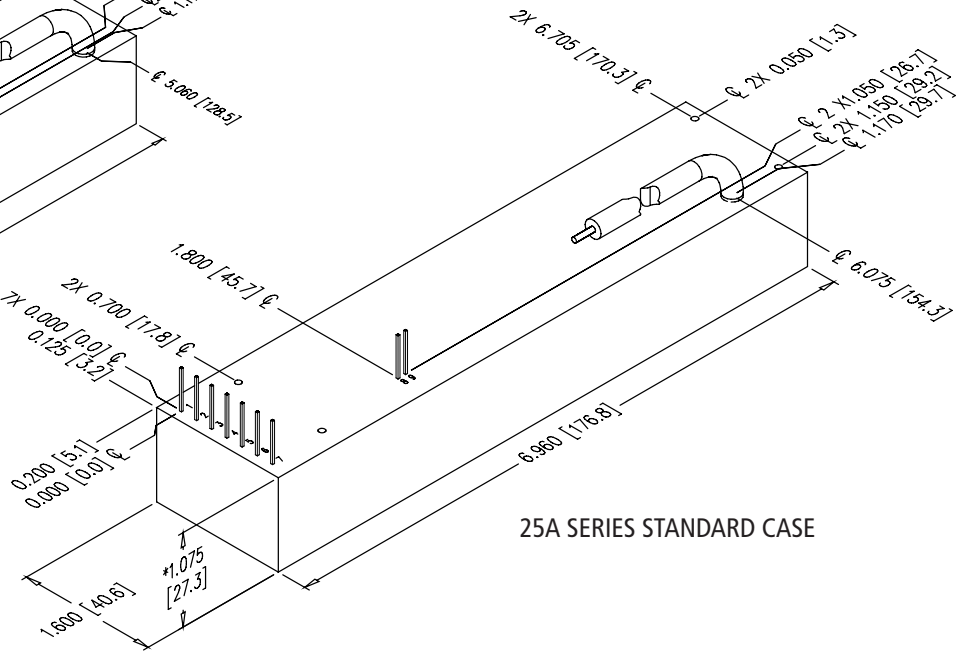
15A SERIES STANDARD CASE



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 in³ (80.31cc), w/-C Option 8.80 in³ (144.23cc)
15A: 6.35 in³ (104.08cc), w/-C Option 11.00 in³ (180.29cc)
20A: 8.55 in³ (140.13cc), w/-C Option 14.40 in³ (236.02cc)
25A: 11.70 in³ (191.76cc), w/-C Option 20.00 in³ (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 (452.24g), w/-C Option 22.00 oz (623.69g)

TOLERANCE

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

NOTES

Standard case length, width, and height specs are ±0.050" (1.27)
-C Option case length, width and height specs are ±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.

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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 >100kΩ, .01uF / 50V (Max) on all models except -M, -C, and -M-E configurations which are 0Ω.

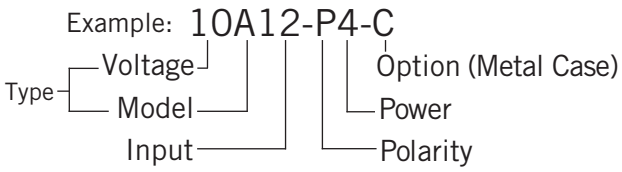
PROUDLY

MADE IN THE USA

IEC-60950-1

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 (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 (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 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-2, BR-3, and BR-5 mounting bracket kits, and our full range of high voltage output connectors (see Accessories & Connectors datasheet).

Rev. W 9/10

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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 ≥30kV 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.

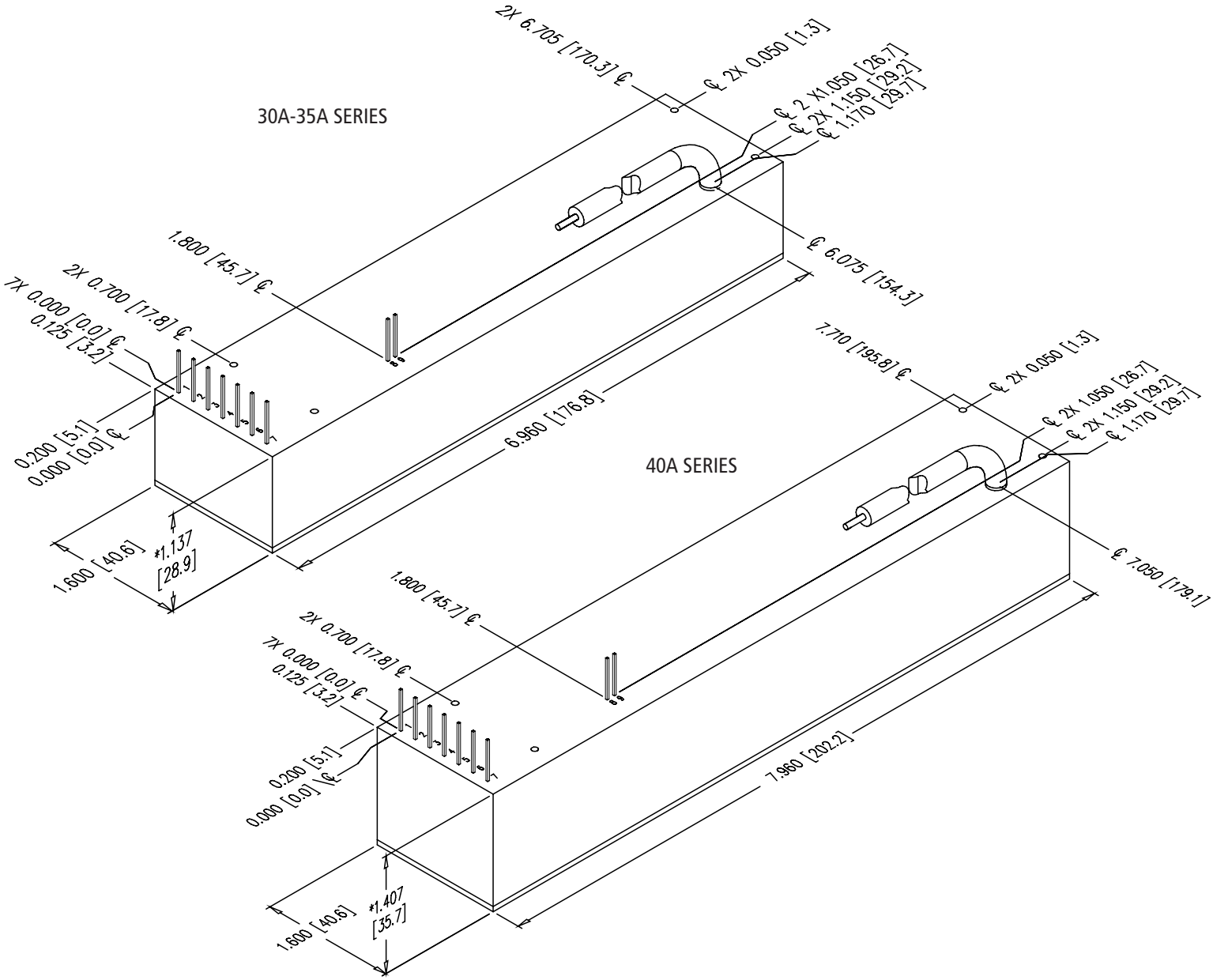
- 0 to 30kV, 35kV or 40kV output
- 4, 15 or 30 watts of output power
- Maximum Iout capability down to 0 Volts
- Wide input voltage range
- Indefinite output short-circuit protection
- Output current & voltage monitors
- Fixed-frequency, low-stored-energy design
- >400,000 hour MTBF @65°C
- UL, cUL, 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 -P1 or -S1 options, 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.

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 in³ (207.46cc), w/-C Option 20.00 in³ (327.80cc)
40A: 17.92 in³ (293.66cc), w/-C Option 27.00 in³ (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 ±0.050" (1.27)
Pin to Pin ±0.015" (0.38)
Mounting hole locations ±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.

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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 >100kΩ, .01uF / 50V (Max) on all models except -M, -C, and -M-E configurations which are 0Ω.

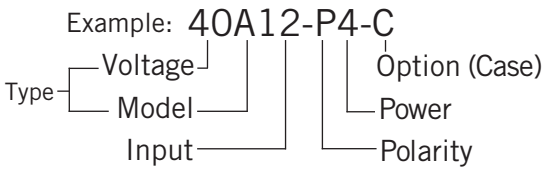
PROUDLY

MADE IN THE USA

IEC-60950-1

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).

Rev. S 9/10

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E SERIES

Precision High Voltage Power Supply

The E Series of precision high-voltage power supplies has very low ripple, excellent linearity, and very stable temperature characteristics. Models in this series are offered with a 10ppm temperature coefficient and reference. The control and monitoring functions are available on a standard DB15 female connector.

Typical applications for the E Series include the following: mass spectrometry, electron beams, ion beams, and contraband detection.

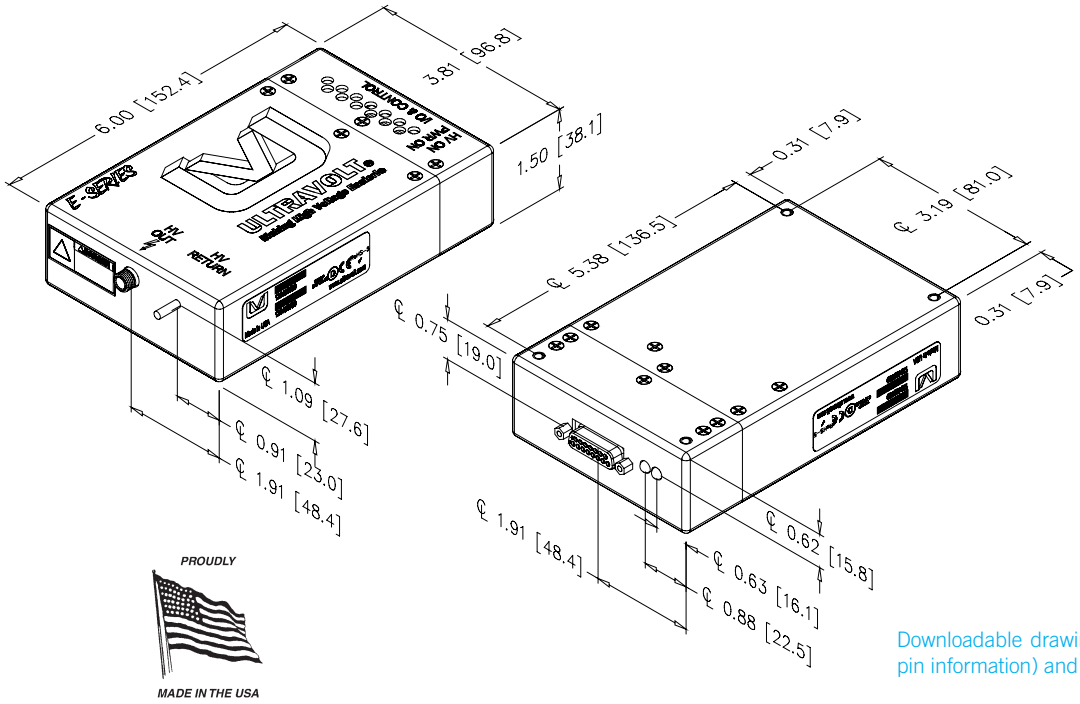
- Precision output voltage from 0 to 1kV thru 0 to 15kV
- 4, 15/20, or 30 watts of output power
- Maximum Iout capability down to 0 Volts
- Current regulation standard
- Wide input voltage range
- Output current monitor
- 10ppm temperature coefficient and reference
- PPM level ripple
- PPM level regulation and stability

PARAMETER	CONDITIONS	MODELS																		UNITS
INPUT		**ALL TYPES**																		
Voltage Range	Full Power	+ 23 to 30																		VDC
Current	Standby / Disable	< 50																		mA
Current	No Load, Max Eout	< 325																		mA
Current	Full Load, Max Eout	2.5																		A
AC Ripple Current	Nominal Input, Full Load	< 10																		mA p-p
OUTPUT		**1E**			**2E**			**4E**			**6E**			**10E**			**15E**			
Voltage Range	Nominal Input	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
Nominal Input Voltage / Model		24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	VDC
Power	Nominal Input, Max Eout	4	20	30	4	20	30	4	20	30	4	20	30	4	15	30	4	15	30	Watts
Current	Iout Entire Output Voltage Range	4	20	30	2	10	15	1	5	7.5	0.67	3.3	5	0.4	1.5	3	0.26	1	2	mA
Voltage Monitor	Normal Operating Conditions	0 to 10 ±0.5%																		VDC
Current Monitor	Normal Operating Conditions	0 to 10 ±0.1%																		VDC
Ripple	Full Load, Max Eout	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	PPM
Line Regulation	Nom. Input, Max Eout, Full Power	< 10ppm																		VDC
Static Load Regulation	No Load to Full Load, Max Eout	< 10ppm																		VDC
Stability	30 Min. warmup, per 8 hr/ per day	< 10ppm																		VDC
PROGRAMMING & CONTROLS		**ALL TYPES**																		
Input Impedance	Nominal Input	10																		MΩ
Adjust Accuracy & Adjust Linearity	10% to 100%	0.5%																		%
Adjust Voltage	Differential	0 to +10																		VDC
Output Voltage	T= +25°C, Initial Value	+10.00 ± 0.05%																		VDC
Max Source Current	T= +25°C	1																		mA
Output Impedance	Normal Operating Conditions	Buffered, low impedance, 2mA max for source/sink current																		-
Enable/Disable		0 to +1 Disable, +2.5 to 15 Enable (Default = Enable)																		VDC
ENVIRONMENTAL		**ALL TYPES**																		
Operating	Full Load, Max Eout, Case Temp.	+10 to +45																		°C
Temperature Coefficient	Over the Specified Temperature	± 10																		PPM/°C
Thermal Shock	Mil-Std 810, Method 504, Class 2	-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 10,000																		ft
Shock	Mil-Std-810, Method 516, Proc. 4	20																		G's
Vibration	Mil-Std-810, Method 514, Fig. 514-3	10																		G's

Specifications subject to change without notice.

E SERIES

Precision High Voltage Power Supply



PROUDLY

MADE IN THE USA

CONSTRUCTION

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

SIZE

Volume 34.29 in³ (561.9cc)
Weight 2.4lbs (1.1kg)

TOLERANCE

Overall ± 0.030" (1.27)
Pin to Pin ± 0.015" (0.38)
Mounting Hole Location ± 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.

RoHS COMPLIANT

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

CE c UL us IEC-60950-1

GEN 3 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 Programming input is differential between pins 2 and 3
3	Voltage Programming +	
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	
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 +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.

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 Power Output	**4**
	15/20 Watts Power Output	**15/20**
	30 Watts Power Output	**30**
Performance Level	10ppm Line Regulation, Load Regulation, Stability, and Temp. Co.	**-10PPM**
Connectors	LGH	**(Standard)**
	5kV, SHV Type	**-SHV-5KV**
	10kV, BNC Type	**-BNC-10KV**
	20kV, BNC Type	**-BNC-20KV**

Example: 2E24-P20-10PPM

Type — Voltage — Model — Input — Power — Performance Level — Polarity

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

Rev. D 8/10

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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 0.08in³ (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)	

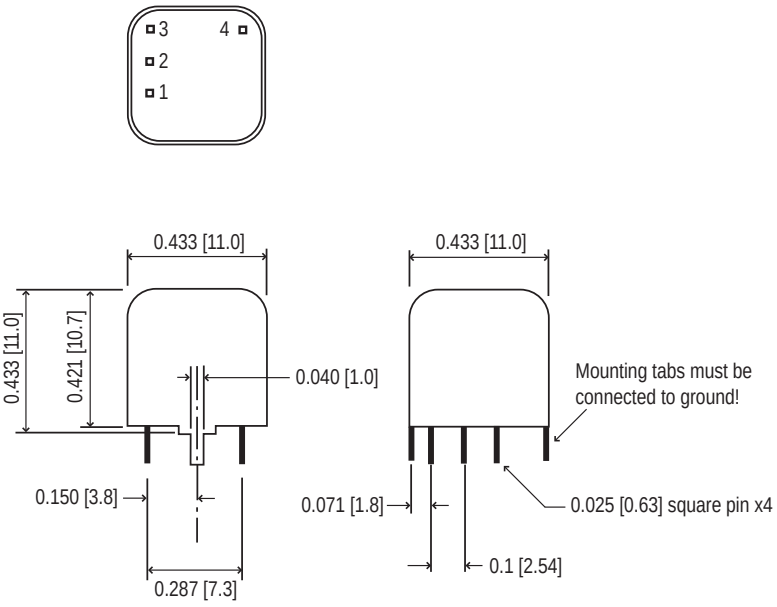
Please contact UltraVolt's customer service department for an analysis of your requirements.

PARAMETER	SPECIFICATION
Input voltage Vin (pins 1 & 2)	5VDC ±0.5VDC (recommended) maximum: 12Vdc (reverse: -0.2V)
Input current	For 0V output voltage: <1.6mA For 100V, no load: < 3mA At full output voltage, full load: <50mA
HV output Vout (pin 4)	0 to 100V programmable
Polarity	Fixed positive or negative
HV setting (pin 3)	Via external voltage source 0/2.5V Accuracy: ±2% at full scale
Max. output current Iout	1mA nominal
Load voltage regulation	±0.01% of full output voltage for no load to full load
Line voltage regulation	±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	<50ppm/°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°C to +50°C
Storage temperature	-10°C to +70°C
Safeguards	• Output current internally limited • Soft start feature: low overshoot
Shielding	Ground return is to metal enclosure

Specifications subject to change without notice.

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: 0.081in³ (1.331cc)
Weight: 0.176oz (5g)

TOLERANCE

Overall ±0.0039" (0.1)
Pin to Pin ±0.0039" (0.1)
Tabs location ±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**

RoHS COMPLIANT

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

Example: 0.1XS5-P0.1

Type — Voltage, Model
Input
Power
Polarity

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

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US SERIES

Microsize, Micropower High Voltage Power Supply

At only 0.35in³ (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, 12, or 15 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 (<20mV peak to peak)
- 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.

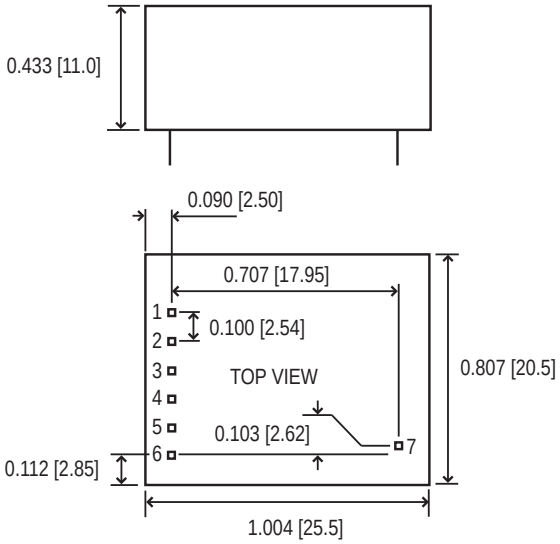
PARAMETER	SPECIFICATION			
Input voltage Vin (pins 1 & 2)	5VDC ±0.5VDC or 12 to 15VDC ±0.5VDC, according to type			
Input current	Inhibition mode: <5mA at full output voltage, full load:			
	<65mA for the 200V model	<60mA for the 300V model	<55mA for the 400V model	<50mA for the 500V model
Polarity	Fixed positive or negative			
HV setting (pin 3)	Via external potentiometer, minimum resistance 10kΩ or Via external voltage source 0/2.5V ±0.5% at full scale, and input impedance >1MΩ			
Load voltage regulation	±0.01% of full output voltage for no load to full load			
Line voltage regulation	±0.01% of full output voltage over specified input voltage range			
Residual ripple	<20mV peak-to-peak at full output voltage and current <5mV peak-to-peak at 200V and 200µA			
Temperature coefficient	<50ppm/°C			
Output HV monitoring (pin 2)	0/2.5V signal Accuracy : ±0.2% Output impedance : 1kΩ			
Output reference voltage (pin 4 - optional)	2.5V ±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°C to +50°C			
Storage temperature	-40°C to +70°C			
Safeguards	Output current internally limited Soft start feature: the start is guaranteed with no overshoot			

Specifications subject to change without notice.

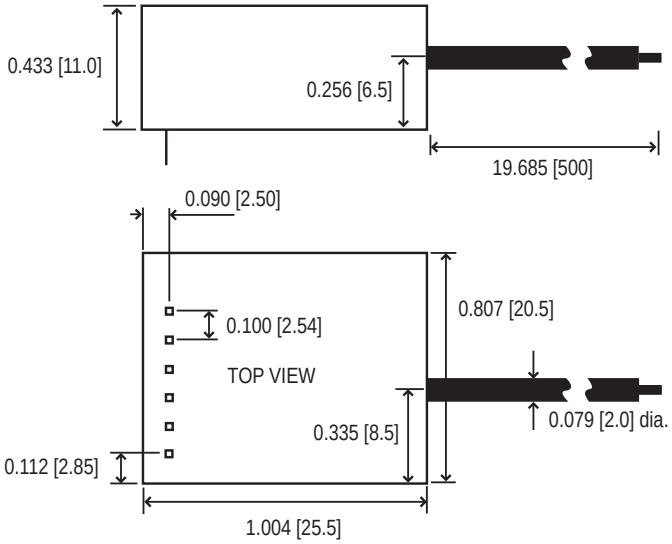
US SERIES

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: 0.351in³ (5.750cc)
Weight: 0.459oz (13g)

TOLERANCE

Overall ±0.0039" (0.1)
Pin to Pin ±0.0039" (0.1)
Case to Pin ±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)

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.

RoHS COMPLIANT

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

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**
	15VDC Nominal	**15**
Power	Watts Output	**0.1**
Case	Tin Steel Case	**(Standard)**
Polarity	Positive Output	**-P**
	Negative Output	**-N**
Option	Output voltage lead wire	**-WS**

Example: 0.5US5-P0.1-WS

Type — Voltage, Model
Input
Polarity
Power
Option

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

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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 1500V and very small current, at only 0.84in³ (13.8cc). With a footprint under 1in² (2.54cm²), these modules are perfect for applications with limited board space.

- 4 models from 0 to 600V, 1000V, 1250V, or 1500V
- 1 watt of output power
- Tight line/load regulation
- Arc and continuous short circuit protection
- Self restoring output voltage
- 12, 15 or 24 Volts DC Input
- Low cost
- Miniature and lightweight
- 5V reference
- 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
Avalanche Photo Diodes (APD)
Photomultiplier Tubes (PMT)
Scanning Electron Microscopes (SEM)

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

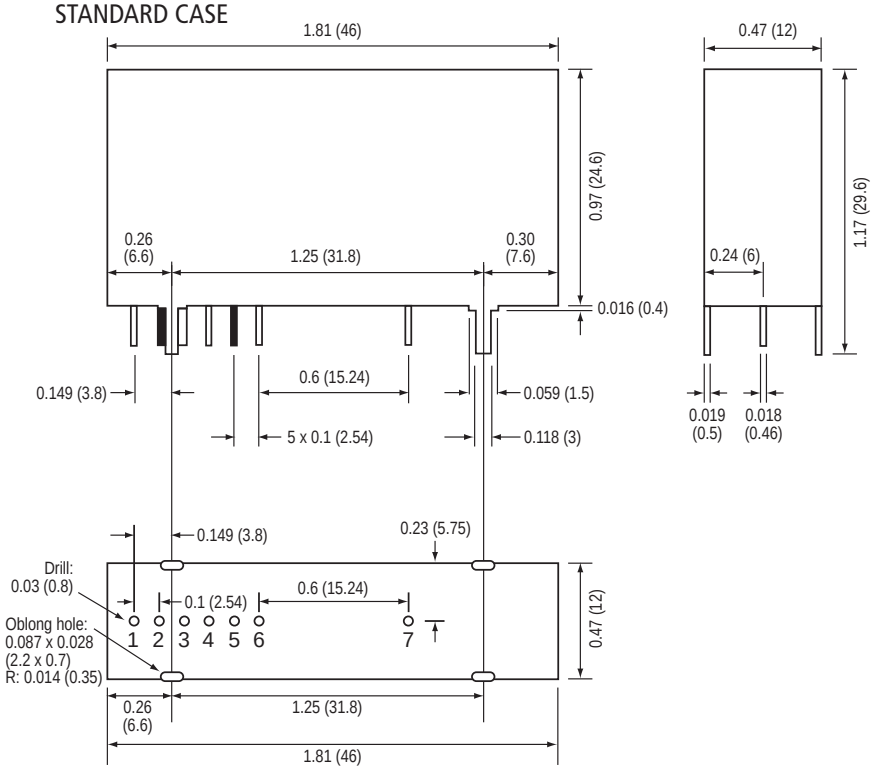
PARAMETER	SPECIFICATION
Input voltage Vin (pins 1 & 2)	12VDC ±0.5Vdc or 15VDC ±0.5VDC or 24VDC ±1VDC, According to type
Input current	At no load: 15mA At full load: from 65mA to 100mA
Polarity	Fixed positive and fixed negative
HV setting (pins 3, 4 & 5)	Via external potentiometer, minimum resistance 10kΩ or Via external voltage source 0/ 5V ±0.5% at full scale, and input impedance >1MΩ
Load voltage regulation	±0.01% of full output voltage for no load to full load
Line voltage regulation	±0.01% of full output voltage over specified input voltage range
Residual ripple	Between 10mV and 50mV peak-to-peak at full load
Temperature coefficient	100ppm/°C for the maximum output voltage after starting and over temperature range 0 to 50°C
Output HV monitoring (pin 6)	+1V/1kV max. or -1V/-1kV max. according to model polarity Output impedance = 200kΩ ±1%
Output reference voltage (pin 5)	5V ±0.5%, TC:50ppm/°C, max. output current:1mA
Operating temperature	0°C to +50°C
Storage temperature	-20°C to +70°C
Safeguards	Arc and short circuit protection
Options	• Flying wire for HV output instead of pin 7 • Suitable for use with an external potentiometer

Specifications subject to change without notice.

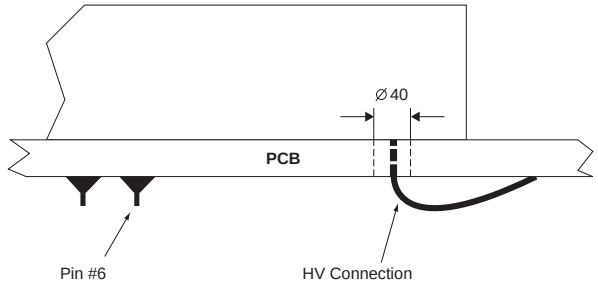
V SERIES

Vertical, Microsize High Voltage Biasing Supply

STANDARD CASE



FLYING LEAD OPTION



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

Note: Mounting tabs must be connected to ground.

RoHS COMPLIANT

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

CONSTRUCTION

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

SIZE

Volume: 0.84in³ (13.8cc)
Weight: 1.23oz (35g)

TOLERANCE

Overall ±0.0039" (0.1)
Pin to Pin ±0.0039" (0.1)
Tabs location ±0.0118" (0.3)

NOTES

0.018" (0.46) 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)

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**
Input	12VDC Nominal	**12**
	15VDC Nominal	**15**
	24VDC Nominal	**24**
Power	Watts Output	**0.5**
	Watts Output	**0.8**
	Watts Output	**1**
Case	Tin Steel Case	**(Standard)**
Polarity	Positive Output	**-P**
	Negative Output	**-N**
Option	Flying Lead for HV Output	**-WS**

Example: 1.5V24-P1-WS

Type — Voltage — Model — Input — Polarity — Power — Option

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

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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 1500V and very small current, at only 1.00in³ (16.4cc). At less than 0.5in (12.7mm) in height, these modules are ideal for low profile applications.

- 4 models from 0 to 600V, 1000V, 1250V, or 1500V
- 1 watt of output power
- Tight line/load regulation
- Arc and continuous short circuit protection
- Self restoring output voltage
- 12, 15 or 24 Volts DC Input
- Low cost
- Miniature and lightweight
- 5V reference
- 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

Avalanche Photo Diodes (APD)

Photomultiplier Tubes (PMT)

Electrostatic chuck (E-chuck)

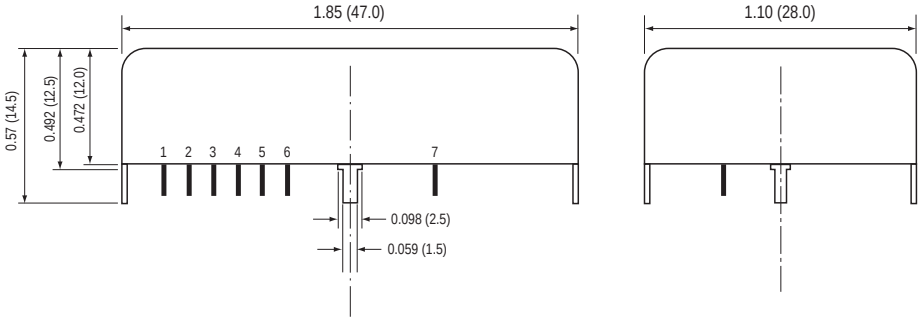
Please contact UltraVolt's customer service department for an analysis of your requirements.

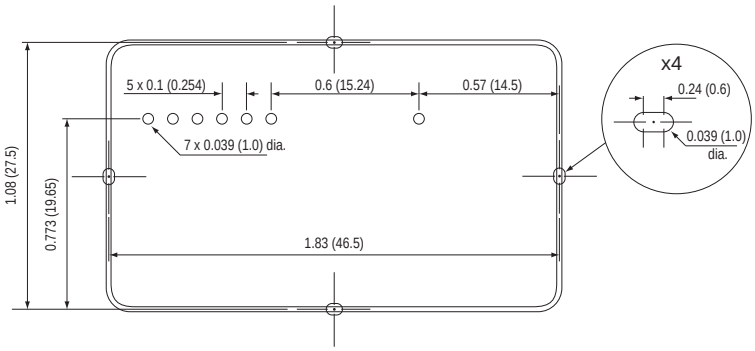
PARAMETER	SPECIFICATION
Input voltage Vin (pins 1 & 2)	12VDC ±0.5VDC or 15VDC ±0.5VDC or 24VDC ±1VDC, according to type
Input current	At no load: 15mA At full load: from 65mA to 100mA
Polarity	Fixed positive and fixed negative
HV setting (pins 3, 4 & 5)	Via external potentiometer, minimum resistance 10kΩ or Via external voltage source 0/5V ±0.5% at full scale, and input impedance >1MΩ
Load voltage regulation	±0.01% of full output voltage for no load to full load
Line voltage regulation	±0.01% of full output voltage over specified input voltage range
Residual ripple	Between 10mV and 40mV peak-to-peak at full load
Temperature coefficient	100ppm/°C for the maximum output voltage after starting and over temperature range 0 to 50°C
Output HV monitoring (pin 6)	+1V/1kV max. or -1V/-1kV max. according to model polarity output impedance = 200kΩ ±1%
Output reference voltage (pin 5)	5V ±0.5%, TC:50ppm/°C, max. output current: 1mA
Operating temperature	-40°C to +50°C
Storage temperature	-40°C to +70°C
Safeguards	Arc and short circuit protection
Options	• Flying wire for HV output instead of pin 7 • Suitable for use with an external potentiometer

Specifications subject to change without notice.

M SERIES

Miniature, Microsize High Voltage Biasing Supply





CONSTRUCTION

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

SIZE

Volume: 1.00in³ (16.4cc)
Weight: 1.23oz (35g)

TOLERANCE

Overall ±0.0039" (0.1)
Pin to Pin ±0.0039" (0.1)
Tabs location ±0.0118" (0.3)

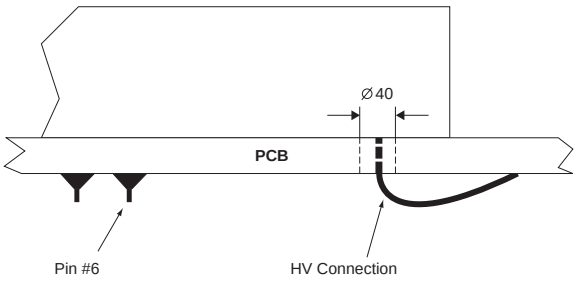
NOTES

0.018" (0.46) 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)

FLYING LEAD OPTION



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

Note: mounting tabs must be connected to ground.

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**
Input	12VDC Nominal	**12**
	15VDC Nominal	**15**
	24VDC Nominal	**24**
Power	Watts Output	**0.5**
	Watts Output	**0.8**
	Watts Output	**1**
Case	Tin Steel Case	**(Standard)**
Polarity	Positive Output	**-P**
	Negative Output	**-N**
Option	Output Voltage Lead Wire	**-WS**

Example: 1.5M24-P1-WS

Type — Voltage — Model — Input — Power — Polarity — Option

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

RoHS COMPLIANT

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

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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.

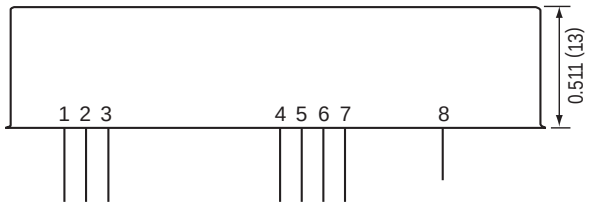
PARAMETERS	SPECIFICATIONS
Input voltage Vin (pins 2 & 3)	15VDC ±1.5VDC or 24VDC ±2VDC, according to type
Input current	example for a 15VDC, output 6000V, 1mA model: inhibition mode: 27mA at no load & HV = 6000V 46mA, at full load < 630mA
HV output Vout (pin 8)	0 to 1000V through 0 to 6000V according to type
Polarity	fixed positive or negative
Programming (pins 4 & 6)	via external voltage source 0 to +5V ±0.1% at full scale, and input impedance = 94kΩ
Max. output current Iout	limited to 110% of nominal current
Load voltage regulation	±0.01% of full output voltage for no load to full load
Line voltage regulation	±0.01% of full output voltage over specified input voltage range
Residual ripple	< 0.02% peak-to-peak at full load
Temperature coefficient	100ppm/°C
Output HV monitoring (pin 7) {still operating in inhibition mode}	analog 0 to +5V buffered output signal, accuracy ±0.2% output impedance = 1kΩ temperature coefficient: 50ppm/°C for ≤ 4kV units, 100ppm/°C for 6kV units
Output current monitoring (pin 5) {still operating in inhibition mode}	analog 0 to +5V buffered output signal, accuracy ±2% output impedance = 1kΩ temperature coefficient: 100ppm/°C
Enable/Disable (pin 1)	to disable (opened remote interlock) or enable (closed remote interlock)
Operating temperature	-10°C to +50°C
Storage temperature	-10°C to +70°C
Safeguards	• protected against reverse Vin • auto inhibition if Tcase > 75°C • soft start feature : the start is guaranteed with no overshoot • HV setting internally limited to 5.3V

Specifications subject to change without notice.

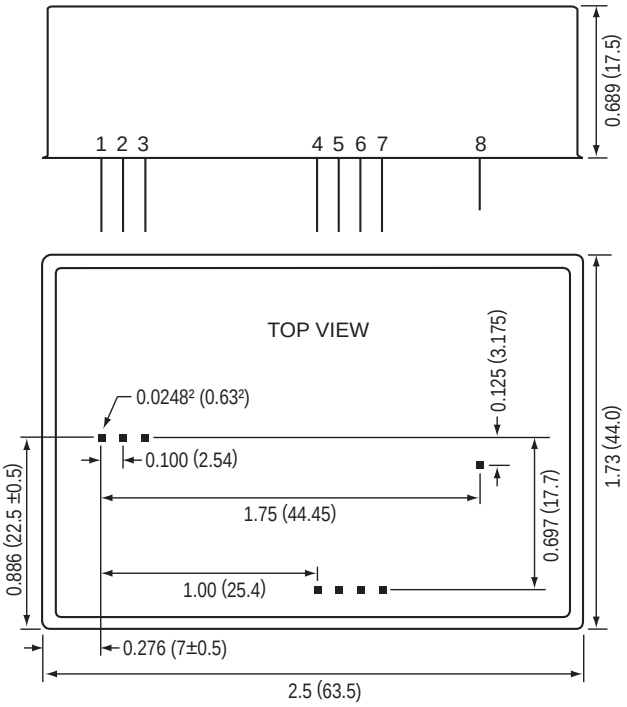
D SERIES

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

RoHS COMPLIANT

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

CONSTRUCTION

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

SIZE

Volume:
1-4kV, 1-4W: 8.55 in³ (140.13cc)
1-4kV, 6W and 1-6kV, 1-6W: 11.70 in³ (191.76cc)
Weight:
1-4kV, 1-4W: 2.54 oz (72g)
1-4kV, 6W and 1-6kV, 1-6W: 3.00 oz (85g)

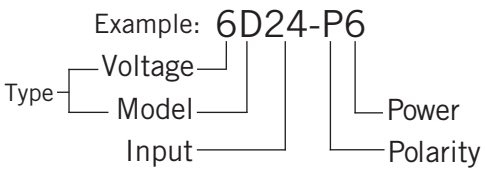
TOLERANCE

Overall ±0.0118" (0.3)
Pin to pin ±0.0039" (0.1)
Case to pin ±0.0591" (1.5)

NOTES

Standard case length, width, and height specs are ±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**



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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

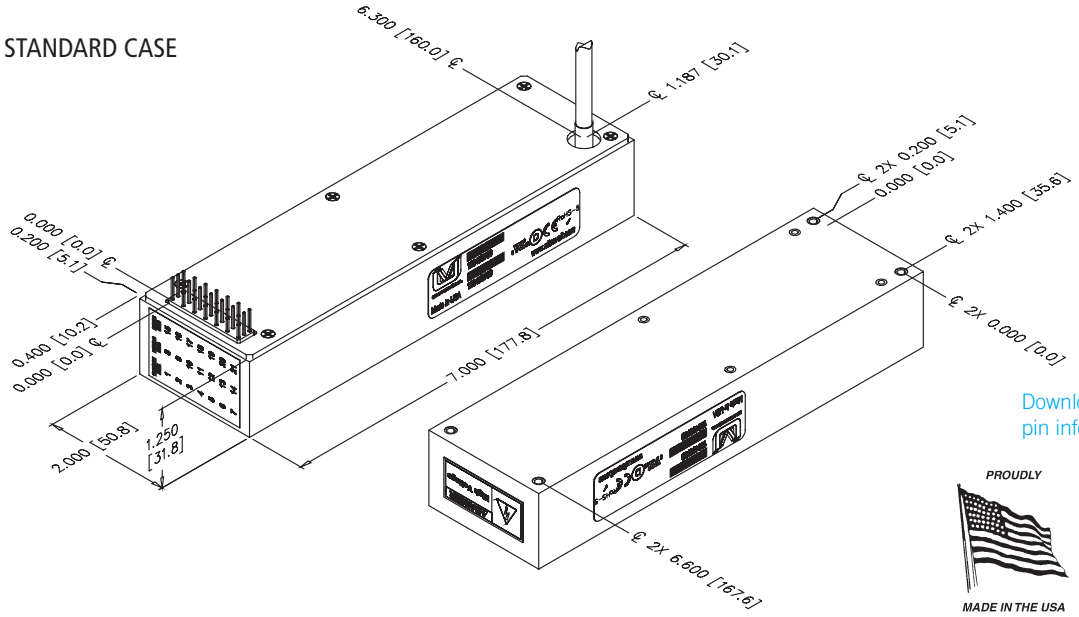
PARAMETER	CONDITIONS	MODELS						UNITS
INPUT		ALL TYPES						
Voltage Range	Full Power	+24 ± 10%						VDC
Current	Standby / Disable	< 70						mA
Current	Full Load, Max Eout	< 925						mA
Current	No Load, Max Eout	< 375						mA
AC Ripple Current	Nominal Input, Full Load	< 30						mA p-p
OUTPUT		1CP	2CP	4CP	6CP	10CP	15CP	
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
PROGRAMMING & CONTROLS		ALL TYPES						
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
ENVIRONMENTAL		ALL TYPES						
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 (Vacuum may require -P1 or -S1 options, contact factory for details.)						-
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.

CP SERIES

Constant Power High Voltage Supply

STANDARD CASE



CONSTRUCTION

Epoxy-filled Aluminum Alloy Box, Anodized Gold

SIZE

Volume 17.5in^3 (286.77 cc)
Weight 1.4lb (0.64kg)

TOLERANCE

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

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

PROUDLY

MADE IN THE USA

RoHS COMPLIANT

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 ± 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 ± 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**

Example: 1CP24-P10

Type — Voltage — Model — Input — Power — Polarity

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

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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^3 dual-output supply
- Fixed-frequency, low-stored-energy design
- High power density
- Output short-circuit protected
- UL, cUL, CE, IEC-60950-1, and Demko Recognized

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 ±10% for 4W units and 24 to 28VDC ±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 ±5%. Line regulation error is < 0.1%; load regulation error is < 0.1% per 100uA. The output has a temperature co-efficient of ±0.11% per °C.

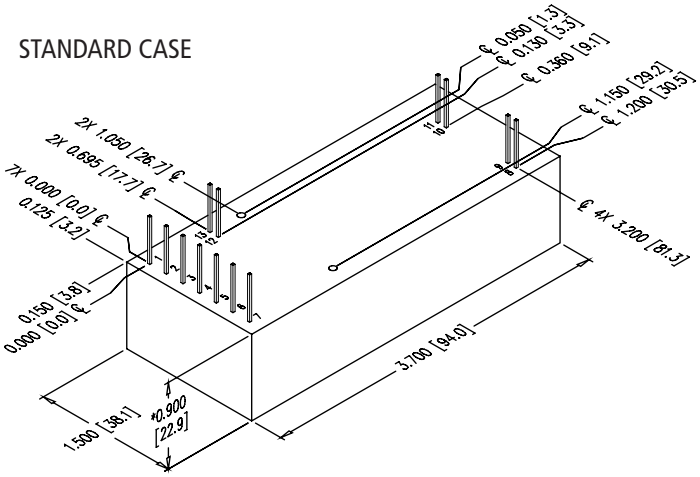
Fixed outputs available are:

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

NOTES

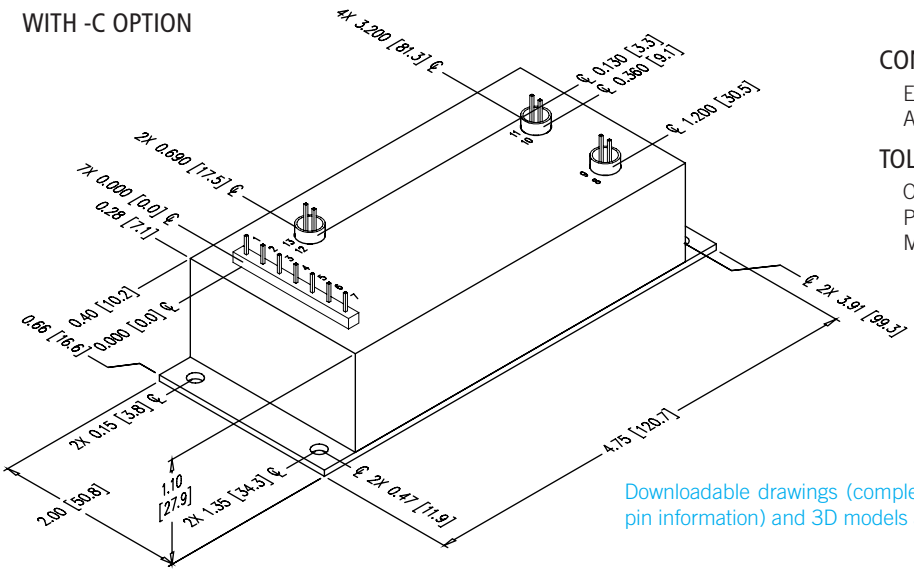
20W and 30W versions are an additional 0.062" (1.57) in height.
-M equipped units are an additional 0.030" (0.76) for each dimension.
Contact UltraVolt's Customer Service Department for drawings of models equipped with -E or -H options.

Specifications subject to change without notice.

DUAL OUTPUT AUX SERIES

High Voltage Biasing Supply

WITH -C OPTION



CONSTRUCTION

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

TOLERANCE

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

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

PROUDLY MADE IN THE USA

IEC-60950-1

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 >100kΩ, .01uF / 50V (Max) on all models except -M, -C, and -M-E configurations which are 0Ω.

ORDERING INFORMATION		
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

- Type: Voltage / Model
- Main Output Polarity
- Main Output Power
- AUX Output Polarity
- AUX Output Voltage
- Option (Case)

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

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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^3 triple output supply
- Fixed-frequency, low-stored-energy design
- High power density
- Indefinite output short-circuit protection
- UL, cUL, CE, IEC-60950-1, and Demko Recognized

HIGH VOLTAGE AUX OUTPUTS

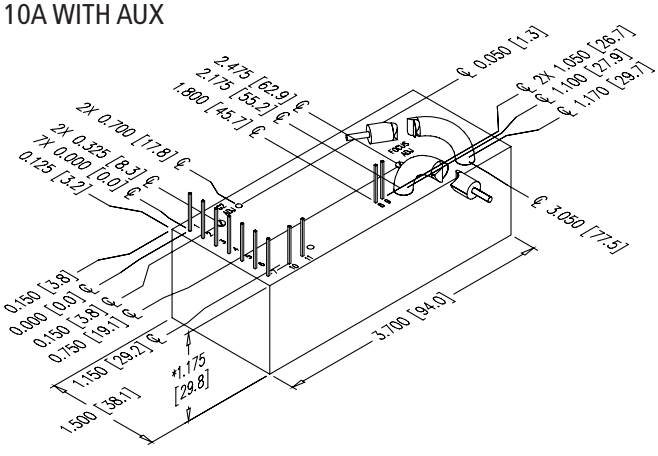
The AUX outputs are non-isolated, positive, unipolar outputs. Full capability is available over an input range of 12 to 15VDC ±10% for 4W units and 24 to 28VDC ±5% for 15W/30W units. The Focus AUX output voltage is fully functional when the main output is within the range specified on the ordering information table. The manufactured tolerance on the output voltage range provided is ±5%. Line regulation error is <0.1%. Load regulation error is 0.5V per uA. The outputs have a temperature co-efficient of +0.11% per °C. Each AUX output has a current capability of 0 to ±25uA, 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.

Specific outputs available are:

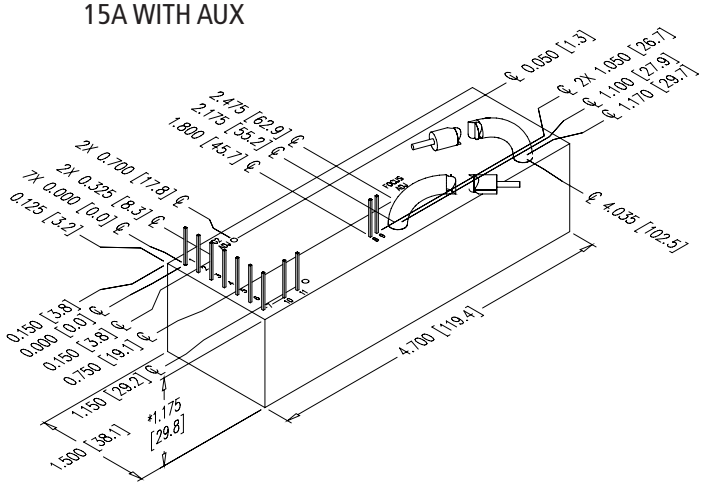
Standard TC:	Compensated TC:
300V	500V ± 200PPM
450V	650V ± 408PPM
600V	800V ± 537PPM
750V	950V ± 626PPM
900V	1100V ± 690PPM
1050V	

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



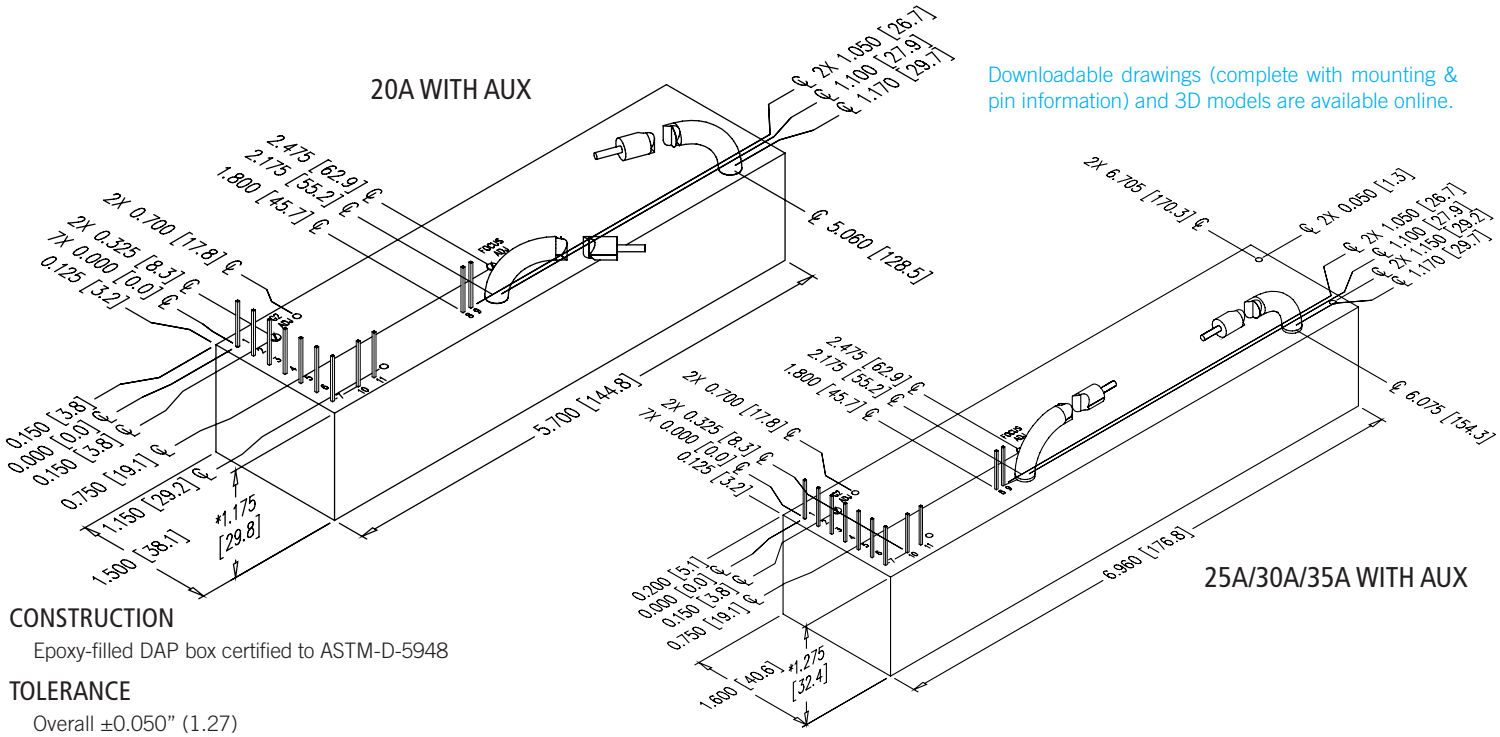
15A WITH AUX



Specifications subject to change without notice.

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 ±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.

PROUDLY MADE IN THE USA

IEC-60950-1

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 >100kΩ, .01uF / 50V (Max) on all models except -M, -C, and -M-E configurations which are 0Ω.

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	**-Fvvv**
Grid Output	See Table on Pg. 1	**-Gvvv**
	Temperature Compensated AUX	**-TC**
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)**
	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 — Main Output Power
Option (Case) — Grid Output Voltage — Focus Output Voltage

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

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BIPOLAR HIGH POWER C SERIES

Dual-Output High Voltage Power Supply

The Bipolar C Series line of regulated DC-to-DC high-voltage converters is an extension of the High Power C Series. Bipolar C Series units contain a pair of + and - standard-product, 60-watt or 125-watt High Power C Series assemblies, providing a total of 125 watts or 250 watts. By encapsulating a module pair within one case, the cost of testing, potting, burn-in, and system integration is reduced.

The ± HV output pair is packaged in UltraVolt's 4.5" x 8" x 1.1" standard case. This high power density is especially suited to high-energy pulsers, amplifiers, and discharge devices with large capacitance, fast repetition rates, or high current loads. See Application Note 10 for more charging information. Typical applications for the Bipolar C Series include the following: cap-charging, pulsed power, ultrasound, amplifiers, and pulse generators.

- 7 models from 0 to ±125 Volts through 0 to ±6kV
- 125 or 250 watts of total output power
- Dual, independently controlled outputs
- Output current & voltage monitors
- High efficiency
- Maximum Iout capability down to 0 Volts
- Low profile
- Fast Trise with very low overshoot
- High power to voltage density
- >200,000 hour MTBF @65°C
- Output short-circuit protection
- Fixed-frequency, low-stored-energy design
- UL, cUL, CE, IEC-60950-1, and Demko Recognized

PARAMETER	CONDITIONS														UNITS
INPUT		**ALL TYPES**													
Voltage Range	Full Power	+ 23 to 30													VDC
Voltage Range	Derated Power Range	+ 11 to 32													VDC
Current	Standby / Disable	< 40													mA
Current	Max Load, Max Eout	125W: 3, 250W: 6													A
Current	No Load, Max Eout	1/8C to 1C: < 600, 2C to 6C: < 1000													mA
AC Ripple Current	Nominal Input, Full Load	< 50													mA p-p
OUTPUT		**1/8C**		**1/4C**		**1/2C**		**1C**		**2C**		**4C**		**6C**	
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	125	250	125	250	125	250	125	250	125	250	125	250	125	250	Watts
Current	Iout, Entire Output Voltage Range	1000	2000	500	1000	250	500	125	250	62	125	31	62	21	42	mA
Current Scale Factor	Full Load	833	1667	417	833	208	417	114	227	52	104	26	52	17.7	35	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	V p-p
Rise Time	Max Iout, Various C Loads & Eout	Figure A													-
Storage Capacitance	Internal	0.90	0.90	0.90	0.90	0.43	0.43	0.019	0.019	0.019	0.019	0.013	0.013	0.013	0.013	uF
Overshoot	C Load, 0 Eout to Full Eout	< 1V		< 1V		< 1V		< 1V		< 1V		< 1V		< 1V	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
ENVIROMENTAL		**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)													-
TEMPERATURE & HUMIDITY		**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 (Vacuum may require -P1 or -S1 options, contact factory for details.)													-
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.

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

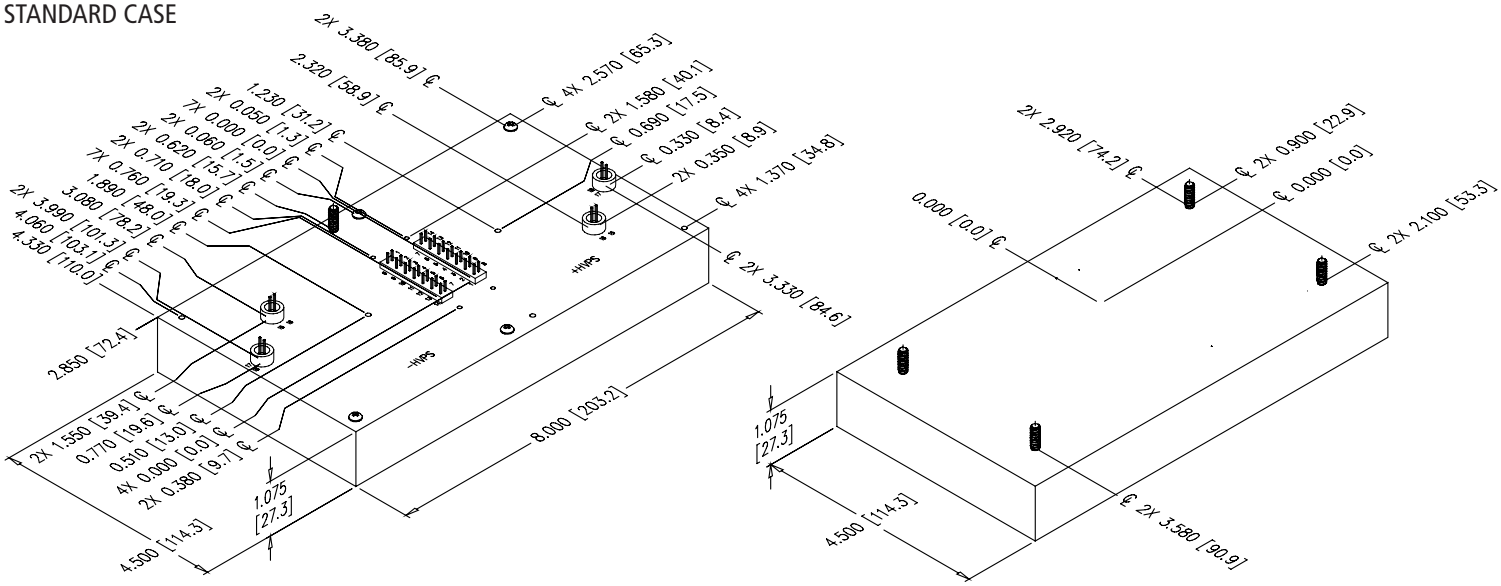
$$F = \frac{I}{C \times V}$$

C = uF
E^2 = 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^3 (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 >100kΩ, .01uF / 50V (Max)

- HVPS CONNECTIONS
1 & 8 - Input Power Ground Return
3 - Iout Monitor
4 - Enable/Disable
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6 - Remote Adjust Input
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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 >100kΩ, .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**

CE cULus IEC-60950-1

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

PROUDLY MADE IN THE USA

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

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

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

Rev. K 8/10

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

The HVA Series of DC-to-DC high-voltage power supplies operates a precision filter/divider & linear HV switch to produce a High-Voltage Amplifier (HVA). These modules provide a high-resolution, programmable, high-voltage DC to greater than 1 kHz output. The HVA Series is optimized for bias applications while providing excellent line regulation, load regulation, dynamic response, and stability. The HVA Series can both source and sink current! Typical applications for this series include the following: electrostatic chuck, pockel cells, mass spectrometry, and electron microscopes.

- Can both source and sink current
- PPM level line & load regulation
- Bipolar models available at 0 to 5kV
- Differential precision 0 to 10VDC control input
- Precision voltage and current monitors
- Unipolar models available at 0 to 10kV
- 25ppm temperature coefficient
- Operates in DC, reversible, and amplifier modes
- Fast slew rate (40V/µs)
- High bandwidth

PARAMETER	CONDITIONS	MODELS						UNITS
INPUT		ALL TYPES						
Voltage Range	Full Power	24VDC ± 10%						VDC
Current	Standby / Disable	<70 unipolar, <105 bipolar						mA
Current	Full Load, Max Eout	<420						mA
Current	No Load, Max Eout	<400						mA
OUTPUT*		1kV/±1kV	2kV/±2kV	4kV/±4kV	±5kV	6kV	10kV	
Power	Nominal Input, Max Eout	0.25	0.5	1	1	1	1	W
Current	Iout Entire Voltage Range	250	250	250	200	167	100	uA
Ripple	Full Load, Max Eout	0.05	0.05	0.05	0.03	0.03	0.01	%V pp
Voltage Monitor	Normal Operating Conditions	0 to 10 ± 0.5%						VDC
Current Monitor	Normal Operating Conditions	0 to 10 ± 0.1%						VDC
Line Regulation	Vin Min to Vin Max, Max Eout	<0.01						%
Load Regulation	No Load to Full Load, Max Eout	<0.01						%
PROGRAMMING & CONTROLS		ALL TYPES						
Input Impedance	Normal Operating Conditions	10						MΩ
Adjust Voltage	Differential	0 to +10						VDC
Enable/Disable		0 to +1 Disable, +2.5 to +15 Enable (Default = Enable)						VDC
Output Voltage	T = +25°C, Initial Value	+10.00 ± 0.05%						VDC
Max Source Current	T = +25°C	1						mA

*Units listed without polarity can be ordered as positive (+) or negative (-). Units listed as (±) are bipolar.

Specifications subject to change without notice.

HVA SERIES

Precision High-Voltage Amplifier

Sample “HVA” Series Waveforms:

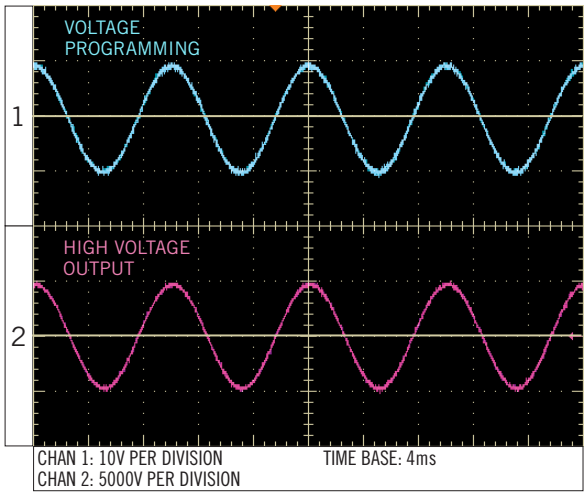


Figure A:
5HVA24-BP1 Sine Wave Input

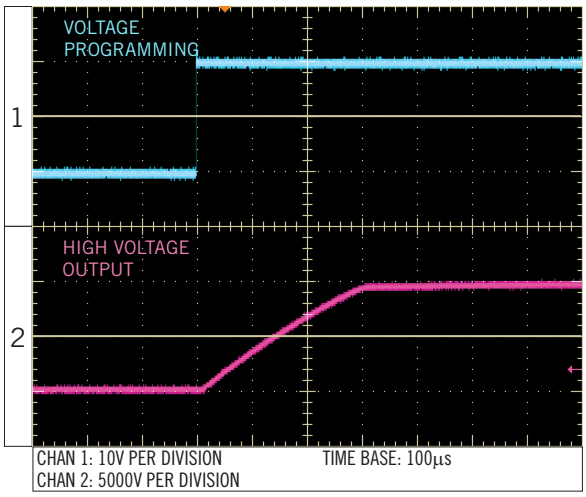


Figure B:
5HVA24-BP1 10kV Step Wave Input w/ No Load

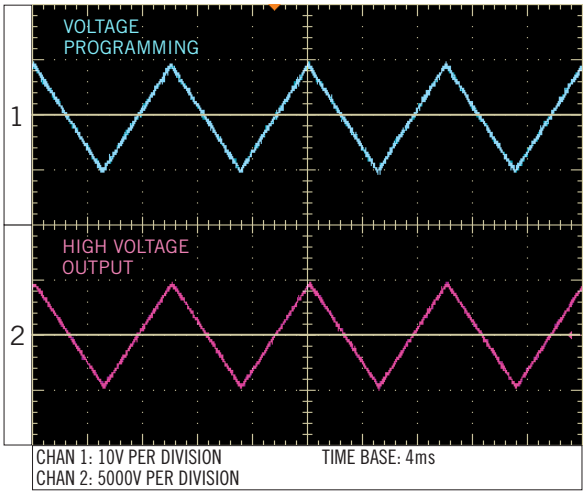


Figure C:
5HVA24-BP1 Triangle Wave Input

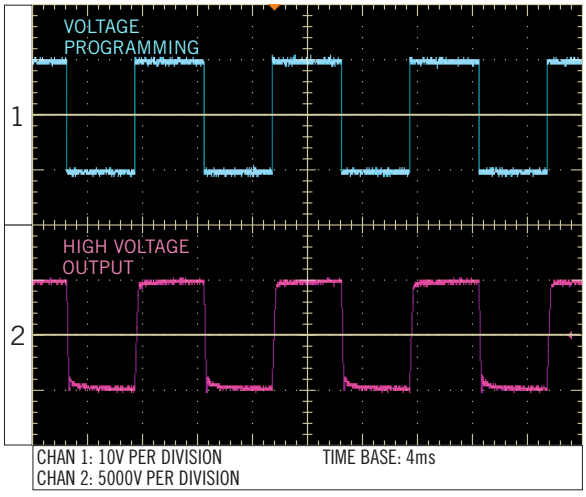


Figure D:
5HVA24-BP1 Square Wave Input

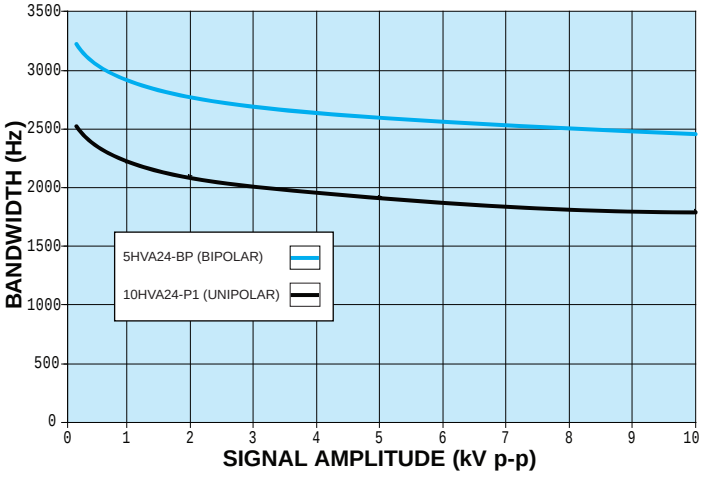


Figure E:
Bandwidth vs. Signal Amplitude with No Load

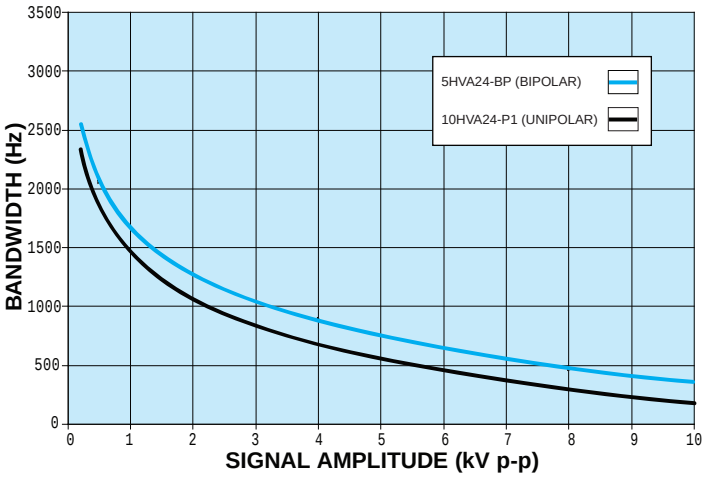
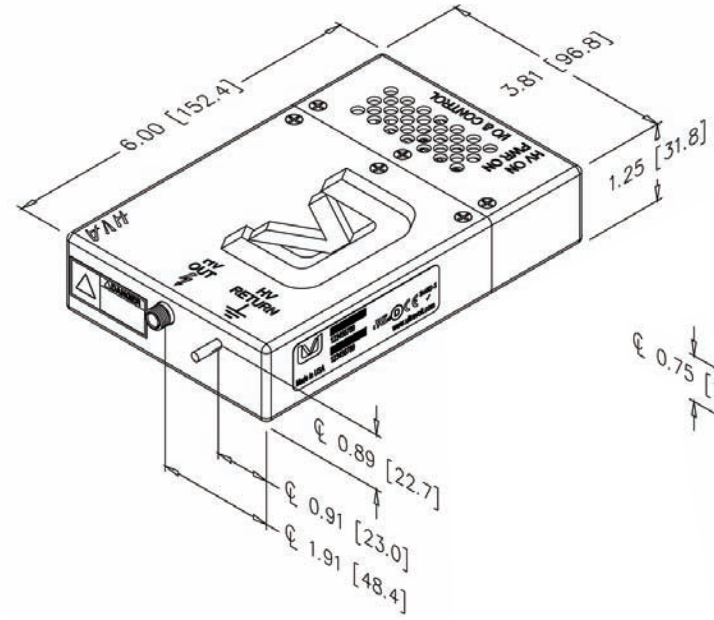


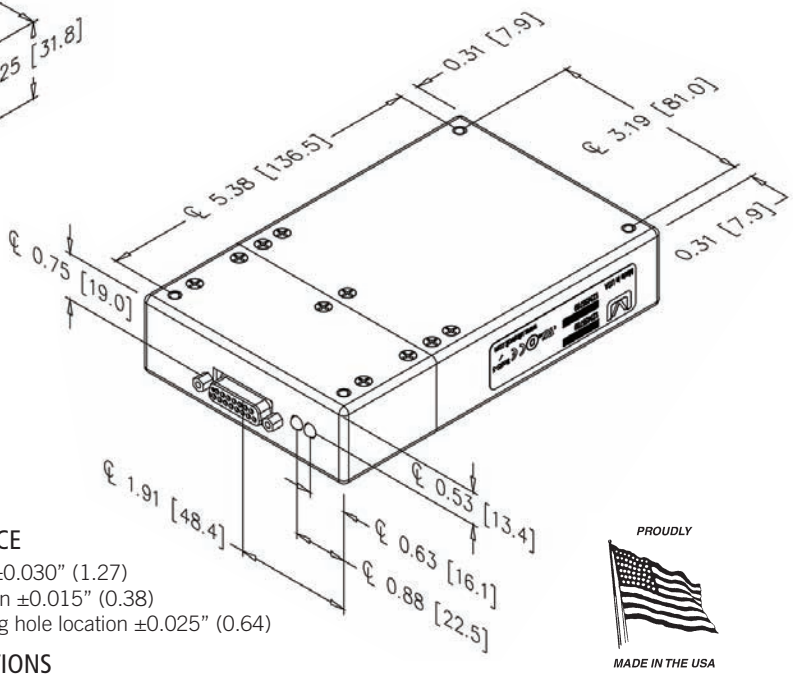
Figure F:
Bandwidth vs. Signal Amplitude with 100pF Load

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 in³ (468.34cc)
Weight 1.5 lbs. (0.68kg)

TOLERANCE

Overall ±0.030" (1.27)
Pin to Pin ±0.015" (0.38)
Mounting hole location ±0.025" (0.64)

CONNECTIONS

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

PROUDLY

MADE IN THE USA

RoHS COMPLIANT

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 ±10V represents 0 to ± 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 ±10V represents 0 to ± 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**
Connections	LGH	**Standard**
	5kV SHV Type	**-SHV-5kV**
	10kV, BNC Type	**-BNC-10kV**

Example: 1HVA24-P1
Voltage
Model
Input
Polarity
Power

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

Rev. C 9/10

HV RACK® SERIES

Rack Mount High Voltage Power System

The HV Rack power system is a fully featured, configurable chassis, enabling end users to select and to specify the UltraVolt high-voltage power supply (HVPS) operating in each channel from UltraVolt's catalog of more than 600 models. This combination provides accurate control and measurement of high-voltage power supply and HV system performance.

- 1 to 4 configurable high-voltage output channels
- Voltage ranges from 0 to 62VDC through 40kV
- 4 to 250 watts per channel, up to 1000 watts total
- Independent control & monitoring of each channel
- Voltage and Current meters for each channel
- Constant current / Constant voltage auto-crossover
- Pre-set before & during bias capability
- PLC Analog/Digital Remote operation capability

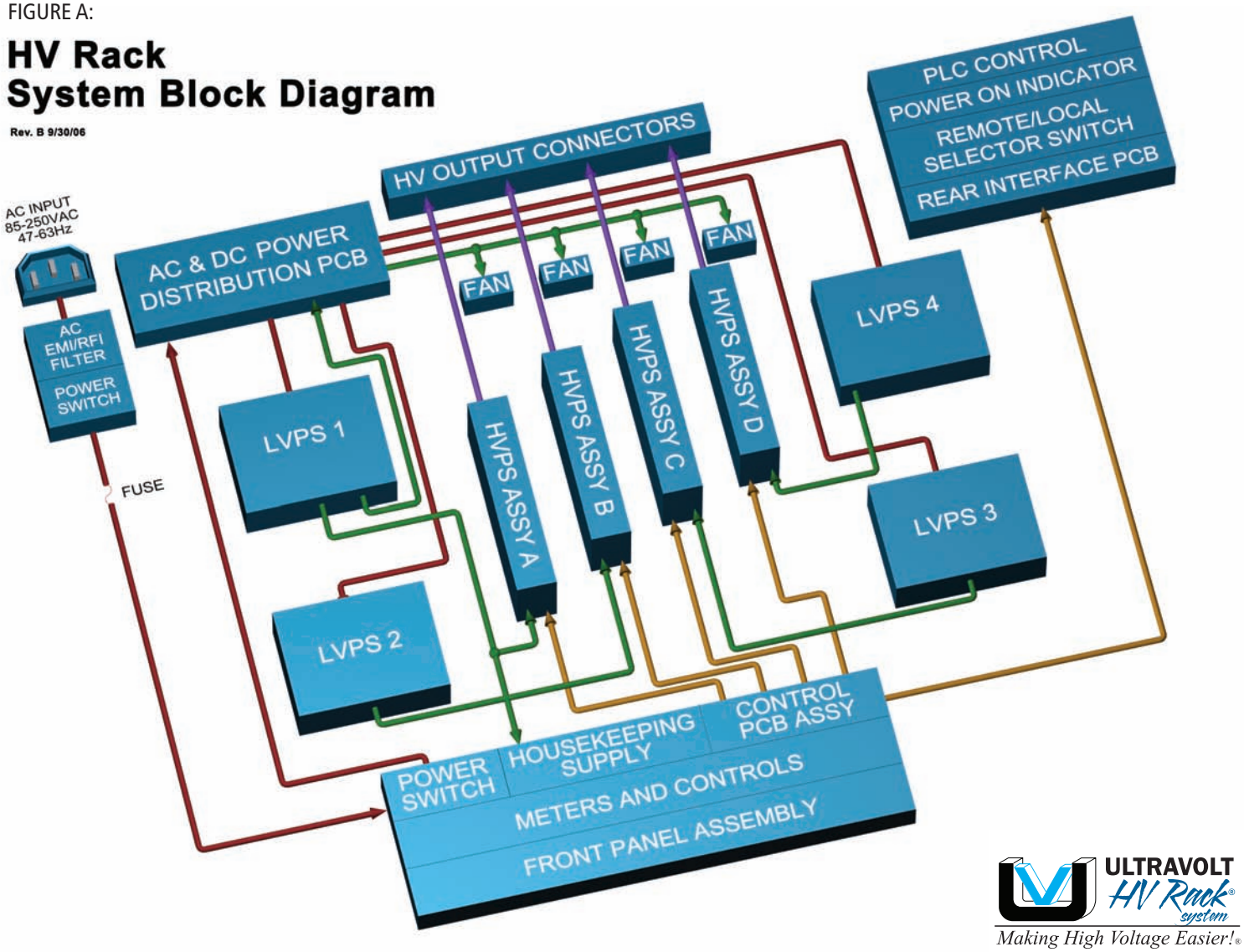
PARAMETER	CONDITIONS	MODELS			
AC INPUT		HV RACK X-250	HV RACK X-500	HV RACK X-750	HV RACK X-1000
Voltage	Full Power, Autoswitching	115/230VAC, 50/60Hz	115/230VAC, 50/60Hz	230VAC, 50/60Hz	230VAC, 50/60Hz
Power	120VAC, Max Eout , Full Load	375W	750W	N/A	N/A
Power	240VAC, Max Eout , Full Load	375W	750W	1125W	1500W
REMOTE CONTROL		ALL MODELS			
Enable	All Channels	TTL high to enable, low to disable (DEFAULT IS DISABLE)			
V Control	All Channels	0V to 4.64V = 0V to 100% HV out (5V = 108% HV out)			
HV Monitor	All Channels	0V to 4.64V = 0V out to 100% V out (5V = 108% V out)			
I Control	All Channels	0V to 4.64V = 0A to 100% Io (5V = 108% Io)			
I Monitor	All Channels	0V to 4.64V = 0A to 100% Io (5V = 108% Io)			
Reference Out	All Channels	5V precision voltage reference returned to signal ground			
LVPS Out	One Signal, PTC Fused	+15V±10%, 0 to 100mA			
Power Ground	One Signal	Return of LVPS Out			
Global Disable	One Signal	TTL signal disables all Channels, low to enable, high to disable (DEFAULT IS ENABLE)			
OUTPUT METERS		TYPE OF CHANNEL		TOLERANCE	
Voltage	4½ Digit Red LED	All		1% Full Scale	
Current	3½ Digit Blue LED	All		5%/1% Full Scale	
TEMPERATURE		ALL MODELS			
Operating	Full Load, Max Eout, Case Temp.	+10°C to +45°C			
Storage	Non-Operating, Case Temp.	-40°C to +85°C			
		Extended temperature operation is available, please contact the factory.			
ALTITUDE		ALL MODELS			
Operating	Standard Package	0 to 10,000 ft			
Storage	Standard Package	0 to 50,000 ft			
HUMIDITY		ALL MODELS			
Operating	Standard Package	0 to 95% non-condensing			
Storage	Standard Package	0 to 95% non-condensing			
PACKAGING		ALL MODELS			
Chassis Length	Not including mounting feet	18.5in (469.9mm)			
Chassis Width	Not including mounting feet	17.0in (431.8mm)			
Chassis Height	Not including mounting feet	5.0in (127.0mm)			
Front Panel Length	Not including handles or controls	19.0in (482.6mm)			
Front Panel Width	Not including handles or controls	0.125in (3.18mm)			
Front Panel Height	Not including handles or controls	5.25in (3U or 133.35mm)			
Weight	Overall (configuration dependent)	~ 30 lbs (11.2kg)			
Weight	Shipping (configuration dependent)	~ 40 lbs (14.93kg)			

Specifications subject to change without notice.

HV RACK® SERIES

Rack Mount High Voltage Power System

FIGURE A:



ULTRAVOLT HV Rack® system

Making High Voltage Easier!®

1800 Ocean Avenue, Ronkonkoma, NY 11779
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HV RACK® SERIES

Rack Mount High Voltage Power System

FIGURE B: FRONT PANEL

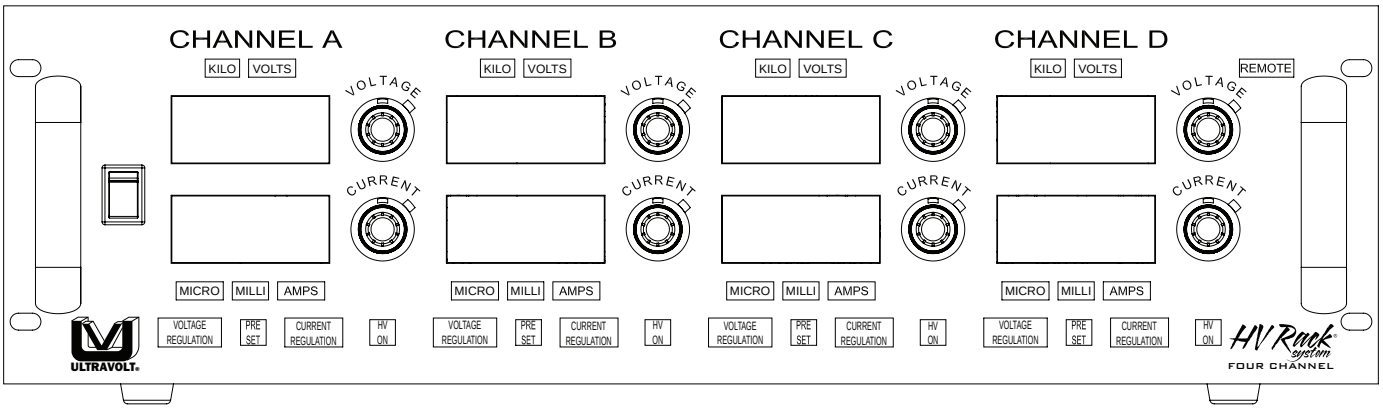
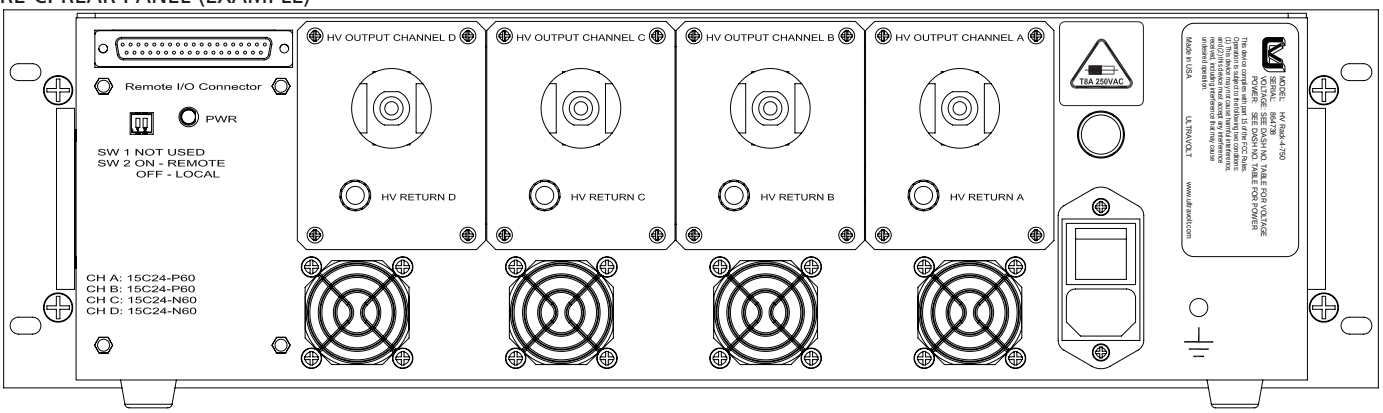


FIGURE C: REAR PANEL (EXAMPLE)



STANDARD HV CONNECTOR:

- Alden B110YX10 (one per channel)

CURRENTLY AVAILABLE OPTIONS:

- USB Interface (USB-HV-RACK)
- Floating/Isolated Channels
- SHV Connectors
- Amp Connectors
- Fischer Connectors
- Alden Connectors
- Caton Connectors
- Parker Medical Connectors
- Removable Mounting Feet
- Mounting Slides

ORDERING INFORMATION	
TYPE:	DESCRIPTION:
HV Rack-1-250	19" HV Rack with (1) set of meters & controls with 300 watts of LV power configured for: One UltraVolt HVPS 250W max output.
HV Rack-2-250	19" HV Rack with (2) sets of meters & controls with 300 watts of LV power configured for: Two UV HVPS 250W max combined output.
HV Rack-2-500	19" HV Rack with (2) sets of meters & controls with 600 watts of LV power configured for: Two UV HVPS 500W max combined output.
HV Rack-3-250	19" HV Rack with (3) sets of meters & controls with 300 watts of LV power configured for: Three UV HVPS 250W max combined output.
HV Rack-3-500	19" HV Rack with (3) sets of meters & controls with 600 watts of LV power configured for: Three UV HVPS 500W max combined output.
HV Rack-3-750	19" HV Rack with (3) sets of meters & controls with 900 watts of LV power configured for: Three UV HVPS 750W max combined output.
HV Rack-4-250	19" HV Rack with (4) sets of meters & controls with 300 watts of LV power configured for: Four UV HVPS 250W max combined output.
HV Rack-4-500	19" HV Rack with (4) sets of meters & controls with 600 watts of LV power configured for: Four UV HVPS 500W max combined output.
HV Rack-4-750	19" HV Rack with (4) sets of meters & controls with 900 watts of LV power configured for: Four UV HVPS 750W max combined output.
HV Rack-4-1000	19" HV Rack with (4) sets of meters & controls with 1200 watts of LV power configured for: Four UV HVPS 1000W max combined output.

The entire HV Rack system's part number must include the complete part number of each UltraVolt HVPS to be installed. The following are examples of complete HV Rack system part numbers:

HV Rack-1-250: A=1C24-P125
HV Rack-2-250: A=15C25-P125, B=10A24-N30-F-M
HV Rack-3-250: A=30A24-N30-F-M, B=10A24-P15-F-M, C=2A12-P4-F-M
HV Rack-4-1000: A=1C24-P250, B=1C24-N250, C=1/2C24-P250, D=1/2C24-N250

The sum of the output power capability of the modules cannot exceed the total rack power capability.

PROUDLY

MADE IN THE USA

Rev. H 8/10

BT SERIES

AC-DC High Voltage Bench-top Power System

The compact, high-voltage BT Series of AC-DC bench-top high voltage power systems with adjustable output voltage offers stand-alone and remote operation modes. For stand-alone operation, the power system is fitted with front panel controls. For remote operation, it can be configured with analog controls or digital controls such as a serial interface supporting a RS232/ RS485 serial port.

The BT Series houses a high-voltage power supply from UltraVolt's line of microsize/micropower products.

- Configurable from 0 to 100V through 0 to 6kV
- 100mW to 6W of output power
- Universal 85-264VAC input
- Bench-top configuration
- Single positive or negative output
- A wide range of outputs
- Current and/or voltage monitoring
- Available in either analog or digital versions
- Protection against overload, short circuit and arc

PARAMETERS	SPECIFICATIONS
Input voltage	Universal 85-264 VAC
ON/OFF controls	Switch on rear panel
Output voltage	0 to 100V through 0 to 6kV, depending on model
Output power	0 to 100mW through 0 to 6W, depending on model
Polarity	Positive or negative, depending on model
Load voltage regulation	± 0.01% of full output voltage for no load to full load
Max. output current	Limited to 110% of nominal current
Load voltage regulation	±0.01% of full output voltage for no load to full load
Line voltage regulation	± 0.01% of full output voltage over specified input voltage range
Temperature coefficient	100ppm/°C or better, depending on model
Safeguards	Screw plug for grounding on rear panel

PARAMETERS	LOCAL MODE MONITORING	REMOTE MODE SPECIFICATIONS	
		DIGITAL VERSION	ANALOG VERSION
Local / remote mode High Voltage ON/OFF Voltage setting	via front panel controls	• via RS 232	via analog signals on SUBD9 connector on rear panel

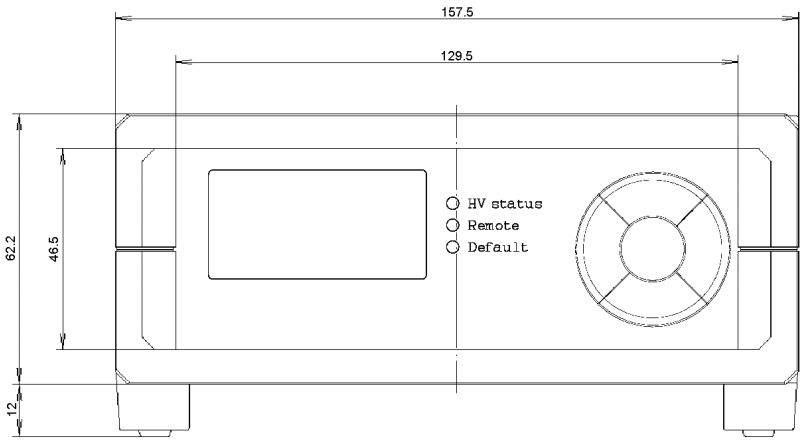
PARAMETERS	LOCAL MODE MONITORING	REMOTE MODE SPECIFICATIONS	
		DIGITAL VERSION	ANALOG VERSION
Output voltage monitoring Output current monitoring (only available with some models)	on LCD display on front panel	• via RS 232	via analog signals on SUBD9 connector on rear panel

Specifications subject to change without notice.

BT SERIES

AC-DC High Voltage Bench-top Power System

FRONTVIEW



CONSTRUCTION

High quality ABS material
Insulation: fully potted in an epoxy resin

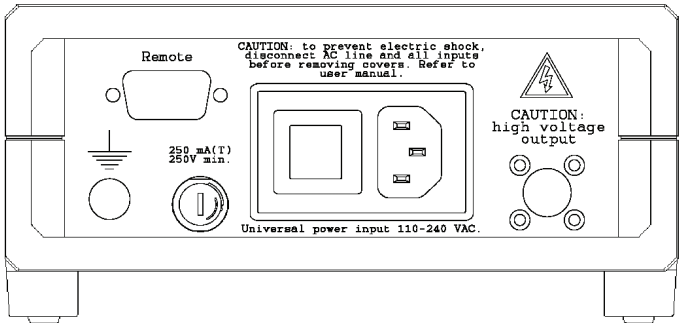
SIZE

Dimensions:
7.83 L x 6.2 W x 2.9 H in (199.0 L x 157.5 W x 62.2 H mm)
With feet extended - rises 10°, height of entire unit with feet is 4.0in (101.6mm)

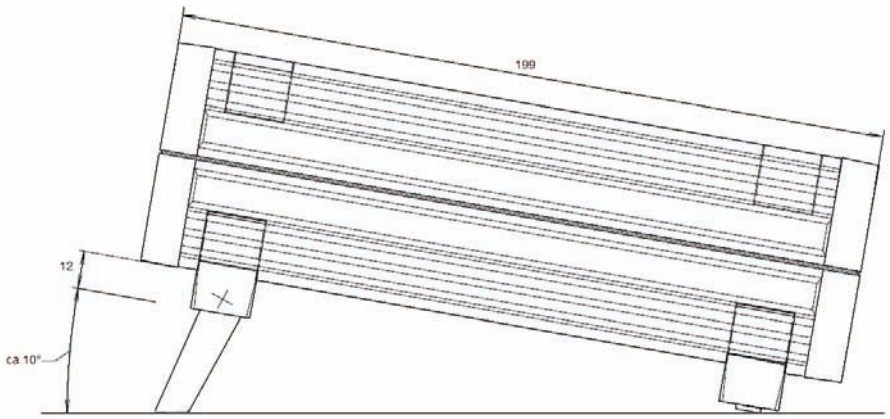
NOTES

IEC 320 type AC connector fuse (500mA) on rear panel
Secured HV BNC connector on rear panel
For further electrical specifications, please refer to the corresponding microsize product data sheet that will be housed in the BT Series box.

BACKVIEW

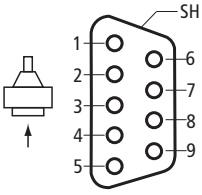
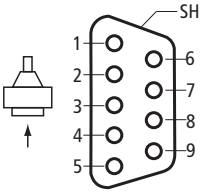


SIDEVIEW

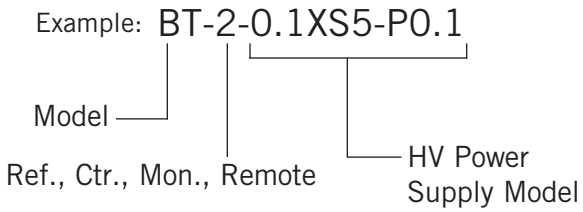


BT SERIES

AC-DC High Voltage Bench-top Power System

I/O CONNECTIONS ON REMOTE CONNECTORS					
DIGITAL RS-232 SUBD9 (ACCORDING TO STANDARD EIA232 DATA COMMUNICATION EQUIPMENT (DCE) STANDARD)			ANALOG REMOTE SUBD9		
SOCKET L DB9 FEMALE  	Data exchange: (transmit data) (receive data)	1. NC	SOCKET L DB9 FEMALE  	Digital ground :	1. D_GND
		2. TX		Inhibition input :	2. HV_ON/OFF
		3. RX		Current monitoring :	3. HVM_C
		4. NC		Voltage monitoring :	4. HVM_V
		5. GND		Reference :	5. REF
	Flow Control: (clear to send) (request to send)	6. NC		Remote mode :	6. LOCAL/DIST
		7. CTS			7. NC
		8. RTS		Analog ground :	8. A_GND
		9. NC		Voltage control input :	9. HVC_V
	Shielding:	SH. Shield		Shielding:	SH. Shield

ORDERING INFORMATION		
Model	Series name	**BT**
Input	85-264VAC	**(Standard)**
Reference, Control, Monitoring (valid only for the analog version)	2.5 VDC	**2**
	4 VDC	**4**
	5 VDC	**5**
	10 VDC	**10**
Remote interface (valid only for the digital version)	RS232	**RS**
HV Power Supply Model	Configurable with microsize/micropower product line (XS, US, V, M, & D Series)	**See product datasheets for part numbers**



RoHS COMPLIANT

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

Rev. B 8/10

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FL SERIES

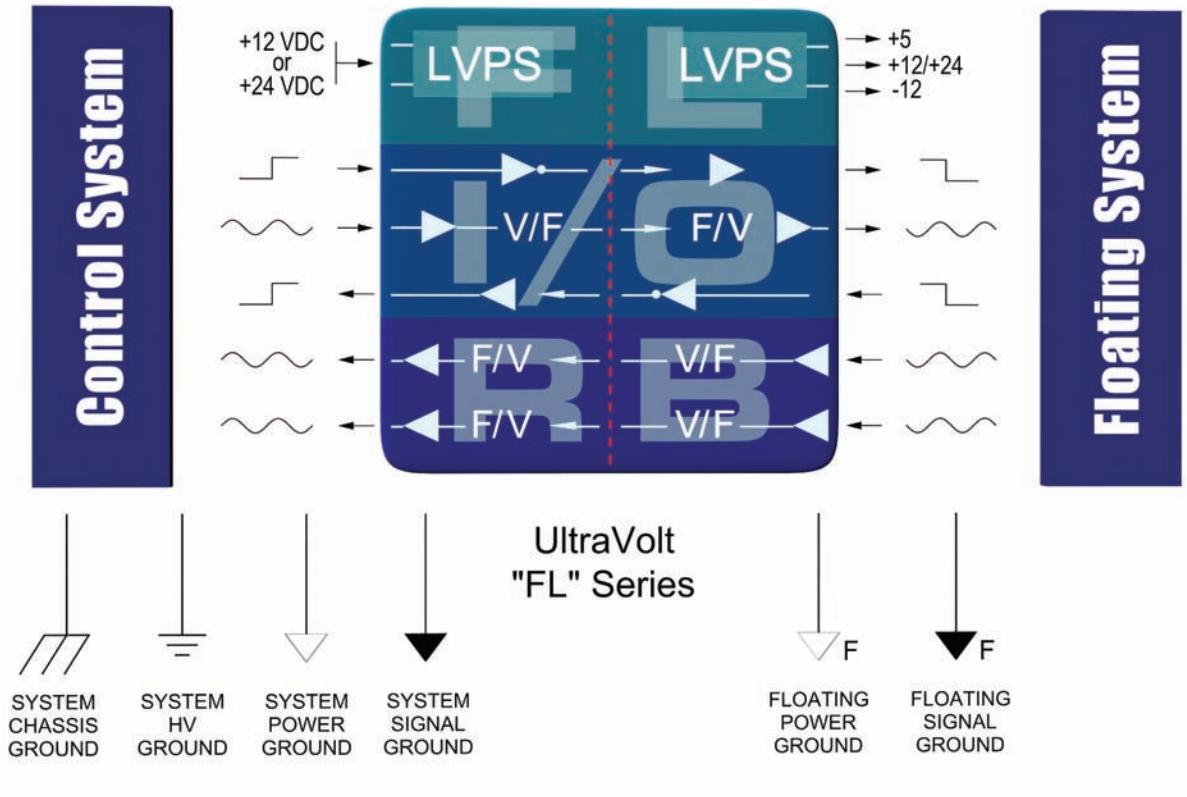
Floating Hot Deck LVPS With Isolated Digital and Analog I/O

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 Pulsers & Gated Grids
- Floating High Side Current Monitors
- Floating Filament Bias
- Floating Capacitance Meters
- 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.

FL SERIES

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

PARAMETER	CONDITIONS	MODELS		UNITS
INPUT POWER:		**12V MODELS**	**24V MODELS**	
Voltage Range	Full Power	+12 ± 5%	+24 ± 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
LOCAL CONTROLS: REFERENCE		**ALL TYPES**		
Output Voltage	T = +25°C, Initial value	+5.1 ± 1%		VDC
Output Impedance	T = +25°C	464 ± 1%		Ω
Stability	Over full temperature range	0.2		mV/°C
LOCAL CONTROLS: LVPS ENABLE / DISABLE		**ALL TYPES**		
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 ± 0.2 (Isink 1mA minimum)		VDC
INPUT / OUTPUT ISOLATION:		**12V MODELS**	**24V MODELS**	
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
ISOLATED POWER OUTPUTS:		**15FL12-12W**	**15FL24-24W**	
Output #1 Power	Nominal input, max Iout	12	24	W
Output #1 Voltage	Nominal input voltage range	+12 ± 2%	+24 ± 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 ± 1	-15 ± 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 ± 5%	+5.6 ± 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
ISOLATED CONTROLS: TTL CHANNEL "UP"		**ALL TYPES WITH "-I/O" OPTION**		
Local input	Source voltage, sink current	10MΩ internal pull up to +15V <1V low, >2.5V high		VDC
Isolated output	Inverted & buffered TTL	Open collector with internal 1kΩ pull up to +5V Can sink 10mA max		VDC
Baud Rate	Varying duty cycle	DC to >300		kHz
ISOLATED CONTROLS: ANALOG CHANNEL "UP"		**ALL TYPES WITH "-I/O" OPTION**		
Local input voltage	Range	0 to + 5		VDC
Local input impedance		10 Meg		Ω
Isolated output voltage	Range	0 to + 5		VDC
Isolated output impedance		Buffered low impedance		-
Initial offset error		< ± 1%		mV
Gain error	Full scale	< ± 2%		VDC
Linearity error	0 to full scale	< ± 1%		VDC
Stability	30 min. warm-up, per 8 hrs / per day	< 0.01% / < 0.02%		VDC
Temperature Coefficient	0 to +55°C	< ± 50		ppm/°C
Bandwidth	Symmetric or asymmetric signal	DC to 30 (-3dB point is 47 Hz)		Hz

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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	10MΩ internal pull up to +15V <1V low, >2.5V high		VDC
Local output	Inverted & Buffered TTL	Open collector with internal 1kΩ 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		Ω
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		Ω
Initial offset error	Signal source	< ± 5		mVDC
Gain error	Full scale	< ± 1%		VDC
Linearity error	0 to full scale	< ± 1%		VDC
Stability	30 min. warm-up, per 8 hrs / per day	< 0.01% / < 0.02%		VDC
Temperature Coefficient	-20 °C to +55 °C	< ± 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 (Vacuum may require -P1 or -S1 options, contact factory for details.)		
Storage	Non-operating	Sea level to Vacuum (Vacuum may require -P1 or -S1 options, contact factory for details.)		
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

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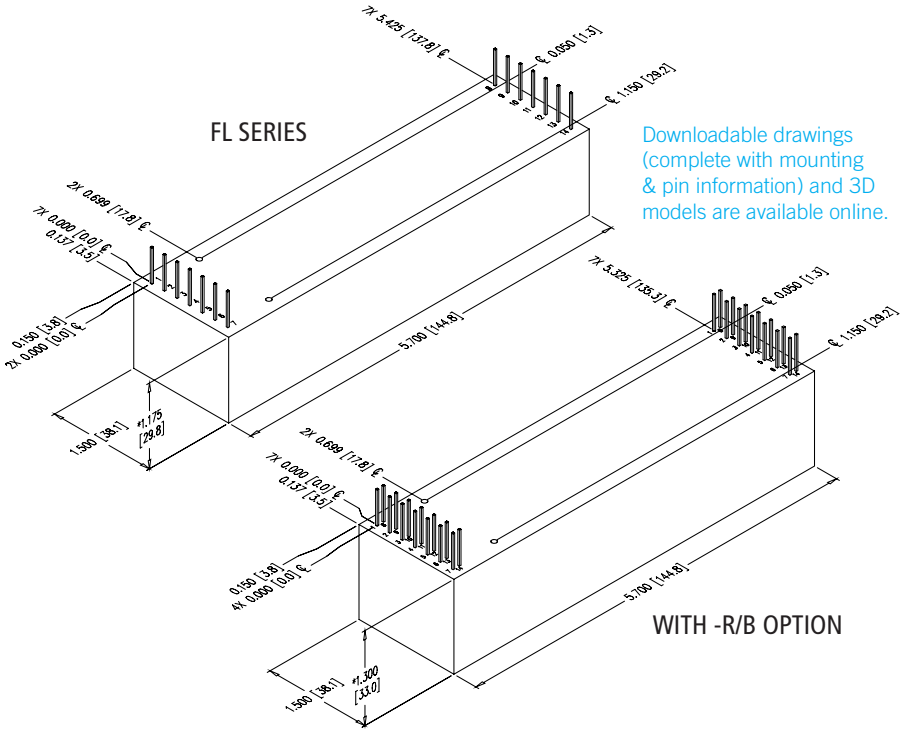

Downloadable drawings (complete with mounting & pin information) and 3D models are available online.

CONSTRUCTION

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

SIZE

Volume: Standard: 10 in³ (163.9cc)
-R/B Option: 11.1 in³ (182cc)

Weight: Standard: 12.0 oz (340.2g)
-R/B Option: 13.3 oz (377.1g)

TOLERANCE

Overall ±0.050" (1.27)
Pin to Pin ±0.015" (0.38)
Mounting hole locations ±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.

IEC-60950-1

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

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 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)

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 Voltage	12VDC Nominal	**12**
	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	**-R/B**
	Partial Mu-Metal Shield	**-M**
Case	Plastic Case - Diallyl Phthalate	**Standard**
	'Eared' Chassis Mounting Plate	**-E**

PROUDLY

MADE IN THE USA

Example: 15FL12-12W-I/O

Type — Isolation — Model — Input — Power — Option

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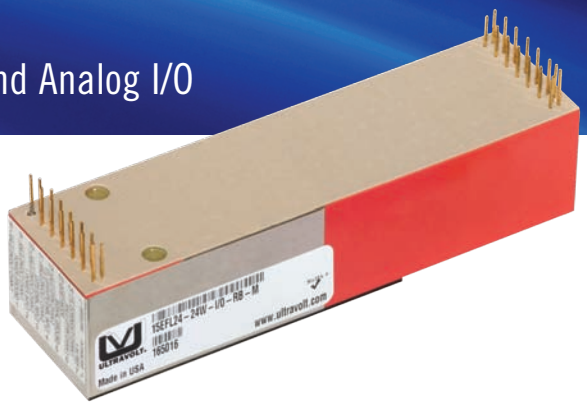
EFL SERIES

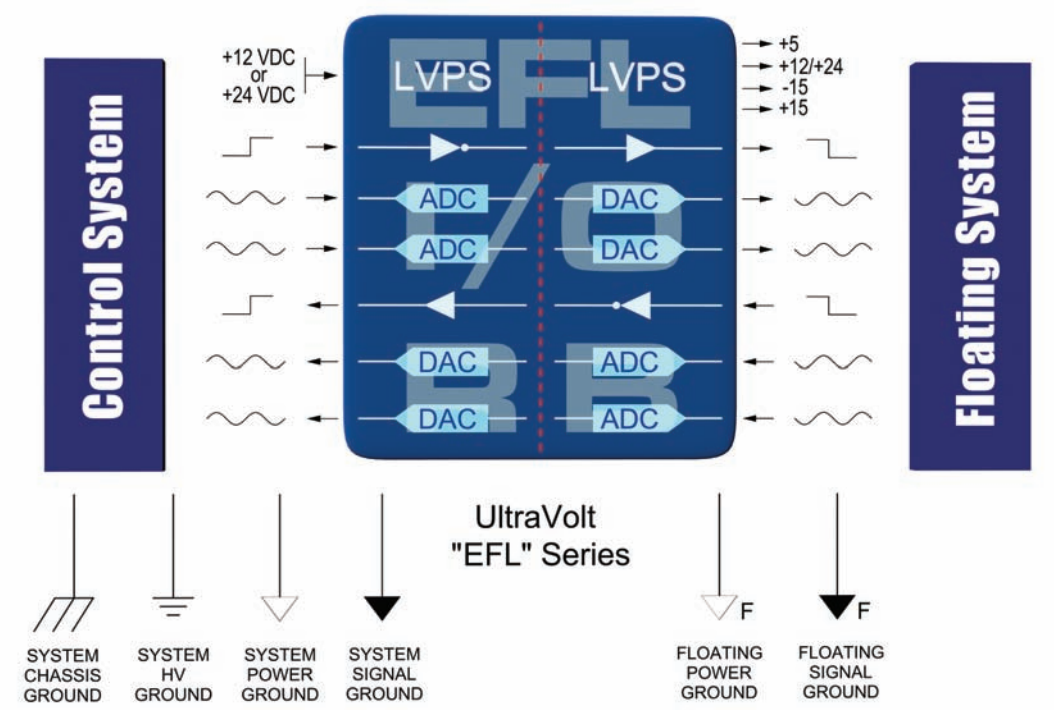
Enhanced Floating Hot Deck LVPS With Isolated Digital and Analog I/O



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 ±0.05% and accuracy of ±0.2%
- 10ppm temperature coefficient
- Isolated up to 15kV
- DC leakage current of <10nA
- 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 400uA.

Specifications subject to change without notice.

EFL SERIES

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

PARAMETER	CONDITIONS	MODELS			UNITS
INPUT POWER		**12W MODELS**	**24W MODELS**	**36W MODELS**	
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 ± 1%			VDC
Output Impedance	T = +25°C	464 ± 1%			Ω
Stability	Over full temperature range	0.2			mV/°C
LOCAL CONTROLS: LVPS ENABLE / DISABLE		**ALL TYPES**			
Power supply on	Open, or a voltage above TTL high	+2.4 to 5			VDC
Power supply off	Grounded, or a voltage below TTL low	0 to + 0.7 ± 0.2 (Isink 1mA minimum)			VDC
INPUT / OUTPUT ISOLATION:		**ALL TYPES**			
Isolation Voltage	Continuous	15			kV
Leakage Current	All inputs to all outputs	< 10			nA
Leakage Capacitance	All inputs to all outputs	< 40 std, < 50 "-E"			pF
ISOLATED POWER OUTPUTS:		**15EFL12-12W**	**15EFL24-24W**	**15EFL24-36W**	
Output #1 Power	Nominal input, max Iout	12	24	36	W
Output #1 Voltage	Nominal input voltage range	+12 ± 1%	+24 ± 1%	+24 ± 1%	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	< 0.1 %	< 0.25 %	< 0.25 %	VDC
Output #1 Ripple	Full load	< 2.5 %	< 1.5 %	< 1.5 %	V p-p
Output #2 & #4 Voltage	Nominal input voltage range	±15 ± 2 %	±15 ± 2 %	±15 ± 2 %	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	< 0.1 %	< 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 or open collector)			VDC
Isolated output	Inverted & buffered TTL	1 ≥ 2.4, 0 ≤ 0.4 ± (Sources 0.8 mA, Sinks 3 mA)			VDC
Baud Rate	Duty cycle	< 15			ms
ISOLATED CONTROLS: ANALOG CHANNEL "UP"		**12V MODELS**	**24V MODELS**		
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

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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 or open collector)	VDC
Local output	Inverted & Buffered TTL	1 > 2.4 (Sources 0.8mA) 0 < 0.4 (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:	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 (Vacuum may require -P1 or -S1 options, contact factory for details.)	
Storage	Non-operating	Sea level to Vacuum (Vacuum may require -P1 or -S1 options, contact factory for details.)	
SHOCK & VIBRATION:		ALL TYPES	
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

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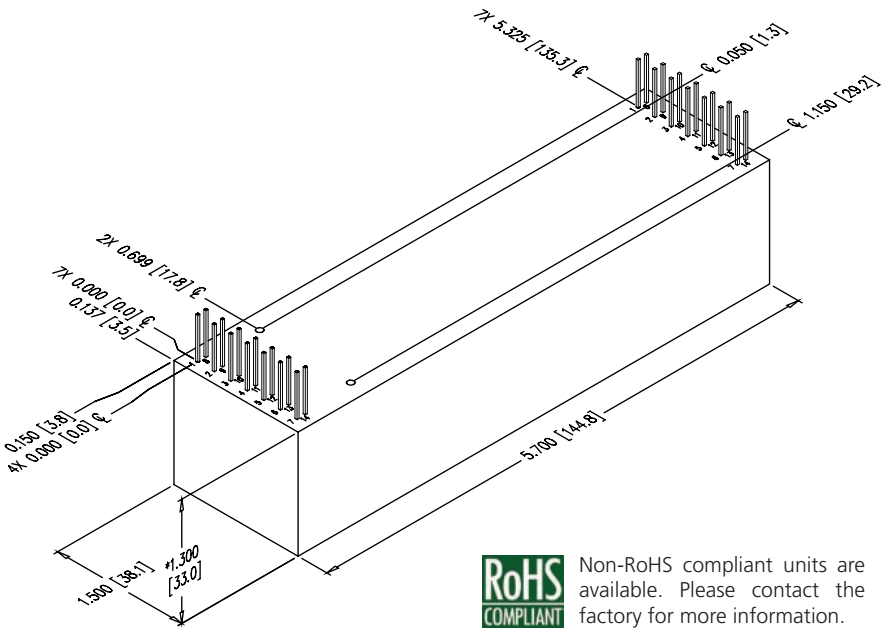
EFL SERIES

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



RoHS COMPLIANT

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

CONSTRUCTION

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

SIZE

Volume:
All Types: 11.1 in³ (182cc)

Weight:
All Types: 13.3 oz (377.1g)

TOLERANCE

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

NOTES

24-watt and 36-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.

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

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

ORDERING INFORMATION		
Type	15kV Isolation	**15EFL**
Input Voltage	12VDC Nominal	**12**
	24VDC Nominal	**24**
Power	Watts Output (12 V Only)	**-12W**
	Watts Output (24 V Only)	**-24W**
	Watts Output (24 V 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	**-E**

Example: 15EFL12-12W-I/O-R/B

Type — Isolation
Model
Input
Power

Rev. D 10/10

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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
INPUT		**ALL TYPES**	
Operating Range	All Conditions	+24 ± 10	VDC
Current	Full Load Output	900mA Typical	mA
OUTPUT		**ALL TYPES**	
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
PROGRAMMING & CONTROLS		**ALL TYPES**	
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
ENVIRONMENTAL		**ALL TYPES**	
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 (Vacuum may require -P1 or -S1 options, contact factory for details.)	-
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

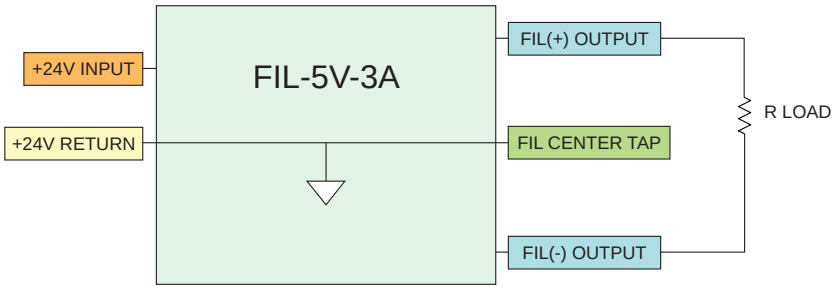
Specifications subject to change without notice.

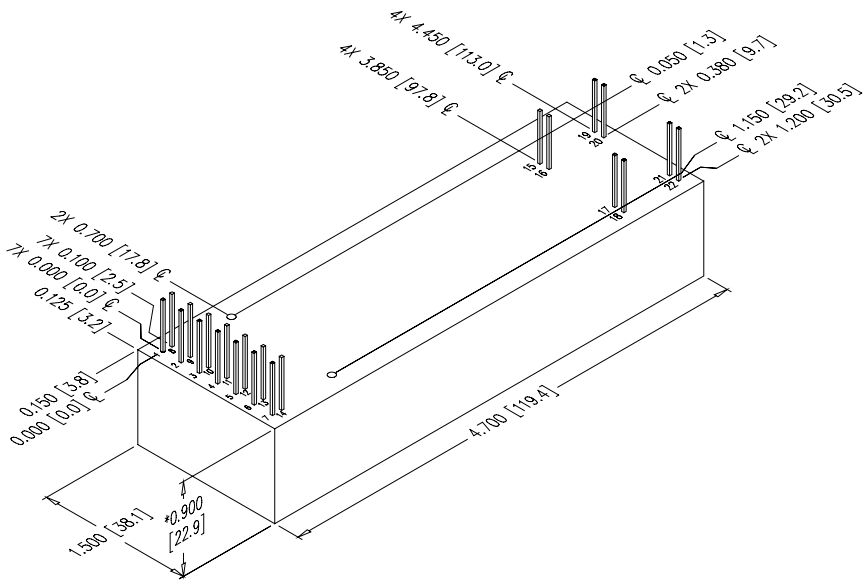
FIL SERIES

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 in³ (104cc)
Weight:
6.75 oz (191g)

TOLERANCE

Overall ±0.050" (1.27)
Pin to Pin ±0.015" (0.38)
Mounting hole locations ±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.

PROUDLY

MADE IN THE USA

RoHS COMPLIANT

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

Model
Output Voltage
Output Current
Option (Mu-Metal)

Rev. C 8/10

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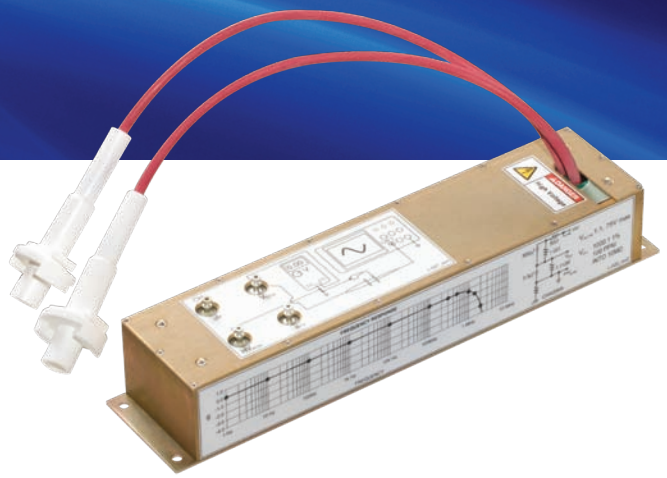
TF SERIES

High Voltage Test Fixture



The TF Series product line is designed to support the need to make accurate measurements of high-voltage power supply (HVPS) & HV system performance. These reduced-size HV test fixture devices can be used for research and development, incoming inspection, production testing, field testing, or calibration. Each TF Series device, when coupled with a conventional meter or oscilloscope, is a stand-alone test fixture optimized for a specific HV testing function. The TF Series is engineered to support accurate measurement of ripple, noise, pulses, absolute DC, DC stability, DC line regulation, DC load regulation, etc.

- Make accurate HV in-line measurements
- View and measure AC ripple & noise on DC HV
- Measure absolute HV DC to 0.25% @ 25 PPM stability
- View and measure T_{rise}, T_{fall}, overshoot & settling time
- Measure & monitor signals from 35Hz to 10MHz
- View signals from DC to 20MHz
- View and measure AC mV on DC kV
- PLC Analog/Digital Remote operation capability

KEY FEATURES:

The UltraVolt TF Series models all feature dual Alden B110YX10 HV connectors. These connectors facilitate in-line measurements as well as un-terminated measurements. Internal ARC limiting / softening resistors are present for safety. All TF models have the HV ground return connection isolated from the chassis ground connection by 100 kW and clamped by a protection device.

SPECIFICATIONS:

All specifications are subject to change without notice. UltraVolt will enhance specifications whenever possible, through continuous product and process improvement efforts. Customers are not contacted when changes are made unless they have arranged for configuration control with UltraVolt's customer service department ("CSD") through the "-Q" suffix program. Only the most significant items will be noted on UltraVolt's web site, in the product change notice section.

ALTITUDE, HUMIDITY & TEMPERATURE:

The TF Series operating performance is guaranteed between sea level and 10,000ft., in non-condensing relative humidity up to 95%, and between temperatures of -40°C to +65°C. Storage temperature range is -55°C to +105°C.

TF SERIES MODELS:

"Precision Divider": 40TF-DCD

A 40kV rated HV Test Fixture that features a precision 10,000:1 DC divider ("DCD") with a full scale accuracy of ±1%, a temperature stability of better than ±25 ppm per °C, and a voltage coefficient of < 1% per 40,000 volts. DC Loading is 1 GigW. Capacitive loading is < 10pF.

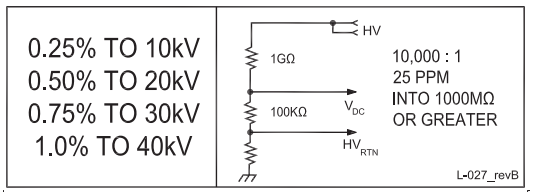


Fig. A - Frequency Response (Precision Divider)

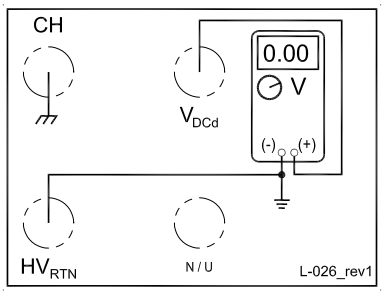


Fig. B - Electrical Connections (Precision Divider)

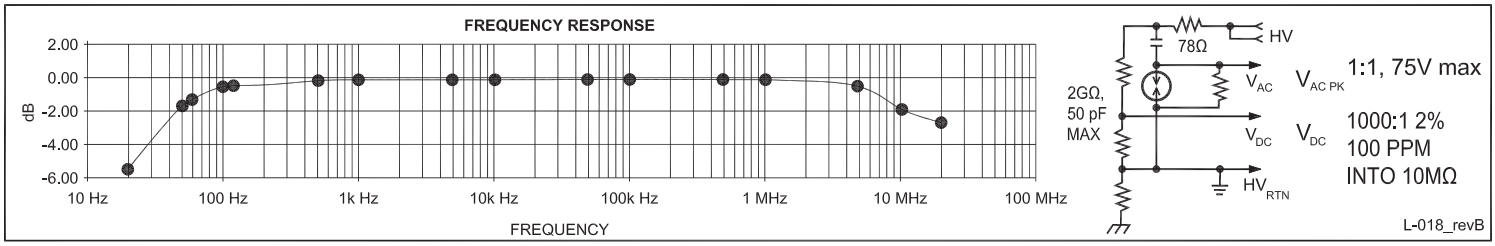
⚠ WARNING! A shock hazard exists when the chassis ground or the HV return ground is not properly connected! ⚠

Specifications subject to change without notice.

TF SERIES
High Voltage Test Fixture

"Ripple & Voltage Monitor": 40TF-ACV&DCD

A 40kV rated HV Test Fixture that features a 1:1 AC viewing (ACV) capacitor (V_{AC}=95% of V_{AC} input ±5%) providing a bandwidth of 35Hz to 10MHz (Monitor 10Hz to 20MHz) over a signal range of 1mV to 75V Pk, along with a 1,000:1 DC divider ("DCD") with a full scale accuracy of ±2% and a temperature stability of better than ±100 ppm per °C. DC Loading is 2 GigW. Capacitive loading is < 50pF.



Note: It is recommended that the oscilloscope be set for 20MHz BW limit.
Fig. C - Bandwidth & Equivalent Circuit (Ripple & Voltage Monitor)

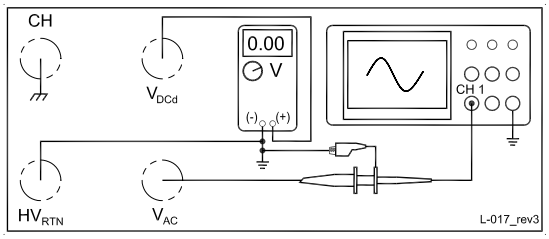
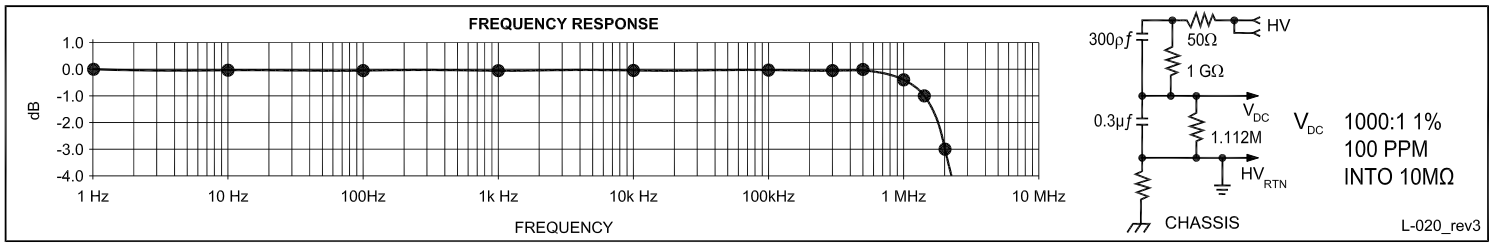


Fig. D - Electrical Connections (Ripple & Voltage Monitor)

⚠ WARNING! A shock hazard exists when the chassis ground or the HV return ground is not properly connected! ⚠

"Compensated Divider": 40TF-CDCD&CLOAD

A 40kV rated HV Test Fixture that features a compensated 1,000:1 Compensated DC Divider ("CDCD") capable of showing T_{rise}, T_{fall}, overshoot & settling over a bandwidth of DC to 2MHz. The unit also functions as a 300pF capacitive load ("CLOAD"). DC Loading is 1 GigW. DC full-scale accuracy is ±2% with temperature stability of better than ±100 ppm per °C.



Note: It is recommended that the oscilloscope be set for 20MHz BW limit.
Fig. E - Bandwidth & Equivalent Circuit (Compensated Divider)

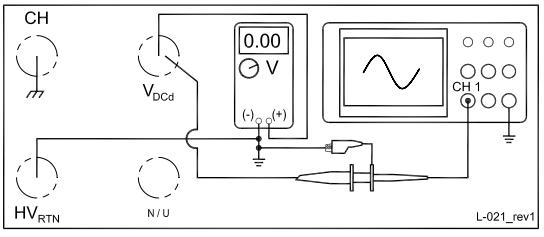


Fig. F - Electrical Connections (Compensated Divider)

⚠ WARNING! A shock hazard exists when the chassis ground or the HV return ground is not properly connected! ⚠

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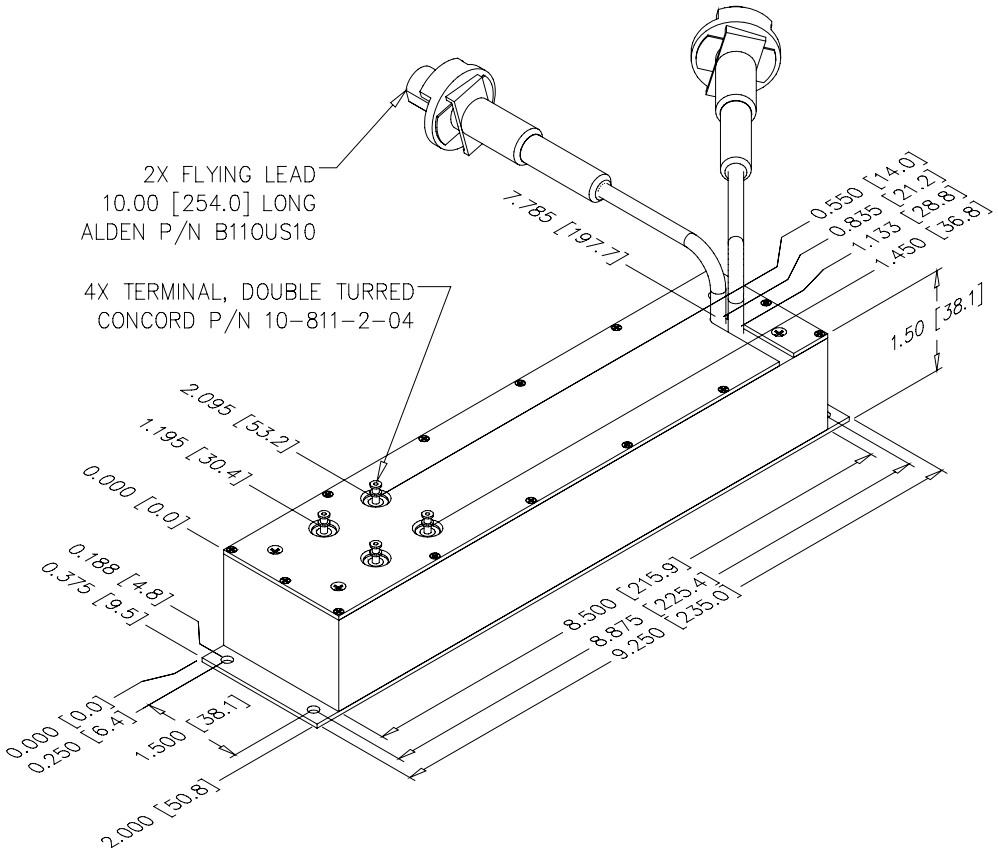
TF SERIES

High Voltage Test Fixture



CONSTRUCTION

Aluminum Box Anodize Gold

SIZE

Volume 27.75in^3 (454.74cc)
Weight 1.65Lbs. (748.43g)

TOLERANCE

Overall ±0.050" (1.27)
Pin to Pin ±0.015" (0.38)

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

PROUDLY

MADE IN THE USA

RoHS COMPLIANT

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

ORDERING INFORMATION	
TYPE	DESCRIPTION
40TF-DCD	Precision divider
40TF-ACV&DCD	Ripple and voltage monitor
40TF-CDCD&CLOAD	Compensated divider

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

Rev. G 6/10

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ULTRAVOLT PRODUCT OPTIONS

-H: HEAT SINK

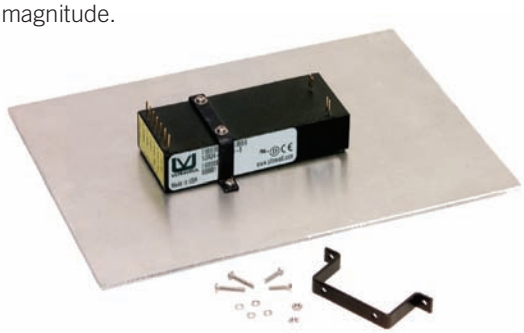
For PCB-mounted A and C Series plastic package units in extended temperature environments.

-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.

-E: "EARED" MOUNTING PLATE

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



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-18: BRACKET KIT

For chassis mounting any AA 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.

-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.

USB-HV-RACK

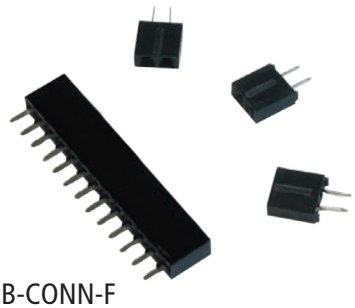
USB control for an HV Rack® system. Enables users to control and monitor an HV Rack system via a PC.

Specifications subject to change without notice.

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

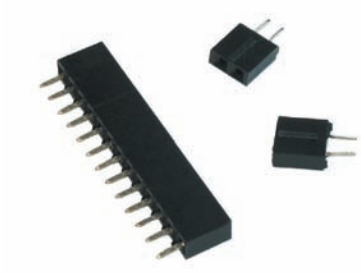


PCB-CONN-F

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

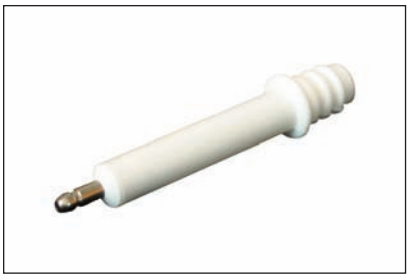
HIGH VOLTAGE CONNECTORS & CABLES

Industry Standard Connectors & Cables

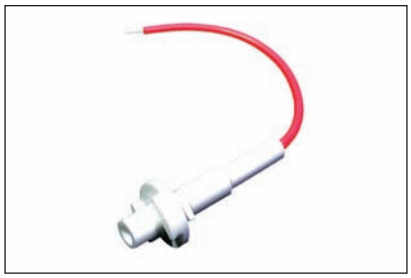
UV Option Part #: -AT20
UV Connector Part #: CN-20KV-1000
Manufacturer: Alden
Manufacturer Part #: A000.140
Mates to: CA-15KV-1000

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

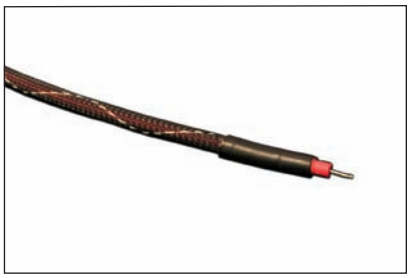
UV Option Part #: -AT50
UV Connector Part #: CN-30KV-1001
Manufacturer: Caton
Manufacturer Part #: 14203-LX
Mates to: N/A



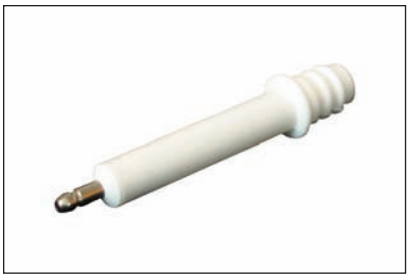
UV Option Part #: -AT21
UV Connector Part #: CN-30KV-1000
Manufacturer: Alden
Manufacturer Part #: F800.165
Mates to: CA-30KV-1001 or CN-35KV-1000



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

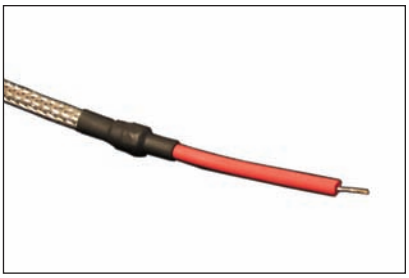


-AP Option
Anode Lead Protective Wrap:
Expandable, non-fraying, braided sleeving over HV flying lead



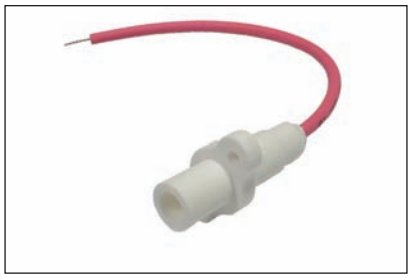
UV Option Part #: -AT23
UV Connector Part #: CN-35KV-1001
Manufacturer: Alden
Manufacturer Part #: F800.187
Mates to: CA-30KV-1001 or CN-35KV-1000

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

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: CA-17205-L4

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

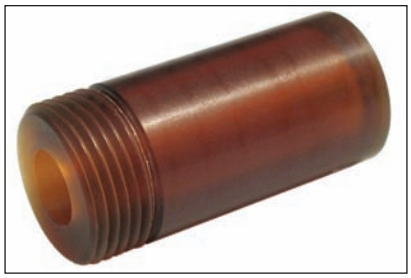
UV Cable Assembly Part #: CA-20KV-1000
Manufacturer: Jetron
Manufacturer Part #: 56-185-14
Mates to: CN-20KV-1001

UV Option Part #: -AT11
UV Connector Part #: CN-15KV-1000
Manufacturer: Amp or Jetron
Manufacturer Part #: LGH1/2L
Mates to: CA-15KV-1001

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-10KV-1000

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

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

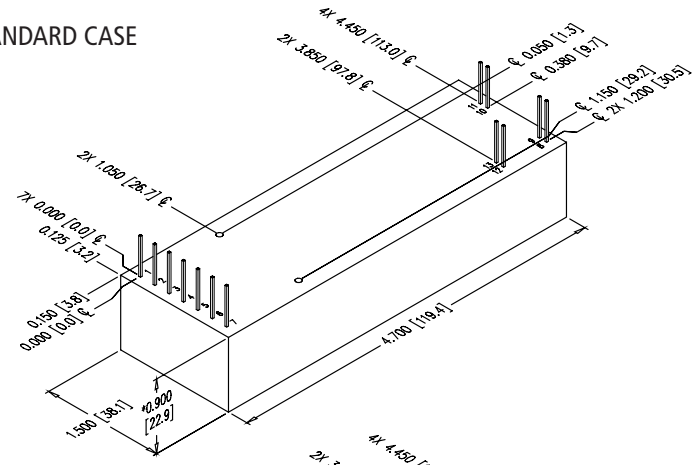
MODEL	VOLTAGE	POWER	WITH -F	WITH -F-M	50% LOWER THAN -F-M RIPPLE W/ EXT. CAP
1/16A12	62V	4W	<0.002%	<0.002%	.5uF / Metal Film
1/16A24	62V	20W	<0.003%	<0.004%	.5uF / Metal Film
1/16A24	62V	30W	<0.006%	<0.006%	.5uF / Metal Film
1/8A12	125V	4W	<0.002%	<0.0048%	.5uF / Metal Film
1/8A24	125V	20W	<0.008%	<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.

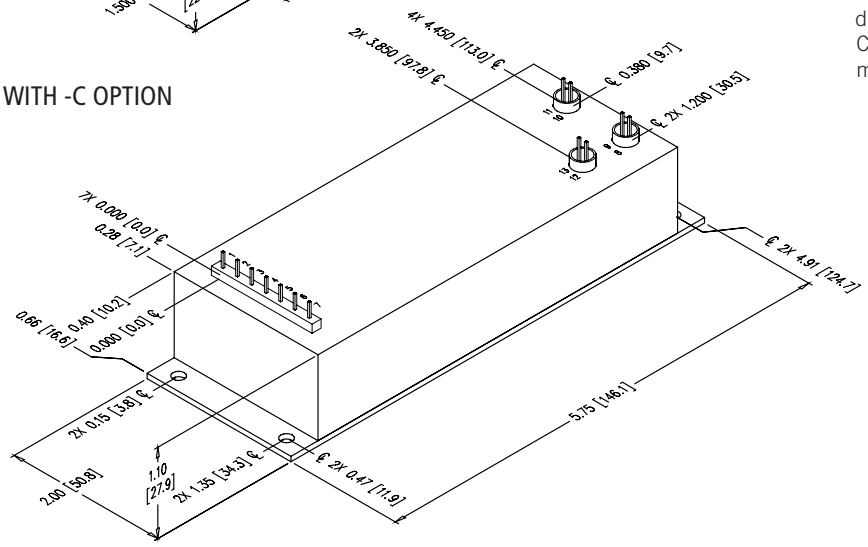
-F OPTION

Ripple Stripper® Output Filter

STANDARD CASE



WITH -C OPTION



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 (70.5 cc), w/ -C Option: 8.00in^3 (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.

IEC-60950-1

PROUDLY MADE IN THE USA

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 & 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.

ORDERING INFORMATION		
Accessory	Ripple Stripper® Output Filter	**-F**
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**
Shield	Six-sided Mu-Metal Shield	**-M**
Output Termination	Optional unshielded flying lead	**-W**

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

Example: 1/2A12-P4-F-M-C

Ripple Stripper® Output Filter
Option (Case)
Option (Mu-Metal Shield)

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

Rev. A 9/10

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.

Aerosol Monitor • Aircraft Simulator Display • Avalanche Photo Diode (APD) • Arc Lamps • Automated Test Equipment (ATE) • Atomic Force Microscopes • Avionics Displays • Bar Code Scanners • Beam Deflection • Bomb Detectors • Burn-in systems • Capacitor Charging • Cable Testers • Cable Thumpers • CAT Scan • Cellular Electropartition • Cellular Electrophoresis • Chemical Analyzer • Channel Electron Multipliers (CEM) • Cold Cathode Lamp • Contraband Detectors • Corona Generators • Cosmic Radiation Monitor • Cathode Ray Tube (CRT) • DC Bus Supply • Deflection Amplifier • Deflection Plates • Deformable Mirror Control • Deposition Systems • Detectors • Detonators • Deuterium Lamp • E-Beam Lithography • E-Beam Welding • EL Lighting • Electro Cauterization • Electro Optics • Electron Microscope • Electrophoresis • Electrorheology • Electrostatic Chucks • Electrostatic Lenses • Electrostatic Painting • Electrostatic Precipitators • Electrostatic Printing • Energy Analyzer • ESD Testing • Femptosecond Lasers • Field Emission Display • Filaments • Film Recorders • Flashlamps • Flir • Gas Discharge Devices • Gas Discharge Tubes • Gas Chromatography • Gene Splicing • Geophysical Tools • Geiger Mueller Tubes • Gravity Meter • Hi Pot Testing • Hollow Cathode Lamps • HV Amplifiers • HVD • Ignitors • Image Intensifiers • Imaging • Infrared Camera • Ink Jet Printing • Ion Beams • Ion Implanters • Ion Microscopes • Ion Mills • Ionization Chamber • Ionization Sensor • Ionizers • Interferometers • Klystron • Lasers • Laser Diode • Laser Disabsorption • Laser Measurement Systems • Laser Range Finder • Laser Scalpel • LCD Back Light • Leak Detector • Leakage Testing • Machine Vision System • Magnetron • Magnetic Quadruple Mass Spectrometer • TOF Mass Spectrometers • Medical Displays • Medical Imagers • Mercury Vapor Lamp • Microchannel Plates • Microwave Switches • Motor Testers • Monochromator • Neutron Generators • Non Destructive Testing • NMR Imaging • Nuclear Medical Imager • Ordinance Triggers • Ozone Analyzer • Ozone Generators • Particle Analyzer • PCB Testers • PFN • Photo Diodes • Phototubes • Plasma • Plasma Welding • Photo Multiplier Tubes (PMT) • Pockell Cell • Pollution Monitors • Powder Coating • Proton Beam • Protein Analyzer • Proportional Counters • Pulse Generators • Pulsed Power • PZT Activators • Q-Switch • Radar • Radiation Monitor • Residual Gas Analyzers • RF Amps • Ring Laser Gyro • Sample Transporter • Scanning Electron Microscopes • Scanning Tunneling Microscope • Security Systems • Signal Tracers • Sit Tubes • Sonar • Spectrometer • Spectrophotometers • Sputtering • Static Control Systems • Streak Camera • Surge Generators • Thyrotrons • Time Domain Resolvers • Time of Flight Mass Spectrometer • Transducers • Transient Generator • Traveling Wave Tube (TWT) • Ultrasonic • Ultrasonic Imaging • Ultrasonic Measurement • UV Lamp

ULTRAVOLT®