

# ULTRAVOLT M SERIES

MINIATURE, MICRO-SIZED HIGH VOLTAGE BIASING SUPPLIES



The miniature, micro-sized M series is the ideal solution for applications requiring biasing voltage ranging from 0 to 3000 V and very small current—only 16.4 cc (1.00 in<sup>3</sup>). Less than 12.7 mm (0.5") high, these modules are ideal for low-profile applications.

## PRODUCT HIGHLIGHTS

- Seven models from 0 to 600, 1000, 1250, 1500, 2000, 2500, or 3000 V
- Output power: 0.5, 0.8, or 1 W
- Tight line/load regulation
- Arc and continuous short circuit protection
- Self-restoring output voltage
- Low cost
- Miniature and lightweight
- Voltage monitoring
- Low ripple (0.01% peak to peak)
- Optional flying lead
- UL/cUL recognized, IEC-60950-1, CE Mark (LVD and RoHS)

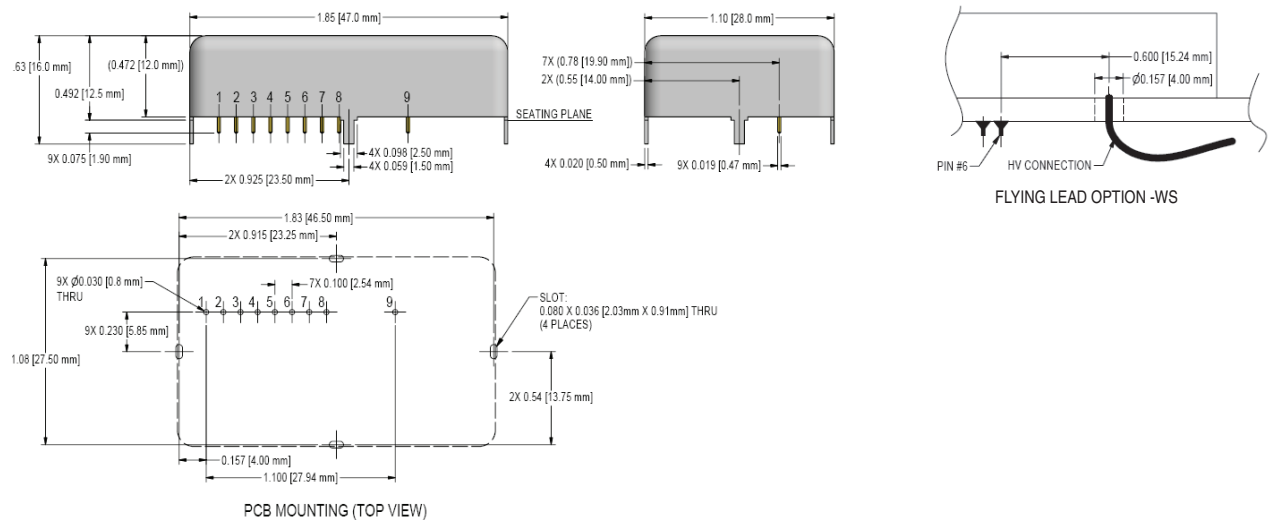
## TYPICAL APPLICATIONS

- Bias supplies
- Electrostatic chucks
- Hand held x-ray fluorescence (XRF)
- Avalanche photo diodes (APD)
- Photomultiplier tubes (PMT)
- Silicon detector (SiD)
- X-ray flat panel detector (FPD)
- Ionization chamber detector

## ELECTRICAL SPECIFICATIONS

Parameter	Specifications												Units
Input Voltage Vin (Pins 1 and 2)	5 ±0.5 (2 to 3 kV ONLY)			12 ±1			15 ±1 (600 V to 1.5 kV ONLY)			24 ±2			VDC
Input Voltage	5 (2 to 3 kV ONLY)						12						V
Input Current	No load: 55, full load: 450						No load: 45, full load: 200						mA
Input Voltage	15 (600 V to 1.5 kV ONLY)						24						V
Input Current	No load: 40, full load: 190						No load: 35, full load: 160						mA
Polarity	Fixed positive or fixed negative												
Output Voltage	0 to 600			0 to 1000			0 to 1250			0 to 1500			VDC
Input Voltage	12	15	24	12	15	24	12	15	24	12	15	24	VDC
Output Power	0.5	0.8	1	0.5	0.8	1	0.5	0.8	1	0.5	0.8	1	W
Output Current	0.83	1.33	1.67	0.5	0.8	1	0.4	0.64	0.8	0.33	0.53	0.67	mA
Output Voltage	0 to 2000			0 to 2500			0 to 3000						VDC
Input Voltage	5	15	24	5	15	24	5	15	24	5	15	24	VDC
Output Power	0.5	0.8	1	0.5	.08	1	0.5	.08	1	0.5	.08	1	W
Output Current	0.25	0.40	0.50	0.20	0.32	0.40	0.167	0.267	0.333	0.167	0.267	0.333	mA
Parameter	All Types												Units
HV Setting	10 to 100 K (potentiometer across Vref. and signal ground, wiper to adjust)												-
Load Voltage Regulation	< 0.01% of full output voltage for no load to full load												VDC
Line Voltage Regulation	< 0.01% of full output voltage over specified input voltage range												VDC
Residual Ripple	< 0.01% at full load												V pk to pk
Temperature Coefficient	100 ppm/°C for the max output voltage after starting and over temperature range 0 to 50°C												-
Output Voltage Monitoring	600 to 1500 V: +1 V/1 kV max or -1 V/-1 kV max according to model polarity output impedance = to 200 kΩ ±1%												-
	2 to 3 kV (12 to 24 V input only): 0 to +5 V±2%												-
	2 to 3 kV (5 V inputs): 0 to +2.5 V±2%												-
Reference Voltage	12 to 24 V input only: 5 V ±1%, TC: 100 ppm/°C, max output current: 1 mA												-
	5 V inputs: 2.5 V ±1%, TC: 100 ppm/°C, max output current: 1 mA												-
Operating Temperature	-10 to +65, full load, max Eout, case temp												°C
Storage Temperature	-40 to +70												°C
Safeguards	Arc and short-circuit protection												-
Options	Shielded flying lead for HV output (0.6 to 1.5 kV units only)												-
Enhanced Interface (-EI) Option (2 to 3 kV Only)	Enable/disable (ON/OFF): 0 to +0.5 V enable, +2.4V to Vinput disable (default = disable)												-
	Output current monitor (5 V input only): 0 to +2.5 V ±2%												-
	Output current monitor (12 to 24 V input): 0 to +5.0 V ±2%												-

MECHANICAL SPECIFICATIONS



- 1 Pins 7 and 8 are available for 2 k to 3 kV units with enhanced interface option ONLY.
- 2 Drawing views: third angle projections. Measurements are in inches (millimeters).

Construction	
Case	Steel, tin-plated thickness 0.5 mm (0.02")
Insulation	Silicone-based RTV (contact factory for other options)
Volume	16.4 cc (1.00 in <sup>3</sup> )
Weight	35 g (1.23 oz)
Tolerance	Overall: ±0.76 mm (0.030")
	Pin to Pin: ±0.38 mm (0.015")
	Pin to Tab: ±0.51 mm (0.020")
	Tab to Tab: ±0.25 mm (0.010")

- 1 0.47 mm (0.019") round pins, length: 3 mm (0.12"), spacing: 2.54 mm (0.1")
- 2 PCB mounting through 4 mounting tabs, length: 5 mm (0.2"), width: 1.5 mm (0.059"), thickness: 0.5 mm (0.02")
- 3 Optional flying lead for HV output: coaxial cable (RG178), diameter: 2 mm (0.079"), length: 500 mm (19.685") (0.6 to 1.5 kV units only)

### INTERFACE

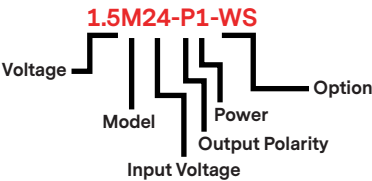
Connections	
Pin	Function
1	Positive Power Input
2	Power Ground
3	Signal Ground
4	Remote Adjust Input
5	Reference Voltage
6	Voltage Monitor
7	Current Monitor
8	Enable (available with -EI option only)
9	HV Output

**1** Mounting tabs must be connected to ground.

ORDERING INFORMATION

Type	0 to 600 VDC Output	0.6M
	0 to 1000 VDC Output	1M
	0 to 1250 VDC Output	1.25M
	0 to 1500 VDC Output	1.5M
	0 to 2000 VDC Output	2M
	0 to 2500 VDC Output	2.5M
	0 to 3000 VDC Output	3M
Input	5 VDC Nominal (2 to 3 kV only)	5
	12 VDC Nominal	12
	15 VDC Nominal (600 V to 1.5 kV only)	15
	24 VDC Nominal	24
Power	0.5 W Output	0.5
	0.8 W Output	0.8
	1 W Output	1
Case	Tin Steel Case	(Standard)
Polarity	Positive Output	-P
	Negative Output	-N
Option	Shielded Flying Lead for HV Output (600 V to 1.5 kV)	-WS
	Current Monitor/Enable Pin (2 to 3 kV only)	-EI

The M series is not available in all territories. Please contact Advanced Energy for details concerning sales in your area.





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#### ABOUT ADVANCED ENERGY

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

PRECISION | POWER | PERFORMANCE



**CAUTION:**  
High Voltage

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

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