Advanced Energy

ULTRAVOLT® M SERIES

MINIATURE, MICRO-SIZED HIGH VOLTAGE BIASING SUPPLIES



Single-output, micro-sized HV modules

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^3). Less than 12.7 mm (0.5″) high, these modules are ideal for low-profile applications.

Features

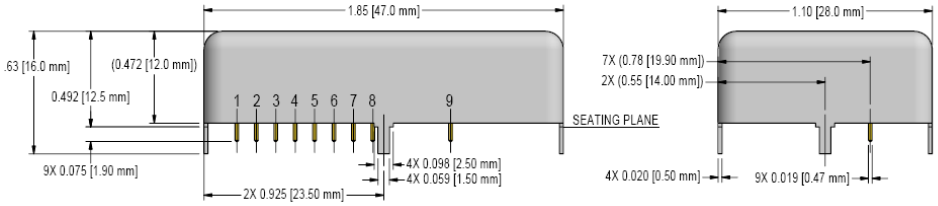
- Seven models from 0 to 600, 1000, 1250, 1500, 2000, 2500, or 3000 V
- Output power: 0.5, 0.8, or 1 W
- Tight line/load regulation
- Arc and continuous short circuit protection
- Self-restoring output voltage
- Low cost
- Miniature and lightweight
- Voltage monitoring
- Low ripple (0.01% peak to peak)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

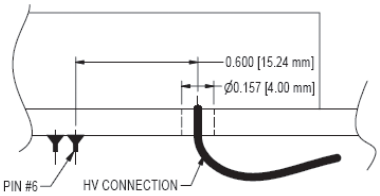
Typical Applications

- Bias supplies
- Electrostatic chucks
- Hand held X-Ray Florescence (XRF)
- Avalanche photo diodes (APD)
- Photomultiplier Tubes (PMT)
- Silicon Detector (SiD)
- X-Ray Flat Panel detector (FPD)
- Ionization Chamber detector

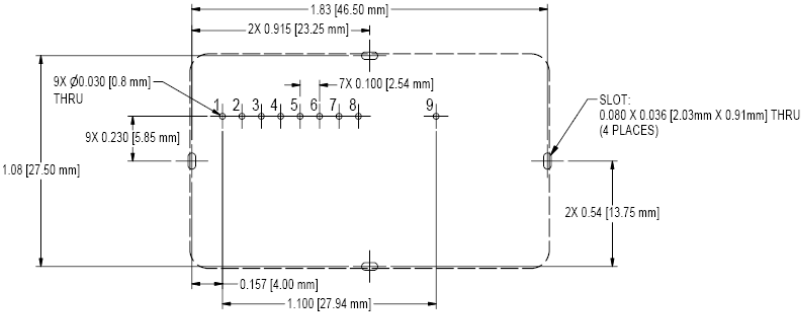


PARAMETER	SPECIFICATIONS												UNITS
Input Voltage Vin (Pins 1 and 2)	5 ±0.5 (2 to 3 kV ONLY), 12 ±1, 15 ±1 (600 V to 1.5 kV ONLY), or 24 ±2												VDC
Input Voltage	5 (2 to 3 kV ONLY)			12			15 (600 V to 1.5 kV ONLY)			24			V
Input Current	No load: 55, full load: 450			No load: 45, full load: 200			No load: 40, full load: 190			No load: 35, full load: 160			mA
Polarity	Fixed positive and fixed negative												-
Output Voltage	0 to 600			0 to 1000			0 to 1250			0 to 1500			VDC
Input Voltage	12	15	24	12	15	24	12	15	24	12	15	24	VDC
Output Power	0.5	0.8	1	0.5	0.8	1	0.5	0.8	1	0.5	0.8	1	W
Output Current	0.83	1.33	1.67	0.5	0.8	1	0.4	0.64	0.8	0.33	0.53	0.67	mA
Output Voltage	0 to 2000			0 to 2500			0 to 3000						VDC
Input Voltage	5	12	24	5	12	24	5	12	24				VDC
Output Power	0.5	0.8	1	0.5	0.8	1	0.5	0.8	1				W
Output Current	0.25	0.40	0.50	0.20	0.32	0.40	0.167	0.267	0.333				mA
HV Setting	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 = 200 kΩ ±1%												-
Output Voltage Monitoring (2 to 3 kV)	12 to 24 V input only: 0 to +5 V±2%												VDC
	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	Flying lead for HV output												-
Enhanced Interface (-EI) Option (2 to 3 kV Only)	Enable/disable (ON/OFF): 0 to +0.5 V enable, +2.4V to V_input 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%												-





FLYING LEAD OPTION -WS



PCB MOUNTING (TOP VIEW)

Note: Pins 7 and 8 are available for 2 k to 3 kV units with enhanced interface option ONLY.

Drawing views: third angle projections. Measurements are in inches (millimeters).

PHYSICAL SPECIFICATIONS

Construction	Steel, tin-plated thickness 0.5 mm (0.02″) Insulation: fully potted in an epoxy resin
Volume	16.4 cc (1.00 in³)
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″)

Notes: 0.47 mm (0.019″) round pins, length: 3 mm (0.12″), spacing: 2.54 mm (0.1″)

PCB mounting through 4 mounting tabs, length: 5 mm (0.2″), width: 1.5 mm (0.059″), thickness: 0.5 mm (0.02″)

Optional flying lead for HV output: coaxial cable (RG178), diameter: 2 mm (0.079″), length: 500 mm (19.685″)

CONNECTIONS

Pin	Function
1	POSITIVE POWER INPUT
2	POWER GROUND
3	SIGNAL GROUND
4	REMOTE ADJUST INPUT
5	REFERENCE VOLTAGE
6	VOLTAGE MONITOR
7	CURRENT MONITOR (available with -EI option only)
8	ENABLE (available with -EI Option ONLY)
9	HV OUTPUT

Note: Mounting tabs must be connected to ground.

ORDERING INFORMATION

Type	0 to 600 VDC Output	0.6 M
	0 to 1000 VDC Output	1 M
	0 to 1250 VDC Output	1.25 M
	0 to 1500 VDC Output	1.5 M
	0 to 2000 VDC Output	2 M
	0 to 2500 VDC Output	2.5 M
	0 to 3000 VDC Output	3 M
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
	Flying Lead for HV Output (2 to 3 kV Only)	-W
	Current Monitor/Enable Pin (2 to 3 kV Only)	-EI

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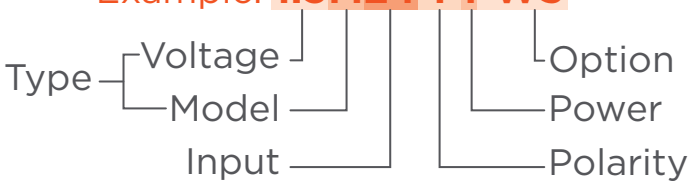
RoHS COMPLIANT Non-RoHS compliant units are available. Please contact the factory for more information.

Example: **1.5M24-P1-WS**



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

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



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

ENG-HV-Mseries-230-I 4.16

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