



The MSA Series are compact printed circuit board mountable (PCB) high voltage power supply module available from 1kV to 3kV with either a positive or negative output polarity. The MSA Series feature 0-10Vdc variable voltage programming that equals 0-100% of rated output voltage. A voltage monitor is provided where 0-10Vdc equals 0-100% of rated output voltage. Additionally a status signal and enable signal provides simple control of the power supply. All units have in-built protection against fault conditions.

The MSA Series are intended for general use where a compact high performance PCB mountable power supply is required, like driving an electron multiplier in a mass spectrometer. The aluminium enclosure helps shield the unit reducing radiated noise.

TYPICAL APPLICATIONS

- Photomultiplier Tubes
- Electron Multiplier
- Mass Spectrometry
- Electrostatic Lenses
- Nuclear Instruments

SPECIFICATIONS

Input Voltage:

+24 Vdc, ± 2 Vdc

Input Current:

150mA maximum input current
30mA pk-pk maximum input current ripple

- **Compact High Performance Module**
- **Variable Voltage Programming**
- **0.9 Watts Output Power**
- **Voltage Monitor**
- **Arc and Short Circuit Protected**

www.spellmanhv.com/manuals/MSA

Output Polarity:

Positive or negative, specify at time of order

Output Power:

0.9 watts, maximum

Output Voltage Accuracy:

$\pm 1\%$

Voltage Regulation:

Line: 21.6Vdc to 26.4Vdc, $\pm 0.02\%$

Load: 0-100% rated load, $\pm 0.02\%$

Stability:

50ppm/8hrs after one hour warm up period

Temperature Coefficient:

25ppm per degree C

Settling Time:

After Power On or Enable:

100 milliseconds, typical

When power is removed the unit will decay to $< \pm 60$ volts within 2 seconds

Protection:

Arc and short circuit protected.

Not designed to withstand continuous arcing

Environmental:

Temperature Range:

Operating: 0°C to 60°C

Storage: -20°C to 70°C

Humidity:

95% RH, non-condensing

Cooling:

Convection cooled

Dimensions:

2.73" L x 2.21" W x 1.21" D (69.4mm x 56.2mm x 30.7mm)

Weight:

7.0 oz. (200g)

Regulatory Approvals:

Designed to meet EN 61010-1, UL 61010A-1 and CAN/CSA-22.2 No. 61010.1

As the unit is intended for incorporation into end users equipment it will not be tested as a standalone unit to meet the EMC directive. The user will need to follow sensible EMC precautions in using the unit.

The unit is compliant with the EU RoHS directive.

MSA SELECTION TABLE

Model	Output Voltage	Output Current	Ripple (Vpp)
MSA1*24	0-1kV	0-900µA	30mV
MSA2*24	0-2kV	0-450µA	40mV
MSA3*24	0-3kV	0-300µA	50mV

- 1) Replace the * with "P" for positive output polarity and "N" for negative output polarity.
- 2) The ripple figure includes random non switch related noise, noise related to the oscillator, switching and feedback control circuitry and noise associated with the rectified primary switching frequency.

LOW VOLTAGE SIGNAL PINS FOR POWER AND CONTROL

PIN	SIGNAL	LEVEL	SIGNAL PARAMETERS
1	Enable	TTL	Enable = Low ($\leq 1.2V$). Disable = High ($\geq 2.4V$), when Enable pin is NC, 10kΩ pull up to +5V $\pm 10\%$
2	Status	0V/5V	OK = 11kΩ pull up to +5.1V $\pm 10\%$. Fault = $\leq 0.1V$, Zout = 1kΩ
3	Voltage Program	0-10V	0 to +10Vdc = 0 to 100% rated output voltage, Accuracy = $\pm 1\%$. Zin = 10kΩ
4	Voltage Monitor	0-10V	0 to +10Vdc = 0 to 100% rated output voltage, Accuracy = $\pm 2\%$. Zout = 20kΩ
5	Input Voltage	24Vdc	Power Input
6*	Signal Ground	0V	Ground reference for control and monitoring signals
7*	Power Ground	0V	Power Return

To reset the unit after a fault condition, Pin1 (Enable) must be set high for at least 10 seconds

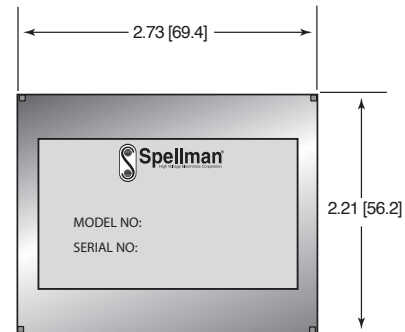
* pins 6 & 7 are linked internally

HIGH VOLTAGE CONNECTION DETAIL

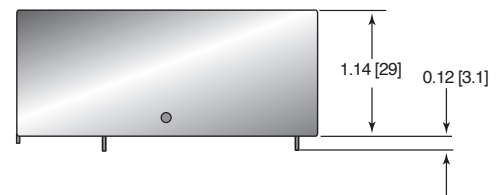
PIN	SIGNAL	SIGNAL PARAMETERS
8	High Voltage Output	0-100% Rated Output. !!Danger: High Voltage!!

DIMENSIONS: in.[mm]

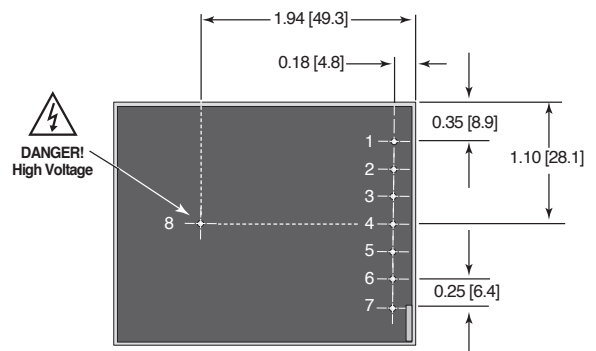
TOP VIEW



FRONT VIEW



BOTTOM VIEW



SIDE VIEW

