

The MP Series has been designed as high performance dc to dc converters with output voltages up to 40kV.

Each module provides well regulated, low ripple and high stability high voltage in a highly versatile compact design, combining linear and switched mode techniques to minimize internal dissipation and generated EMI/RFI interference. The higher voltage modules are vacuum encapsulated to ensure corona free operation.

Specialist cell manufacture of the MP Series ensures prompt delivery.

### TYPICAL APPLICATIONS

Photomultiplier Tubes  
Scintillators  
Electron Guns  
Ion Guns  
Nuclear Instruments  
Electrostatic lenses  
Spectroscopy  
Microchannel Plates

### OPTIONS

**F** Flange Mounting  
**P** Positive Output Polarity  
**N** Negative Output Polarity  
**LL** Optional Lead Length

### SPECIFICATIONS

#### Input Voltage:

+24Vdc±2V. Other input voltages available on special order.

#### Input Current:

Less than 1A at full output.

#### Output Voltage:

Continuously adjustable over entire output range. Available in either positive or negative output polarity. See table for voltage ranges.



Not intended for new designs

- **Arc and Short-Circuit Protection**
- **Low Output Ripple - 0.001% p-p**
- **Local and Remote Voltage Programming**
- **10v Reference Output for External Control**
- **High Stability 0.001% Line and Load Regulation**
- **Models up to 40kV Output**
- **CE Mark for EMC Directive**
- **OEM Customization Available**

[www.spellmanhv.com/manuals/MP](http://www.spellmanhv.com/manuals/MP)

#### Output Voltage Control: Controlled by either:

- 1) Internal ten-turn potentiometer
  - 2) External potentiometer 5k to 100k (set internal pot. to max.)
  - 3) Remote differential voltage programming  
(0 to +10V gives 0 to full output).
- Accuracy 0.1%.

#### Remote Control:

Remote programming Common Mode Range: -5VDC to +15VDC

#### Line Regulation:

0.001% for input change of 1V.

#### Load Regulation:

0.001% for 100µA to full load change  
(at maximum voltage).

#### Temperature Coefficient:

Better than 25ppm/°C.

#### Stability:

<0.007%/hr at constant operating conditions  
after 1 hour warm-up.

#### Output Voltage and Current Monitors:

Voltage: 0 to +10V represents zero to full output ±1%.  
Current: 0 to +10V represents zero to full output ±2%.

#### Temperature:

Operating: 0°C to +50°C.  
Storage: -35°C to +85°C.

#### Connectors:

Input: 10 pin connector (mating connector supplied).  
Output: Output voltage 1-20kV: 500mm screened cable URM76  
Output voltage 30kV: 500mm screened cable RG59  
Output voltage 40kV: 500mm silicone rubber cable

#### Dimensions:

##### Stud mounted case

MP1 to MP5: 1.65"H x 3.86"W x 5.83"D (42mm x 98mm x 148mm)  
MP10 to MP15: 1.65"H x 3.86"W x 7.48"D (42mm x 98mm x 190mm)  
MP20 to MP30: 1.65"H x 3.86"W x 9.45"D (42mm x 98mm x 240mm)

Two M3 metric studs on case as standard  
(mating hardware supplied)

#### Flange case

- MP1 to MP5: 1.65"H x 3.86"W x 6.61" (42mm x 98mm x 168mm)  
Fixing center: 6.14" (156mm)
- MP10 to MP15: 1.65"H x 3.86"W x 8.27" (42mm x 98mm x 210mm)  
Fixing center: 7.80" (198mm)
- MP20 to MP30: 1.65"H x 3.86"W x 10.2" (42mm x 98mm x 260mm)  
Fixing center: 9.77" (248mm)
- MP40: 1.81"H x 3.86"W x 13.0" (46mm x 98mm x 330mm)  
Fixing center: 12.5" (318mm) (4 x 3.3mm mounting holes)

#### Weight:

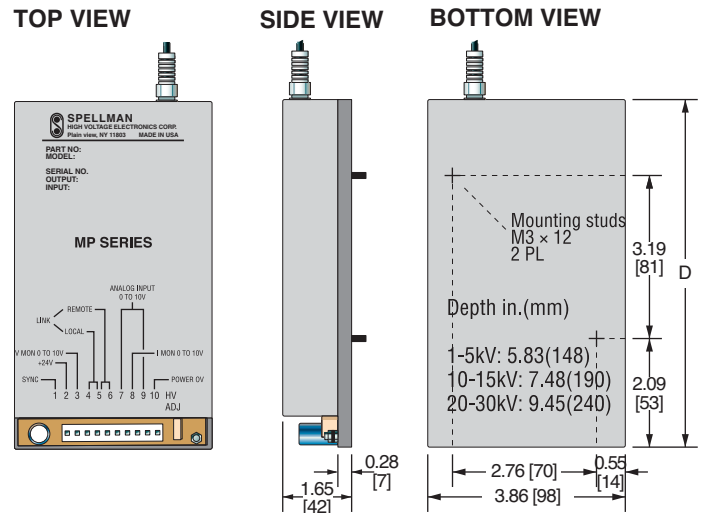
- MP1 to MP5: 21.18 oz. (600g)
- MP10 to MP15: 35.3 oz. (1000g)
- MP20 to MP30: 51.18 oz. (1450g)
- MP40: 76.24 oz. (2160g)

#### Regulatory Approvals:

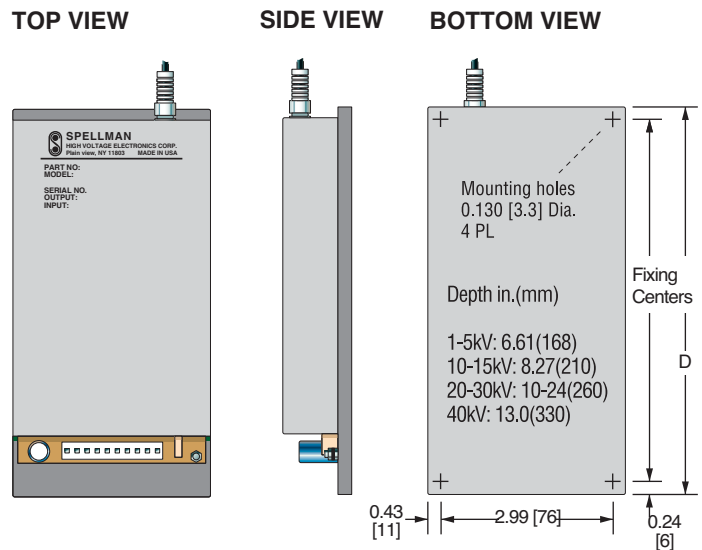
Compliant to 2004/108/EC, the EMC Directive and 2006/95/EC, the Low Voltage Directive.

DIMENSIONS: in.[mm]

#### STUD MOUNTING (standard)



#### FLANGE MOUNTING (optional)



#### MP SELECTION TABLE

| OUTPUT VOLTAGE<br>kV | MAX. CURRENT<br>mA | RIPPLE<br>(full load)<br>mV | MODEL  |
|----------------------|--------------------|-----------------------------|--------|
| 0 to 1               | 10                 | 10mV p-p                    | MP1*   |
| 0 to 1.5             | 6                  | 10mV p-p                    | MP1.5* |
| 0 to 2               | 5                  | 10mV p-p                    | MP2*   |
| 0 to 2.5             | 4                  | 10mV p-p                    | MP2.5* |
| 0 to 3               | 3                  | 10mV p-p                    | MP3*   |
| 0 to 5               | 2                  | 20mV p-p                    | MP5*   |
| 0 to 10              | 1                  | 100mV p-p                   | MP10*  |
| 0 to 15              | 0.60               | 150mV p-p                   | MP15*  |
| 0 to 20              | 0.50               | 200mV p-p                   | MP20*  |
| 0 to 30              | 0.33               | 300mV p-p                   | MP30*  |
| 0 to 40              | 0.2                | 400mV p-p                   | MP40*  |

\*Specify "P" for positive polarity or "N" for negative polarity.

#### MP CONNECTOR 10 PIN

| PIN | SIGNAL              | PIN | SIGNAL          |
|-----|---------------------|-----|-----------------|
| 1   | Synchronization     | 6   | Remote Control  |
| 2   | +24V Input          | 7   | Vprog+          |
| 3   | Voltage Monitor     | 8   | Current Monitor |
| 4   | Local Control       | 9   | Vprog-          |
| 5   | Remote / Local Link | 10  | Power Ground    |

