



Spellman's new MPS series are a family of high voltage 10 Watt modules that provide output voltages ranging from 1kV to 30kV.

The MPS series are high performance products designed with Spellman's hybrid topology of linear and switch mode power conversion techniques delivering lower noise with higher efficiency. The MPS series produces excellent ripple and stability performance specifications from a compact footprint. Additionally the MPS series features, as standard, a differential amplifier input for the voltage programming signal to improve immunity from external system noise and addressing any offset issues. Alternatively the output voltage may be pre-set by an internal potentiometer.

RS-232 or RS-485 digital interfaces are also available as optional; both the standard analog and the optional digital controls are provided via a 15-pin D-type connector.

Spellman's proprietary HV technology coupled with SMT circuitry results in an ultra compact and lightweight module that is available as either a positive or negative supply that is ideal for OEM applications.

### TYPICAL APPLICATIONS

Photomultiplier Tubes	Electrostatic Printing
Electron and Ion Beams	Scintillators
Electronmultiplier Detectors	Mass Spectrometry
Microchannel Plate Detectors	Electrostatic Lenses
Nuclear Instruments	

### OPTIONS

<b>VCC</b>	Variable Current Control
<b>HS</b>	High Stability
<b>DCC 2</b>	RS-232
<b>DCC 4</b>	RS-485

Note: It is not possible to supply the unit with both HS and DCC options

- **Differential Input for Voltage Program**
- **Optional RS-232/RS-485 Control**
- **10 Watts Output Power**
- **Voltage and Current Monitors and Controls**
- **High Stability**
- **Ultra Low Ripple and Noise**
- **CE Marked and UL61010-1 Certified**

<a href="http://www.spellmanhv.com/manuals/MPS">www.spellmanhv.com/manuals/MPS</a>	Operators Manual
<a href="http://www.spellmanhv.com/MPS/faq">www.spellmanhv.com/MPS/faq</a>	FAQ's
<a href="http://www.spellmanhv.com/MPS/dcc">www.spellmanhv.com/MPS/dcc</a>	Digital Interface

### SPECIFICATIONS

#### Input Voltage:

+24 Vdc, ±2Vdc

#### Input Current:

≤1 amp maximum

#### Output Voltage:

9 models available from 1kV to 30kV

#### Output Polarity:

Positive or negative, specify at time of order

#### Power:

10 watts, maximum

#### Voltage Regulation:

Line: ≤0.001% of rated output voltage over specified input voltage

Load: ≤0.001% of rated output voltage for full load change

#### Current Regulation (VCC Option):

Line: ≤0.01% for 1V input voltage change under any load conditions

Load: ≤0.01% for full load to short circuit

#### Ripple:

See "model selection" table

#### Stability:

≤0.007% per hour, 0.02% per 8 hours after 1.0 hour warm up period.  
≤0.05% per 1000 hours after 1.0 hour warm up period (HS option)

#### Temperature Coefficient:

≤25ppm per degree C

≤10ppm per degree C (HS option)

#### Environmental:

Temperature Range:

Operating: 0°C to 50°C

Storage: -35°C to 85°C

Humidity:

20% to 85% RH, non-condensing

#### Cooling:

Convection cooled

#### Interface Connector:

15 pin male D connector

#### Output Connector:

A captive 39.4" (1 meter) long shielded HV cable is provided

**Dimensions:**

- 1-10kV: 1.18" H X 2.75" W X 5.12" D  
(30mm x 70mm x 130mm)
- 15-20kV: 1.18" H X 2.75" W X 6.49" D  
(30mm x 70mm x 165mm)
- 30kV: 1.37" H X 2.95" W X 8.47" D  
(65mm x 75mm x 215mm)

**Weight:**

- 1-3kV: 9.88 oz. (280g)
- 5-10kV: 14.82 oz. (420g)
- 15-20kV: 22.92 oz. (650g)
- 30kV: 35.51 oz. (950g)

**Regulatory Approvals:**

UL recognized component (RC), File E354595. Compliant to IEC/UL 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use; CAN/CSA-C22.2 No.61010-1. CE marked to EN 61010-1. UKAS marked to BS EN 61010-1. RoHS compliant.

As the unit is designed for incorporation within the users system it is not tested against any specific EMC standards. The user will need to take sensible EMC precautions when designing the unit in and verify the overall system EMC performance against any relevant standards.

**MPS ANALOG INTERFACE—  
15 PIN D CONNECTOR (NON-DCC UNITS)**

PIN	SIGNAL	SIGNAL PARAMETERS
1	Power/Signal Ground	Ground (also used as analog signal ground on 1kV to 10kV units)
2	+24Vdc Input	+24Vdc @ 1 amp maximum
3	Voltage Monitor Output	0 to 10Vdc=0 to 100% Rated Output ±2%, Zout =10kΩ
4	Local Programming Potentiometer Wiper Output	Potentiometer connected to +10Vdc (accuracy: 0.2%) and Ground, 0 to 10Vdc adjustable wiper output provided
5	Voltage Program Input	0 to 10Vdc=0 to 100% Rated Output ±2%, Zin=10MΩ
6	Voltage Program Differential Amplifier Output	0 to 10Vdc=0 to 100% Rated Output, Zout =10kΩ
7	Voltage Program Differential Amplifier Input—Positive	0 to 10Vdc differential between pin 7 and pin 9 = 0 to 100% of rated output, diode clamped to ground, Zin =38kΩ
8	Current Monitor Output	0 to 10Vdc = 0 to 100% Rated Output ±2%, Zout =10kΩ
9	Voltage Program Differential Amplifier Input—Negative	0 to 10Vdc differential between pin 7 and pin 9 = 0 to 100% of Rated Output, diode clamped to ground, Zin =38kΩ
10	No Connection	No Connection
11	Current Program Input	Standard: Internally connected to provide 110% fixed current limit VCC Option: 0 to 10Vdc=0 to 100% Rated Output ±2%, Zin=1MΩ
12	Enable Input	Low = Enable, TTL, CMOS, Open Collector Compliant
13	Internal Connection	No Connection
14	Vref (/HS unit only)	+10V ultra high stability reference output. Accuracy: 0.05%, temperature coeff. <5ppm/°C On standard units the reference voltage is available on pin 4
15	Analog Signal Ground (15kV to 20kV units)	Analog Signal Ground (No connection for 1kV to 10kV units)

**MPS DIGITAL INTERFACE—  
15 PIN D CONNECTOR (DCC UNITS)**

PIN	SIGNAL	SIGNAL PARAMETERS
1	Power/Signal Ground	Ground
2	+24Vdc Input	+24Vdc @ 1 amp maximum
3	No Connection	No Connection
4	Local Programming Potentiometer Wiper Output	Potentiometer connected to +10Vdc and Ground, 0 to 10Vdc adjustable wiper output provided
5	No Connection	No Connection
6	No Connection	No Connection
7	No Connection	No Connection
8	No Connection	No Connection
9	No Connection	No Connection
10	No Connection	No Connection
11	No Connection	No Connection
12	Enable Input	Low = Enable, TTL, CMOS, open collector compliant
13	No Connection	No Connection
14	TxD	Transmit data (output) with respect to ground (pin 1)
15	RxD	Receive data (input) with respect to ground (pin 1)

- Notes: 1.) The DCC option operated via a simple ASCII protocol. Contact us for more information.  
2.) The HS and DCC option cannot be offered together

**MPS SELECTION TABLE**

Model	Output Voltage	Output Current	Ripple (Vpp)
MPS1*10/24	1kV	10mA	<10mV
MPS2*10/24	2kV	5.00 mA	<20mV
MPS2.5*10/24	2.5kV	4.00 mA	<25mV
MPS3*10/24	3kV	3.3mA	<25mV
MPS5*10/24	5kV	2mA	<30mV
MPS10*10/24	10kV	1mA	<50mV
MPS15*10/24	15kV	0.66mA	<100mV
MPS20*10/24	20kV	0.5mA	<150mV
MPS30*10/24	30kV	0.33mA	<250mV

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

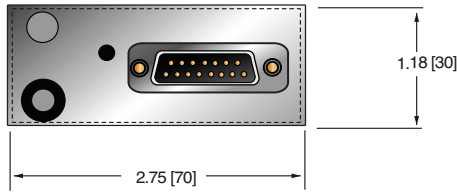
**How To Order:**

MPSXX\*10/24/YYY  
where:  
XX is the Output voltage (see selection table)  
\* is the polarity: P for positive / N for negative  
YYY is the option: VCC / HS / DCC2 / DCC4

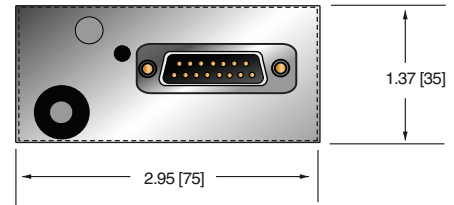


DIMENSIONS: in.[mm]

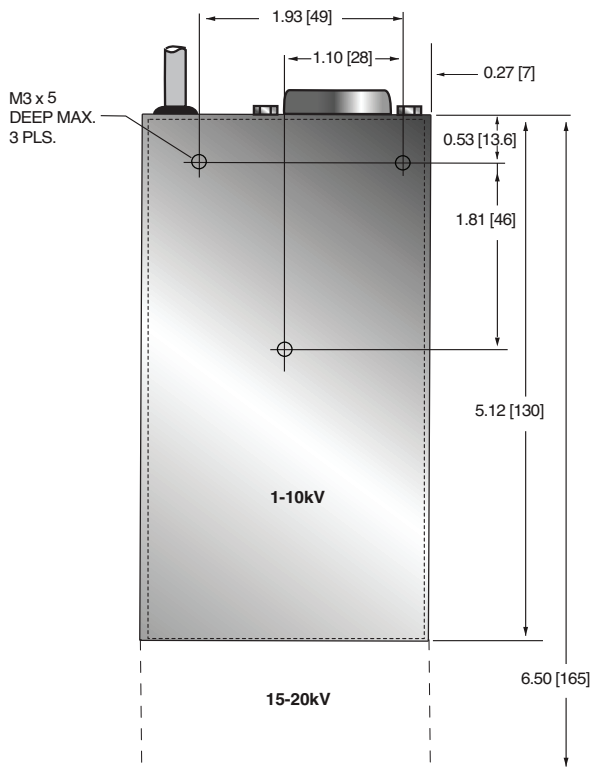
**1-20kV  
FRONT VIEW**



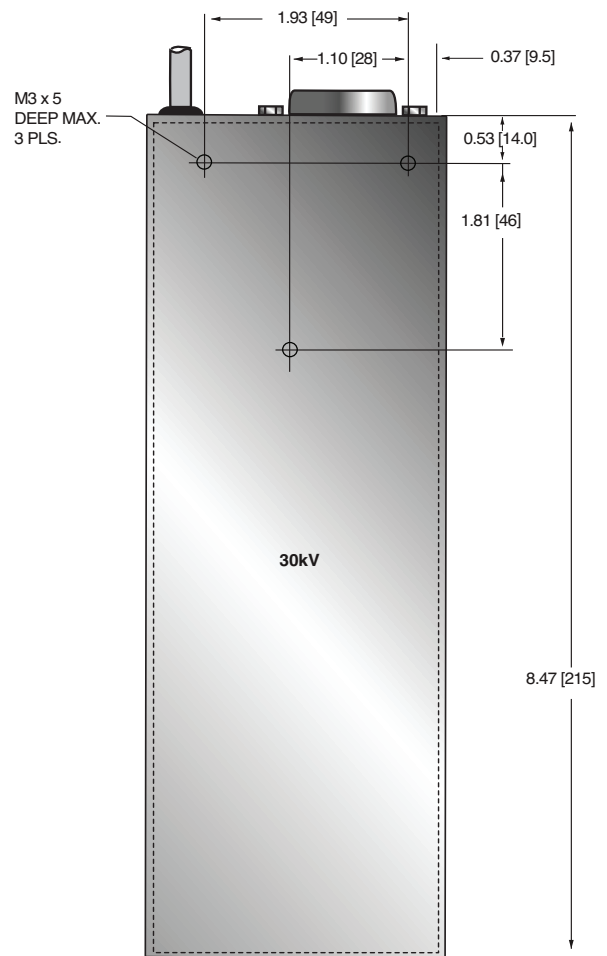
**30kV  
FRONT VIEW**



**BOTTOM VIEW**



**BOTTOM VIEW**



**SIDE VIEW**



**SIDE VIEW**

