



- **Extremely Compact High Performance Module**
- **Digital or Differential Analog Voltage Program**
- **Standard RS-232/RS-485 Control**
- **10 Watts Output Power**
- **Voltage and Current Monitors**
- **High Stability, Low TC**
- **Digital Oscillator Provides Ultra Low Ripple and Noise, Down to 1/f Band**

Spellman's new MPD series are a family of high voltage 10 Watt modules that provide output voltages ranging from 2.5kV to 20kV.

The MPD 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 MPD series produces excellent ripple and stability performance specifications from a compact footprint. The MPD series features a differential amplifier input for the voltage programming signal to improve immunity from external system noise and addressing any offset issues.

A fully featured remote user interface is provided via 15-pin D-type connector as well as RS-232/RS-485 serial interface. The unit can be full analog or full digital control defined by interface connector links.

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	

SPECIFICATIONS

Input Voltage:

+24 Vdc, ± 2 Vdc

Input Current:

≤ 1 amp maximum

Output Voltage:

5 models available from 2.5kV to 20kV

Output Polarity:

Positive or negative, specify at time of order

Power:

10 watts, maximum

Voltage Regulation:

Line: For a 1V line change 10ppm

Load: 0-100% load 10ppm

Current Limit:

110% of rated output current

Ripple:

See "drift, ripple and noise" table

Stability:

After one hour warm up period.

10ppm/hour

25ppm/8 hours

500ppm/1000 hours

Temperature Coefficient:

10ppm per degree C

Protection:

Arc and short circuit protected. Not designed to withstand continuous arcing

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

Dimensions:

2.5-10kV:

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 6.50" D (30mm x 70mm x 165mm)

Weight:

2.5/5/10kV:

14.82 oz. (420g)

15/20kV:

22.09 oz. (650g)

Interface Connector:

15 pin male D connector

Output Connector:

A captive 39.4" (1 meter) long HRG58 shielded HV cable is provided

Regulatory Approvals:

Safety: The unit is designed to meet the requirements of EN61010-1, UL61010A-1 and CAN/CSA 22.2 No 1010.1.

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

MPD SELECTION TABLE

Model	Output Voltage	Output Current	Ripple (Vpp)
MPD2.5*10/24	2.5kV	4.00 mA	See table below
MPD5*10/24	5kV	2mA	See table below
MPD10*10/24	10kV	1mA	See table below
MPD15*10/24	15kV	0.66mA	See table below
MPD20*10/24	20kV	0.5mA	See table below

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

MPD DRIFT, RIPPLE and NOISE

Model	3mHz-30mHz	30mHz-3Hz	3Hz-30Hz	30Hz-300Hz	300Hz-30kHz	30kHz-3MHz
MPD2.5	10mV	10mV	10mV	5mV	5mV	5mV
MPD5	10mV	10mV	10mV	10mV	10mV	10mV
MPD10	20mV	20mV	20mV	20mV	20mV	20mV
MPD15	30mV	30mV	30mV	30mV	30mV	30mV
MPD20	40mV	40mV	40mV	40mV	40mV	40mV

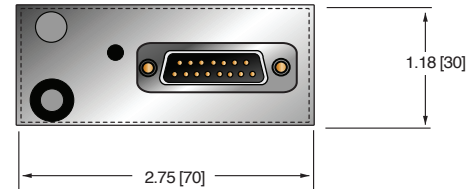
MPD EXTERNAL INTERFACE – 15 PIN MALE D CONNECTOR

PIN	SIGNAL	SIGNAL PARAMETERS
1	Power Ground	Ground
2	+24Vdc Input	+24Vdc @ 1 amp maximum
3	Voltage Monitor Output	Voltage monitor 0-10Vdc for 0 to full scale output $\pm 1\%$ (wrt signal ground)
4	Voltage Reference Output	10Vdc @ 1mA maximum
5	Voltage Program Input	0 to 10Vdc=0 to 100% rated output, $Z_{in}=10M\Omega$
6	Voltage Program Differential Amplifier Output	0 to 10Vdc=0 to 100% rated output, $Z_{out}=10k\Omega$
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, $Z_{in}=38k\Omega$
8	Current Monitor Output	Voltage monitor 0-10Vdc for 0 to full scale output $\pm 1\%$ (wrt signal ground)
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, $Z_{in}=38k\Omega$
10	Voltage Program Digital Output	0 to 10Vdc = 0 to 100% rated output, $Z_{out}=10k\Omega$
11	Analog Signal Ground	Analog signal ground for control and monitoring
12	Enable Input	Low = Enable, TTL, CMOS, open collector compliant
13	Digital Mode	RS-232 or RS-485 configuration Low = RS-485, Open circuit = RS-232
14	RS-232 TxD/RS-485 (-)	Transmit data (output) wrt pin 1 or RS-485 inverting
15	RS-232 RxD/RS-485 (+)	Receive data (input) wrt pin 1 or RS-485 non inverting

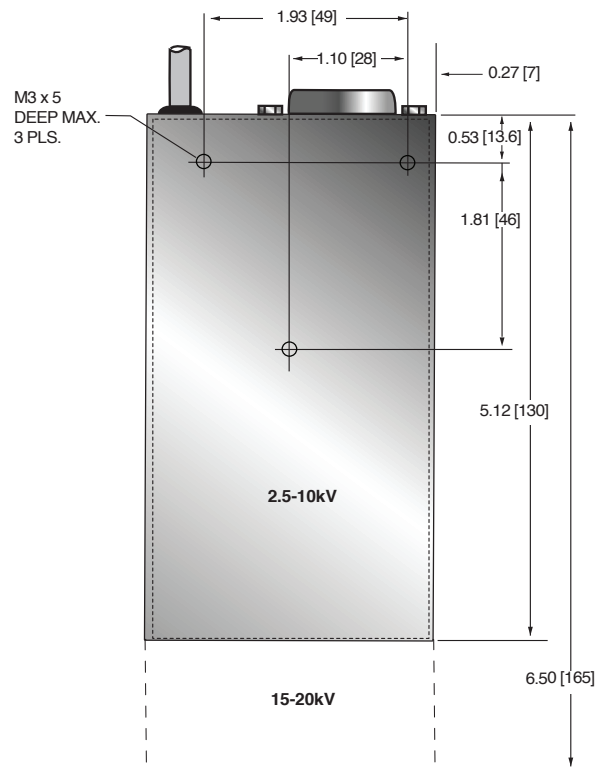
Digital Control – Connect pin 5 to pin 10
Analog Control – Connect pin 5 to pin 6

DIMENSIONS: in.[mm]

FRONT VIEW



BOTTOM VIEW



SIDE VIEW

