



Spellman's V-Pak series are high performance 10W high voltage power supplies offering a variable output voltage up to 10kV. These small modules achieve extreme ruggedness and reliability with excellent long term stability with low ripple and noise characteristics. Additionally, the V-Pak features a differential amplifier input for the voltage programming signal to improve immunity from external system noise and addresses any offset issues. A fully featured analog user interface is provided via a 9-pin D-type connector. Spellman's proprietary HV technology coupled with SMT circuitry results in a small compact and lightweight module that is available in either a positive or negative polarity output.

## TYPICAL APPLICATIONS

- Photomultiplier Tubes
- Electrostatics
- Ion Guns
- Spectroscopy
- Precision Lenses
- Electron Beam
- Electrophoresis
- Image Intensifiers

## SPECIFICATIONS

### Input:

+24VDC  $\pm$  0.5VDC

### Input Current:

$\leq$ 1 Amp

### Output Voltage:

Up to 10kV

### Output Polarity:

Positive or Negative, specify at time of order

### Output Power:

10W

### Voltage Regulation:

Line:  $\leq$ 0.001% of rated output voltage over specified input voltage

Load:  $\leq$ 0.001% of rated output voltage for full load change

- **ULTRA COMPACT FOOTPRINT**
- **DIFFERENTIAL INPUT FOR OUTPUT VOLTAGE PROGRAM**
- **10 WATT OUTPUT POWER**
- **OUTPUT VOLTAGE CONTROL**
- **OUTPUT VOLTAGE AND CURRENT MONITOR**
- **HIGH STABILITY WITH ULTRA LOW RIPPLE AND NOISE**
- **10V PRECISION REFERENCE**
- **SHUTDOWN MONITOR AND CONTROL**
- **120% OUTPUT CURRENT LIMIT**

### Ripple:

See model selection table

### Stability:

$\leq$ 0.01% per hour, 0.02% per 8 hours after 1.0 hour warmup period

### Precision Reference:

+10V  $\pm$ 1%, 10ppm  $^{\circ}$ C<sup>-1</sup>. Drift <15ppm per 1000 hours

### Transient Response:

0.5% maximum recovering to 0.1% in <100ms for a step change of 10% to 90% to 10% of rated load.

### Protection:

#### Output:

- Arc and short circuit protection
- Output Voltage limited to <120% of nominal maximum
- Output current limited to <110% of nominal maximum
- Soft starting current and voltage
- Thermal protection shutdown

#### Input:

- Over and under voltage protection.
- Low input current protection

### Temperature Coefficient:

$\leq$ 25ppm/ $^{\circ}$ C.

### Operating Temperature:

0 to 45 $^{\circ}$ C operating

### Storage Temperature:

-35 to +85 $^{\circ}$ C storage

### Humidity:

10% to 90% RH, non-condensing

### Cooling:

Additional heat sinking required to achieve continuous operation at full power

### Dimensions:

0.79"H x 2.75"W x 2.75"D (20mm x 70mm x 70mm)

### Weight:

<1.1 pounds (0.5kg)

### Interface Connector:

9-pin D-type connector

### Output Connector:

A captive 39.4" (1m) screened flying lead

### Regulatory Approvals:

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

## V-PAK MODEL SELECTION TABLE

| V-PAK Series | Voltage   | Current | Ripple (Vpp) |
|--------------|-----------|---------|--------------|
| VP1*10/24    | 0 to 1kV  | 10.00mA | <10mV        |
| VP2*10/24    | 0 to 2kV  | 5.00mA  | <20mV        |
| VP3*10/24    | 0 to 3kV  | 3.33mA  | <30mV        |
| VP5*10/24    | 0 to 5kV  | 2.00mA  | <50mV        |
| VP10*10/24   | 0 to 10kV | 1mA     | <100mV       |

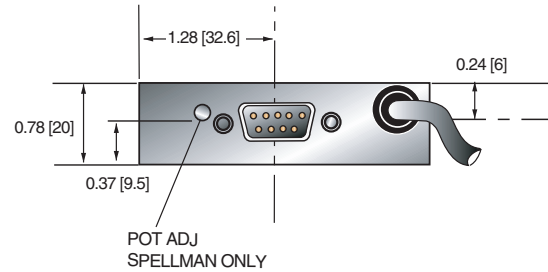
Specify "P" for positive polarity or "N" for negative polarity

## V-PAK ANALOG INTERFACE— 9 PIN MALE D CONNECTOR

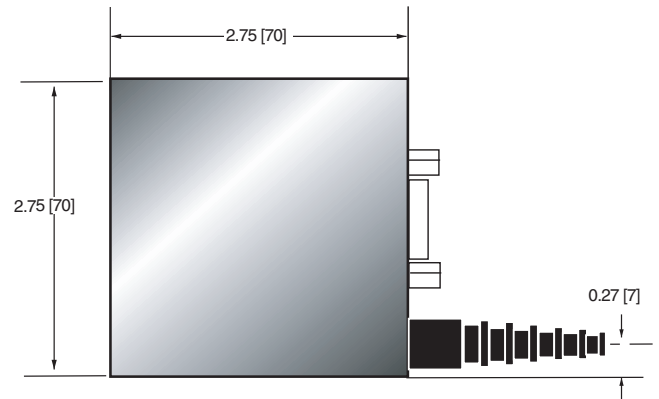
| PIN | SIGNAL                        | SIGNAL PARAMETERS  |
|-----|-------------------------------|--|
| 1   | Power Input Ground            | 0V   |
| 2   | Reference Output              | +10VDC   |
| 3   | Voltage Control Input +       | 0 to +10VDC with respect to pin 4  |
| 4   | Voltage Control Input -       | 0 to -10VDC with respect to pin 3  |
| 5   | Shutdown                      | Bi-directional; input >5V forces shutdown<br>Output >5V indicates shutdown condition |
| 6   | Power Input +                 | 24VDC  |
| 7   | Ground (signal)               | 0V   |
| 8   | Proportional I Monitor Output | 0 to 10V ±5%, Z=1kΩ  |
| 9   | Proportional V Monitor Output | 0 to 10V ±5%, Z=1kΩ  |

DIMENSIONS: in.[mm]

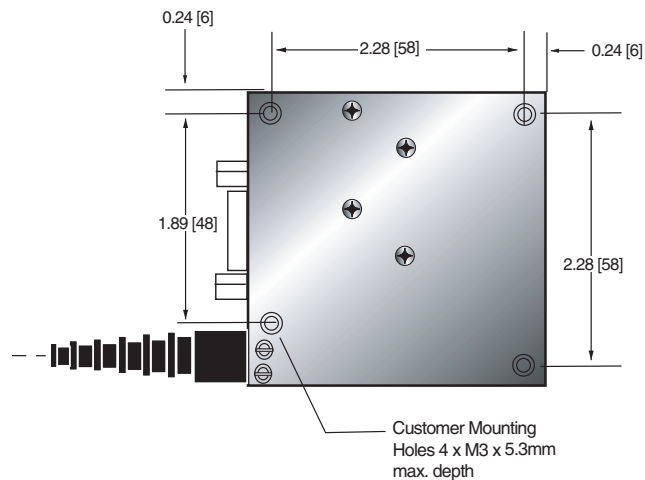
### FRONT VIEW



### TOP VIEW



### BOTTOM VIEW



### SIDE VIEW

