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 ± 0.5VDC
- **Input Current:**
  ≤1 Amp
- **Output Voltage:**
  Up to 10kV
- **Output Polarity:**
  Positive or Negative, specify at time of order
- **Output Power:**
  10W
- **Voltage Regulation:**
  Line: ≤0.001% of rated output voltage over specified input voltage
  Load: ≤0.001% of rated output voltage for full load change
- **Ripple:**
  See model selection table
- **Stability:**
  ≤0.01% per hour, 0.02% per 8 hours after 1.0 hour warmup period
- **Precision Reference:**
  +10V ±1%, 10ppm °C⁻¹. 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:**
  ≤25ppm/°C.
- **Operating Temperature:**
  0 to 45°C operating
- **Storage Temperature:**
  -35 to +85°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 Analog Interface—9 Pin Male D Connector

<table>
<thead>
<tr>
<th>PIN</th>
<th>SIGNAL</th>
<th>SIGNAL PARAMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power Input</td>
<td>Ground 0V</td>
</tr>
<tr>
<td>2</td>
<td>Reference Output</td>
<td>+10VDC</td>
</tr>
<tr>
<td>3</td>
<td>Voltage Control Input +</td>
<td>0 to +10VDC with respect to pin 4</td>
</tr>
<tr>
<td>4</td>
<td>Voltage Control Input -</td>
<td>0 to -10VDC with respect to pin 3</td>
</tr>
<tr>
<td>5</td>
<td>Shutdown</td>
<td>Bi-directional; input &gt;5V forces shutdown</td>
</tr>
<tr>
<td>6</td>
<td>Power Input</td>
<td>+24VDC</td>
</tr>
<tr>
<td>7</td>
<td>Ground (signal)</td>
<td>0V</td>
</tr>
<tr>
<td>8</td>
<td>Proportional I Monitor Output</td>
<td>0 to 10V ±5%, $Z=1k\Omega$</td>
</tr>
<tr>
<td>9</td>
<td>Proportional V Monitor Output</td>
<td>0 to 10V ±5%, $Z=1k\Omega$</td>
</tr>
</tbody>
</table>

## V-PAK Model Selection Table

<table>
<thead>
<tr>
<th>V-PAK Series</th>
<th>Voltage</th>
<th>Current</th>
<th>Ripple (Vpp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP1*10/24</td>
<td>0 to 1kV</td>
<td>10.00mA</td>
<td>&lt;10mV</td>
</tr>
<tr>
<td>VP2*10/24</td>
<td>0 to 2kV</td>
<td>5.00mA</td>
<td>&lt;20mV</td>
</tr>
<tr>
<td>VP3*10/24</td>
<td>0 to 3kV</td>
<td>3.33mA</td>
<td>&lt;30mV</td>
</tr>
<tr>
<td>VP5*10/24</td>
<td>0 to 5kV</td>
<td>2.00mA</td>
<td>&lt;50mV</td>
</tr>
<tr>
<td>VP10*10/24</td>
<td>0 to 10kV</td>
<td>1mA</td>
<td>&lt;100mV</td>
</tr>
</tbody>
</table>

Specify “P” for positive polarity or “N” for negative polarity.

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**Customer Mounting**

Holes 4 x M3 x 5.3mm max. depth

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**Dimensions:** in. [mm]

- Front View:
  - 1.28 [32.6]
  - 0.78 [20]
  - 0.37 [9.5]
  - 0.24 [6]
  - 1.89 [48]
  - 2.28 [58]
  - 2.75 [70]

- Top View:
  - 0.75 [19.1]
  - 0.27 [7]

- Bottom View:
  - 0.24 [6]
  - 2.28 [58]

- Side View:
  - 1.85 [48]
  - 2.28 [58]

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**Spellman High Voltage Electronics Corporation**

www.spellmanhv.com

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