OEM High Voltage Power Supply
Model HVPS124

Preliminary Specification
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1. INTRODUCTION

The OEM High-Voltage Power Supply is designed to set the bias voltage of various types high-resistance sensors, such as CdZnTe-, He3- or HPGe detectors, piezo devices, toxin detection and etc.

The HVPS124 module fully regulated and programmable outputs of 0 to 2000 volts are available in positive polarity. They based of micro-power DC to high voltage DC converters feature low EMI/RFI due to a magnetic free design.

Modules are available in two types. Module HVPS124-3V powered from 3.0 V to 5.5 V, module HVPS124-5V powered from 4.5 V to 15 V.

Low power consumption and light weight, with a case height of less than 7 mm, allows the use of a module for portable, battery powered equipment.

Voltage monitoring is provided at a 1000:1 ratio. Soft-start high voltage ramp-rates are designed in to further protect sensitive detectors to support long-term reliability.

Outward appearance of the HVPS124 are shown in fig. 1.

Fig. 1. High Voltage Power Supply HVPS124 OEM module.
2. SPECIFICATIONS

Basic

- output voltage ................................................................. 5V ... 2000 V
- output polarity ................................................................. positive
- output current ................................................................. 2 μA
- output ripple and noise <1* ................................................... < 10 mVpp
- reference voltage ............................................................. 2.048 V
- control voltage range ......................................................... 0 V ... 2.048 V
- control voltage transfer factor ............................................. 1000
- monitor output impedance ................................................. 50 Ω
- temperature instability 2* ................................................... ± 200 ppm/°C
- long-term instability 3* ...................................................... < 100 ppm/hr
- startup time ................................................................. < 5 sec

Power Requirements

- input voltage
  HVPS124-3V ........................................................................ 3.0 V ... 5.5 V
  HVPS124-5V ........................................................................ 4.5 V ... 15 V
- input current 4*  
  HVPS124-3V ........................................................................ ≤ 14 mA
  HVPS124-5V ........................................................................ ≤ 7 mA
- quiescent current 5*  
  HVPS124-3V ........................................................................ ≤ 1.4 mA
  HVPS124-5V ........................................................................ ≤ 0.7 mA

Operation Temperature ........................................................... -10°C to +60°C

Mechanical

- dimensions ................................................................. 34.9 mm x 17.0 mm x 6.8 mm
- weight ................................................................. < 6 g

<1* Measured at 2000 V output voltage, 1000 MΩ load.
<2* Measured at 1000 V output voltage, 500 MΩ load.
<3* Measured at 1000 V output voltage, 500 MΩ load, 5 min warm-up.
<4* Measured at 5 V input voltage, 1000 MΩ load.
<5* Measured at 5 V input voltage.
2. DESIGN FEATURES

Appearance of the HVPS124 was shown in fig. 1.
The HVPS124 module pin assignment is shown in table 1.

Table 1

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
<td>Signal Ground</td>
</tr>
<tr>
<td>2</td>
<td>Vin</td>
<td>Input Voltage 3,0 V ... 5,5 V for HVPS124-3V 4,5 V ... 15 V for HVPS124-5V</td>
</tr>
<tr>
<td>3</td>
<td>Vref</td>
<td>Reference Voltage Output 2,048 V</td>
</tr>
<tr>
<td>4</td>
<td>Vctl</td>
<td>Control Voltage Input 0 ... 2,0 V</td>
</tr>
<tr>
<td>5</td>
<td>Vmon</td>
<td>Voltage Monitor Output Vmon=Vout/1000</td>
</tr>
<tr>
<td>6</td>
<td>GND</td>
<td>High Voltage Output Return</td>
</tr>
<tr>
<td>7</td>
<td>Vout</td>
<td>High Voltage Output Vout=Vctl*1000</td>
</tr>
</tbody>
</table>

A typical application of the OEM module is shown in Fig. 2.

![Fig. 2. A typical application of the HVPS124 module.](image-url)
Dimensions of the HVPS124 shown on fig. 3.

Fig. 3. Dimensions of the HVPS124 module.
3. SAFETY AND PRECAUTIONS

- The Detection Module EMI shields have a thin wall and should not be strongly squeezed.
- Do not remove the EMI shields, this may cause product breakdown.
- Do not touch High Voltage Output pin module while the high voltage is on and for 5 minutes after system is shut down.