# High-Voltage Power Supply PS OPA 3kV ISO

*Technical Documentation*

Fulgora Spectra™

September 17, 2026

## Device Summary

The **PS OPA 3kV ISO** high-voltage power supply is a compact and reliable solution for providing precise and stable DC voltage.

**Key features:**

- High output voltage stability and low ripple.
- Built-in RC filter to reduce noise and protect against 50 Hz interference.
- Protection against short circuit and overvoltage.



*PS OPA 3kV ISO Power Supply*

## Main Applications

- Powering photomultiplier tubes (PMTs), vacuum electronic devices, and microchannel plate (MCP) detectors.
- Laboratory experiments requiring a precise, stable, and isolated high-voltage power source.

## Technical Specifications

| Parameter | Value | Units |
|---|---|---|
| Supply voltage | $24 \pm 1$ | V |
| Input current | ¡ 1.5 | A |
| Allowed noise level on +24 V rail | $\leq 200$ | $mV_{p\text{-}p}$ |
| Output voltage | 10–3000 | V |
| Maximum output current | $\leq 500$ | µA |
| Output voltage ripple/noise | $\leq 500$ | $mV_{p\text{-}p}$ |
| Temperature stability | 100 | ppm/°C |
| Voltage stabilization time | 1 | s |
| Dimensions | $160 \times 110 \times 60$ | mm |
| Weight | 500 | g |

**Table 1:** Key technical parameters of the power supply.

# Block Diagram

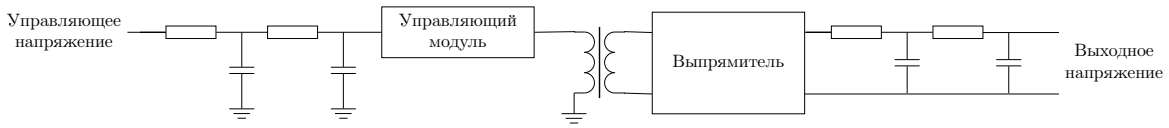



**Figure 1:** Block diagram of the PS OPA 3kV ISO device.

The control voltage applied to the device input passes through a dual RC filter with a characteristic time constant

$$\tau = R \cdot C = 0.1\,\text{s}.$$

This filter effectively suppresses 50 Hz interference that may appear on the control signal cable. To reduce high-frequency noise, the power supply output also features a dual RC filter.

The output impedance of the device is 94 kΩ, which makes the output voltage sensitive to loads with high current consumption. Although the device is designed to work with a capacitive load, a small resistive load is required for stable operation.

It is recommended to maintain a load current of at least 50 $\mu$A. This ensures effective discharge of the output RC filter capacitors after shutdown and prevents the accumulation of residual voltage.

# Power and Control Connectors

## 1. Input Power

A standard **5.5×2.1 mm DC jack** is used for the input power:

- Center contact: +24 V
- Outer contact: GND (ground)

## 2. D-Sub 9 Control Connector

| Pin | Function | I/O | Min | Type | Max | Units |
|---|---|---|---|---|---|---|
| 1 | Reference voltage output[1] | Out | 9.99 | – | 10.01 | V |
| 2 | GND (ground) | – | – | – | – | – |
| 3 | High-impedance control input | In | 0 | – | 10 | V |
| 4 | Voltage monitor output | Out | 0 | – | 10 | V |
| 5 | Low-current power output | Out | 23.5 | 24 | 24.5 | V |
| 6 | GND (ground) | – | – | – | – | – |
| 7 | GND (ground) | – | – | – | – | – |
| 8 | GND (ground) | – | – | – | – | – |
| 9 | GND (ground) | – | – | – | – | – |

**Table 2:** Pin assignments of the D-Sub 9 control connector.

[1] Maximum load current is no more than 1 mA.

# Measurements and Plots

## 1. Output Voltage Noise Oscillogram

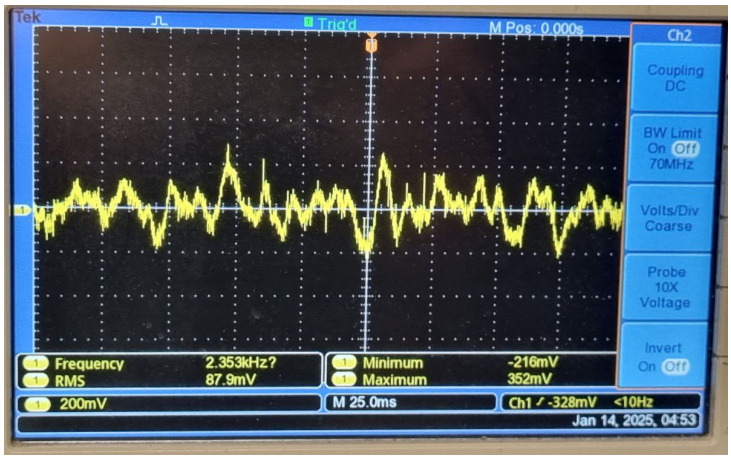



**Figure 2:** Output voltage noise (approximately 500 $\mathrm{mV_{p-p}}$).

## 2. Temperature Dependence of the Output Voltage

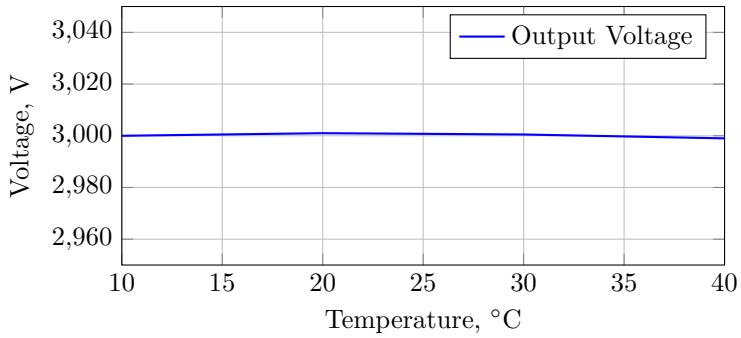



**Figure 3:** Output voltage stability vs. ambient temperature.

## 3. Stabilization Delay After Control Signal Application

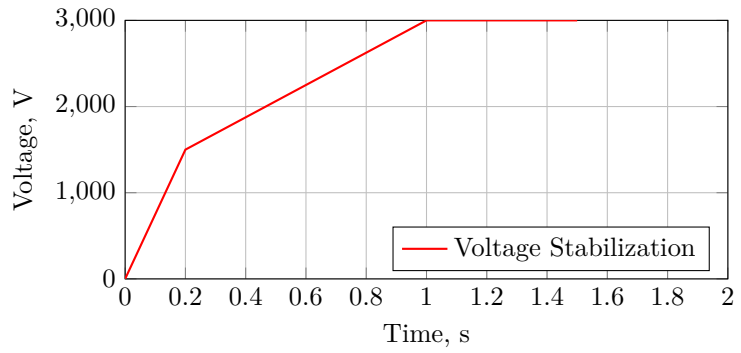



**Figure 4:** Voltage stabilization delay after the control signal changes.

## Operating Conditions

- Operating temperature range: from 10 °C to 40 °C.
- Relative humidity: up to 70%.