

- **Local or Remote Control of Beam Energy, Filament Power and Emission Current**
- **Integrated Floating Filament Supply**
- **Active Bias System**
- **RS-232 Control and Monitoring Interface**
- **High Stability, Less Than 2.5 ppm**
- **OEM Customization Available**

www.spellmanhv.com/manuals/EGM

Spellman's precision Electron Gun Power Supply is designed to achieve extremely high stability and low ripple. The EGM50 incorporates an integral floating filament supply and active bias. Full control via RS-232 interface reduces end-product development time and eases system integration. Safe, ground level local and remote control of beam energy, filament power and emission current provides optimum operational efficiency.

TYPICAL APPLICATIONS

Electron-Beam Lithography
Semiconductor Inspection
Scanning Electron Microscopes

SPECIFICATIONS

Input Voltage:

90-260Vac

Input Current:

<1.1A @ 100Vac

Input Frequency:

47 to 63Hz

Input Protection:

IEC inlet 3.15A "T" fuse

Temperature Range:

Operating: 20°C to 25°C
Storage: -10°C to 70°C

Operating Humidity:

10 to 70% RH

Connections and Cables:

9-pin "D" type: System Interlocks
25-pin "D" type: RS232
RJ485: Optional Ethernet
Optional HV Cable: 8m (XPVD-75-3Y) Hitachi
3-pin HV: 75kV DC Standard Federal Connector

Local Control:

Front panel push button for filament power and emission current increments
Beam energy on and off

Remote Control:

Via an RS-232C for Beam Energy, Filament Power, and Active Bias

Monitoring:

Digital monitoring via RS232C.
Analog output monitoring provided via BNC connectors on the rear panel

Front Panel Monitor:

Display 1: Beam energy or bias voltage
Display 2: Emission current
Display 3: Filament power

Dimensions:

2 x 3U 19" Rack Units

Weight:

Control Module 10kg (22lbs.)
HV Module 40kg (68lbs.)

Regulatory Approvals:

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

BEAM ENERGY

Output Voltage:

-50kV fixed, adjustable $\pm 2\%$ via remote control.
(Other output voltages available upon request)

Output Current:

500 μ A maximum

Polarity:

Negative

Line Regulation:

<10ppm for a 10% line change at 50kV 500 μ A

Load Regulation:

<10ppm for 100 to 500 μ A emission current change

Stability:

<2.0ppm/48hours/0.5°C

Warm Up Time:

5 hours for full stability

Ripple and Noise:

<2.5ppm.

Overcurrent Protection:

Protected against overcurrent to 120% of the rated current.
Unit will shutdown for over current condition greater than 100ms

Arc Protection:

Included

FILAMENT POWER SUPPLY

Output Power:

10W max. (adjustable in 0.1W steps)
 2A maximum current
 8.4V maximum voltage

Regulation:

Constant with secondary side control

Line Regulation:

<10ppm for 10% line change

Load Regulation:

<5% change in power from 4W to 7W (1Ω to 7Ω)

Drift:

<50ppm/12 hours/0.5°C after warm-up

Warm Up:

<3 hours for full stability

Ripple and Noise:

<0.1% (operating frequency)
 <50ppm (10Hz to 3 kHz)

Monitor:

+1.00V for 10W
 100ppm Stability
 0.5% accuracy

ACTIVE BIAS

Voltage Range:

Low: -200 to -1100V ref to filament center tap
High: -200 to -2000V ref to filament center tap
 Low or high range selected via rear panel switch

Temperature Coefficient:

<100ppm/°C

Emission Control:

0 to 500μA adjustable in steps of 0.1μA

Emission Monitor:

+5V for 500μA output
 100ppm stability
 0.1% accuracy

INTERFACE CONNECTOR

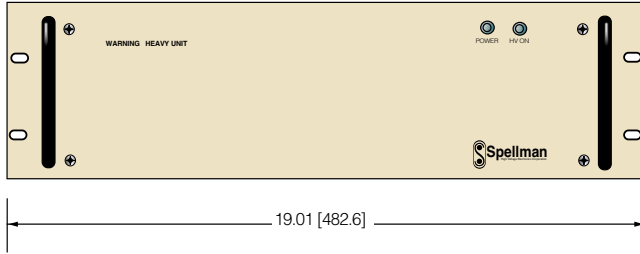
| PIN | SIGNAL | SIGNAL PARAMETERS |
|-----|---------------------|--|
| 1 | PSU on | Volt free contacts to indicate that there is power on the unit |
| 2 | N/C | No Connection |
| 3 | N/C | No Connection |
| 4 | N/C | No Connection |
| 5 | 0V | No Connection |
| 6 | Interlock/HV Enable | Link to 0V to enable HV output |
| 7 | N/C | No Connection |
| 8 | N/C | No Connection |
| 9 | PSU on | Volt free contacts to indicate that there is power on the unit |

RS-232 DIGITAL INTERFACE—

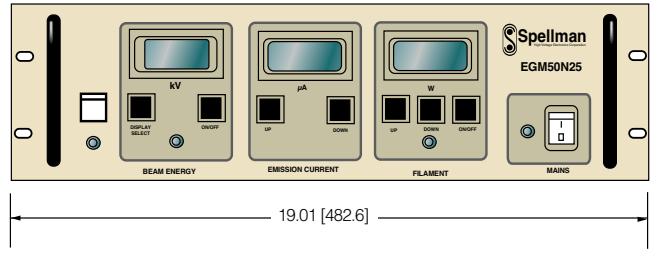
| PIN | SIGNAL | SIGNAL PARAMETERS |
|-----|--------|--------------------------------|
| 1 | N/C | No Connection |
| 2 | TX | PSU Transmit Data |
| 3 | RX | PSU Receive Data |
| 4 | RTS | Ready to Send |
| 5 | CTS | Clear to Send |
| 6 | N/C | No Connection |
| 7 | 0V | |
| 8 | N/C | No Connection |
| 9 | N/C | +12Vdc up to 100mA, switchable |
| 10 | N/C | No Connection |
| 11 | N/C | No Connection |
| 12 | N/C | No Connection |
| 13 | N/C | No Connection |
| 14 | N/C | No Connection |
| 15 | N/C | No Connection |
| 16 | N/C | No Connection |
| 17 | N/C | No Connection |
| 18 | N/C | No Connection |
| 19 | N/C | No Connection |
| 20 | N/C | No Connection |
| 21 | N/C | No Connection |
| 22 | N/C | No Connection |
| 23 | N/C | No Connection |
| 24 | N/C | No Connection |
| 25 | N/C | No Connection |

DIMENSIONS: in.[mm]

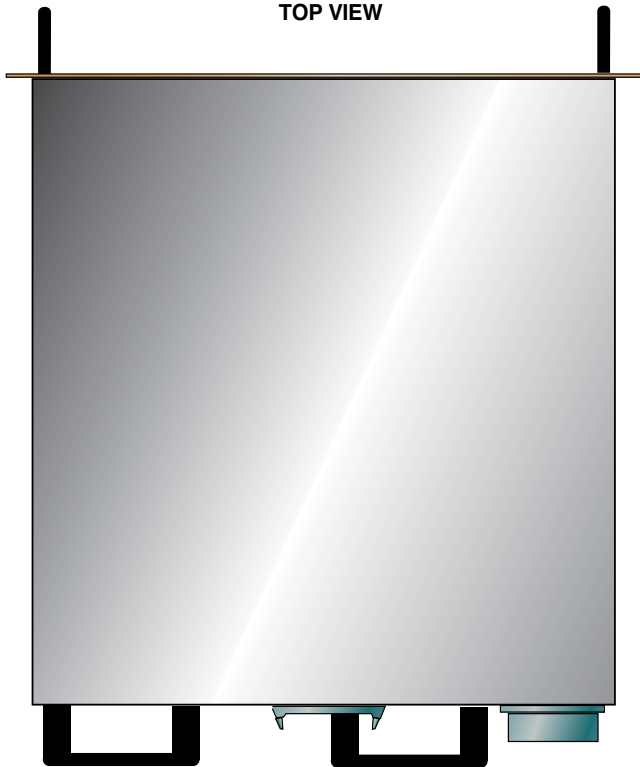
FRONT VIEW



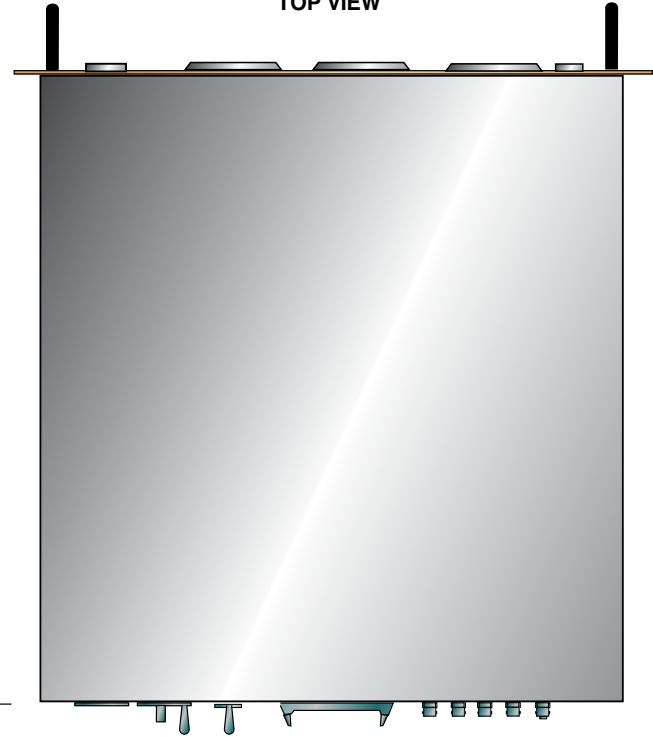
FRONT VIEW



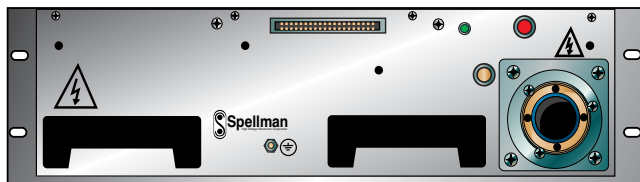
TOP VIEW



TOP VIEW



BACK VIEW



BACK VIEW

