EBM20 OEM MODULE FOR SEM APPLICATIONS

SPELLMAN HIGH VOLTAGE ELECTRONICS CORPORATION

- ***Triode Supply for Electron Beam Columns***
- ***High Precision, Low Noise, Ultra Stable***
- ***Over Current/Voltage Protection***
- ***Arc and Short Circuit Protection***
- ***OEM Customization Available***
- ***CE and RoHS Compliant, Designed to Meet UL***

The EBM20 powers E-Beam Columns in Thermionic Scanning Electron Microscopes providing acceleration, bias and filament sources in a single compact package. Spellman's proprietary HV packaging and encapsulation technology gives dramatic improvements in size, cost and performance compared to other SEM power supply offerings. The EBM20 provides a highly regulated, low noise, ultra stable accelerator supply programmable from 0 to -20kV at 200uA. The EBM20 has floating bias and filament supplies referenced to the accelerator. Programming signals utilize differential analog inputs to minimize external noise and offset voltages effects. A ground referenced accelerator current monitor is provided. The EBM20 is arc and short circuit immune, along with over voltage and over current protection.

TYPICAL APPLICATIONS

Scanning Electron Microscope

SPECIFICATIONS

Input Voltage:
+24Vdc, ±5%, 1.5A maximum

High Voltage Outputs:

ACCELERATOR:

Voltage:
0V to -20kV full load with respect to ground

Current:
200µA maximum, continuous from -500V to -20kV

Accuracy:
±1% from -500V to -20kV

Load Regulation:
<±100ppm, 20µA to 200µA load change

Line Regulation:
<±100ppm for 10% line change

Ripple:
<30ppm p-p at -20kV, 200µA,
maximum bias and filament output

Temperature Coefficient:
<100ppm/°C

Stability:
30ppm/3 minutes at 100µA load current after 1 hour warm up

BIAS:
(Referenced to Accelerator)

Voltage:
0 to +1.5kV (max allowable output limited to 2kV)

Current:
150µA maximum

Accuracy:
±3% of full scale

Line Regulation:
<±0.1% for 10% line change

Ripple:
<0.1% p-p

Temperature Coefficient:
<1000ppm/°C

Stability:
1%/10 minutes

FILAMENT:
(Referenced to Accelerator)

Power:
0 to 12W

Load Resistance:
1Ω ±5%

Accuracy:
±3% of FS

Load Regulation:
<1% for 10% change in load resistance

Line Regulation:
<1% for 10% line change

Ripple:
<0.1% p-p max

Temperature Coefficient:
<300ppm/°C

Stability:
100ppm/10 minutes

Spellman High Voltage Electronics Corporation

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128145-001 REV. A

INTERFACE:

Input:
Analog control for accelerator, filament and bias

Output:
Custom 3 pin receptacle and cable assembly

Temperature:
Operating: 5°C to +40°C
Storage: -20°C to +50°C

Humidity:
20% to 85% RH, non-condensing

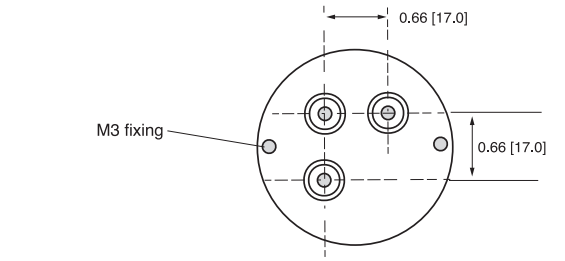
Dimensions:
10.63˝H x 2.36˝W x 7.87˝D (270mm x 60mm x 200mm) excluding any mounting brackets

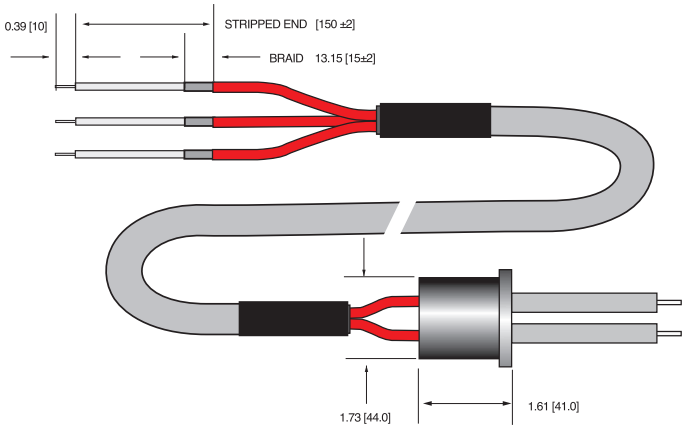
Weight:
<10 lbs. (4.5kg)

Regulatory Approvals:
The unit is CE marked against EN61010:2010 safety requirements for electrical equipment for measurement, control and laboratory use and is RoHS compliant.

The unit is designed to meet: UL61010-1:2012 safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: general requirements and CAN/CSA-C22.2 No.61010-1-12:2015.

HV CABLE ASSEMBLY DETAILS





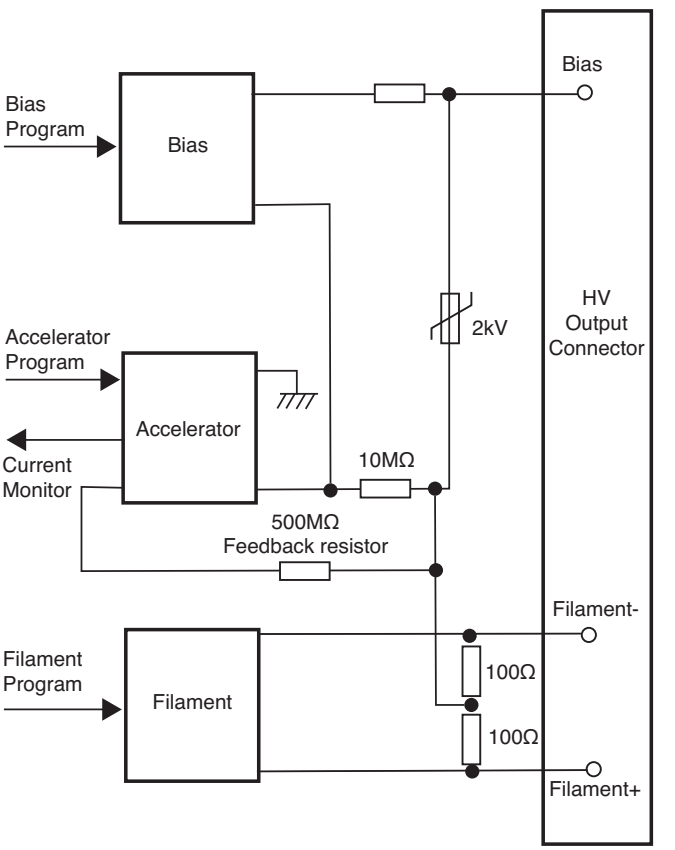
POWER INPUT CONNECTOR 3 PIN JST MODEL B 3PS-VH

PIN	SIGNAL	PARAMETER
1	+24V High Voltage Power Input	+24Vdc Input
2	0V Input	+24Vdc Common
3	FG	Chassis Ground

CONTROL AND MONITORING CONNECTOR 10 PIN JST MODEL S10B-EH

PIN	SIGNAL	PARAMETER
1	FIL PROG (+)	Filament Program (+) Input
2	FIL PROG (-)	Filament Program (-) Input
3	BIAS (+)	Bias (+) Input
4	BIAS (-)	Bias (-) Input
5	ACC PROG (+)	Acc Voltage Program (+) Input
6	ACC PROG (-)	Acc Voltage Program (-) Input
7	EMS	Emission Current Monitor Output
8	EMS GND	Emission Current Monitor Gnd (0V)
9	ACC MON	ACC Voltage Monitor Output
10	ACC MON GND	ACC Voltage Monitor GND (0V)

How to Order:
Standard: PART NO.:EBM20N4/24
HV Cable: PART NO.:HVC30/3IS/LL1650 (1.65m Cable)



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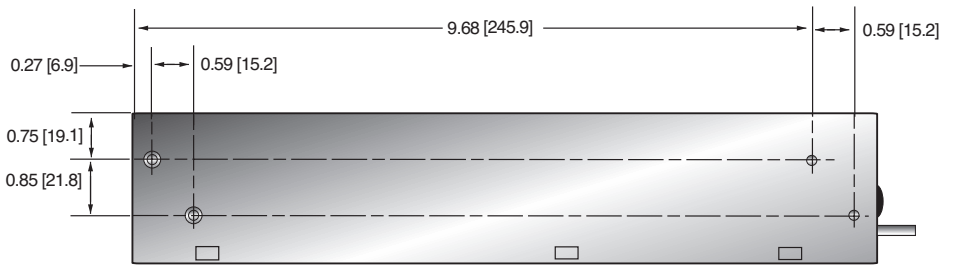
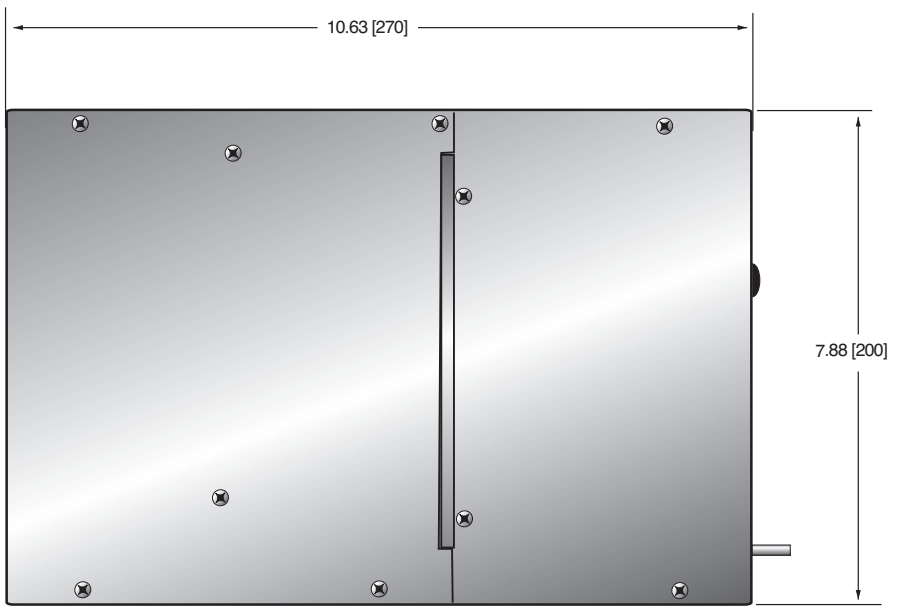
DIMENSIONS: in.[mm]

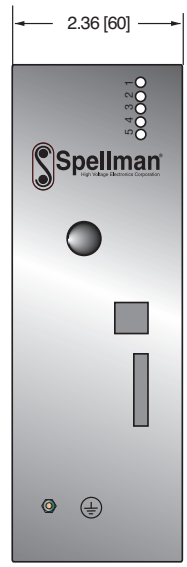
SIDE VIEW



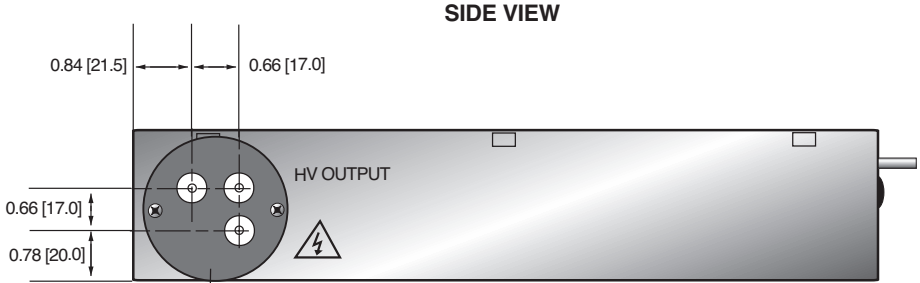
TOP VIEW



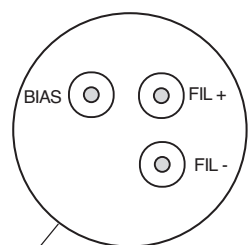
FRONT VIEW



SIDE VIEW



PIN OUT DETAIL



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