



- **50kV at 2mA, 50 or 75 Watt Max**
- **65kV at 2mA, 65 Watt Max**
- **Floating Integrated Filament Supply**
- **Arc & Short Circuit Protection**
- **Voltage & Current Programming**
- **Local and Remote Emission Control**
- **Safety Interlock**
- **Optional Digital Interface**

[www.spellmanhv.com/manuals/MFX](http://www.spellmanhv.com/manuals/MFX)

The MFX Series is the result of Spellman's exceptional high voltage packaging and surface mount fabrication techniques, coupled with its proprietary encapsulation technology producing this ultra compact-sized OEM X-Ray generator module.

The MFX Series is designed to power floating filament X-Ray tubes from various manufacturers. It features a 0 to 50kV (or 0 to 65kV) high voltage output, and up to 2mA of emission current limited to 50, 65 or 75 Watts, operating from a +24Vdc input. The MFX utilizes a closed loop filament beam control circuit to provide a highly regulated beam current. The floating ac filament supply operates between 0.3 and 4 amps. Offering tight regulation, high stability and low ripple, the MFX provides users both local and remote analog control to set beam voltage, emission current and filament current limit. An optional USB, RS-232 and Ethernet interface is available.

### OPTIONS

- SIC** Standard Interface Controller (Ethernet, USB & RS-232)
- 5VPM** 0 to 5 Volt Programming and Monitor Scaling

### SPECIFICATIONS

#### Input:

+24Vdc  $\pm 10\%$ , 5.0A maximum for either 50 Watts or 75 Watts.  
+24Vdc  $\pm 1V$ , 5.0A maximum for 65kV/65W units.

#### Efficiency:

80-85%, typical

#### Output:

0 to 50kV at 0 to 2mA, limited to a maximum of 50 watts or 75 Watts. 0-65kV at 2mA limited to 65 Watts. Negative output polarity.

#### Voltage Control:

**Local:** Internal multi-turn potentiometer to set voltage from 0 to full output voltage.  
**Remote:** 0 to +10Vdc proportional from 0 to full output voltage. Accuracy:  $\pm 1\%$ .  $Z_{IN}$ : 10Mohm.

#### Emission Control:

**Local:** Internal potentiometer to set beam current between 0 and full output current.  
**Remote:** 0 to +10Vdc proportional from 0 to full output current. Accuracy :  $\pm 1\%$ .  $Z_{IN}$ : 10Mohm. Filament limit and filament preheat control capability is also provided.

#### High Frequency AC Filament Supply:

Current: 0-4A, adjustable limit  
Voltage: 5.0 volt limit

#### Voltage Regulation:

Load: 0.01% of output voltage no load to full load.  
Line:  $\pm 0.01\%$  for  $\pm 10\%$  change in input voltage.

#### Current Regulation:

Load: 0.01% of output current from 0 to rated voltage.  
Line:  $\pm 0.01\%$  for  $\pm 10\%$  change in input voltage.

#### Ripple:

0.1% p-p of maximum rated output voltage, 50kV units (50/75W)  
0.1% rms maximum rated output voltage, 65kV units (65W)

#### Environmental:

Operational: 0°C to +50°C  
Storage: -40°C to +85°C  
Humidity: 0% to 90%, non-condensing

#### Temperature Coefficient:

0.01% per °C, voltage and current.

#### Stability:

0.05% per 8 hours after 1/2 hour warm-up.

#### Voltage and Current Monitors:

0 to +10Vdc proportional from 0 to rated output. Accuracy  $\pm 1\%$ .

#### Dimensions:

50kV Unit: 7.00"H x 2.87"W x 8"D  
(177.80mm x 72.90mm x 203.25mm)  
65kV Unit: 7.00"H x 2.87"W x 9"D  
(177.80mm x 72.90mm x 228.65mm)  
SIC Option: 7.75"H x 2.87"W x 8"D/9"D  
(196.85mm x 72.90mm x 203.25mm/228.65mm)

#### Weight:

7.0 lbs. (3.2kg)

#### Regulatory Approvals:

RoHS compliant.

### J2 POWER INPUT CONNECTOR

PIN	SIGNAL	PARAMETER
1	+24V Input	+24 volts @ 5A, max.
2	24V Return (Gnd.)	Power Ground

### J4 ANALOG INTERFACE CONNECTOR MALE 15 PIN MINI "D"

PIN	SIGNAL	PARAMETER
1	Monitor Return	Signal Ground
2	Voltage Monitor	0-10 volts = 0 to full scale, Zout=1KΩ
3	Current Monitor	0-10 volts = 0 to full scale, Zout=1KΩ
4	Interlock Output	Connect 12V HVON bulb to pin 15 to enable
5	+10 Volt Reference	+10 Volts @ 1mA, maximum
6	Filament Monitor	1 volt = 1 amp, Zout=1KΩ
7	Voltage Program Input	0-10 volts = 0 to full scale, Zin=10MΩ
8	Local Voltage Program*	10 turn pot., screwdriver adjust
9	Filament Limit Setpoint*	1 volt = 1 amp, screwdriver adjust
10	Current Program Input	0-10 volts = 0 to full scale, Zin=10MΩ
11	Local Current Program*	10 turn pot, screwdriver adjust
12	Not used (+24V Out for Interlock)	(Optional Interlock configuration)
13	Not used (Interlock Coil)	(Optional Interlock configuration)
14	Filament Preheat Setpoint*	1 volt = 1 amp, screwdriver adjust
15	Interlock Return	Interlock Ground

\*Denotes 10 turn potentiometer located on front panel

### J1 CATHODE OUTPUT CLAYMOUNT HV CONNECTOR

PIN	OUTPUT CONNECTION
C (common)	-High Voltage Output
S (small)	-High Voltage Output
L (large)	Filament Output
G (grid)	Filament Output

Note: No high voltage cable is provided

Recommended Cable:

Claymount part number: 11470

Cable assembly, L3 CA11, CA11, 10F, CS=Bare 10 foot, Mini Federal Connectors on both ends, "C" and "S" are both connected to the bare wire

#### How To Order:

Sample model number:

50 Watt unit: MFX50N50

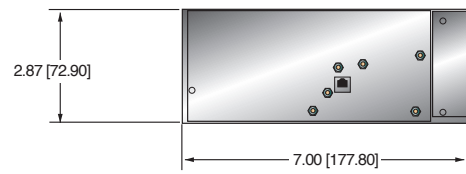
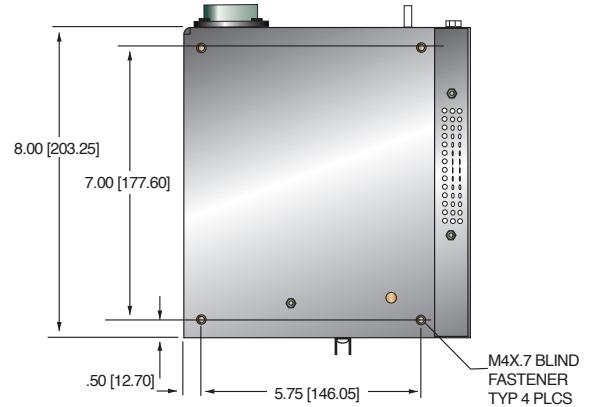
65 Watt unit: MFX65N65

75 Watt unit: MFX50N75

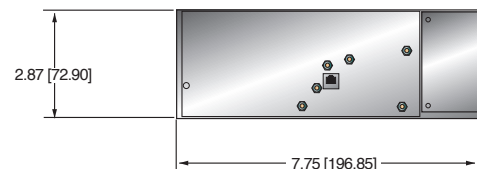
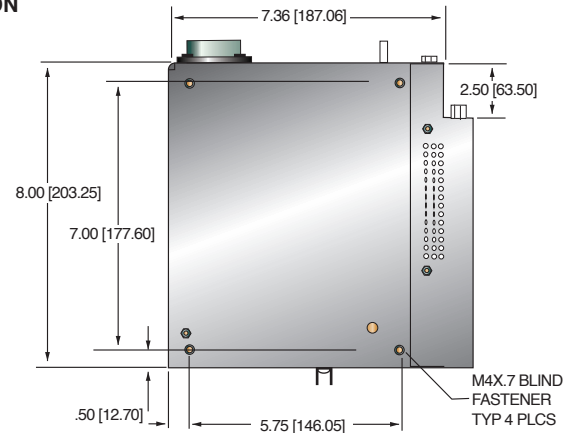
Options are added to the model number as follows:

MFX50N75/SIC

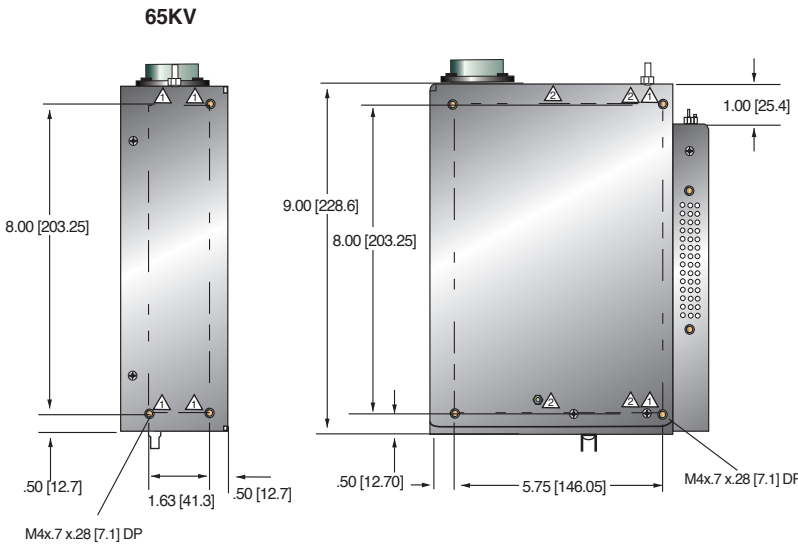
DIMENSIONS: in.[mm]



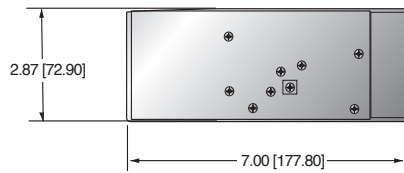
### 50KV WITH SIC OPTION



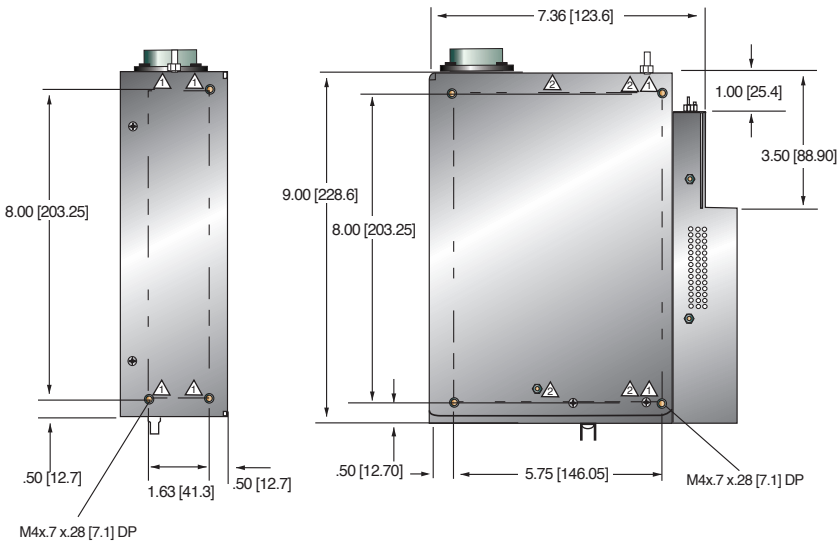
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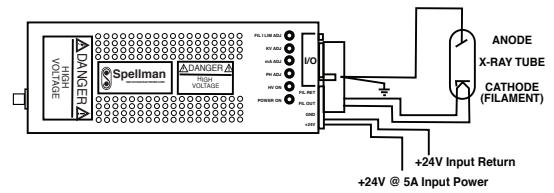
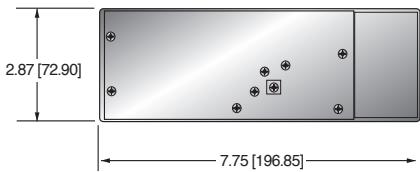
△ = ALTERNATE MOUNTING OPTION  
 ▲ = STANDARD MOUNTING OPTION



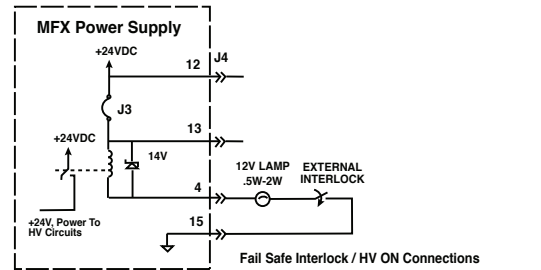
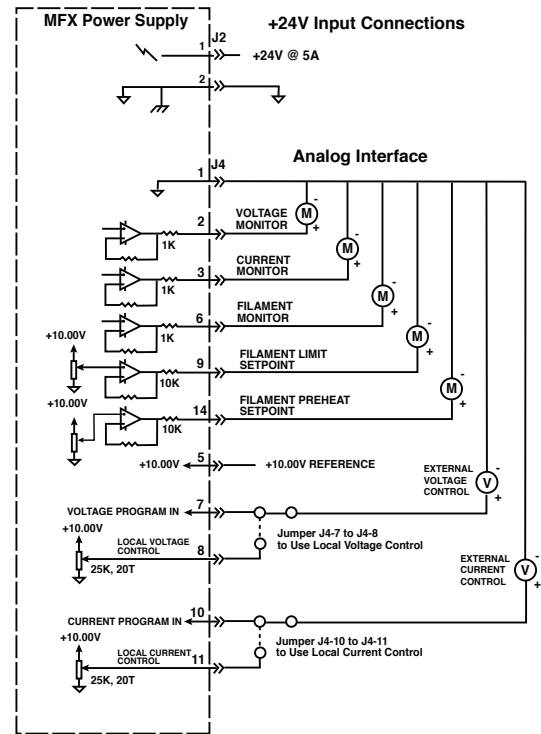
65KV WITH SIC OPTION



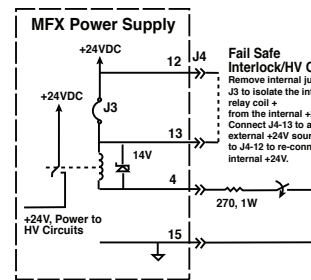
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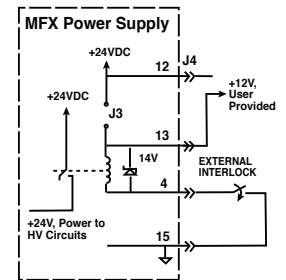
Typical MFX Operating Setup



Alternate Interlock Configurations



Alternate Interlock Configuration:  
Fail Safe Lamp Replaced with a 270 Ohm Resistor



Alternate Interlock Configuration:  
Customer Provided +12V For HV ON Relay, Relay Return Grounded