Spellman’s XRB011 Series of Monoblock® X-Ray sources are designed for OEM applications powering its internal X-Ray tube up to 80kV at 20W and 80kV at 50W. Features like 24Vdc input voltage, small package size, standard analog interface and RS-232/Ethernet digital interface simplify integrating the XRB011 into your X-Ray system. Proprietary emission control circuitry provides excellent regulation of X-Ray tube current, along with outstanding stability and performance.

TYPICAL APPLICATIONS
Medical X-Ray: Fluoroscopy and Radiography for Extremities, Specimen Radiography. Pulsed Fluoroscopy (contact Spellman sales)
Industrial X-Ray: Component inspection and Non-Destructive Testing

SPECIFICATIONS
X-Ray Characteristics:
- Tube Type: Micro focus tube
- Focal Spot: 33μm Nominal, 50μm max. (IEC 336)
- Beam Filter: Ultem 0.060˝ (1.5mm)
- Oil 0.175˝ (4.4mm)
- Beam Geometry: Symmetrical 40° cone

Input Voltage:
- 20W: 24Vdc ±1V @ 2.5A
- 50W: 24Vdc ±1V @ 4A

X-Ray Tube Voltage:
- Nominal X-Ray tube voltage is adjustable between 35kV to 80kV

X-Ray Tube Current:
- 20W: 0-250μA over specified tube voltage range
- 50W: 0-700μA over specified tube voltage range

X-Ray Tube Power:
- 20/50W maximum continuous

Voltage Regulation:
- Line: ±0.5% for a ±1V change of nominal input line voltage
- Load: ±0.5% for a voltage change of 35kV to 80kV

Voltage Accuracy:
- Voltage measured across the X-Ray tube is within ±1% of the programmed value

Voltage Risetime:
- Ramp time shall be ≤250ms from 10% to 90% of maximum rated output voltage

Voltage Temperature Coefficient:
- ≤100ppm/°C

Over Temperature Fault:
- Indicates that the internal oil temperature has exceeded 65°C. The high voltage output will be disabled. Toggling the X-Ray ON Command OFF and ON will reset the fault.

Over Voltage Fault:
- An overvoltage (OV) fault is detected when the output voltage exceeds 82kV. The high voltage output will be disabled. Toggling the X-Ray ON Command OFF and ON will reset the fault.

Voltage Ripple:
- 1% peak to peak

Current Regulation:
- Line: ±0.5% for a ±1V change of nominal input line voltage
- Load: ±0.5% for a voltage change of 35kV to 80kV

Current Accuracy:
- Current measured through the X-Ray tube is within ±2.5% of the programmed value

Over Current Fault:
- An overcurrent (OC) fault is detected when the emission current exceeds 275μA (20W model) and 710μA (50W model). Toggling the X-Ray ON Command OFF and ON will reset the fault.

Arc Intervention:
- One arc fault. The high voltage output will be disabled. Toggling the X-Ray ON command OFF and ON will reset the fault.

Filament Configuration:
- Internal high frequency AC filament drive with closed loop filament emission control

Analog Interface:
- Ground referenced 10kV/V, 25μA/V (20W model) and 70μA/V (50W model) for programming and monitoring analog interface signals. Open collector, active low digital signal interface. Internal jumper is needed to be configured for analog interface.
### Analog Interface—J1 25 PIN MALE D CONNECTOR

<table>
<thead>
<tr>
<th>PIN</th>
<th>SIGNAL</th>
<th>PARAMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+24V</td>
<td>+24Vdc ±1Vdc @ 4A</td>
</tr>
<tr>
<td>2</td>
<td>+24V</td>
<td>+24Vdc ±1Vdc @ 4A</td>
</tr>
<tr>
<td>3</td>
<td>+24V</td>
<td>+24Vdc ±1Vdc @ 4A</td>
</tr>
<tr>
<td>4</td>
<td>NC</td>
<td>No Connection</td>
</tr>
<tr>
<td>5</td>
<td>NC</td>
<td>No Connection</td>
</tr>
<tr>
<td>6</td>
<td>NC</td>
<td>No Connection</td>
</tr>
<tr>
<td>7</td>
<td>NC</td>
<td>No Connection</td>
</tr>
<tr>
<td>8</td>
<td>NC</td>
<td>No Connection</td>
</tr>
</tbody>
</table>

### Digital Interface: RS-232: standard  
Ethernet: optional

### Control Software:
A demo GUI is available for engineering evaluations

### Interlock/Signals:
A hardware interlock functions in both analog and digital programming modes.

### Operating Temperature:
0°C to +40°C

### Storage Temperature:
-20°C to +70°C

### Humidity:
10% to 95% relative humidity, non-condensing

### Cooling:
50W option: Customer provided, external cooling fan, 50cfm, minimum

### Analog Interface and Input Line Connector:
25 pin D connector, male

### Digital Interface Connector:
- RS-232: 9 pin D connector, female  
- Ethernet: RJ45 connector

### Grounding Point:
6-32 ground stud provided on chassis

### Dimensions:
- 20W: 5.81"W x 5.0"H x 10.81"D  
  (147.57mm X 127mm X 274.57mm)  
- 50W: 6.00"W x 5.0"H x 10.81"D  
  (152.4mm x 127mm x 274.57mm)

### Weight:
- 20W: 18lbs (8.165kg)  
- 50W: 20lbs (9.072kg)

### Orientation:
Can be mounted in any orientation.

### X-Ray Leakage:
Less than 1mR/hr at 1 meter

### Regulatory Approvals:
Compliant to EMC 60601-1-2. UL/CUL recognized file E242584. CE to EN 61010-1 for Non-Medical Applications.

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### RS-232 DIGITAL INTERFACE—J5 9 PIN FEMALE D CONNECTOR

<table>
<thead>
<tr>
<th>PIN</th>
<th>SIGNAL</th>
<th>PARAMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NC</td>
<td>No Connection</td>
</tr>
<tr>
<td>2</td>
<td>TX Out</td>
<td>Transmit Data</td>
</tr>
<tr>
<td>3</td>
<td>RX In</td>
<td>Receive Data</td>
</tr>
<tr>
<td>4</td>
<td>NC</td>
<td>No Connection</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Signal Ground</td>
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<tr>
<td>6</td>
<td>NC</td>
<td>No Connection</td>
</tr>
<tr>
<td>7</td>
<td>NC</td>
<td>No Connection</td>
</tr>
<tr>
<td>8</td>
<td>NC</td>
<td>No Connection</td>
</tr>
</tbody>
</table>

### Ethernet Digital Interface— RJ45 8 PIN CONNECTOR

<table>
<thead>
<tr>
<th>PIN</th>
<th>SIGNAL</th>
<th>PARAMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TX +</td>
<td>Transmit Data +</td>
</tr>
<tr>
<td>2</td>
<td>TX -</td>
<td>Transmit Data -</td>
</tr>
<tr>
<td>3</td>
<td>RX +</td>
<td>Receive Data +</td>
</tr>
<tr>
<td>4</td>
<td>NC</td>
<td>No Connection</td>
</tr>
<tr>
<td>5</td>
<td>NC</td>
<td>No Connection</td>
</tr>
<tr>
<td>6</td>
<td>RX -</td>
<td>Receive Data -</td>
</tr>
<tr>
<td>7</td>
<td>NC</td>
<td>No Connection</td>
</tr>
</tbody>
</table>

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### Analog Interface—J1 25 PIN MALE D CONNECTOR

<table>
<thead>
<tr>
<th>PIN</th>
<th>SIGNAL</th>
<th>PARAMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+24V RETURN</td>
<td>+24V RETURN</td>
</tr>
<tr>
<td>2</td>
<td>+24V RETURN</td>
<td>+24V RETURN</td>
</tr>
<tr>
<td>3</td>
<td>NC</td>
<td>No Connection</td>
</tr>
<tr>
<td>4</td>
<td>NC</td>
<td>No Connection</td>
</tr>
<tr>
<td>5</td>
<td>NC</td>
<td>No Connection</td>
</tr>
<tr>
<td>6</td>
<td>NC</td>
<td>No Connection</td>
</tr>
<tr>
<td>7</td>
<td>NC</td>
<td>No Connection</td>
</tr>
</tbody>
</table>

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### Control Software:
A demo GUI is available for engineering evaluations

### Interlock/Signals:
A hardware interlock functions in both analog and digital programming modes.

### Operating Temperature:
0°C to +40°C

### Storage Temperature:
-20°C to +70°C

### Humidity:
10% to 95% relative humidity, non-condensing

### Cooling:
50W option: Customer provided, external cooling fan, 50cfm, minimum

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### Analog Interface and Input Line Connector:
25 pin D connector, male

### Digital Interface Connector:
- RS-232: standard
- Ethernet: optional

### Grounding Point:
6-32 ground stud provided on chassis

### Dimensions:
- 20W: 5.81"W x 5.0"H x 10.81"D  
  (147.57mm X 127mm X 274.57mm)  
- 50W: 6.00"W x 5.0"H x 10.81"D  
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### Weight:
- 20W: 18lbs (8.165kg)  
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### Orientation:
Can be mounted in any orientation.

### X-Ray Leakage:
Less than 1mR/hr at 1 meter

### Regulatory Approvals:
Compliant to EMC 60601-1-2. UL/CUL recognized file E242584. CE to EN 61010-1 for Non-Medical Applications.
20W Model

ORDERING INFORMATION

XRB011-80PN20  80kV, 250uA, 20W, Analog Interface, RS-232
XRB011-80PN20E  80kV, 250uA, 20W, Analog Interface, RS-232, Ethernet
XRB011-80PN20A  80kV, 250uA, 20W, Analog Interface
XRB011-80PN20/CE  80kV, 250uA, 20W, Analog Interface, RS-232, CE
XRB011-80PN20E/CE  80kV, 250uA, 20W, Analog Interface, RS-232, Ethernet, CE
XRB011-80PN20A/CE  80kV, 250uA, 20W, Analog Interface, CE

XRB011
20W Model

DIMENSIONS: in. [mm]

FRONT VIEW

SIDE VIEW

TOP VIEW
50W Model
ORDERING INFORMATION

XRB011-80PN50  80kV, 700uA, 50W, Analog Interface, RS-232
XRB011-80PN50E 80kV, 700uA, 50W, Analog Interface, RS-232, Ethernet
XRB011-80PN50A 80kV, 700uA, 50W, Analog Interface
XRB011-80PN50/CE 80kV, 700uA, 50W, Analog Interface, RS232, CE
XRB011-80PN50E/CE 80kV, 700uA, 50W, Analog Interface, RS232, Ethernet, CE
XRB011-80PN50A/CE 80kV, 700uA, 50W, Analog Interface, CE