The XFN Series is designed to power floating filament X-ray tubes from various manufacturers. It features a 0 to 60kV (or 0 to 70KV) high voltage output, and up to 2mA of emission current limited to 50, 65, 75 or 100 Watts, operating from a +24Vdc input. The XFN utilizes a closed loop filamentry beam control circuit to provide a highly regulated beam current. The floating filament supply operates between 0.3 and 5 amps. Offering tight regulation, high stability and low ripple, the XFN provides users both local and remote analog control to set beam voltage, emission current and filament current limit. An optional USB, RS-232 and RS-422 interface is available.

**INTRODUCTION**

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**TYPICAL APPLICATIONS**

Grounded anode X-ray tubes from Kevex, Oxford, RTW, Superior, Varian and Trufocus…

**XFN SELECTION TABLE**

<table>
<thead>
<tr>
<th>KV</th>
<th>mA</th>
<th>P(W)</th>
<th>MODEL</th>
<th>KV</th>
<th>mA</th>
<th>P(W)</th>
<th>MODEL</th>
<th>KV</th>
<th>mA</th>
<th>P(W)</th>
<th>MODEL</th>
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<tbody>
<tr>
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<td>1.67</td>
<td>10</td>
<td>XFN6N10</td>
<td>30</td>
<td>0.33</td>
<td>10</td>
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<td>0.17</td>
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<td>4</td>
<td>0.83</td>
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<td>1.67</td>
<td>100</td>
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<td>30</td>
<td>XFN10N30</td>
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<td>0.75</td>
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<td>0.15</td>
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<td>10</td>
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<td>0.14</td>
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<td>XFN70N10</td>
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<td>XFN50N30</td>
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<td>0.43</td>
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<td>XFN20N50</td>
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<td>1</td>
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<td>XFN50N50</td>
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<td>0.71</td>
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<td>3.25</td>
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<td>XFN20N65</td>
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<td>1.3</td>
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<td>XFN50N65</td>
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<td>0.93</td>
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<td>1.5</td>
<td>75</td>
<td>XFN50N75</td>
<td>70</td>
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<tr>
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<td>XFN20N100</td>
<td>50</td>
<td>2</td>
<td>100</td>
<td>XFN50N100</td>
<td>70</td>
<td>1.43</td>
<td>100</td>
<td>XFN70N100</td>
</tr>
</tbody>
</table>

**XFN SELECTION EXAMPLE**

```
XFN 70 N 100 -2 5 USB AT X

Series Number | Maximum Output Voltage (KV) | Output polarity | Maximum Output Power (W) | Option | Option | Option | Option | Option | Option
--- | --- | --- | --- | --- | --- | --- | --- | --- | ---
XFN6N75 | 65KV, 2mA | Negative polarity | | | | | | | |
```

**OPTIONAL USB 2.0, RS-232 OR RS-422 IS AVAILABLE.**

- 60KV AT 2 mA. 100 WATTS MAX.
- 70KV AT 2 mA. 100 WATTS MAX.
- FLOATING FILAMENT SUPPLY.
- OVERVOLTAGE, ARC & SHORT CIRCUIT PROTECTION.
- VOLTAGE & CURRENT PROGRAMMING.
- LOCAL AND REMOTE CONTROL.
- SAFETY INTERLOCK.
- OEM CUSTOMIZATION AVAILABLE.
## XFN Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Describe</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input</strong></td>
<td>+24Vdc ±10%, 5.0A maximum for 70W, 8.0A maximum for 100W.</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>6KV, 10KV, 20KV, 30KV, 40KV, 50KV, 60KV, 65KV, 70KV Maximum output Voltage option.</td>
</tr>
<tr>
<td><strong>Stability</strong></td>
<td>0.02% per 8 hours after 1/2 hour warm-up.</td>
</tr>
<tr>
<td><strong>Temperature Coefficient</strong></td>
<td>≤25ppm/°C.</td>
</tr>
<tr>
<td><strong>Ripple</strong></td>
<td>0.1% p-p of maximum rated output voltage.</td>
</tr>
<tr>
<td><strong>Voltage/Current Monitor</strong></td>
<td>0 to 10 volt corresponds to 0 to maximum output, Zout=11KΩ, accuracy: ±1%.</td>
</tr>
<tr>
<td><strong>Voltage Local Programming</strong></td>
<td>Internal potentiometer to set voltage from 0 to maximum output voltage.</td>
</tr>
<tr>
<td><strong>Voltage Remote Programming</strong></td>
<td>0 to +10Vdc proportional from 0 to maximum output voltage, Zin=10MΩ.</td>
</tr>
<tr>
<td><strong>Current Programming Remote</strong></td>
<td>Internal potentiometer to set current from 0 to maximum output current.</td>
</tr>
<tr>
<td><strong>Current Programming Local</strong></td>
<td>0 to +10Vdc proportional from 0 to maximum output current, Zin=10MΩ.</td>
</tr>
<tr>
<td><strong>Voltage Load Regulation</strong></td>
<td>0.01% (no load to full load change).</td>
</tr>
<tr>
<td><strong>Voltage Line Regulation</strong></td>
<td>±0.01% (input voltage line change ±10%).</td>
</tr>
<tr>
<td><strong>Current Load Regulation</strong></td>
<td>0.01% (no load to full load change).</td>
</tr>
<tr>
<td><strong>Current Line Regulation</strong></td>
<td>±0.01% (input voltage line change ±10%).</td>
</tr>
<tr>
<td><strong>Filament Supply</strong></td>
<td>Current: 0.3-5A, adjustable limit. Voltage: 0-5volt adjustable limit.</td>
</tr>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>0°C to +50°C.</td>
</tr>
<tr>
<td><strong>Storage Temperature</strong></td>
<td>-40°C to +85°C.</td>
</tr>
<tr>
<td><strong>Cooling</strong></td>
<td>Convection cooled</td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>20% to 85% RH, non-condensing.</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>60KV: 7.28” H x 2.95” W x 8.07” D (185.00mm x 75.00mm x 205.00mm)</td>
</tr>
<tr>
<td></td>
<td>60KV (Option USB/RS232/RS422): 8.03” H x 2.95” W x 8.07” D (204.00mm x 75.00mm x 205.00mm)</td>
</tr>
<tr>
<td></td>
<td>70KV: 7.28” H x 2.95” W x 8.98” D (185.00mm x 75.00mm x 228.00mm)</td>
</tr>
<tr>
<td></td>
<td>70KV (Option USB/RS232/RS422): 8.03” H x 2.95” W x 8.98” D (204.00mm x 75.00mm x 228.00mm)</td>
</tr>
</tbody>
</table>

### XFN Power Input

<table>
<thead>
<tr>
<th>J4 Parameter</th>
<th>J4 SINGAL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>+24V Input</td>
<td>1</td>
<td>+24 Volts @ 5A, MAX. 100@8A, MAX.</td>
</tr>
<tr>
<td>24V Return(Gnd)</td>
<td>2</td>
<td>Power Ground</td>
</tr>
</tbody>
</table>

### XFN Analog Interface

<table>
<thead>
<tr>
<th>I/O</th>
<th>SINGAL</th>
<th>PARAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Monitor Return</td>
<td>Ground</td>
</tr>
<tr>
<td>2</td>
<td>Voltage Monitor</td>
<td>0-10 volts=0 to maximum output</td>
</tr>
<tr>
<td>3</td>
<td>Current Monitor</td>
<td>0-10 volts=0 to maximum output</td>
</tr>
<tr>
<td>4</td>
<td>Interlock Output</td>
<td>Alternate Interlock Configurations</td>
</tr>
<tr>
<td>5</td>
<td>+10 Volts Reference</td>
<td>+10 Volts @ 1mA, maximum</td>
</tr>
<tr>
<td>6</td>
<td>Filament Monitor</td>
<td>1V=1A, Zout=10KΩ</td>
</tr>
<tr>
<td>7</td>
<td>Voltage Program Input</td>
<td>0-10 volts=0 to maximum output</td>
</tr>
<tr>
<td>8</td>
<td>Local Voltage Program</td>
<td>10 turn pot, screwdriver adjust</td>
</tr>
<tr>
<td>9</td>
<td>Filament Limit Setpoint</td>
<td>1V=1A, screwdriver adjust</td>
</tr>
<tr>
<td>10</td>
<td>Current Program Input</td>
<td>10 turn pot, screwdriver adjust</td>
</tr>
<tr>
<td>11</td>
<td>Local Current Program</td>
<td>10 turn pot, screwdriver adjust</td>
</tr>
<tr>
<td>12</td>
<td>N/C+(+24V Out for Interlock)</td>
<td>Optional Interlock Configuration</td>
</tr>
<tr>
<td>13</td>
<td>N/C (Interlock Coil)</td>
<td>Optional Interlock Configuration</td>
</tr>
<tr>
<td>14</td>
<td>Filament Preheat Setpoint</td>
<td>1V=1A, screwdriver Adjust</td>
</tr>
<tr>
<td>15</td>
<td>Interlock Return</td>
<td>Ground</td>
</tr>
</tbody>
</table>

### XFN LED Indicators

<table>
<thead>
<tr>
<th>LED SINGAL</th>
<th>LED SINGAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 POW</td>
<td>Power ON</td>
</tr>
<tr>
<td>2 ARC</td>
<td>Arc fault occurs</td>
</tr>
<tr>
<td>3 OT</td>
<td>Over temperature occurs</td>
</tr>
<tr>
<td>4 OC</td>
<td>Over current occurs</td>
</tr>
</tbody>
</table>

### USB Digital Interface

<table>
<thead>
<tr>
<th>USB SINGAL</th>
<th>USB SINGAL</th>
<th>USB SINGAL</th>
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</thead>
<tbody>
<tr>
<td>VBUS</td>
<td>+5V dc</td>
<td></td>
</tr>
<tr>
<td>2 D-</td>
<td>Data-</td>
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</tbody>
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RS-232/RS-422 Digital Interface

<table>
<thead>
<tr>
<th>J3 SINGAL</th>
<th>J3 SINGAL</th>
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</thead>
<tbody>
<tr>
<td>1 N/C</td>
<td>6 RA+/RA- Receive</td>
</tr>
<tr>
<td>2 TXD/Transmit Data</td>
<td>7 RB-/RB- Receive</td>
</tr>
<tr>
<td>3 RXD/Receive Data</td>
<td>8 TB+/TB- Transmit</td>
</tr>
<tr>
<td>4 N/C</td>
<td>9 TA+/TA- Transmit</td>
</tr>
<tr>
<td>5 SGND</td>
<td></td>
</tr>
</tbody>
</table>

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USB Digital Interface

<table>
<thead>
<tr>
<th>USB SINGAL</th>
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<tbody>
<tr>
<td>1 VBUS</td>
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<tr>
<td>2 D-</td>
<td>Data-</td>
</tr>
<tr>
<td>3 D+</td>
<td>Data+</td>
</tr>
<tr>
<td>4 GND</td>
<td>Ground</td>
</tr>
</tbody>
</table>
### DIMENSIONS

**60KV:**

- **DIMENSIONS:** in. [mm]
  - 6.99 [177.5]
  - 0.55 [14.0]
  - 6.99 [177.5]
  - 0.69 [17.5]
  - 8-M4X0.7 BLIND FASTENER TYP4 PLCS
  - 0.31 [8.0]
  - 8.07 [205.0]
  - 6.99 [177.5]

**60KV (Option USB/RS232/RS422):**

- 0.69 [17.5]
- 0.31 [8.0]
- 6.99 [177.5]
- 8.07 [205.0]

**GROUND STUD M5 × 0.8 × 15mm**

**8-M4X0.7 BLIND FASTENER TYP 4 PLCS**

---

**60KV/70KV**

- 50W/65W/75W/100W
- X-ray Generator

**ISO9001:2008**

---

sales@wismanhv.com
www.wismanhv.com

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180514
70KV:

**8-M4X0.7 BLIND FASTENER**
TYP 4 PLCS

**GROUND STUD**
M5 x 0.8 x 15mm

70KV (Option USB/RS232/RS422):

**8-M4X0.7 BLIND FASTENER**
TYP 4 PLCS

**GROUND STUD**
M5 x 0.8 x 15mm