The XPIN® detector is Moxtek’s best performing Si-PIN detector. XPIN detectors use a silicon PIN diode, multi-layer collimator, and thin DuraBeryllium® window, achieving great resolution and x-ray sensitivity. The XPIN preamp provides a low-noise signal output to an analog or digital pulse shaping amplifier. The XPIN-XT package is ideal for benchtop and portable applications where an integrated temperature controller is not required.

### Applications

**Portable / Benchtop XRF**
- RoHS / WEEE
- Light element analysis
- Alloy sorting/ Metallurgy
- Scientific research
- Nuclear monitoring
- Quality control
- Coating analysis
- Plastic additive analysis
- Soil analysis
- OSHA compliance
- Contamination sampling
- Archeology
- Art authentication
- Forensic
- Mobile crime lab

### Standard Package Includes:

**XPIN-XT Detector**
- Vacuum sealed detector module
  - DuraBeryllium® window
  - Ultra-low noise Moxtek JFET
  - Thick Si-PIN diode
  - Preamplifier with input/output connector
- Optional detector mounts

### Features

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Si-PIN diode</td>
<td>Low cost</td>
</tr>
<tr>
<td>Small, compact design</td>
<td>Close coupling between detector and source, portable</td>
</tr>
<tr>
<td>Two-stage thermoelectric cooler</td>
<td>Fast cooling without liquid nitrogen</td>
</tr>
<tr>
<td>Stable resolution</td>
<td>Minimal calibration maintenance</td>
</tr>
<tr>
<td>Thin DuraBeryllium windows</td>
<td>Light-element identification, corrosion resistant</td>
</tr>
<tr>
<td>Wide ambient temperature range</td>
<td>Industrial applications</td>
</tr>
<tr>
<td>Multi-layer collimator</td>
<td>Minimal stray peaks</td>
</tr>
</tbody>
</table>

### Example XPIN Spectrum

**Example XPIN Spectrum (6mm²)**

- Fe⁵⁵, 5.89keV @ -55°C, 8µs Shaping Time
- 148eV FWHM
- 5.89keV
- 6.49keV

**Example XPIN Spectrum (13mm²)**

- Fe⁵⁵, 5.89keV @ -55°C, 8µs Shaping Time
- 201eV FWHM
- 5.89keV
- 6.49keV
**XPIN-XT**

### Detector Specifications

- **Diode Active Area:** 6mm² or 13mm²
- **Diode Thickness:** 625μm
- **Detector Window:** 25μm thick DuraBeryllium®
- **Collimator Material:** Multilayer W/ Ni/ Cr/ Al
- **Energy Resolution:**
  - 6mm²: ≤ 190eV FWHM
  - 13mm²: ≤ 230eV FWHM
- **Peak to background:**
  - 6mm²: 3600/1 @1keV (typical)
  - 13mm²: 3000/1 @1keV (typical)
- **Test Conditions:** 8µs shaping time, MXDPP-200, -35°C, Fe⁵⁵, 5.9 keV, 7000 CPS
- **Weight:** 41 grams (with heat sink)
  10 grams (without heat sink)

### Preamp Specifications

#### Inputs

- **Detector Power:** +5V ±5% @ 16mA, -5V ±1% @ 20mA
- **Cooler Power:** 0 to +3.5V max, 0.56A max
- **High Voltage Diode Bias:** +130 to +200 VDC

#### Outputs

- **Detector Output Signal:** Negative sawtooth ramp with voltage swing +2V to -2V, (pulse reset < 20μsec)
- **Charge Conversion Gain:** 1.25mV/ keV typical
- **Temperature Control:** Manually controlled

### XPIN-XT Preamp Pinout

<table>
<thead>
<tr>
<th>Pin ID</th>
<th>Description</th>
<th>Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TEC GND</td>
<td>GND</td>
</tr>
<tr>
<td>2</td>
<td>TEC +</td>
<td>+3.5 VDC Max</td>
</tr>
<tr>
<td>3</td>
<td>Detector Power</td>
<td>+5VDC</td>
</tr>
<tr>
<td>4</td>
<td>Detector Power</td>
<td>-5VDC</td>
</tr>
<tr>
<td>5</td>
<td>Detector GND</td>
<td>GND</td>
</tr>
<tr>
<td>6</td>
<td>Detector Signal</td>
<td>NA</td>
</tr>
<tr>
<td>7</td>
<td>Thermistor</td>
<td>NA</td>
</tr>
<tr>
<td>8</td>
<td>Detector GND</td>
<td>GND</td>
</tr>
<tr>
<td>9</td>
<td>Not Connected</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>High Voltage</td>
<td>+170 VDC</td>
</tr>
</tbody>
</table>

### XPIN-XT Connector Pinout

#### XPIN-XT Mount Options

- **Mounting Option:**
  - 00 Preamp only**
  - AB Angle Bracket**
  - HS Heat Sink

- **ORDER CODE:** XPIN - XT - XXX - 025 - P20- XX

- **Diode Active Area:**
  - 006 6mm² Diode
  - 013 13mm² Diode

- **XPIN-XT-AB**
  Angle bracket sold separately

- **XPIN-XT-HS**
  Heat Sink sold separately

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Subject to technical change without notice
XPIN-XT-AB**
(Angle bracket sold separately)

XPIN-XT-HS
(Heat Sink sold separately)