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-BT package is ideal for benchtop and portable applications requiring simple mounting, automatic temperature control, and metal shielding.

**Features**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</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>
<tr>
<td>Internal temperature control</td>
<td>No external temperature control required</td>
</tr>
</tbody>
</table>

**Standard Package Includes:**

- Vacuum sealed detector module
- DuraBeryllium® window
- Ultra-low noise Moxtek JFET
- Preamplifier with input/output connectors
- Thick SiPIN diode
- Metal preamplifier housing
- Integrated temperature controller

**XPIN-BT Detector**

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

- XPIN®-BT X-ray Detector Datasheet

- Example XPIN Spectrum (6mm²)
  - Fe55, 5.89keV @ -55°C, 8µs Shaping Time
  - 148eV FWHM

- Example XPIN Spectrum (13mm²)
  - Fe55, 5.89keV @ -55°C, 8µs Shaping Time
  - 201eV FWHM

Subject to technical change without notice.
**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:** 140 grams (1.50” snout length)
- **Standard Warranty:** One year.

**Preamp Specifications**

- **Inputs**
  - **Detector Power:** +9V ± 5% @ 55mA, -9V ±5% @ 35mA
  - **Temperature Control Power:** +5VDC
  - **High Voltage Diode Bias:** +130 to +200VDC
- **Outputs**
  - **Detector Output Signal:** Negative sawtooth ramp with voltage swing +2V to -2V, (pulse reset < 20µsec)
  - **Charge Conversion Gain:** 4mV/ keV typical
  - **Temperature Control:** Ready signal (open collector)

**XPIN-BT Preamp Pinout**

<table>
<thead>
<tr>
<th>Pin ID</th>
<th>Description</th>
<th>Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ready Signal</td>
<td>Open collector</td>
</tr>
<tr>
<td>2</td>
<td>High Voltage</td>
<td>+170 VDC</td>
</tr>
<tr>
<td>3</td>
<td>Detector Power</td>
<td>-9 VDC</td>
</tr>
<tr>
<td>4</td>
<td>Detector Power</td>
<td>+9 VDC</td>
</tr>
<tr>
<td>5</td>
<td>Temperature GND</td>
<td>GND</td>
</tr>
<tr>
<td>6</td>
<td>Temp Control Power</td>
<td>+5 VDC</td>
</tr>
<tr>
<td>Shield</td>
<td>Detector Ground</td>
<td>GND</td>
</tr>
</tbody>
</table>

**Signal Connector (BNC)**

<table>
<thead>
<tr>
<th>Contact</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin</td>
<td>Detector Signal</td>
</tr>
<tr>
<td>Shield</td>
<td>Signal GND</td>
</tr>
</tbody>
</table>

**ORDER CODE:** XPIN - BT - XXX - 025 - 150- TC

**Specify Diode Active Area:**
- 006 6mm² Diode
- 013 13mm² Diode
XPIN-BT

(Angle bracket sold separately)