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.

<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,</td>
</tr>
<tr>
<td></td>
<td>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>
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<td>Multi-layer collimator</td>
<td>Minimal stray peaks</td>
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<tr>
<td>Internal temperature control</td>
<td>No external temperature control required</td>
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</tbody>
</table>

**Standard Package Includes:**

**XPIN-BT Detector**
- 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 X-ray Detector**

The XPIN®-BT X-ray 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
- **Si-PIN diode**: Low cost
- **Small, compact design**: Close coupling between detector and source, portable
- **Two-stage thermoelectric cooler**: Fast cooling without liquid nitrogen
- **Stable resolution**: Minimal calibration maintenance
- **Thin DuraBeryllium® windows**: Light-element identification, corrosion resistant
- **Wide ambient temperature range**: Industrial applications
- **Multi-layer collimator**: Minimal stray peaks
- **Internal temperature control**: No external temperature control required

### Standard Package Includes:
- **XPIN®-BT Detector**
  - 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

**Example XPIN Spectrum**
- (6mm)
- 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

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)

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

XPIN-BT Preamp Pinout

<table>
<thead>
<tr>
<th>Power Connector (Lemo)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pin ID</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>1</td>
<td>Ready Signal</td>
</tr>
<tr>
<td>2</td>
<td>High Voltage</td>
</tr>
<tr>
<td>3</td>
<td>Detector Power</td>
</tr>
<tr>
<td>4</td>
<td>Detector Power</td>
</tr>
<tr>
<td>5</td>
<td>Temperature GND</td>
</tr>
<tr>
<td>6</td>
<td>Temp Control Power</td>
</tr>
<tr>
<td>Shield</td>
<td>Detector Ground</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signal Connector (BNC)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contact</strong></td>
<td><strong>Description</strong></td>
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</tr>
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<td>Shield</td>
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</tbody>
</table>
XPIN-BT Mechanical Drawing

XPIN-BT
(Angle bracket sold separately)