Cougar-640
LN2 cooled high resolution SWIR camera

Benefits and Features
- Lowest noise
- High sensitivity
- Low dark current
- Windowing for enhanced focusing
- Measuring extreme low light signals
- Extreme long integration time with non-destructive readout

Applications
- Astronomy
- Raman spectroscopy
- Low light level SWIR imaging
- High resolution imaging spectroscopy
- Failure analysis via photon emission or electroluminescence

The Cougar-640 excels in performance for any R&D spectroscopy or semiconductor failure analysis task. These demanding applications, where very low light levels need to be measured, require cameras with low dark current, low noise and best response in the SWIR range. All of these features are now combined in one single camera.

The in-house developed InGaAs detector of the Cougar-640 is optimized for 77K operation, using Liquid Nitrogen (LN2) cooling and is based on a SFD (Source Follower per Detector) read-out topology for ultra-low noise levels ever seen (15 e-). Integration time of several hours is possible with the RWI (Read While Integrate) feature with nondestructive readout and very low dark current of less than 10e-/second.

The Cougar-640 features a high image resolution of 640 x 512 with a 20 μm pixel pitch and full 24 bit ADC. Camera interfacing is provided via standard CameraLink for ease of integration.
## Cougar-640

**LN2 cooled high resolution SWIR camera**

**Technical drawings of electronics housing and Dewar**

### Camera specifications Cougar-640

<table>
<thead>
<tr>
<th>Lens (not included)</th>
<th>Optical interface</th>
<th>Custom lens mount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame rate (full frame)</td>
<td>1.42 Hz</td>
<td></td>
</tr>
<tr>
<td>Window of Interest</td>
<td>Minimum size 2 x 4 pixels</td>
<td></td>
</tr>
<tr>
<td>Exposure time range</td>
<td>Illuminated mode with ITR: 12.5 ns – 53.7 sec, Emission mode with RWI: 0.7 sec – till saturation</td>
<td></td>
</tr>
<tr>
<td>Full well</td>
<td>400.000 e-</td>
<td></td>
</tr>
<tr>
<td>Gain (e-/ADU count)</td>
<td>2.2 μV/e-</td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>15 e- (@ T=77K, Tint=50 μs)</td>
<td></td>
</tr>
<tr>
<td>Dark current</td>
<td>&lt; 10 e-/s (@ T=77K)</td>
<td></td>
</tr>
<tr>
<td>A to D conversion resolution</td>
<td>24 bit</td>
<td></td>
</tr>
</tbody>
</table>

### Interfaces

- **Camera control**: CameraLink
- **Image acquisition**: Base CameraLink (24 bit)
- **Trigger**: 3.3 V CMOS levels (trigger in & out)

### Power requirements

- **Power consumption**: < 600 mA
- **Power supply**: 12 V

### Physical characteristics

- **Dimensions electronics housing**: 100 W x 130 H x 40 L mm³
- **Dimensions dewar**: 93 W x 207 H x 178 L mm³
- **Weight electronics module**: 0.6 kg
- **Weight dewar**: 2.1 kg

### Array specifications XFPA-1.7-640-LN2

- **Array Type**: InGaAs
- **Spectral band**: 0.9 to 1.7 μm @ room temperature, 0.9 to 1.55 μm @ 77K cooling
- **# Pixels**: 640 x 512
- **Pixel Pitch**: 20 μm x 20 μm
- **Array Cooling**: LN2 (77K)
- **Pixel clock frequency**: 125 kHz
- **Pixel operability**: > 98%

### Product selector guide

<table>
<thead>
<tr>
<th>Part number</th>
<th>Cooling</th>
<th>Digital output interface</th>
<th>Frame rate (Hz)</th>
<th>ADC</th>
</tr>
</thead>
<tbody>
<tr>
<td>XEN-000076</td>
<td>LN2 (77K)</td>
<td>CameraLink</td>
<td>1.42</td>
<td>24 bit</td>
</tr>
</tbody>
</table>

---

For your local contact click at: [www.lot-qd.com](http://www.lot-qd.com)

© cameras@lot-qd.com

LOT-QuantumDesign Europe

Infrared Drucke