General Description

Quantum Imaging’s QI-SWIR-HD10 camera is a low noise camera with extended spectral range from 0.6µm to 1.7µm. The camera uses SCD’s latest 1280 x 1024 format InGaAs detector with 10µm pixel pitch. The advanced digital ROIC provides advanced programmable on-chip features and very low noise performance.

The camera features Automatic Gain and Exposure Control to optimize image quality over a wide range of imaging conditions. A proprietary non-uniformity correction NUC provides non-uniformity correction over the -40°C to +70°C operating range with full performance from -30°C to +55°C.

The camera has a TEC to cool the focal plane for low light-level imaging. On-board Correlated Double Sampling (CDS) delivers dynamic range of up to 70dB and low read noise <50 rms electrons for low light operation.

A key feature of the FPA is on-chip digital Asynchronous Laser Pulse Detection (ALPD) that is enabled by proprietary circuitry on the FPA. ALPD provides a full-frame two-dimensional capture and X-Y position of short duration laser pulses in both daytime and nighttime. Multiple asynchronous spots can be tracked in the same FOV. This capability is completely independent of imaging, assuring optimal imaging capability with laser pulse detection.

Main Features

- 1280 x 1024 Resolution with 10µm pixel pitch
- Extended spectral response 0.6µm to 1.7µm
- 30-60 FPS (29.97 fps in NTSC mode)
- Snapshot Imaging
- 12-bit digitization
- Total noise <60e- rms (typical at 20°C sensor). Total noise in uncooled mode is dependent upon temperature
- Total Power < 4 Watts (typical), <2W uncooled mode
- Camera Link® and other outputs available upon request
- Internal or external trigger
- Programmable NUC, AGC, Trigger, and ALPD

Benefits

- Non-ITAR version available
- ALPD mode for “see-spot” operations in all lighting conditions with multiple, asynchronous laser sources
- Low Image Lag eliminates image persistence
- Extended spectral range increases sensitivity and allows for shorter wavelength illuminators
- Compact size fits small space claims

Applications

- Automotive and Airborne Driver Enhanced Vision
- UAV applications
- Semiconductor inspection
- Airborne reconnaissance (Haze penetration)
- Laser spot detection (See Spot)
- Bio Applications
**Mechanical Dimensions**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>VALUE</th>
<th>COMMENTS</th>
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</thead>
<tbody>
<tr>
<td>Sensor Type</td>
<td>InGaAs</td>
<td></td>
</tr>
<tr>
<td>Sensor Readout</td>
<td>Full-frame</td>
<td>Snapshot mode</td>
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<tr>
<td>Image Format</td>
<td>1280 x 1024</td>
<td></td>
</tr>
<tr>
<td>Pixel Size</td>
<td>10μm x 10μm</td>
<td></td>
</tr>
<tr>
<td>Active Area</td>
<td>100% fill factor</td>
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</tr>
<tr>
<td>Spectral Response</td>
<td>0.6μm to 1.7μm</td>
<td>See QE plot</td>
</tr>
<tr>
<td>Read Noise</td>
<td>&lt;50e- rms</td>
<td>Typical</td>
</tr>
<tr>
<td>Total Noise</td>
<td>&lt;60e- rms</td>
<td>20°C sensor temp</td>
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<tr>
<td>Max Frame Rate</td>
<td>30 up to 60 FPS</td>
<td>Typical</td>
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<tr>
<td>Dynamic Range</td>
<td>70dB</td>
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<tr>
<td>Power Dissipation</td>
<td>4 Watts</td>
<td>Typical</td>
</tr>
</tbody>
</table>

**MECHANICAL**

- **Housing Material**: Aluminum
- **Lens Mount**: C-mount/M42 Other mounts available
- **Weight**: < 4oz
- **Dimensions**: 1.7” x 1.8” x 2.3” See drawing

**POWER AND SIGNAL INTERFACE**

- **Power Input**: +3.3VDC Omnetics A22045-001
- **Data**: Base Camera Link NTSC also available
- **Trigger/ Sync**: SamTec MCX and Camera Link CC1
- **Mode Control**: Serial port Via Camera Link

**ENVIRONMENTAL**

- **Operating Temp**: -30 to +55°C Full Performance
- **Storage Temp**: -40°C to 70°C
- **Degraded Performance (random noise)**
- **Storage Temp**: -50°C to +85°C non-condensing

For additional information:
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**Typical Spectral Response**

![Graph showing typical spectral response](image-url)