The SU1024-LDH2 is a 2nd generation high-speed 1024-pixel linescan InGaAs camera that increases the A-line rate to 91,911 lines per second. This enables spectral-domain optical coherence tomography (SD-OCT) at 1.04 μm to capture detailed 3-D volumes of the retina, nerve head, and choroid layer in a blink of the eye. For 1.31 μm SD-OCT, diode-array based OCT systems offer superior phase stability for Doppler or Polarization-Sensitive OCT. The LDH2 provides 12-bit digital capture into base-format Camera Link® interface cards, while providing maximum dynamic range up over 2300:1 for high line rates. Two pixel apertures are available: 500-μm tall pixels for easy alignment in SD-OCT systems, or 25-μm square pixels for ultra-fast machine vision or dual-camera PS-OCT.

**Features**
- 91,911 lps for 1024 pixels at 12 bits
- Integrate-while-read snapshot acquisition
- Wavelength response over 0.8 μm to 1.7 μm with flat QE for 1.05 and 1.31 μm OCT
- 25 μm pixel pitch with aperture heights of 25 μm (defined by on-chip mask) or 500 μm
- 12-bit base Camera Link® compatible output and control
- High quantum efficiency and dynamic range
- Operating temperature range of -10 to +50°C
- Mounts easily to spectrometers due to 5.7 mm image plane depth and O-ring light seal
- Mounts easily to optics benches or MV systems with tripod, front or side fastener hole patterns
- Optional adapters for F-mount or C-mount, lenses (C-mount lenses may not fully illuminate the full width of the 25.6 mm wide arrays)

**Applications**
- Spectral-Domain Optical Coherence Tomography (OCT)
- Ultra-fast absorption or emission spectroscopy for combustion research, moisture, lipids, proteins or other molecular vibration bands in the 0.8 to 1.7 μm range
- Machine vision for ultra-high speed inspection, materials classification, sorting and/or monitoring of continuous processes, for example for food or agricultural product sorting

_Model No: SU1024-LDH2_
## ENVIROMENTAL AND POWER

<table>
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<th>Control</th>
<th>SDR 26-pin connector (Base Camera Link®)</th>
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<td>SDR 26-pin connector (Base Camera Link®)</td>
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<td>Power</td>
<td>Hirose HR10-7R-BPA receptacle</td>
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<tr>
<td>Sync Output</td>
<td>SMA: 5 V, 50 Ω series terminated, active high: integration active</td>
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<td>Trigger: Input</td>
<td>SMA, Low &lt; 0.5, 3 V &gt; high &lt; 5 V</td>
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<tr>
<td>Status LED</td>
<td>Green: TEC locked at setpoint</td>
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<tr>
<td>Trigger modes</td>
<td>Free run, single line per trigger, variable exposure, or gated burst</td>
</tr>
</tbody>
</table>

## ELECTRO-OPTICAL PERFORMANCE

| Sensor format | 1024 pixels on 25 µm pitch with 8 readout ADCs |
| Optical aperture (pixel height) | 1500 µm or 25 µm (square pixel sharply defined by mask on detector surface) |
| Peak quantum efficiency | > 70% |

### Gain capacitor setting

| Typical | Specification |
| 0.1 pF | 1 pF | 10 pF |

### Net full well capacity (Me-)

- 2.0 >1.4 8.7 >7.7 Hz, < 1.0 A
- 7-16 V, < 6 W at 25°C, <9 W at 50°C < 1.5 A peak

### Gain (e-/cnt)

- 540 < 620 |
- 2200 < 2450 |
- 21400 < 24500

### Temporal noise (rms counts)

- 2.0 < 2.4 |
- 1.6 <1.8 |
- 1.3 <1.4

### Dynamic range

- 1900:1 < 1350:1 |
- 2600:1 < 2100:1 |
- 3100:1 < 2600:1

### Differential non-linearity

- +/- 0.8% < +/- 1.2% |
- +/- 0.8% < +/- 1.2% |
- +/- 0.8% < +/- 1.5%

### Bad pixel specification

- White, dark, noisy or pixels exceeding +/- 10 of the mean value when illuminated at 50% of full well
- Number of bad pixels limited to a maximum of 1% of array total; no bad neighbors within 5 pixels

### Exposure time

- 0.007 ms to 1 ms in preset modes or to > 1 s with user programmed or via the width of the ext. trigger

### Trigger modes

- Three modes via CC1 or SMA

### Sync output

- SMA connector: digital signal, high during integration

### External trigger

- Three modes via CC1 or SMA

### External variable ET

- User set by the duration of trigger input signal (minimum ET pulse: 10 µs)

### External trigger jitter

- +/-1 clock cycle: nominally 80 ns with internal ET

### Pixel rate

- 100 Mpix/s max with 2 x 12-bit words transferred on each Camera Link strobe clock at 50 MHz

### Digital output format

- 12-bit base Camera Link®, recommend NI PCIe-1427 or equivalent frame grabber

### Readout mode

- Integrate while read, differential double sampling

### Corrections (preset OPR)

- Factory calibrated gain, offset, and bad pixel replace, applicable to the center 90% of the array

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### REGULATORY COMPLIANCE

| CE | Meets class A level for emission, immunity & ESD standards |
| FCC | Meets requirements for Part 15, Subpart B, Class A, 2006 |

### MECHANICAL

| Length x Width x Height | 6.1 cm x 7.37 cm x 7.62 cm |
| Weight | < 450 g or 1 lbs (no lens or adapter) |
| Threaded Lens Mount and optional lens mount adapters | M42x1-6H with 5.7 mm to image plane none, fixed distance C-Mount adapter or adjustable distance F-Mount adapter (see ordering info) |
| Spectrometer mount | 4 tapped 8-32 holes in 2 inch square pattern |
| Camera Tripod mount | 4 tapped M4x0.7-6H holes spaced 5 cm x 4 cm (h x w) |
| Side wall mounts | O-Ring light seal, 1.9 inch diameter, 1/16th thickness |

### ENVIRONMENTAL AND POWER

| Temperature | -10°C to +50°C case temperature |
| Storage temperature | -20°C to 70°C |
| Humidity | Non-condensing |

### Power requirements

- AC adapter supplied DC (voltage/power) In-rush current: |
- 100-240 VAC, 47-63 Hz, < 1.0 A |
- 7-16 V, < 6 W at 25°C, <9 W at 50°C < 1.5 A peak

### Interfaces

- Control: SDR 26-pin connector (Base Camera Link®)
- Image Data: SDR 26-pin connector (Base Camera Link®)
- Power: Hirose HR10-7R-BPA receptacle
- Sync Output: SMA: 5 V, 50 Ω series terminated, active high: integration active
- Trigger: Input SMA, Low < 0.5, 3 V > high < 5 V
- Status LED: Green: TEC locked at setpoint

### Accessory Kits


### Ordering Information

<table>
<thead>
<tr>
<th>Camera Model</th>
<th>Part Number</th>
<th>Max. Line Rate</th>
<th>Pitch</th>
<th>Pixels</th>
<th>FPA Length</th>
<th>Aperture (Height)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SU1024-LDH2-1.7RT-0500/LC</td>
<td>8000-0484</td>
<td>91,911 lps</td>
<td>25 µm</td>
<td>1024</td>
<td>25.6 mm</td>
<td>500 µm</td>
</tr>
</tbody>
</table>

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1. Actual formats and performance governed by user-selected SUI linear array purchased with camera (dark current may limit longest usable ET)
2. Camera readout noise limited for low & medium gain settings; dark shot noise limited for high gain settings
3. User selectable by command over Camera Link® serial lines
4. Dynamic range limited to maximum values listed when camera operated at exposure times shorter than 28 µs due to reduced full well capacity

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