Raytheon
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# Sensors Unlimited: 2048L InGaAs Linescan camera

## 2048 pixels for OCT or machine vision

The 2048L high-resolution Linescan camera with two pixel configurations and versatile line rates up to 76K lines per second.

### BENEFITS

- 2048 x 1 pixel array with 10 µm pitch
- Square (10x10 µm) or tall (10x210 µm) pixel options
- High QE from 0.98 µm to 1.65 µm
- Solid-state FPA with snapshot exposure
- User controlled exposure and line period
- Line rates from 0.1K to 76K lines per second
- > 1200:1 dynamic range in high gain
- Four sensitivity choices
- External triggering of line and exposure via Camera Link® CC1 line
- Enclosed body < 136 $cm^3$ (< 8.3 $in^3$ )
- Low power < 3.6 W over 6-12 V
- Acquires and saves user non-uniformity corrections
- Base12-bit Camera Link® interfaces

The high-resolution Sensors Unlimited 2048L high-resolution Linescan camera offers two pixel configurations: square pixels (10 x 10 µm) designed for machine vision and tall pixels (10 x 210 µm) optimized for easy alignment with spectrometers. These cameras feature Base Camera Link® interfaces, providing flexible line rates from 100 to >76,000 per second. The 2048L models ensure high resolution, stability and reliability, making them ideal for applications such as optical coherence tomography (OCT) and industrial machine vision (MV).

These cameras provide high uniformity and sensitivity across the short-wave infrared (SWIR) wavelengths from 0.98 to 1.65 µm. Their simultaneous acquisition capability across all pixels ensures superior repeatability and long operating life, meeting the stringent requirements of both medical and industrial MV applications.

### Applications

- OCT at 1.04 µm, 1.31 µm and 1.55 µm.
- High-resolution spectroscopy transient spectra in the 0.94 to 1.68 µm wavelength range.
- Silicon wafer or integrated circuit microscopy.
- SWIR MV of moving objects.
- Thermal MV imaging > 150°C through glass windows.

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| Environmental and power | |
|---|---|
| **Operating case temperature** | +10°C to +35°C |
| **Storage temperature** | -10°C to +60°C |
| **Humidity** | Up to 95% and non condensing |
| **Power requirements:** | |
| **AC adapter** | 100-240 VAC, 47-63 Hz |
| **DC voltage** | +6 to 12 VDC (Maximum: 13.1 VDC) |
| **Typical power** | 3.6 W at 30 °C case temp |
| **In-rush current:** | 1.25 A at 12 VDC |

| Interfaces | |
|---|---|
| **Control and data** | GL2048L: single SDR 26-pin connector |
| **Power connector** | CUI Inc. PJ-056, 1.0 mm x 3.8 mm power jack |
| **Trigger input** | Via Camera Link® CC1 line |
| **Status LED** | Green: power on |
| **Tested framegrabbers** | National Instruments PCIe-1429, -1433, Matrox Solios eV-CL PCIe-X4 |

| Mechanical | |
|---|---|
| **Width x height x depth** | 8.3 cm x 10.2 cm x 1.6 cm (excludes I/O connectors and lens adapter)<br>3.25 in x 4 in x 0.64 in (excludes I/O connectors and lens adapter) |
| **Weight** | < 240 g or 8.6 oz (no lens or adapter) |
| **Threaded lens mount** | M42x1-6H (focus point ~6 mm from camera surface) |
| **Optional lens mount adapters** | C-Mount adapter or adjustable distance F-Mount adapter |
| **Spectrometer mount** | Four tapped 8-32 holes in 2 $in^2$ pattern, two tapped 8-32 holes in-line with image axis, O-ring light seal, 1.9 in diameter, 1/16th thickness |
| **Camera tripod mount** | Two tapped ¼-20 holes, one on bottom, one on side wall |

| Opto-electronic performance | |
|---|---|
| **Sensor format**[1] | 2048 pixels with 2048 readout ADCs on 10 µm pitch |
| **Optical aperture (pixel height)**[1] | 210 µm or 10 µm |
| **Quantum efficiency**[1] | > 60% over 0.98 µm-1.65 µm; > 70% peak response at 1.55 µm |
| **Exposure time**[1,2] | 5.5 µs to 10 ms, user programmed in pixel clock cycles or via the width of the external trigger |
| **Trigger modes**[2] | Free run, single-line per trigger (exposure set by camera) or variable exposure |
| **Pixel rate** | 2048L:157 Mpix/s with 2 x 12-bit words transferred on each Camera Link® strobe clock at 80 MHz |
| **Digital output format** | 12-bit base Camera Link®; recommend NI PCIe-1433 or frame grabber with throughput of > 313 Mbytes to PC motherboard (minimum of four bi-directional PCIe express lanes in PC) |
| **Readout mode** | Integrate While Read, differential double sampling |
| **Corrections (preset OPRs)** | Factory calibrated gain, offset, and bad pixel replace |

[1]Actual formats and performance governed by pixel size options (dark current may limit longest usable ET, especially at high gain).
[2]Modes are user selectable by command over Camera Link® serial lines.

Corrections (preset OPRs)
Factory calibrated gain, offset, and bad pixel replace.

Specifications subject to change without notice.

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**Contact**
Raytheon
Advanced Products & Solutions
Sensors Unlimited Inc.
330 Carter Road
Princeton, New Jersey
08540 USA
(609) 333-8000
sensorsinc.com

**www.RTX.com**