



1.60 x 1.65 x 1.60 inches  
40.6 x 41.9 x 40.6 mm

## Sensors Unlimited Mini-SWIR™ Camera

High-Resolution, Mil-Rugged, High-Sensitivity InGaAs SWIR

The compact J-Series is Sensors Unlimited's next generation SWIR digital video camera featuring a 1.3MP high-resolution, high-sensitivity InGaAs imager. It provides real-time daylight to low-light imaging in the Short Wave Infrared (SWIR) wavelength spectrum for persistent surveillance, laser detection, and penetration through dust, and smoke. In addition, the camera employs on-board Automatic Gain Control (AGC) and built-in non-uniformity corrections (NUCs), allowing it to address the challenges of high-dynamic-range urban night imaging without blooming. Camera Link® digital output provides for plug-and-play video with 12-bit images for digital image processing or transmission. The light-weight and compact size enables easy integration into aerial, mobile and hand-held surveillance systems. Sensors Unlimited's proprietary bin mode allows the user to operate the camera as 640 x 512 pixel with 30 µm pixels to extreme low light imaging applications. Optional NIR/SWIR technology is available to extend the sensitivity of Sensors Unlimited cameras down to 0.7 µm, offering the advantage of extended wavelength response.

### FEATURES

- 1280 x 1024 pixel format, 15 µm pitch
- High sensitivity 2:2 bin mode for 640 x 512 pixel format, 30 µm pitch for low light imaging
- 30 frames per second full frame rate
- Highest sensitivity available in 0.9 to 1.7 µm spectrum; NIR/SWIR, from 0.7 to 1.7 µm
- Partial moonlight to day time imaging
- Compact OEM module size < 4.5 in<sup>3</sup>
- All solid-state InGaAs imager
- On-board, real time non-uniformity corrections
- Digital 12-bit base Camera Link® output
- Automatic Gain Control (AGC)
- Local Area Processing Dynamic Range Enhancements
- Tested to MIL-STD-810G for functional shock, vibration, thermal shock, storage temperature, altitude, humidity, and acceleration
- FCC, MIL-STD-461F, and CE certified



MECHANICAL SPECIFICATIONS		
	Enclosed	OEM
<b>Module dimensions Width x Height x Depth</b>	2.0 x 2.0 x 2.44 inches 50.8 x 50.8 x 62.1 mm (with I/O connectors, no lens or mount)	1.60 x 1.65 x 1.60 inches 40.6 x 41.9 x 40.6 mm (excludes optional output panel)
<b>Weight (no lens)</b>	≤ 235 g	≤ 120 g
<b>Lens Mount</b>	M42x1 mount	M42x1 mount bracket
<b>Included Lens</b>	f/1.4, 50 mm, 21.7° FOV width, M42x1-mount	none
<b>Camera Link Connector</b>	3M SDR26 Connector	none
<b>Interface Connector</b>	Not applicable	Samtec LSHM-130-030-L-DV-A-N
<b>Pixel Pitch</b>	15 μm; 30 μm in 2:2 bin mode	15 μm; 30 μm in 2:2 bin mode
<b>Focal Plane Array Format</b>	1280 x 1024 pixels; 640 x 512 in 2:2 bin mode	1280 x 1024 pixels; 640 x 512 in 2:2 bin mode
<b>Active Area</b>	19.2 mm x 15.4 mm x 24.6 mm diagonal	19.2 mm x 15.4 mm x 24.6 mm diagonal

ENVIRONMENTAL & POWER SPECIFICATIONS	
<b>Operating Case Temperature</b>	-20°C to 45°C
<b>Storage Temperature</b>	-54°C to 85°C, MIL-STD-810G Method 501.5 and 502.5
<b>Humidity</b>	95% relative humidity, MIL-STD-810G Method 507.5 Procedure II
<b>Power Requirements:</b>	
<b>AC Adapter Supplied</b>	100-240 VAC, 47-63 Hz
<b>DC Voltage</b>	+8-16 V
<b>Power</b>	≤ 4.5 W at 20°C (case temperature), ≤ 8 W at 45°C
<b>Functional Shock, Random Vibration, Thermal Shock, Temperature/Altitude/ Humidity Combine, Acceleration</b>	MIL-STD-810G compliant
<b>Electromagnetic Interference (EMI)</b>	FCC Part 15, Subpart B, MIL-STD-461F RE102, CE102, CS115, CS116, RS103
<b>CE Compliance</b>	EN 61326-1:2006, EN 60950-1
<b>Mean Time Between Failure</b>	≥ 10,000 hours, MIL-HDBK-217 with VITA 51.1 Supplement Telcordia Issue 2
<b>Fungus-Inert Material</b>	MIL-HDBK-454B

ELECTRICAL SPECIFICATIONS	
<b>Optical Fill Factor</b>	100%
<b>Spectral Response</b>	Standard, 0.9 μm to 1.7 μm NIR/SWIR, 0.7 μm to 1.7 μm
<b>Quantum Efficiency</b>	Standard, ≥ 65% from 1 μm to 1.6 μm NIR/SWIR, ≥ 65% from 0.9 μm to 1.6 μm
<b>Bin Mode</b>	Analog 2:2
<b>Mean Detectivity, D* (Typical) <sup>1</sup></b>	1.4 x 10 <sup>13</sup> cm <sup>1</sup> /Hz/W (full resolution) 2.7 x 10 <sup>13</sup> cm <sup>1</sup> /Hz/W (2:2 binning mode) 1.5 x 10 <sup>9</sup> photons/cm <sup>2</sup> ·s (full resolution) 5.3 x 10 <sup>8</sup> photons/cm <sup>2</sup> ·s (2:2 binning mode)
<b>Noise Equivalent Irradiance (Typical) <sup>1</sup></b>	85 electrons
<b>Noise (RMS, Typical) <sup>1</sup></b>	4.5 x 10 <sup>5</sup> electrons
<b>Full Well Capacity <sup>2</sup></b>	1000:1
<b>Dynamic Range (Typical) <sup>3</sup></b>	≥ 99%
<b>Operability <sup>4</sup></b>	224 μs to 32.0 ms
<b>Exposure Times</b>	2-point (offset and gain) pixel by pixel, user selectable
<b>Image Correction</b>	12-bit base Camera Link®
<b>Digital Output Format</b>	30 fps
<b>Digital Output Frame Rate</b>	Continuous or 3 externally triggered modes
<b>Scan Mode</b>	

<sup>1</sup> λ = 1.55 μm, exposure time = 32 ms, highest sensitivity OPR level, no lens, x1 digital gain with enhancement, AGC, and correction off.

<sup>2</sup> Exposure time = 224 μs, low gain.

<sup>3</sup> In high dynamic range OPR settings. Able to achieve 300:1 in highest sensitivity OPR settings.

<sup>4</sup> The fraction of pixels with responsivity deviation between +/-35% from the mean.

**For additional information:**  
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