



1.00 x 1.00 x 0.995 inches
25.4 x 25.4 x 25.3 mm

Sensors Unlimited Nano-SWIR™ Camera

Mil-Rugged, High-Sensitivity, Small SWaP InGaAs SWIR Camera

The C-Platform is Sensor Unlimited's next generation SWIR compact video cameras designed for applications requiring small Size, Weight, and Power (SWaP). These cameras feature a 640x512 pixel, high-sensitivity InGaAs imager that does not require thermal stabilization and utilize Sensor Unlimited's proprietary parameterized non-uniformity corrections algorithms to produce high quality imagery. The elimination of thermoelectric coolers enable the packaging of imagers and associated electronics for applications requiring very small size and low power draw. The camera 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. On-board Automatic Gain Control (AGC) is employed to address the challenges of day to night imaging. 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. Optional NIR/SWIR technology is available to extend the sensitivity of Sensor Unlimited cameras down to 0.7 μm , offering the advantage of both Near Infrared (NIR) and Short Wave Infrared wavelength response.

FEATURES

- 640 x 512 pixel format, 15 μm pitch
- 30 Hz full frame rate
- 1.7 W power consumption
- High sensitivity 0.9 to 1.7 μm spectrum response imager; NIR/SWIR, from 0.7 to 1.7 μm
- Partial moonlight to day time imaging
- Compact size less than 1 in³
- 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 (LAP) dynamic range enhancement
- Available mounting accessories

APPLICATIONS

- Low-light level imaging
- Covert surveillance with 24 hr/7 day operation
- Multi-laser spotting and tracking
- Imaging through atmospheric obscurants
- Small size facilitates integration into Unmanned Aerial Systems, handheld, and soldier-mounted systems



UTC Aerospace Systems

MECHANICAL SPECIFICATIONS

Dimensions (width x height x depth) (includes connectors, excludes lens)	1.00 x 1.00 x 0.995 inches 25.4 x 25.4 x 25.3 mm
Weight	< 27 g
Lens mount	M15 x 0.5
Camera Link Connector	Airborn NK-2B2-025-225-TH00
Power Input Connector	Airborn NK-2B2-015-225-TH00
Pixel Pitch	15 μ m
Focal Plane Array Format	640 x 512 pixels
Active Area	9.6 mm x 7.7 mm x 12.3 mm diagonal
Focal Plane Array Format	640 x 512 pixels
Active Area	16 mm x 12.8 mm x 20.5 mm diagonal

ENVIRONMENTAL & POWER SPECIFICATIONS

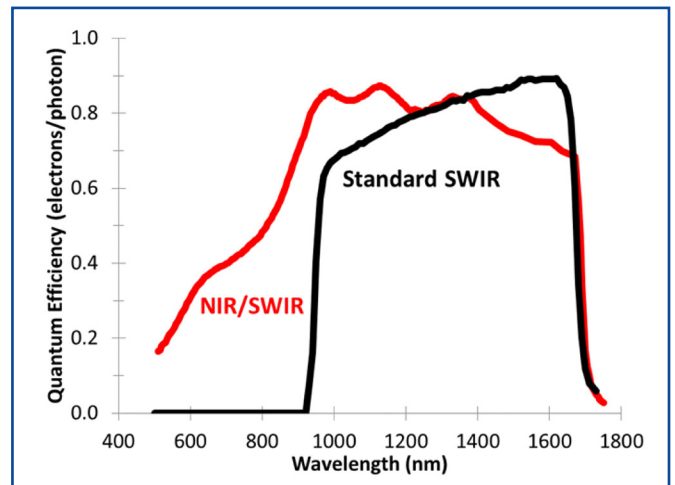
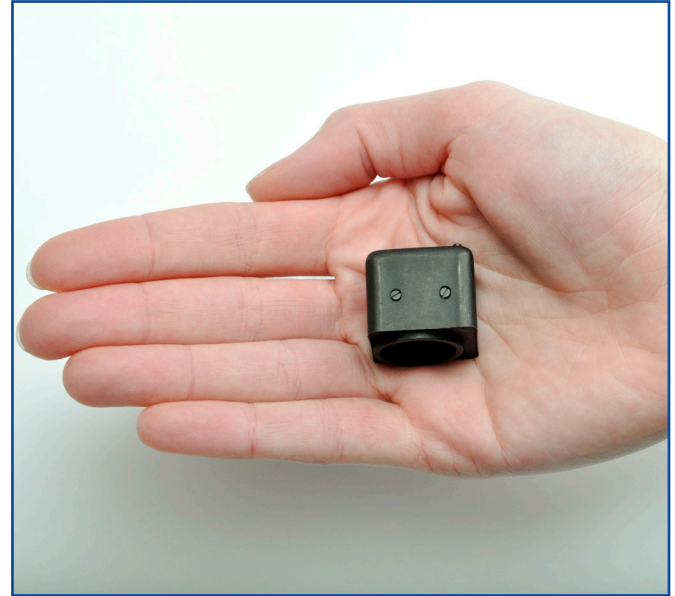
Operating Case Temperature	-35°C to 71°C
Storage Temperature	-54°C to 85°C
Humidity	20-80% relative humidity
Power Requirements:	
DC Voltage	+4-8 V
Power	1.7 W at 20°C case temperature, 5 V input voltage
Functional Shock, Random Vibration, Thermal Shock	MIL-STD-810G compliant design
Conducted & Radiated Emissions	FCC Part 15, MIL-STD-461F CE102 and RE102
CE compliance	EN 61326-1:2006, Class A, EN 61000-3-3:2006, and EN 61000-3-3:1995 A1:2001, A2:2005
Mean Time Between Failure	\geq 10,000 hours, MIL-HDBK-217F N2
Fungus-Inert Material	MIL-HDBK-454B

ELECTRICAL SPECIFICATIONS

Optical Fill Factor	100%
Spectral Response	Standard, 0.9 μ m to 1.7 μ m NIR/SWIR, 0.7 μ m to 1.7 μ m
Quantum Efficiency	Standard, > 65 % from 1 μ m to 1.6 μ m NIR/SWIR, > 65 % from 0.9 μ m to 1.6 μ m
Mean Detectivity, D^* ¹	1.8×10^{13} cm $\sqrt{\text{Hz/W}}$ (typical)
Noise Equivalent Irradiance ¹	1.1×10^9 photons/cm 2 xs (typical)
Noise (RMS) ¹	65 electrons (typical)
Dynamic Range ¹	300:1 (high gain), 1000:1 (low gain) (minimum)
Non-Uniformity Corrections	14 pre-configured operational settings (OPRs)
Operability ²	> 99%
Exposure Times	63 μ s to 33 ms
Image Correction	Goodrich proprietary parameterized non-uniformity corrections which compensate for temperature and illumination intensity
Output Format	12 bit base Camera Link [®]
Digital Output Frame Rate	30 fps
Scan Mode	Continuous
Scan Mode	Continuous, or 4 externally triggered modes, or ROI windowing mode

¹ λ = 1.55 μ m, exposure time = 33 ms, case temperature = 20°C, highest sensitivity gain setting, no lens, x1 digital gain with enhancement, AGC, and correction off

² The fraction of pixels with responsivity deviation between +/- 35% from the mean



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