

P R E L I M I N A R Y

SENSORS
UNLIMITED



1.25 x 1.25 x 1.20 inches
31.8 x 31.8 x 30.6 mm

Sensors Unlimited Micro-SWIR™ Camera

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

The Sensors Unlimited 320CSX MicroSWIR camera features a 320x256 pixel, high-sensitivity, stabilized InGaAs snapshot imager and utilize Sensors Unlimited's image enhancement algorithms to produce highest quality imagery in all lighting conditions.

The camera provides real-time daylight to low-light imaging in the Short Wave Infrared (SWIR) wavelength spectrum for a range of applications that include industrial process monitoring, enhanced vision, and persistent surveillance. On-board Automatic Gain Control (AGC) optimizes the camera's imagery throughout day and night imaging scenarios. Camera Link® digital output provides for plug-and-play video with 12-bit images for digital image processing or transmission.

A modular output allows for additional industry standard interfaces. The light weight, compact size, and low power is ideally suited for integration into industrial process monitoring applications. Optional NIR/SWIR technology is available to extend the sensitivity of Sensors Unlimited cameras below 0.9 μm , offering the advantage of both Near Infrared (NIR) and Short Wave Infrared wavelength response.

FEATURES

- 320 x 256 pixel format, 12.5 μm pitch
- Low cost
- 30 Hz full frame rate
- 1.7 W power consumption (@ 20° C)
- High sensitivity 0.9 to 1.7 μm spectrum response imager; NIR/SWIR, from 0.7 to 1.7 μm
- Low light to day time imaging
- Compact size
- All solid-state InGaAs imager
- Snapshot exposure
- On-board, real time non-uniformity corrections
- Digital 12-bit base Camera Link® output
- Automatic Gain Control (AGC)
- C-mount base optic format; adapters available
- Available mounting accessories



UTC Aerospace Systems

MECHANICAL SPECIFICATIONS

Model	SU320CSX-12.5B-ENC housed series SU320CSX-12.5B-OEM
Dimensions (width x height x depth) (includes connectors, excludes lens)	ENC Series: 1.25"W x 1.25"H x 1.20"D 31.8 x 31.8 x 30.6 mm OEM Series: 1.25"W x 1.20"H x 1.19"D 31.8 x 30.6 x 30.2 mm includes connectors, excludes lens mm
Weight	<60 grams enclosed, <55 grams OEM
Lens mount	C-mount
Camera Link Connector	26 Pin SDR standard connector
Power Input Connector	14 Pin SDR standard connector
Pixel Pitch	12.5 μ m
Focal Plane Array Format	320 x 256 pixels
Active Area	4.0 mm x 3.2 mm (5.1 mm diagonal)

ENVIRONMENTAL & POWER SPECIFICATIONS

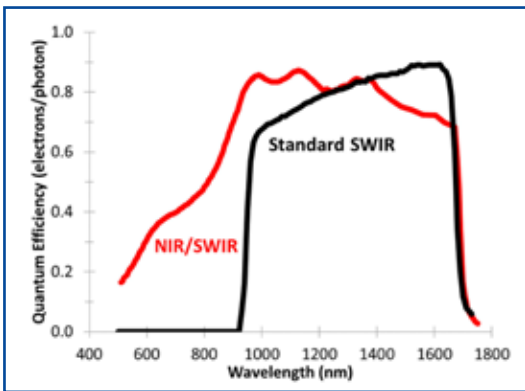
Operating Case Temperature	-5°C to 60°C
Storage Temperature	-54°C to 85°C
Humidity	95% RH non-condensing
Power Requirements:	
DC Voltage	DC Voltage: +4-16 V
Steady State Power	Power: 1.7 W at 20°C case temperature, max <4 W
Max Power	
Functional Shock, Random Vibration, Thermal Shock	MIL-STD-810G compliant design

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	2.86×10^{13} cm $\sqrt{\text{Hz}}/\text{W}$ (typical)
Noise Equivalent Irradiance ¹	8.48×10^6 photons/cm 2 /s (typical)
Noise (RMS) ¹	35 electrons (typical)
Dynamic Range ¹	1700:1 at low gain, 800:1 at high gain
Operability ²	> 99 %
Exposure Times, preconfigured	200 μ s to 32 ms
Image Correction	2-point (offset and gain) pixel by pixel, user selectable
Output Format	12 bit base Camera Link [®]
Digital Output Frame Rate	30 fps
Scan Mode	Continuous

¹ $\lambda = 1.55 \mu\text{m}$, exposure time = 32 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.



Model No: SU320CSX Doc No: 4110-0416 Rev: 1 July 2015

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