

Sensors Unlimited: 320CSX camera



Non-ITAR, high sensitivity, small -SWAP, InGaAs camera

The compact 320CSX represents the next generation of SWIR video cameras, designed specifically for applications that require small size, weight, and power (SWaP).

BENEFITS

- No ITAR restrictions
- 320 x 256 pixel format, 12.5 μm pitch
- Low cost
- 30 or 60 frames per second full frame rate
- 1.7 W power consumption (at +20°C)
- High-sensitivity 0.9 to 1.7 μm spectrum response imager
- Low-light to daytime imaging
- Compact size
- All solid-state InGaAs imager
- Snapshot exposure
- Onboard, real-time, non-uniformity corrections
- Digital 12-bit base Camera Link® output
- Automatic gain control (AGC)

The Sensors Unlimited Micro-SWIR 320CSX camera features a 320 x 256-pixel, high-sensitivity InGaAs imager that is stabilized for consistent performance. It utilizes advanced image enhancement algorithms from Sensors Unlimited to achieve exceptional performance in all lighting conditions.

Capable of operating in bright daylight or low-light conditions, the camera excels in capturing real-time imagery in the short-wave infrared (SWIR) spectrum. It includes onboard automatic gain control (AGC) to maintain optimal image quality regardless of environmental variables. The Camera Link® digital output enables seamless integration, providing 12-bit images for digital processing or transmission.

Compact, lightweight, and power-efficient, this innovative Micro-SWIR camera has transformed industrial process monitoring and imaging applications worldwide.

Applications

- Industrial process monitoring
- Solar cell inspection
- Driver vision enhancement
- Security
- Inspection sorting
- Telecommunications
- Thermal measurements
- Spectroscopy
- Medical imaging
- Infrared reflectography
- Imaging through silicon
- Low-light level imaging
- Covert surveillance
- Imaging through atmospheric obscurants

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Mechanical specifications

Model	SU320CSX-12.5B-ENC housed series SU320CSX-12.5B-OEM
Dimensions (width x height x depth) (includes connectors, excludes lens mm)	Enclosed: 1.25"W x 1.25"H x 1.20"D 31.8 x 31.8 x 30.6 mm OEM: 1.25"W x 1.20"H x 1.19"D 31.8 x 30.6 x 30.2 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 μm
Focal plane array format	320 x 256 pixels
Active area	4.0 mm x 3.2 mm (5.1 mm diagonal)

Environmental and power specifications

Operating case temperature	-5°C to +60°C
Storage temperature	-54°C to +85°C
Humidity	95% relative humidity – non-condensing
Power requirements:	DC voltage: +4-16 V Power: 1.7 W at +20°C case temperature, maximum <4 W
Functional shock, random vibration, thermal shock	MIL-STD-810G-compliant design

Electrical specifications

	30 fps	60 fps
Optical fill factor	100%	100%
Spectral response	Standard, 0.9 μm to 1.7 μm	Standard, 0.9 μm to 1.7 μm
Quantum efficiency	Standard, > 65% from 1 μm to 1.6 μm	Standard, > 65% from 1 μm to 1.6 μm
Mean detectivity, $D^*\text{1}$	> 2.5×10^{13} $\text{cm}\sqrt{\text{Hz}}/\text{W}$ (typical)	> 2.8×10^{13} $\text{cm}\sqrt{\text{Hz}}/\text{W}$ (typical)
Noise equivalent irradiance¹	< 9.7×10^8 photons/ cm^2/s (typical)	< 1.2×10^9 photons/ cm^2/s (typical)
Noise (RMS)¹	< 35 electrons (typical)	< 25 electrons (typical)
Dynamic range¹	> 2500:1 at low gain > 800:1 at high gain	> 2500:1 at low gain > 1100:1 at high gain
Operability²	> 99 %	> 99 %
Exposure times, preconfigured	200 μs to 32 ms	200 μs to 32 ms
Image correction	Two point (offset and gain) pixel by pixel, user selectable	Two point (offset and gain) pixel by pixel, user selectable
Output format	12 bit base Camera Link®	12 bit base Camera Link®
Digital output frame rate	30 fps	60 fps
Scan mode	Continuous	Continuous



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¹ Typical, $\lambda = 1550$ nm, exposure time = 33 ms (30FPS)/16.67 ms (60FPS), case temperature = 20°C, highest sensitivity gain setting, no lens, corrections off, 1x digital gain, with AGC, enhancement and correction off.

² The percentage of pixels with responsivity deviation less than 35% from the mean.

Specifications subject to change without notice.



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