

SU320MSW-1.7RT Snapshot InGaAs SWIR MiniCamera with Windowing

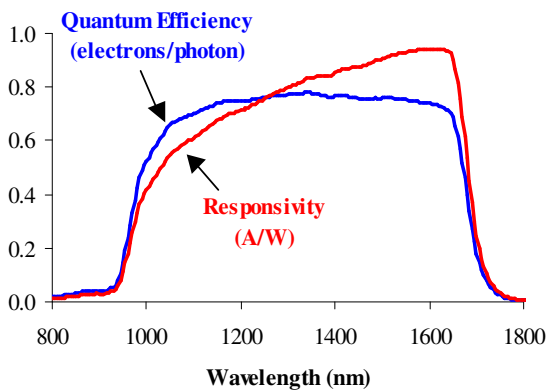


Featuring programmable Region of Interest (ROI) imaging, the compact SU320MSW InGaAs MiniCamera captures images from pulsed events or moving objects with unparalleled temporal control and sensitivity. This short-wave infrared (SWIR) camera's ROI capability allows high-speed imaging at rates over 10,000 fps for a 16 x 16 pixel window. Full-frame imaging with on-board non-uniformity corrections is simultaneously delivered via composite video & 12-bit digital outputs.



APPLICATIONS

- Pulsed laser-beam profiling
- SWIR machine vision of fast moving objects
- Motion analysis
- Real-time tracking and aligning
- Free space communications
- Lasers



FEATURES

- Ultra high frame rates with user programmable Regions of Interest (ROI)
- 320 x 256 pixels on 25 μm pitch, 100% fill factor
- High sensitivity from 0.9 μm to 1.7 μm
- Simultaneous exposure of whole array
- External trigger of ROI acquisition
- Anti-blooming protection
- All solid-state InGaAs imager
- Simultaneous digital & analog outputs
- Low power, < 1.6 W & compact size, < 290 cm^3
- Accepts standard C-mount glass lenses

Designed for near-infrared (NIR) pulsed-laser characterization and high-speed machine vision applications, the SU320MSW Indium Gallium Arsenide (InGaAs) camera simultaneously exposes all pixels in every operating mode ('snapshot' imaging). The proprietary focal plane array, organized as a 320 x 256 pixel matrix of 25 μm square pixels, delivers 100% fill factor and >65% quantum efficiency from 1000 to 1600 nm. The camera features programmable ROI windows, anti-bloom design, and built-in real-time non-uniformity corrections (NUC). Like all SUI™ high-performance InGaAs cameras, the SU320MSW operates the FPA at room temperature while consuming < 1.6 W. Full-frame images may be displayed on EIA170 compatible monitor using progressive or interlace scanning and/or output as 12-bit digital data to commercially available digital frame-grabber boards.

SUI knows IR™

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MECHANICAL

Length x Width x Height	5 cm x 6 cm x 9.5 cm 1.96 in x 2.36 in x 3.74 in
Weight	< 300 g (no lens)
Focal Plane Array Format	320 x 256 pixels
Pixel Pitch	25 μ m
Active Area	8 x 6.4 mm
Lens Mount	C-mount (1-32 thread)
Focal Plane Location	~17.5 mm behind panel

ENVIRONMENTAL & POWER

Operating Temperature	0°C to 40°C
Storage Temperature	-10°C to 60°C
Humidity	Non-condensing
Power Requirements: AC Adapter Supplied DC (Voltage/Current)	100-240 VAC, 47-63 Hz 3.6-5 V / <0.6 A at 25°C ambient

INCLUDED WITH CAMERA

1) Camera	2) 25 mm, f/1.4 C-mount lens
3) Frame grabber interface box	4) AC adapter
5) Camera to FG interface box cable	6) 2 x SMA to BNC cables
7) Manual	8) Carrying case
9) Sample Lab View VI. & camera configuration files for National Inst. frame-grabber cards	

ELECTRICAL SPECIFICATIONS

Optical Fill Factor	100%		
Spectral Response	0.9 μ m to 1.7 μ m		
Quantum Efficiency	> 65% from 1 μ m to 1.6 μ m		
Mean Detectivity, $D^* \text{ }^1$	> 3×10^{12} cm $\sqrt{\text{Hz/W}}$		
Noise Equivalent Irradiance 1	< 5×10^9 photons/cm 2 ·s		
Noise (RMS)	< 400 electrons		
Full Well (Typical)	> 8×10^5 electrons		
True Dynamic Range	> 2000:1		
Operability 2	> 99%		
Full-frame Exposure Times	User selectable from 129 μ s to 16.3 ms (EIA170)		
Image Correction	2-point (offset and gain) pixel by pixel at 8 integration settings, user selectable		
Digital Output Format	12 bit EIA422 format (corrected and uncorrected data is available)		
Analog Output Format	Interlaced or progressive scan for video monitors		
Full-frame Rate	30 Hz (EIA170 interlaced) or 60 Hz (EIA170 progressive scan)		
Acquisition Modes	Full-frame window, preset ROI window, variable ROI window		
Preset Window Modes (region centered in array)	Window size in pixels	Integration Time	Frame Rate
	16 x 16	9.5 μ s	10,012 fps
	64 x 64	25.3 μ s	1,164 fps
	128 x 128	43.2 μ s	327 fps
	200 x 200	69.9 μ s	140 fps
Variable Window Mode (Arbitrary location)	256 x 320	88.1 μ s	70 fps
	Min. of 16 col. x 8 rows up to 256 x 320 In steps of 4 pixels	16 c x 8 r: ~57.1 μ s 320 c x 8 r: ~491 μ s 320 c x 256 r: ~13.16 ms	17,521fps 1,526 fps 75 fps
External Trigger Modes Full-frame Mode	Pre-set exposure (set by integration time), Variable exposure (integrates while trigger high, min. of 160 μ s), Burst with pre-set exposure (standby while trigger low, free-run while high)		
ROI Window Trigger Mode 3	Single frame (short trigger pulse), or burst (pause while trigger low, free-run while high)		

 $^1 \lambda = 1.55 \mu\text{m}$, exposure time = 16.27 ms, no lens, digital gain = x1. 2 The fraction of pixels with responsivity deviation less than +/-35% from the mean. 3 Last two lines of triggered ROI windows will be blank.