



2.1 x 2.1 x 2.55 inches  
53 x 53 x 65 mm

## 320KTSW-1.7RT & 320KTSWVis-1.7RT

### InGaAs SWIR Windowing Cameras

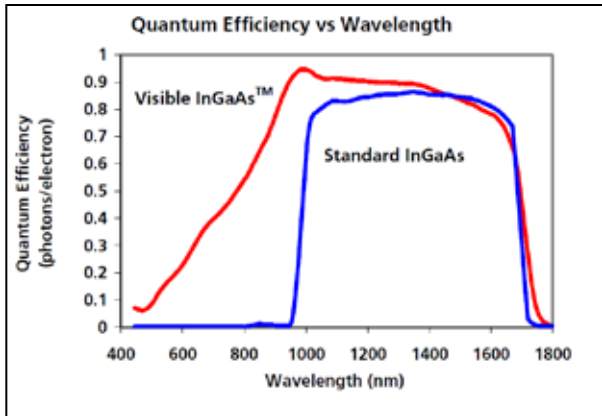
These compact InGaAs snapshot video cameras feature high frame rate Region of Interest (ROI) windowing capture of images. This enables tight tracking of free-space communications lasers or fast moving targets, with >10,000 frames per second for a 16 x 16 pixel window. The camera configurations include 8 corrected modes with variable integration time and 8 convenient preset ROI windows. User serial commands over the 12-bit Camera Link® interface are used to create ROI windows anywhere on the FPA. The SU320KTSW-1.7RT provides high response from 0.9 to 1.7  $\mu\text{m}$  and the SU320KTSWVis-1.7RT extends the response into the visible wavelengths, running from 0.4 to 1.7  $\mu\text{m}$ .

#### APPLICATIONS

- Real-time tracking and aligning
- Free-space communications control systems
- Adaptive optics feedback systems
- Pulsed laser beam profiling
- SWIR Machine vision of moving objects
- Hyperspectral imaging (>5 KHz for 4 x 320 pixel window)

#### FEATURES

- High frame rates with user programmable and
- Regions of Interest (ROI)
- All solid state InGaAs or Visible-InGaAs FPA
- with snapshot exposure ROIC
- Standard InGaAs: 0.9 to 1.7  $\mu\text{m}$
- Visible-InGaAs<sup>TM</sup>: 0.4 to 1.7  $\mu\text{m}$
- 320 x 256 pixel format, 25  $\mu\text{m}$  pitch
- External trigger of ROI acquisition
- Enclosed body size < 9.5 in<sup>3</sup>
- Low power, < 2.5 W at 20°C
- On-board non-uniformity corrections
- Simultaneous Camera Link® digital & EIA-170
- analog outputs
- Improved AGC and contrast enhancement
- algorithms with adjustable thresholds



### MECHANICAL SPECIFICATIONS

<b>Module (no lens)</b> Width x Height x Depth	2.1 x 2.1 x 2.55 inches / 53 x 53 x 65 mm
<b>Weight (no lens)</b>	< 270 g
<b>Lens Mount</b>	C-mount adapter in M42x1 mount
<b>Included Lens</b>	f/1.4, 25 mm, 18° HFOV width, C-mount
<b>Camera Link Connector</b>	3M SDR26 connector
<b>I/O Connector</b>	3M SD14 connector
<b>Interface Connector</b>	Not applicable
<b>Pixel Pitch</b>	25 μm
<b>Focal Plane Array Format</b>	320 x 256 pixels
<b>Active Area</b>	8 mm x 6.4 mm x 10.2 mm diagonal

### ENVIRONMENTAL & POWER SPECIFICATIONS

<b>Operating Case Temperature</b>	-10°C to 40°C
<b>Storage Temperature</b>	-10°C to 60°C
<b>Humidity</b>	Non-condensing
<b>Power Requirements:</b>	
<b>AC Adapter Supplied</b>	100-240 VAC, 47-63 Hz
<b>DC Voltage</b>	+9-16 V
<b>Typical Power</b>	2.2 W at 20°C ambient, < 4.5 W @ 40°C

### ELECTRICAL SPECIFICATIONS

FPA type:	Standard InGaAs	Visible InGaAs™	
<b>Spectral Response</b>	0.9 to 1.7 μm	0.4 to 1.7 μm	
<b>Quantum Efficiency</b>	> 65% from 1 μm to 1.6 μm	> 5% @ 0.4 μm, >45% @ 0.8 μm; > 70% from 1 to 1.6 μm	
<b>Optical Fill Factor</b>	100%		
<b>Mean Detectivity, D*<sup>1</sup></b>	> 5 x 10 <sup>12</sup> cm √Hz/W		
<b>Noise Equivalent Irradiance<sup>1</sup></b>	< 3.5 x 10 <sup>9</sup> photons/cm <sup>2</sup> xs		
<b>Noise (RMS)</b>	< 300 electrons		
<b>Full Well (typical)</b>	700k electrons		
<b>True Dynamic Range</b>	> 2500:1		
<b>Operability<sup>2</sup></b>	> 99%		
<b>Full-frame Exposure Times</b>	User selectable from 0.13 ms to 16.6 ms (EIA170)		
<b>Image Correction</b>	2-point (offset and gain) pixel by pixel at 8 integration settings, user selectable		
<b>Digital Output Format</b>	12-bit Camera Link® via SDR connector		
<b>Analog Output Format</b>	Buffered EIA170 compatible video, 60 fields/s, independent 320 x 256 frame readout per field		
<b>Full-frame Rate</b>	119.6 Hz		
<b>Acquisition Modes</b>	Full-frame window, preset ROI window, variable ROI window		
	<b>Window size in pixels</b>	<b>Integration Time</b>	<b>Frame Rate</b>
<b>Preset Window Modes</b> (region centered in array)	16 x 16	78 μs	11,730 fps
	64 x 64	585 μs	1,700 fps
	128 x 128	1.91 ms	515.4 fps
	160 x 128	2.29 ms	431.2 fps
	256 x 256	6.8 ms	145.9 fps
<b>Variable Window Mode</b> (Arbitrary location)	Min. of 8 col. x 4 rows in 8 col and 4 row increments	8 c x 4 r: ~16.1 μs 320 c x 4 r ~ 132 μs 320 c x 100 r: ~3.30 ms	41,300 fps 5,100 fps 302 fps
<b>External Trigger Modes</b>	Pre-set exposure (set by integration time), delay < 550 ns, Variable exposure (integrates while trigger high, min. of 9 μs). Burst with pre-set exposure (standby while trigger low, free-run while high)		

<sup>1</sup> λ = 1.55 μm, exposure time = 16.6 ms (no lens), corrections off, digital gain 1x, smallest available FPA electrons/count setting

<sup>2</sup> The fraction of pixels with responsivity deviation less than +/-35% from the mean.

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