

FrogEye / SharkEye Image Sensor Selection Guide

FrogEye™ and SharkEye™ cameras feature replaceable image sensor modules. Select an image sensor or combination of sensors that best meets your requirements. The table lists available sensors and the corresponding sensor modules.

Selection Advice:

- **Pixel size** determines the target resolution at a given distance with a given lens. **Pixel count** determines the overall size of the image. **Image sensor form factor** in conjunction with the lens focal length sets the field of view (in degrees).
- Grayscale sensors are about 5x more sensitive than color and offer nearly double the spatial resolution. Choose color versions only if color information is needed.
- Note the illumination requirement for optimum exposure and the minimum useful light level. Select to meet the available light in your application.
- The image dynamic range is a measure of image noise. Greater numbers mean lower noise.



FISM-1CS Module with Dual Image Sensors

Sensor	Kodak KAI-1020	Texas Instruments TC-253	Fillfactory IBIS4-14000
Color and grayscale availability	RGB color and grayscale	grayscale	RGB color and grayscale
Sensor Type	CCD	On-chip intensified 'single photon detector' CCD	CMOS
Pixel Count (Megapixel)	1M	340 K (VGA resolution)	14M
Active Pixel Arrangement	1004 x 1004	656 x 496	4560H x 3048V
Pixel Well Capacity (# e-)	60000	26000	65000
Image Dynamic Range (dB)	60 dB	50 dB	65 dB
Multi-spectral capability (QE >= 5%)	370nm – 860 nm (visible and near IR)	300nm-1000nm (UV, visible, NIR)	
Illumination for optimum exposure (Lux-sec)	0.4 Lux-sec (grayscale version) 2.1 Lux-sec (RGB color version)	0.01 Lux-sec (min. intensification) 0.001 Lux-sec (max. intensification)	0.32 Lux-sec (grayscale version)
Minimum useful light level with F1.4 lens at 25 degrees Celsius (Lux)	0.25 Lux (grayscale) 1 Lux (color)	0.00003 Lux (cooler ON, DFS) 0.002 Lux (cooler OFF, no DFS)	
Electronic Shutter Type	Interline (excellent for ambient light and strobe exposure, no smear)	Frame transfer (good for ambient light and strobe exposure, but some smear at very short exposure time ambient light shots)	Rolling blade (suitable for ambient light; strobe exposure only if no significant ambient light is present)
Pixel size (micrometer)	7.4 um	7.4 um	8 um
Target resolution @ 1000m distance with 400mm lens	18.5 mm (grayscale version) 37 mm (color version)	18.5 mm	20 mm (grayscale version) 40 mm (color version)
Horizontal field of view (degrees)	41 deg with f=10mm lens 1.0 deg with f=400mm lens	27 deg with f=10mm lens 0.7 deg with f=400mm lens	123 deg with f=10mm lens 5 deg with f=400mm lens
Sensor Form Factor	7.4 mm x 7.4 mm	4.85 mm x 3.67 mm	36.48 mm x 24.38 mm
Lens compatibility	C-Mount 2/3" and 1" Canon EF (supports dual sensor ops)	C-Mount 1/3", 1/2", 2/3", 1" Canon EF (supports dual sensor ops)	Canon EF
Maximum sensor frame rate	24 frames/sec	24 frames/sec	3 frames/sec at full resolution higher rates with reduced resolution
SharkEye / FrogEye Sensor Modules	FISM-1C (color version) FISM-1G (grayscale version) FISM-1CS (color dual sensor version) FISM-1GS (grayscale dual sensor)	FISM-1S FISM-1CS (dual sensor version) FISM-1GS (dual sensor version)	FISM-2 (not yet available)
Comment	Low-noise multi-purpose sensor. Available in color and grayscale versions. Available on FISM-1CS/GS co-located with TC-253 night vision sensor (on-demand night vision). Good for near IR (NIR) imaging to defeat camouflage in a foliage environment.	Ultra-sensitive sensor for low-light and night operations. Sub-millisecond exposure times at daytime freeze motion blur and support free-hand imaging with strong telephoto lenses. Available on FISM-1CS/GS co-located with KAI-1020 sensor (on-demand night vision).	A very high resolution sensor suitable for wide-field automated surveillance, scientific applications and photojournalism

