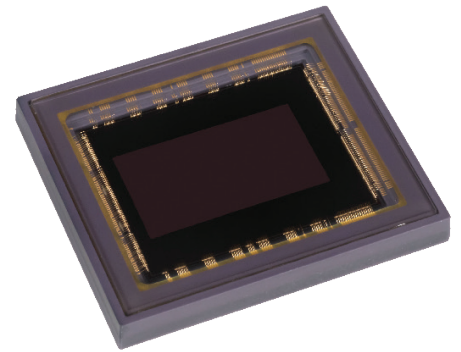


# HWK4123

4/3" 9MP BSI sCMOS 3.0  
4K-120fps Ultra Low Light Sensor

Fairchild Imaging's new BSI sCMOS 3.0 sensors define the next horizon in professional imaging.

The HWK4123 incorporates Fairchild Imaging's new sCMOS 3.0 BSI technology, resulting in an ultra low light capable 4k sensor with market leading 0.5e<sup>-</sup> RMS read noise. Combining the exceptionally low read noise with high quantum efficiency BSI processing enables <0.001 Lux (starlight) imaging capability. The HWK4123 delivers the performance demanded by night vision and high end surveillance applications.



The ultra low light capable HWK4123 is available in monochrome and color versions, and employs new BSI sCMOS 3.0 pixel engineering to realize extremely low noise, boost QE, and reduce dark current. An innovative BSI process enhancement delivers a broad spectrum NIR-QE out to 1100nm to sense nightglow for improved night vision. Low dark current enables lower dark signal noise and maintains high image quality under high temperature conditions.

Fairchild Imaging's proven dual gain amplifier architecture results in 16 bits per pixel to encompass the full dynamic range. Low gain and high gain signal paths provide analog to digital conversions at multiple gain factors on a pixel by pixel basis. The process optimizes both dynamic range and low light noise. The result is a high native dynamic range that can be further extended utilizing the HWK4123's multiple-exposure HDR operating modes.

## Key Features and Benefits

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9.4MP (4096 x 2300)

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4/3" Optical Format

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0.5e<sup>-</sup> RMS Read Noise

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83dB Dynamic Range

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Enhanced NIR QE Process

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Extremely Low Dark Current

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120fps Frame Rate

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## Applications

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Surveillance

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Night Vision

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Critical Infrastructure Security

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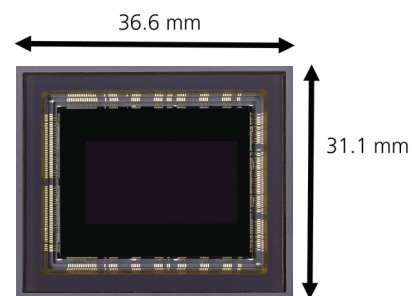
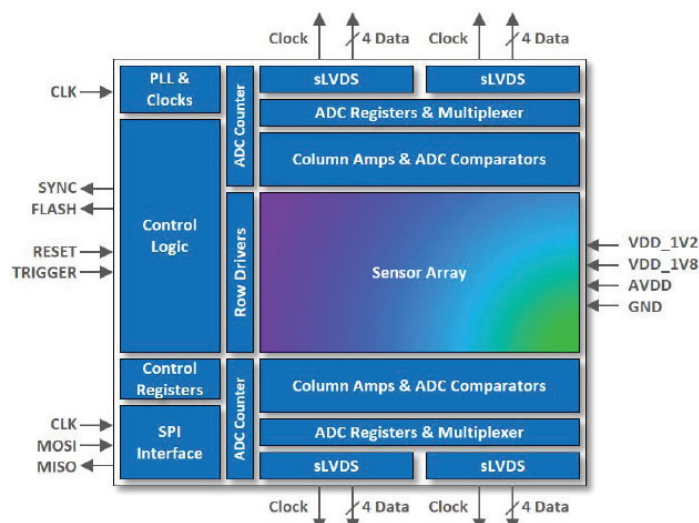
Unmanned Vehicles

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# ideal for imaging in extreme low-light conditions

## Specifications

Sensor	
Optical Format	4/3"
Configurations	Monochrome or Bayer RGB
Active Array	4096 x 2300 (9.4MP)
Active Area	18.9 mm x 10.6 mm
Active Diagonal	21.6 mm
Frame Rates	120 fps @ Full Frame 240 fps @ 1080p (ROI)
ADC Resolution	12 bits @ ≤ 60 fps 11 bits @ 120 fps
Programmable Gain	LG: 1x   HG: 8x, 16x, 32x
Pixel	
Pixel Size	4.6 μm x 4.6 μm
Shutter Types	Rolling and Global Reset
Quantum Efficiency (mono)	>85%
Read Noise	0.5 e- RMS @ 120 fps
Dynamic Range	83 dB
Dark Current	2 e-/sec @ 30°C
Non-linearity	< 1%
Interface	
Temperature Sensor	Analog & Digital Outputs
Output Data Interface @ 1.2 Gbps	10 sub-LVDS @ 60 fps 20 sub-LVDS @ 120 fps
Data Type	11 or 12 bit RAW   16 bit LG/HG Merged
Control Interface	SPI 20 MHz
Operating	
Power	1.8W @ 120 fps
Operating Temp	-30°C to +70°C
Power Supply	3.3V, 2.5V, 1.8V, 1.2V
Packaging	
Package	256 Pin CLGA
Coverglass	Double Sided-AR Coated



HWK4123  
Standard CLGA Package  
(Actual Size)

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