QIMAGING DIGITAL IMAGING MADE EASY

PRODUCT DATASHEET

optiMOS™

Scientific CMOS Optimized for Microscopy

As life science research delves deeper into investigating cellular dynamics, mechanisms and electrochemical signaling, the need for resolving high speed, low light events continues to increase.

Since the inception of digital microscopy, scientific grade CCD cameras have been the gold standard for fluorescence imaging due to their sensitivity and low noise characteristics. However, many cell mechanisms occur on very short time scales and emit low luminescence signals when fluorescently labeled. To sufficiently document these cellular interactions, the imaging device used must be provide adequate temporal and spatial resolution while maintaining a good signal to noise ratio. Due to the inherent architecture of CCDs, achieving high frame rates in combination with low noise and high resolution is simply outside the realm of their intended use.

optiMOS from QImaging is the live cell replacement to CCD cameras. Featuring faster frame rates and lower noise, optiMOS was designed as the budget friendly alternative that avoids complex data management in the PC. Capable of streaming 100fps with a 45% larger FOV and <2e- of read noise, optiMOS delivers 10x the time resolution of CCD cameras without trading off on resolution or sensitivity.

Offered as the affordable sCMOS solution, optiMOS brings the advantages of low noise and high speed imaging to a broader range of cell biology applications.

The new sCMOS Camera and CCD alternative from QImaging

2014 Readers' Choice Laboratory EQUIPMENT AWARDS WINNER

optiMOS™ Series

features	benefits
Study high speed cell dynamics with greater temporal resolution ▪ 100 frames per second	▪ Capture 10x the time resolution of typical CCD cameras ▪ Track high speed dynamic events previously undetected including vesicle formation, protein transport, and calcium wave propagations
See more, faster ▪ 2.1 megapixels with 6.5µm pixels ▪ 14.3mm diagonal	▪ Stream 100fps with a 45% larger FOV than standard 1.4MP fluorescence CCD cameras ▪ Capture more events in a single image – increase throughput
Eliminate the tradeoffs between speed and sensitivity ▪ <2e- read noise	▪ <2e- of noise enables high frame rates without compromising on sensitivity ▪ Capture high speed details and maintain your SNR ▪ Preserve cell vitality with shorter exposures
High Speed Imaging without Complexity ▪ Proprietary High Speed Data Interface ▪ 420MB/s data rate	▪ Stream 100fps to a single PCIe Solid State Drive ▪ Does not require complex and expensive RAID 0 configurations with multiple SSD drives

OPTIMOS™ Specifications

sCMOS sensor	
Sensor Type	BAE CIS1910F Scientific CMOS
Sensor Array	1920 x 1080
Pixel Size	6.5µm x 6.5µm
Sensor Dimensions	12.48mm x 7.02mm (14.32mm diagonal)
Peak Quantum Efficiency	55% at 600nm
Single Pixel Full Well	30,000e-

camera	
Digital Output	16-bit
Readout Frequency	283MHz and 78MHz
Read Noise	1.9e- (rms); 1.5e- (median)
Frame Rate	100 fps at full resolution
Exposure Time Range	25µs - 30s
Regions of Interest	Arbitrary, user defined
Digital Binning	2x2, 4x4, 8x8
Dark Current Rate	0.5 e/p/s at 0°C
Cooling	0°C stabilized at +20°C ambient
Digital Interface	SerialLite PCIe
Triggering I/O Signals	Trigger In, Expose Out, Trigger Ready Out
Supported Triggering Modes	Internal Timed, Trigger First, Edge High, Edge All Rows
Optical Interface	1", C-mount optical format
Mounting Hole Thread Size	1/4"- 20 thread
Camera Dimensions	98mm x 125mm x 178mm
Weight	1.72kg
Computer Platforms/ Operating Systems	Windows 7 (32/64 bit), Windows 8 (32/64 bit) Must have available PCIe x4 slot Refer to the QImaging website for the latest list of minimum computer requirements
Power Requirement	25 watts at 9 volts

typical region of interest frame rates

1920 x 1080	100fps
1920 x 512	220fps
512 x 512	220fps
1920 x 128	850fps
128 x 128	850fps
1920 x 64	1630fps
64 x 64	1630fps

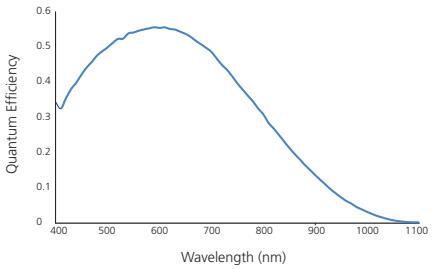
methods and applications

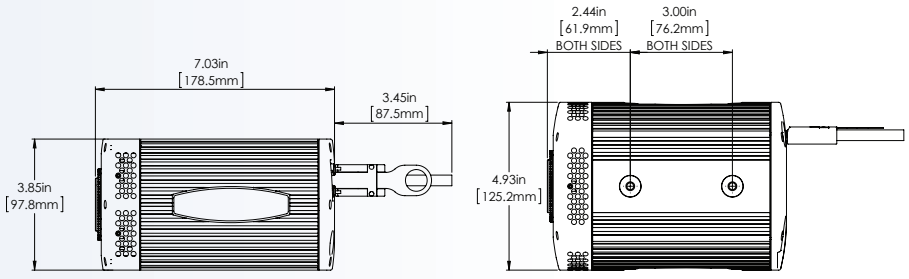
- **Cell Biology**
  - Spinning Disk Confocal
  - High Speed Multicolor Fluorescence
  - FRAP
  - Intrinsic Imaging
- **Ion Transport Physiology**
  - Electrophysiology
  - Calcium Imaging
  - Ratiometrics Imaging
  - Voltage Sensitive Dyes
- **Biophysics**
  - Membrane Dynamics
  - Protein/Lipid Trafficking
  - Nanoparticle Imaging
  - High Speed FRET
  - TIRF

included

- **optiMOS Scientific CMOS Camera**
  Model: 01-OPTIMOS-R-M-16-C
  (monochrome, 16-bit)
- *Power Supply*
- *Data Cable*
- *High Speed PCIe Card*
- *Access to SDK*
- *Limited Warranty*

spectral response





Note: Specifications are typical and subject to change.

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