

# ROLERA™ em-c<sup>2</sup>

## High Speed Digital EMCCD Camera for Bio-Imaging

Introducing the Rolera EM-C<sup>2</sup> EMCCD camera – a versatile bio-imaging platform which combines unprecedented 40 MHz speed with high resolution and low light sensitivity.

The EM-C<sup>2</sup> boasts a brand new feature called **Easy-EM™**, the **one-click optimization** of your camera's EM gain settings in all modes of speed. Instant experimental repeatability is possible with Easy-EM, as each camera is uniquely characterized and operational with the best read noise reduction, dynamic range, and limited EM noise injection.

Stream video of your experiment at 34.2 full frames per second. View live cells in high speed, with 200+ FPS using binning and ROIs.

Get up and running fast with intuitive hardware triggering options, compatibility in popular microscopy control and imaging software suites. Speed is guaranteed with the Rolera EM-C<sup>2</sup>'s dedicated IEEE 1394b FireWire interface.

## High Speed, High Sensitivity Digital EMCCD Camera



Introducing  
**Easy-EM™**  
Technology



### features

Introducing Easy-EM™

Active cooling

High-Speed Readout

Low-Noise Electronics

Flexible Exposure Control

External Sync and Trigger

Binning

IEEE-1394b FireWire 800 Connection

14-bit readout

Integrated digitization

No need for external controller

Easy installation

Software included

RGB module available

### benefits

- Each camera is individually characterized to determine its optimal EM Gain setting. Easy-EM sets your camera to this highest-sensitivity mode.

- Actively cooled to -50° to reduce thermal noise

- Previewing and focusing in real time

- 165.8fps with 8x8 binning

- 34.2fps full resolution @ 14 bits

- Ideal for automated imaging applications

- Quantitation and imaging of low light levels

- Optimal integration over a wide range of light levels

- Tight synchronization with flashlamps, automated filters, shutters, and microscope stages

- Increases sensitivity for quantitation and imaging of very low light levels

- Increases frame rate

- Simple connectivity

- Ease of use and installation

- More than 16,000 gray levels per pixel

- No RF interference

- Keeps bench space clutter-free

- Ready to use in less than 10 minutes

- Enables a variety of life-science applications

- High-resolution color images

### applications

The Rolera EM-C<sup>2</sup> is the fastest, highest resolution EMCCD camera which performs in a variety of low-light bio-imaging applications.

- Live cell imaging

- Spinning disk confocal microscopy

- Fluorescent protein imaging (BFP, GFP, YFP, RFP, FRAP)

- TIRF

- Ratiometric Imaging

- Ion Imaging

# Rolera EM-C<sup>2</sup> Specifications

## ccd sensor

Light-Sensitive Pixels	1004 x 1002
Binning Modes	2, 4, 8
Exposure/Integration Control	200µs to 17.9min
Sensor Type	Texas Instruments TX285 Frame Transfer EMCCD
Pixel Size	8µm x 8µm
Linear Full Well	32,700e-
Read Noise (Typical)	20e- rms @ 40MHz 20e- rms @ 20MHz 18e- rms @ 10MHz <i>Read noise effectively reduced to &lt;1 e- rms with EM gain enabled</i>
Dark Current	0.06 e-/pix/s
Cooling	-50°C (regulated)
Digital Output	8 bits/14 bits
Readout Frequency	40, 20, 10MHz
Frame Rate	34.2fps full resolution @ 14 bits (40MHz)

## camera

Computer Platforms/ Operating Systems*	Windows® 7, Windows XP, Windows Vista (64/32 bit)
Digital Interface	IEEE-1394b FireWire
External Trigger	TTL Input
Trigger Types	Internal, Software, External (Edge-Hi/Edge-Low/Pulse-Hi/Pulse-Low/Strobe-Hi/Strobe-Low)
External Sync	TTL Output
External RGB Filter Control	Support for RGB filter
Optical Interface	2/3", C-mount optical format
Threadmount	1/4" – 20 mount
Power Requirements	40 watts at 12 volts
Weight	952g (2.1lbs)
Warranty	2 years
Operating Environment	0 to 25°C, 80% relative humidity non-condensing
Storage Temperature	-10 to 60°C

## cell imaging frame rates

*No BINNING providing full spatial resolution*

	Approx. Size* (µm)	Required Region of Interest	Frames/Sec
Endosome/Lysosome	5x5	38x38	205
Cell Nucleus	10x10	75x75	171
Golgi	15x15	113x113	147
Small Cell Region	20x20	150x150	134
CHO	25x25	188x188	124
HeLa	30x30	225x225	111

\*Using average cell sizes with a 60X objective to calculate ROI requirements

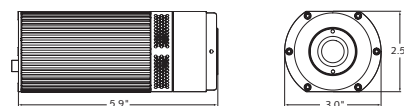
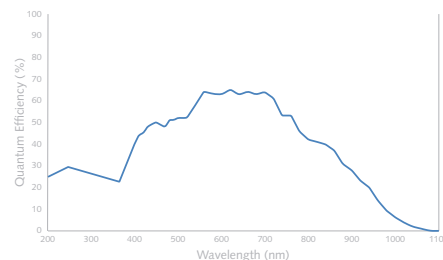
## included

- **Rolera EM-C<sup>2</sup> Bio-Imaging Microscopy Camera**  
Model: 01-ROL-EMC2-R-F-M-14-C (monochrome)
- *Power supply*
- *IEEE1394b FireWire cable (9-pin to 9-pin)*
- *IEEE1394b FireWire PCI Express Card*
- *QCapture Suite software for PC*
- *Limited Warranty*

## camera options

- Performance Assurance Program (extended warranty)
- RGB Filter Module

## spectral response



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[www.qimaging.com](http://www.qimaging.com)



\*Refer to QImaging website for detailed listing of supported operating systems.  
Note: Specifications are typical and subject to change.

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