

# ROLERA™ thunder

QImaging presents the **Rolera Thunder**: the most quantitative and sensitive camera ever offered on the QImaging product line.

The Thunder contains a 16µm pixel, 512x512 EMCCD sensor with >90% QE and read noise <1e<sup>-</sup>.

Combined with a linear EM gain and onboard EM calibration, the Rolera Thunder offers the ideal imaging solution for low light applications.

## camera models

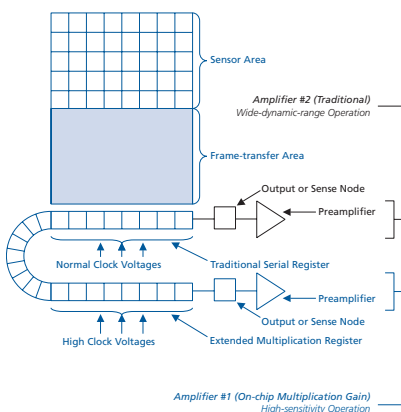
Includes: IEEE-1394 FireWire cable, IEEE-1394 PCIe card, power supply, and access to SDK

- **Monochrome Rolera Thunder**  
Model: 01-ROL-THUNDER-F-M-16-C

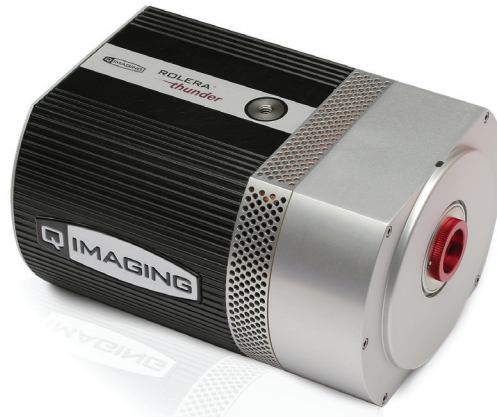
## camera options

- Extended Warranty

## emccd architecture



## High-Speed, Extremely Sensitive Digital EMCCD Camera



features	benefits
High Quantum Efficiency	<ul style="list-style-type: none"> <li>■ Extremely high sensitivity for demanding low-light &amp; fluorescence imaging; up to 90%+ between 500–650nm</li> </ul>
High-Speed Readout	<ul style="list-style-type: none"> <li>■ Previewing &amp; focusing in real time</li> <li>■ 385+fps with 6x6 binning and ROI</li> <li>■ 30fps full resolution @ 16 bits</li> <li>■ Ideal for automated imaging applications</li> </ul>
Low-Noise Electronics	<ul style="list-style-type: none"> <li>■ Quantitation &amp; imaging of low light levels</li> </ul>
Flexible Exposure Control	<ul style="list-style-type: none"> <li>■ Optimal integration over a wide range of light levels</li> </ul>
External Sync & Trigger	<ul style="list-style-type: none"> <li>■ Tight synchronization with flashlamps, automated filters, shutters, &amp; microscope stages</li> </ul>
Three-Stage Peltier Cooling	<ul style="list-style-type: none"> <li>■ Reduces thermal noise for low-light long exposures while providing temperature stability</li> </ul>
Binning	<ul style="list-style-type: none"> <li>■ Increases sensitivity for quantitation &amp; imaging of very low light levels</li> <li>■ Increases frame rate</li> </ul>
IEEE-1394 FireWire Connection	<ul style="list-style-type: none"> <li>■ Simple connectivity</li> <li>■ Better noise performance</li> <li>■ Ease of use &amp; installation</li> <li>■ Portability with laptop computer</li> <li>■ Simultaneous use of multiple cameras through a single port</li> </ul>
PVCam® Circular buffers Device sequencing	<ul style="list-style-type: none"> <li>■ Supported by numerous third-party software packages</li> <li>■ Real-time focus</li> <li>■ Precise integration with shutters, filter wheels, etc.</li> </ul>

# ROLERA THUNDER Specifications

## emccd sensor

Light-Sensitive Pixels	512 x 512	
Binning Modes	1, 2, 3, 4, 5, 6 horizontally, arbitrary vertically	
ROI (Region of Interest)	From 1x1 pixels up to full resolution, continuously variable in single-pixel increments	
Sensor Type	e2v L3Vision CCD97, back-illuminated device	
Pixel Size	16µm x 16µm	
Linear Full Well	800,000e- (EM mode); 200,000e- (conventional)	
Read Noise	"EM gain" amplifier	"Traditional" amplifier
	40 e- rms @ 5MHz 55 e- rms @ 10MHz <i>Read noise effectively reduced to &lt;1 e- rms with EM gain enabled</i>	<8 e- rms @ 1.25MHz 15 e- rms @ 5MHz
Dark Current	0.5 e-/pix/s	
Cooling Technology	Three-stage Peltier cooling, chamber back-filled with nitrogen at atmosphere, assembled in a cleanroom environment	
Cooling Type	Down to -25°C, regulated, with software control in 1°C increments	
Digital Output	16 bits	
Readout Frequency	10, 5MHz (EM mode); 5, 1.25MHz (normal mode)	
Frame Rate	30fps full resolution @ 16 bits (385+ maximum with binning and ROI functions)	

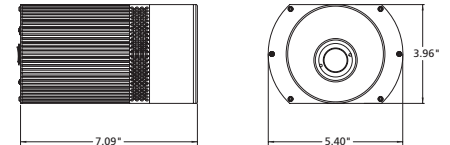
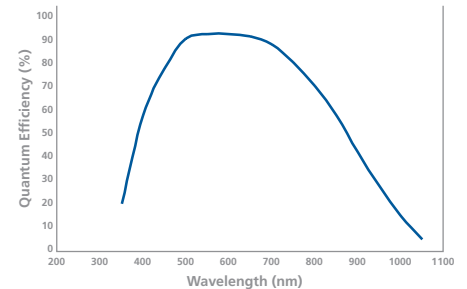
## camera

Computer Platforms/ Operating Systems*	Windows® XP, Vista, or Windows 7
Digital Interface	IEEE-1394 FireWire
External Trigger	TTL Input
Trigger Types	Internal, Software, External
External Sync	TTL Output
EM Gain Control	1 to 1000 times (typical) Self calibrating linearization
Optical Interface	2/3", C-mount optical format
Threadmount	1/4" – 20 mount
Weight	3.18kg (7lbs)
Warranty	2 years
Operating Environment	0 to 30°C, 0 to 80% relative humidity non-condensing
Storage Temperature	-20 to 60°C

## applications

- Spinning-Disk Confocal Microscopy
- Dynamic Ratio Imaging (e.g., pH, Low-Concentration Flux)
- FRAP (Fluorescence Recovery After Photobleaching)
- Live-Cell Fluorescent Protein Imaging
- Astronomy
- Bose-Einstein Condensate

## spectral response



Tel 604.530.5800 ▪ Fax 604.539.1825 ▪ info@qimaging.com  
www.qimaging.com



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

Rolera is a trademark of Qimaging Corporation.  
Qimaging is a registered trademark of Qimaging Corporation.  
Other brand and product names are the trademarks or registered trademarks of their respective owners and manufacturers.