

# RETIGA-2000R

**FAST1394**

## Monochrome or Color

The **QImaging® Retiga-2000R** digital camera features enhanced visible-range quantum efficiency resulting in high sensitivity that is ideal for brightfield, machine vision, metrology, and metallurgical imaging applications. A progressive-scan interline CCD sensor gives a resolution of 1.92 million pixels in a 12-bit digital output. High-speed, low-noise electronics provide linear digital data for rapid image capture. The IEEE 1394 FireWire® digital interface allows ease of use and installation with a single wire. No framegrabber or external power supply is required. The Retiga 2000R includes QCapture software (Windows® and Mac OS) for real-time image preview and capture. A **Software Development Kit (SDK)** is available upon request for interfacing with custom software.

### camera models

*Includes: IEEE 1394 FireWire cable, IEEE 1394 PCIe card, power supply, QCapture Suite software, QCapture Pro software, and access to SDK*

- **Monochrome Retiga 2000R:**  
Model: RET-2000R-F-M-12-C

- **Color Retiga 2000R:**  
Model: RET-2000R-F-CLR-12-C

### camera options

- RGB Color Filter for monochrome cameras (F-mount interface required), refer to data sheet for more details
- Extended Warranty



## High Sensitivity IEEE 1394 FireWire® Digital CCD Camera



features	benefits
High-Resolution, 1.92-Million-Pixel Sensor	<ul style="list-style-type: none"> <li>▪ Highly detailed, sharp images</li> </ul>
Large Pixels (7.4µm x 7.4µm)	<ul style="list-style-type: none"> <li>▪ High sensitivity, high dynamic range, large well capacity</li> </ul>
High-Speed Readout	<ul style="list-style-type: none"> <li>▪ Previewing &amp; focusing in real time</li> <li>▪ 190fps maximum frame rate</li> <li>▪ 10fps full resolution @ 12 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>
12-Bit Digitization/ 36-Bit Color Digitization (with Optional RGB Filter)	<ul style="list-style-type: none"> <li>▪ 4096 grey levels for precise light-intensity discrimination</li> <li>▪ 4096 levels per channel for superior color images</li> </ul>
External Sync & Trigger	<ul style="list-style-type: none"> <li>▪ Tight synchronization with flashlamps, automated filters, shutters, &amp; microscope stages</li> </ul>
Peltier Cooling	<ul style="list-style-type: none"> <li>▪ Minimizes thermal noise during low-light, long-exposure imaging</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>▪ Ease of use &amp; installation</li> <li>▪ Portability with laptop computer</li> <li>▪ Simultaneous use of multiple cameras through a single port</li> <li>▪ Single-cable operation (no external power supply or control unit)</li> </ul>
Extensive Application Software Support	<ul style="list-style-type: none"> <li>▪ Choose from a large selection of life science &amp; industrial software for microscopy, machine vision, &amp; video-streaming functions</li> </ul>

# RETIGA-2000R FAST1394 Specifications

## ccd sensor

Light-Sensitive Pixels	1.92 million; 1600 x 1200
Binning Modes	2x2, 4x4, 8x8
ROI (Region of Interest)	From 1x1 pixels up to full resolution, continuously variable in single-pixel increments
Exposure/Integration Control	10µs to 17.9min in 1µs increments
Sensor Type	Kodak® KAI-2020 progressive-scan interline CCD (monochrome or color)
Pixel Size	7.4µm x 7.4µm
Linear Full Well	40,000e- (1x1); 80,000e- (2x2)
Read Noise	16e-
Dark Current	0.5e-/pix/s (non-cooled)
Cooling	Peltier thermoelectric cooling to 25°C below ambient
Digital Output	12 bits
Readout Frequency	20, 10, 5MHz
Frame Rate	7.5fps full resolution @ 12 bits (190fps maximum with binning and ROI functions)

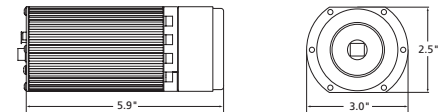
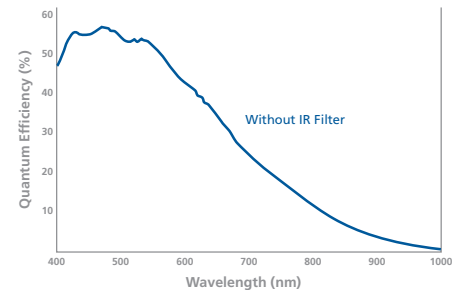
## camera

Computer Platforms/ Operating Systems	Windows® 7, Vista and XP (32/64 bit)
Digital Interface	IEEE 1394 FireWire
Sustained Image Data Rate	40MB/s
Shutter Control	Electronic shutter, no moving parts
External Trigger	TTL Input
Trigger Types	Internal, Software, External
External Sync	TTL Output
Gain Control	0.451 to 21.5x
Offset Control	-2048 to 2047
Optical Interface	1", C-mount optical format
Threadmount	1/4" — 20 mount
Power Requirements	17W (cooled), 11W (non-cooled)
Weight	845g
Warranty	2 years
Operating Environment	0 to 50°C (32 to 122°F)
Storage Temperature	-10 to 60°C
Humidity	Less than 80% non-condensing at 35°C (95 °F)

## applications

- Brightfield, Phase-Contrast, & Darkfield Microscopy
- Live-Cell Imaging
- Pathology, Histology, & Cytology
- FISH
- Ca<sup>++</sup> Ratio Analysis
- Motility & Motion Analysis
- DNA Analysis
- Metallurgical Microscopy
- Semiconductor Inspection
- Manufacturing Quality Control
- Failure Analysis
- Forensic Analysis

## spectral response



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

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