

# RETIGA 2000R *FAST1394*

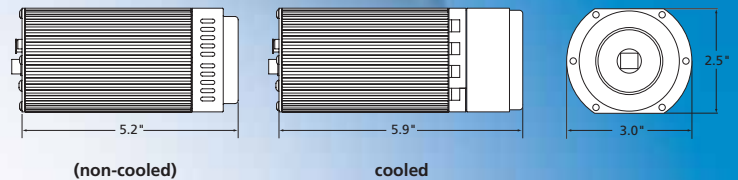
High-Sensitivity IEEE 1394 FireWire™ Digital CCD Camera – Monochrome or Color

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.



Retiga 2000R (non-cooled)

Retiga 2000R cooled



Note: Lenses are shown for illustration only and are not included.

## CAMERA MODELS

Includes: IEEE 1394 FireWire™ cable, IEEE 1394 PCI card, QCapture software, QCapture Pro software, IEEE 1394 power supply (cooled version only), & access to SDK

- **Monochrome Retiga 2000R Cooled** Model: RET-2000R-F-M-12-C
- **Monochrome Retiga 2000R Non-Cooled** Model: RET-2000R-F-M-12
- **Color Retiga 2000R Cooled** Model: RET-2000R-F-CLR-12-C
- **Color Retiga 2000R Non-Cooled** Model: RET-2000R-F-CLR-12

## FEATURES

- High-Resolution, 1.92-Million-Pixel Sensor
- Large Pixels (7.4µm x 7.4µm)
- High-Speed Readout
- Low-Noise Electronics
- 12-Bit Digitization/  
36-Bit Color Digitization  
(with Optional RGB Filter)
- External Sync & Trigger
- Peltier Cooling

## BENEFITS

- Highly detailed, sharp images
- High sensitivity, high dynamic range, large well capacity
- Previewing & focusing in real time
- 190fps maximum frame rate
- 10fps full resolution @ 12 bits
- Ideal for automated imaging applications
- Quantitation & imaging of low light levels
- 4096 grey levels for precise light-intensity discrimination
- 4096 levels per channel for superior color images
- Tight synchronization with flashlamps, automated filters, shutters, & microscope stages
- Minimizes thermal noise during low-light, long-exposure imaging

## CAMERA OPTIONS

- **RGB Color Filter** for monochrome cameras (F-mount interface required), refer to spec sheet for more details



- **Extended Warranty**

### Binning

IEEE 1394 FireWire™  
QImaging Fast 1394 Technology

Extensive Application  
Software Support

- Increases sensitivity for quantitation & imaging of very low light levels
- Increases frame rate
- Simple connectivity
- Ease of use & installation
- Portability with laptop computer
- Simultaneous use of multiple cameras through a single port
- Single-cable operation (no external camera power supply or control unit)
- Choose from a large selection of life science & industrial software for microscopy, machine vision, & video-streaming functions

# RETIGA 2000R FAST<sup>1394</sup> SPECIFICATIONS

## 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

## 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)
Read Noise	16e-
Dark Current	0.5e-/pix/s (non-cooled)
Cooling Available	Yes (optional)
Cooling Type	Peltier thermoelectric cooling to 25°C below ambient
Digital Output	12 bits
Readout Frequency	20, 10, 5, 2.5MHz
Frame Rate	10fps full resolution @ 12 bits (190fps maximum with binning and ROI functions)

## CAMERA

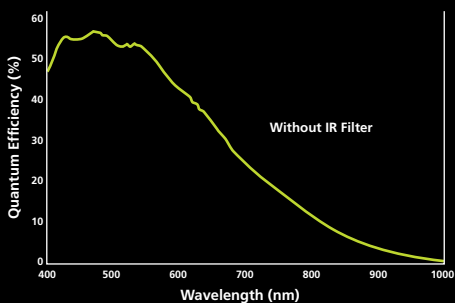
Computer Platforms/Operating Systems	Windows® & Mac OS*
Digital Interface	IEEE 1394 FireWire™
Sustained Image Data Rate	40MB/s
Shutter Control	Electronic shutter, no moving parts
External Trigger	TTL Input
Trigger Types	Internal, Software, External
External Sync	TTL Output
Gain Control	0.451 to 21.5x
Offset Control	-2048 to 2047
Optical Interface	1", C-mount optical format
Threadmount	1/4" — 20 mount
Power Requirements	11W (non-cooled); 17W (cooled)
Weight	585g (non-cooled); 845g (cooled)
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)

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

ISO 9001:2000



## SPECTRAL RESPONSE



04-0017A-C



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