QIMAGING®

DIGITAL IMAGING MADE EASY

RETIGA-2000DC

FAST 1394

The **QImaging® Retiga-2000DC** CCD digital camera has been specially engineered for low-light, high-dynamic-range, high-speed applications. An 80,000e- full well capacity, combined with a three-stage Peltier device using an all-metal, hermetic-vacuum-sealed CCD chamber, provides extreme dynamic range for applications such as live-cell imaging, forensics, and fluorescence. The camera's software-selectable regulated cooling enables precise control in single-degree increments down to -45°C. The Retiga-2000DC features a 1.92-megapixel CCD, 12-bit digital output, and an IEEE 1394 interface for enhanced connectivity and noise-shielding performance. Additionally, the camera comes with Hot Pixel Reduction™ (HPR) technology, an innovative combination of a deep-cooled vacuum design and FPGA-based pixel clock timing that offers unbeatable performance in terms of dark current and generation of hot pixels.

camera models

Includes: IEEE 1394 FireWire cable, IEEE 1394 PCI card, power supply, hex key, QCapture Suite software, and access to SDK

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

camera options

- Removable IR-Cutoff Filter

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

- Extended Warranty

Deep-Cooled, High-Dynamic-Range Digital CCD Camera

RETIGA Series

features	benefits
HPR Technology	■ Ultimate reduction of hot pixels
Black-Out Mode	■ Turns all lights off for low-light imaging applications
High-Resolution, 1.92-Million-Pixel Sensor	■ Highly detailed, sharp images
High-Speed Readout	■ Previewing & focusing in real time ■ 190fps maximum frame rate ■ 10fps full resolution @ 12 bits ■ Ideal for automated imaging applications
Low-Noise Electronics	■ Quantitation & imaging of low light levels
Optional/Removable IR-Cutoff Filter	■ High-contrast, visible-range images with IR filter in place ■ Removable for IR applications
Flexible Exposure Control from 10µs to 17.9min	■ Optimal integration over a wide range of light levels
External Sync & Trigger	■ Tight synchronization with flashlamps, automated filters, shutters, & microscope stages
Three-Stage Peltier Cooling w/ Vacuum Seal	■ Reduced thermal noise for low-light, long exposures
Binning	■ Increases sensitivity for quantitation & imaging of very low light levels ■ Increases frame rate
IEEE 1394 FireWire Connection	■ Simple connectivity ■ Better noise performance ■ Excellent connectivity ability ■ Ease of use & installation ■ Portability with laptop computer ■ Simultaneous use of multiple cameras through a single port
Extensive Application Software Support	■ Choose from a large selection of life science & industrial software for microscopy, machine vision, & video-streaming functions

RETIGA-2000DC *FAST1394* Specifications

ccd sensor

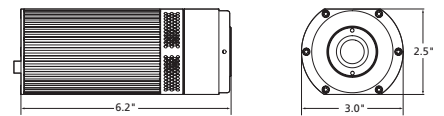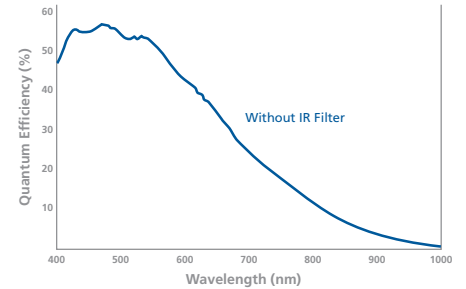|	
Light-Sensitive Pixels	1.92 million; 1600 x 1200
Binning Modes	2x2, 4x4, 8x8
ROI (Region of Interest)	From 1x1 pixels up to full resolution, continuously variable in single-pixel increments
Exposure/Integration Control	10µs to 17.9min in 1µs increments
Sensor Type	Kodak® KAI-2020 progressive-scan interline CCD (monochrome)
Pixel Size	7.4µm x 7.4µm
Linear Full Well	40,000e- (1x1 binning); 80,000e- (2x2 binning)
Read Noise	15e-
Dark Current	0.031e-/pix/s
Cooling Technology	Three-stage Peltier cooling with all-metal, hermetic-vacuum-sealed chamber assembled in a Class 10,000 cleanroom
Cooling Type	Down to -45°C, regulated, with software control in 1°C increments
Digital Output	12 bits
Readout Frequency	20, 10, 5MHz
Frame Rate	10fps full resolution @ 12 bits (190fps maximum with binning and ROI functions)

camera

HPR Technology	Offers unbeatable performance in terms of dark current and generation of hot pixels
Black-Out Mode	Turns all camera lights off to reduce light reflection during low-light applications; software controlled
Computer Platforms/ Operating Systems	Windows®, Mac OS*, Linux® 2.67+ with raw 1394 support
Digital Interface	IEEE 1394 FireWire
External Trigger	TTL Input (optically coupled)
Trigger Types	Internal, Software, External
External Sync	TTL Output (optically coupled)
Gain Control	0.451 to 21.5 times
Offset Control	-2048 to 2047
Optical Interface	1", C-mount optical format
Threadmount	1/4" – 20 mount
Power Requirements	30W; 12–24VDC
Weight	1.092kg
Warranty	2 years
Operating Environment	0 to 40°C
Storage Temperature	0 to 50°C
Humidity	Less than 80% relative humidity

applications

- Immunofluorescence
- Fluorescent protein imaging
- Forensic analysis
- LCD inspection
- Chemiluminescent gel imaging

spectral response

Without IR Filter

2.5"
6.2"
3.0"

RoHS