

RETIGA-4000RV *FAST1394*

Deep-Cooled, High-Dynamic-Range IEEE 1394 FireWire® Digital CCD Camera

The **QImaging® Retiga-4000RV** CCD digital camera has been specially engineered for low-light, high-dynamic-range 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 chemiluminescence, live-cell imaging, and fluorescence. The camera's software-selectable regulated cooling enables precise control in single-degree increments down to -30°C. The Retiga-4000RV features a 4-megapixel CCD, 12-bit digital output, and an IEEE 1394 interface for enhanced connectivity and noise-shielding performance. Additionally, the camera comes with iGlo™ technology, which features an organic light emitting diode (OLED) display that provides users with key information about camera settings in a convenient, ergonomic way.

camera models

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

- **Monochrome Retiga-4000RV:**
Model: RET-4000RV-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

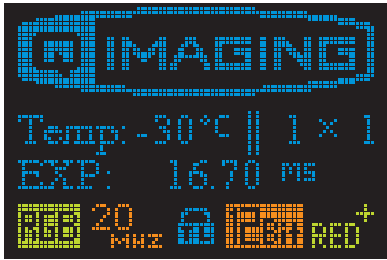


Note: Lens shown for illustration only and is not included.

| features | benefits |
|--|---|
| iGlo™ | <ul style="list-style-type: none"> ▪ OLED display for easy-to-verify key camera information in a simple, ergonomic design |
| Black-Out Mode | <ul style="list-style-type: none"> ▪ Turns all lights off for low-light imaging applications |
| High-Resolution, 4-Million-Pixel Sensor | <ul style="list-style-type: none"> ▪ Highly detailed, sharp images |
| Low-Noise Electronics | <ul style="list-style-type: none"> ▪ Quantitation & imaging of low light levels |
| Optional/Removable IR-Cutoff Filter | <ul style="list-style-type: none"> ▪ High-contrast, visible-range images with IR filter in place ▪ Removable for IR applications |
| Flexible Exposure Control from 10µs to 17.9min | <ul style="list-style-type: none"> ▪ Optimal integration over a wide range of light levels |
| External Sync & Trigger | <ul style="list-style-type: none"> ▪ Tight synchronization with flashlamps, automated filters, shutters, & microscope stages |
| Three-Stage Peltier Cooling w/ Vacuum Seal | <ul style="list-style-type: none"> ▪ Reduced thermal noise for low-light, long exposures |
| Binning | <ul style="list-style-type: none"> ▪ Increases sensitivity for quantitation & imaging of very low light levels ▪ Increases frame rate |
| IEEE 1394 FireWire Connection | <ul style="list-style-type: none"> ▪ 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 | <ul style="list-style-type: none"> ▪ Choose from a large selection of life science & industrial software for microscopy, machine vision, & video-streaming functions |

RETIGA-4000RV FAST1394 Specifications

| ccd sensor | |
|---------------------------------------|---|
| Light-Sensitive Pixels | 4 million; 2048 x 2048 |
| 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-4021 progressive-scan interline CCD (monochrome) |
| Pixel Size | 7.4µm x 7.4µm |
| Linear Full Well | 40,000e- (1x1); 80,000e- (2x2) |
| Read Noise | 12e- (at 20MHz) |
| Dark Current | 0.084e-/pix/s |
| Cooling Technology | Three-stage Peltier cooling with all-metal, hermetic-vacuum-sealed chamber assembled in a Class 1,000 cleanroom |
| Cooling Type | Down to -30°C, regulated, with software control in 1°C increments |
| Digital Output | 12 bits |
| Readout Frequency | 20, 10, 5MHz |
| Frame Rate | 4fps full resolution @ 12 bits (125fps maximum with binning and ROI functions) |
| camera | |
| Black-Out Mode | Turns all camera lights off to reduce light reflection during low-light applications; software controlled |
| iGlo Display | Provides key camera information to the user, allowing easy verification of camera settings |
| 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 | 0.493 to 23.5 times |
| Offset Control | -2048 to 2047 |
| Optical Interface | F-mount optical format; aspect ratio 1:1 |
| Threadmount | 1/4" – 20 mount |
| Power Requirements | 30W; 12–24VDC |
| Weight | 1.180kg |
| Warranty | 2 years |
| Operating Environment | 0 to 40°C |
| Storage Temperature | 0 to 50°C |
| Humidity | Less than 80% relative humidity |

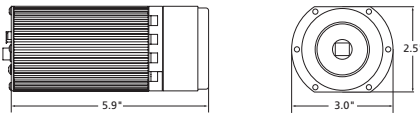
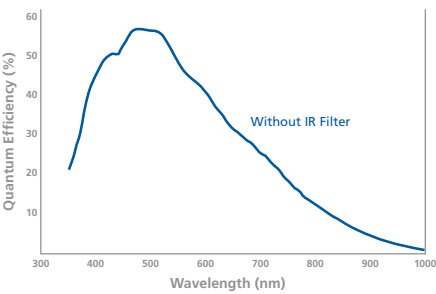


iGlo technology features essential information about camera settings.

applications

- Quantitative Fluorescence Imaging
- Live-Cell Imaging
- Semiconductor Inspection
- Chemiluminescence
- Particle Tracking
- LCD Inspection

spectral response



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

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