

Retriever Technology's "Electron Multiplying" cameras utilize the world's highest resolution Impactron™ CCD from Texas Instruments. This rugged, cooled and extremely sensitive camera gives crisp images at 16 frames per second and 1 Mpixel resolution. They can be run in high-resolution digital or analog formats, and are able to provide near photon counting capabilities in a small and rugged housing.

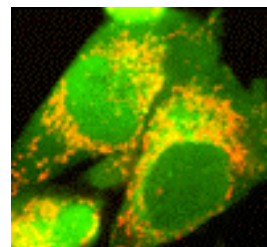


With Retriever Technology's advanced EM -Series cameras, bulky image intensifiers are a thing of the past. In this device, on chip charge multiplication within the CCD - an "impact ionization process" - allows the charge to be amplified in the CCD before the sensor is read out thereby dramatically increasing signal above the readout noise.

A ruggedized hermetically sealed chamber allows for cooling and increased signal to noise performance. The cooling practically eliminates any dark current allowing near single photon counting performance. The EM-Series gives you fast, high resolution, 12 or 16 bit data for any light-starved task such as scientific and surveillance applications. The camera is able to output in both analog and digital mode making it an ideal tool for diverse set of applications. Additional features such as binning and selectable ROI will add flexibility to many scientific and surveillance needs.

Operating Features

- Analog and Digital Output
- Electronically Variable Charge Domain Gain
- TEC Cooling to Optimal Levels - $\Delta 30\text{C}^\circ$
- Electronic Shutter
- Able to Operate in Hostile Environments
- Meets US Military Specifications
- Low Noise Operation
- Full frame or windowing and binning
- Hardware or Software Triggering

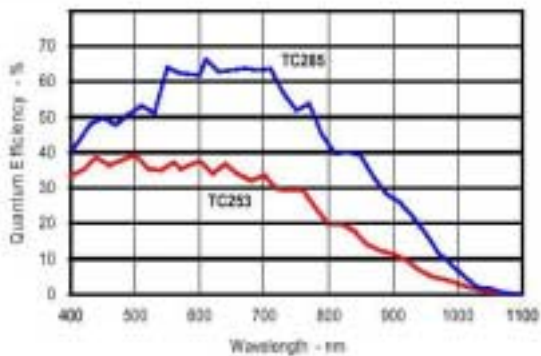


Camera Performance Specifications

- Imager Texas Instruments Impactron
- Resolution 1004 x 1002 Pixels EM-CCD
- Pixel Size 8 micron pixels
- Read Out Rate Max 20MHz
- Digitization 12 or 16 bits
- Gain Adjustable from 1 up to 1000 times
- Spectral Range 100nm-1080nm
- High QE Over 65% at Peak
- Cooling Peltier with Low Noise Fan
- Frame rate 16 fps at 20 MHz
100 fps with binning and windowing
- Analog Output 25 f.p.s CCIR
- Camera Size Various – Typical Head 76mm x 185
- Camera Weight Typical weight 1.25 kg

Other Specifications

Quantum Efficiency of TC253 and TC285



Sensitivity

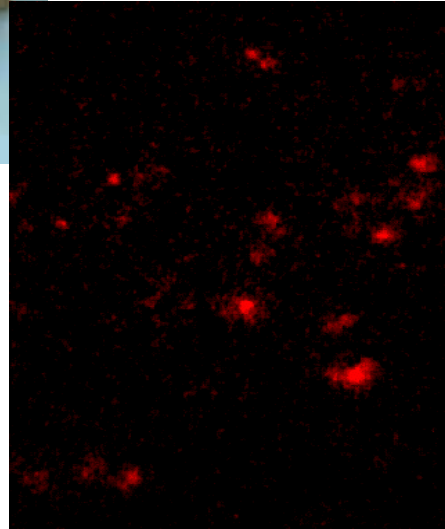
TC285 : 28V/lx*s

TC253 : 8.0V/lx*s

> X3.5

Ease of integration is assured with use of FireWire, camera link interface and generic hardware. An optional Ethernet board allows remote operation. A choice of LVDS or CCIR interface will guarantee system performance, backward compatibility, integrity and ease of integration. The camera can be delivered with complete image analysis software and a suite of drivers for easy integration with popular 3rd part software. For more information contact Retriever Technology. +1 505 986 8196

Courtesy of Texas Instruments



APPLICATIONS

Scientific - With its small pixel size and high resolution, the camera is ideal for live cell and confocal microscopy, single molecule fluorescence or calcium ratio imaging.

On chip signal amplification up to 1000:1 will benefit flux hungry applications such as *in vivo* luminescence imaging, chemi-luminescent gel analysis where traditionally photon-counting techniques are used.

This high quantum efficiency camera permits detection of bacteria colonies or multi-labeled low light fluorescence imaging, as in high throughput screening, by providing drastic exposure time reduction and improved duty cycles.



APPLICATIONS

Military and Security - With its high resolution and ruggedized body, the camera is ideal for many military and security application where the performance of the camera is essential.

The EMCCD camera's low power requirements plus the ability to operate the camera, in video or digital modes, with laptop or remotely via an Ethernet connection, allows un-compromised flexibility.

The Camera meets US Military Specification for durability, shock resistance and environmental ruggedness. Furthermore, its small form factor allows it to be built into tight spaces such as moving vehicles or adopted for foot patrol use.



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