

3.2.3.2 190-1100nm Firewire Silicon CCD Cameras

Models GRAS 20

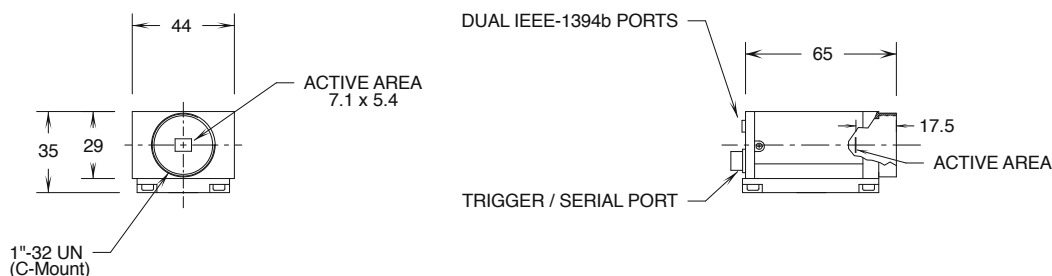
Features

- 61dB true system dynamic range (14 bit with BeamGage)
- High speed electronic shutters
- Exclusive Ultracal available for ISO conforming accuracy
- Flexible external trigger and strobe output for synchronization with laser pulses
- Available with BeamGage software

GRAS 20



GRAS 20/GRAS 20-1550



Firewire Cameras for use with Laptop or Desktop PC

Item	Specification
Model	GRAS 20
Application	1/1.8" format, high resolution, CW YAG, adjustable ROI
Spectral Response	190 – 1100nm ⁽³⁾
Maximum beam size	7.1mm W x 5.4mm H
Pixel spacing	4.4µm x 4.4µm
Number of effective pixels	1600 x 1200
Minimum system dynamic range ⁽¹⁾	61dB
Linearity with Power	±1%
Accuracy of beam width	±2%
Frame rates	15Hz full res; >60Hz depending on ROI ⁽²⁾
Shutter duration	From 1/frame rate to 1/10,000s. Manual or continuous automatic control
Gain control	0db to 25db Manual control
Trigger	Supports both trigger in and strobe out
Photodiode trigger	Optional photodiode trigger available: ESP-GRAS
Saturation intensity ⁽¹⁾	0.3µW/cm ²
Lowest measurable signal ⁽¹⁾	0.4nW/cm ²
Damage threshold	50W/cm ² / 1J/cm ² with all filters installed for <100ns pulse width ⁽⁴⁾
Dimensions and CCD recess	35mm x 44mm x 65mm Fixed C-mount
Image quality at 1064nm	Pulsed with video trigger - good Pulsed, sync - excellent CW - good
Operation mode	Interline transfer progressive scan CCD
Software supported	BeamGage
PC interface	IEEE 1394b Firewire
Minimum host system requirements	IEEE 1394b requires 1394b port or PCI-Express or CardBus Slot

Notes:

- (1) Camera set to full resolution at maximum frame rate and equivalent exposure times, running CW at 632.8nm wavelength. Camera set to minimum useful gain for saturation test and maximum useful gain for lowest signal test.
- (2) The maximum rate depends on the ROI (Region of Interest) size, the bits readout, and the number of cameras on the same bus. The SCOR 20 operates at 7.5Hz 12 bits and 15Hz 8 bits. It operates up to at least 60Hz with a smaller ROI. The frame rate also depends on PC resources.
- (3) May be usable for wavelengths below 350nm but sensitivity is low and detector deterioration may occur. Therefore UV image converter is recommended. Although our silicon cameras have shown response out to 1320nm it can cause significant blooming which could lead to significant errors of beam width measurement. We would suggest our XC130 InGaAs camera for these wavelengths to give you the best measurements.
- (4) This is the damage threshold of the filter glass of the filters. Assuming all filters mounted with ND1 (red housing) filter in the front. Distortion of the beam may occur.