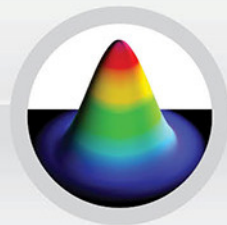


USB
3.0

4.2
MPixels



USER MANUAL

Beamage-4M | USB 3.0 Beam Profiling Camera

1. BEAMAGE-4M

1.1. INTRODUCTION

Gentec-EO introduces the new Beamage-4M. Its sleek and thin design allows the Beamage-4M to fit between tight optical components. Its USB 3.0 connection and improved algorithm allows very fast frame rates. The new 4.2 MPixel CMOS sensor has a large 1" optical format with a small 5.5 μm pixel pitch allowing high resolution on large beams. Most importantly the innovative and improved PC-Beamage-4M software is simple and intuitive to any new or expert beam profiling user.

1.2. SPECIFICATIONS

The following specifications are based on a one-year calibration cycle, an operating temperature of 18 to 28°C (64 to 82 F) and a relative humidity not exceeding 80%.

Table 1-1 List of Specifications

	<i>Sensor Specification</i>
Sensor Technology	CMOS without coverglass
Sensor Size	11.3 x 11.3 mm
Sensor Area	1.28 cm ²
Pixel Count	4.2 MPixels
Pixel H x V	2048 x 2048
Optical Format	1"
Pixel Dimension	5.5 μm
Minimum Measurable Beam	55 μm
ADC	12 bit (default) or 10 bit
Shutter Type	Global
Wavelength Range	350 -1150 nm
Frame Rate	6.2 fps (4.2 MPixel Full Frame) 11.4 fps (2.1 MPixel Active Area 2048 x 1024) 18.6 fps (1.1 MPixel Active Area 2048 x 544) 32 fps (0.066 MPixel Active Area 256 x 256)
RMS noise	1000:1 (60 dB)
Minimum and Maximum Exposure Times	0.06 to 200 ms
External Trig	SMA connector 1.1 volts to 24 volts, the rise edge response time is 300 ns Trigger signal pulse width: 300 ns to 230 ms Optional SMA to BNC adaptor (202273) :

	<i>Damage Thresholds</i>
Maximum Average Power	1 W with ND filter
Saturation Level (1064 nm, CW, ND4)	10 W/cm ²
Saturation Level (1064 nm, Pulsed, ND4)	300 μ J/cm ²
	<i>PC Requirements</i>
USB Port	USB 3.0 port for optimal performance USB 2.0 port
Operating System Compatibility	Windows 8 (for optimal performance) Windows 7 (for optimal performance) Windows Vista
Average RAM Allocation	500 MB Up to 1250 MB for 64 images in buffer
Recommended Requirement	4 Gb RAM minimum 8Gb RAM for optimal performance Intel i series processors (i3, i5, i7) or equivalent for optimal performance, other processors will have lower specifications. i7 for optimal performance Beamage-4M is a new and a high end product. It needs an equally recent high end computer to work. Computer hardware must be from 2010 or after. No computer or parts bought before 2010 will be supported
For Optimal Performance	Close all programs except the PC-Beamage-4M; Keep a minimum of 1 GB RAM free when running the PC-Beamage-4M; Keep a minimum of 50% of free CPU power when running the PC-Beamage-4M Use an Image Buffer of 1
Multi Camera Recommendations	When working with more than one camera, we strongly recommend using one USB3.0 port per camera and a recent high end computer for optimal performance
Internet Upgrades	Downloadable at www.gentec-eo.com/downloads
	<i>Physical Characteristics</i>
Dimensions	61 H x 81.1W x 19.7D
Weight	138 g
Default Attenuation	ND 4.0

	<i>Measured and Displayed Parameters</i>
Displays	3D, 2D, XY (crosshair), Beam Tracking
Beam Diameter Definition	4 Sigma (ISO) - ISO-11146-1:2005 FWHM along crosshair (50%) $1/e^2$ along crosshair (13.5%) 86% effective diameter (D86)
Beam Center Definition	Centroid - ISO-11146-1:2005 First Encountered Peak
Displayed Measurements	Major Axis Minor Axis Effective Diameter Ellipticity Orientation Centroid X and Y Peak X and Y Peak Saturation Level Peak to Average Ratio X and Y Divergence Fitted Gaussian equations Roughness fit along crosshairs Gaussian fit along crosshairs Mean Centroid Position Azimuth Beam Position Stability
Setup Options	Exposure Time (auto or manual) Image Orientation (rotation and flip) Image Averaging (temporal filter) Active Area Pixel Addressing Gain ADC Level Magnifying Lens
Processing Option	Background Subtraction Area Filters (triangular and flat spatial filters) Normalized Display Trigger
Buffer	Buffer size from 1 to 64 frames Possibility to animate stored frames
File options	Save 1 or all images in buffer Save in native format, text format, or binary format Load native format files Print report Save 3D or 2D image in bitmap format Save crosshairs in text format Data Acquisition of measurements in text format and in native format