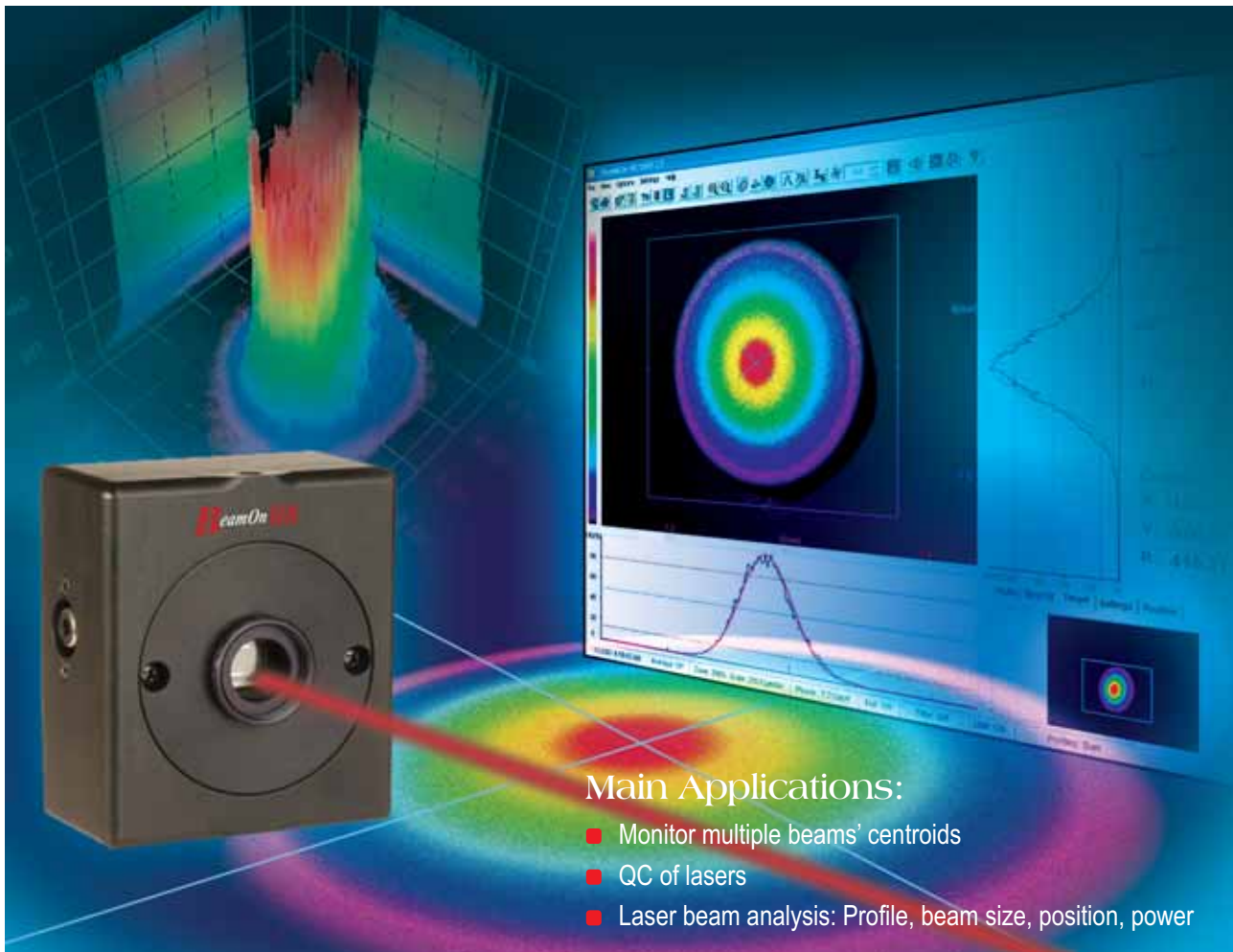


BeamOn HR

1.4 Megapixel CCD Beam Profiler
12 Bit resolution



Main Applications:

- Monitor multiple beams' centroids
- QC of lasers
- Laser beam analysis: Profile, beam size, position, power

Expanding your profiling capabilities

- **Accurate:** High resolution CCD having 12 bit true dynamic range
- **Versatile:** A complete test station measuring Profile, Power and Position, both for CW and pulsed beams
- **Portable:** Based on a USB 2.0 interface for notebooks (or desktops)
- **Easy to use:** user-friendly software, on-line help routine
- **Accessories:** Complete set for larger beams and high power attenuation

Main Software Features

- Real time beam size and gaussian fit (or top hat)
- 2D/3D plots of beam in real time
- Beam centroid tracking and chart with time
- Software controlled electronic shutter & gain
- Video with playback, snapshot files
- Data exporting to another computer via RS232 or TCP/IP
- Data logging with detailed statistics
- ActiveX package to control software from your application
- Automatic Pass/Fail analysis report



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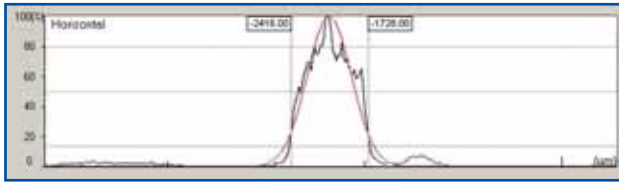
1st Hazait St., P.O.Box 3370 Neshar 20306, Israel Tel:972-4-8200577 Fax: 972-4-8204190

Website:<http://www.duma.co.il> E-mail:sales@duma.co.il



Software Features

Beam Profiles and Width



Horizontal Profile with overlaid Gaussian Profile

Two types of profile presentations are offered:

Sum Profiles-Display the two orthogonal profiles, one along the vertical axis and one along the horizontal axis. Each profile is composed of a summation of rows and columns at a cross-section.

Line Profiles-Display the beam contour along a line parallel to the vertical and horizontal axes. These two orthogonal lines are designated as a cross hair cursor on the image plane and can be moved along the working area. It is possible to rotate the line profiles by +/-50 degrees for analyzing the intensity profile along a certain line and angle of interest.

Best Fit (Gaussian)		
Horizontal Width (µm)	Vertical Width (µm)	
590.17	88.0%	389.91
1104.13	58.0%	729.48
1883.30	13.0%	1244.27
83.34	Correlat (%)	90.65

Best fit results

Width		
Horizontal Width (µm)	Vertical Width (µm)	
587.96	82.5%	314.81
1271.10	51.0%	786.85
1530.56	14.1%	1229.18

Beam width results

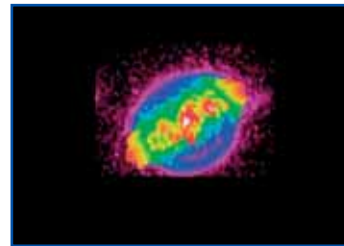
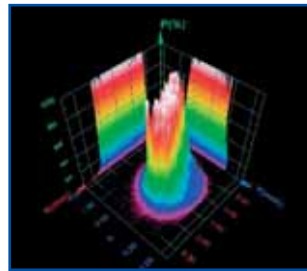
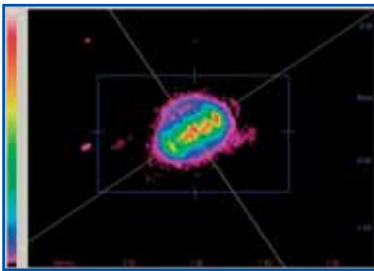
Beam widths are digitally displayed for any three user selected clip levels. Two vertical bars can be moved along the horizontal axis designating the distance (in µm) along this axis.

A Gaussian fit profile can be overlaid on the profiles in real time, while the correlation and fit values are displayed digitally. A Top Hat profile presentation and best fit is also available.

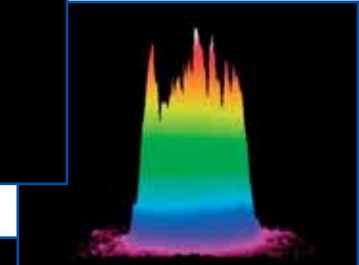
The software offers various algorithms for beam width calculation:

- Percent of Peak
- 84/16 Knife Edge -90/10 Knife Edge

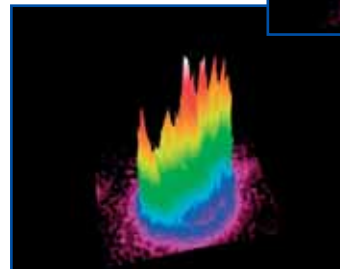
2D and 3D Intensity Plots



3D Plot-top view



3D Plot-side view



3D Plot

The Projection function provides either a 2D or a 3D plot of the beam intensity profile. A zooming feature enables magnification of the displayed image. For a weak beam image, even at max shutter and gain settings, optimize colors using the side color bar.

3D Projection enables viewing the 3D plot with projected images over the X and Y axes.

The 2D/3D plots can be rotated along the beam optical axis, as well as be flipped. This feature enables the user to view the image from various angles around the beam.

Power Measurement



The beam power is displayed as a digital readout at the status bar, as well as at the right-hand screen panel, where there is also a

display of the "Z" digital value in a specific cursor location (in 8 bits or 12 bits).

Alternatively, a needle-type display is available with additional features like: changing power measuring units, averaging, loading a pre-defined filter file, ambient light suppression. A power calibration function allows the user enter a "base" power value. In subsequent captured images the summed intensity of all pixels will be proportional to this value.



Software Features

Beam Position & Chart

Centroid (μm)	
X	971.62
Y	-285.53
R	1012.71

The beam centroid is continuously monitored relative to the center of the CCD head. Three Regions of Interest (ROI) can be defined by the user, thus enabling to monitor of up to 3 beams' centroids simultaneously. The display includes the values of X and Y (in μm) as well as R, which is the distance from the CCD center. Trace On/Off feature enables beam centroid tracking.

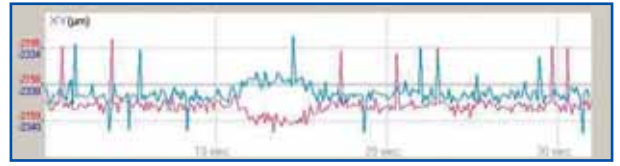


Chart Position function is used to display changes in the position (X and Y) with time, with autoscaling and saving capabilities.



Reticule type targets can be laid out on the position screen, for ease of positioning analysis. The following targets can be used: Cross, Circle, Square, multiple circles and multiple squares.



Detailed Statistics

The information in Statistics screen is updated in real time and is useful for analyzing beam characteristics. It lists the information in a table format and shows the actual measurement values, as well as the minimal measurement, the maximal measurement, the averaged value, and the standard deviation of several parameters:

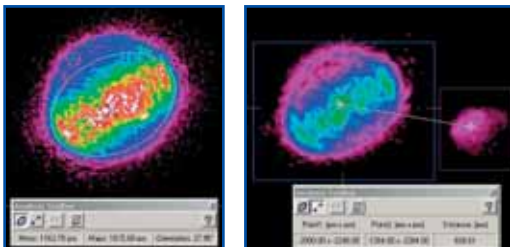
- Beam Centroid
- Beam Peak
- Beam width at 3 clip levels
- Correlation to Gaussian profile
- Power

Beam finding Module – Target



A special feature, which facilitates finding your area of interest within the total CCD area. It is derived from the high-resolution CCD feature, where the resolution is much higher than the screen display capabilities. Your area of interest is clearly displayed as a small rectangular frame within a picture representing the CCD module. Move the small rectangle frame to explore other portions of the CCD area.

Analysis, QA Testing & Report



The ellipse function calculated the best fit ellipsoid for the examined beam. The major and minor axes of the fit ellipse are calculated as well as the orientation of the major axes of the fit.

The distance measurement function calculates the distance between any two points on the beam image, the points are being selected by the user.

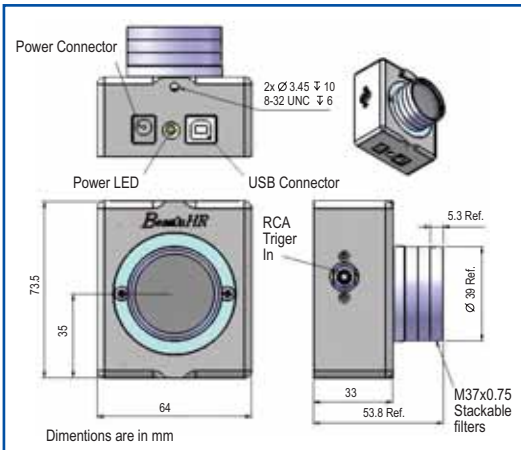
The Test routine allows the user to test a laser beam based on user-defined Pass/Fail criteria. The test results are calculated for any one of the beam selected parameters.

A wealth of beam analysis features

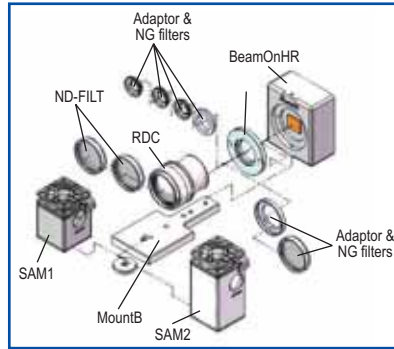
- Data logging to a Text file, or to an Excel file
- Averaging
- Zooming
- Printing of Text and pictures
- User set threshold levels
- Full on line Help routine
- Live Snapshot files replay for complete analysis of results
- Capture up to 12 still images and tile them in matrix format
- Sophisticated report in Excel format including mixed text & images
- Full session recordings for off-line analysis
- Customer set Pass/Fail criteria
- External trigger controle



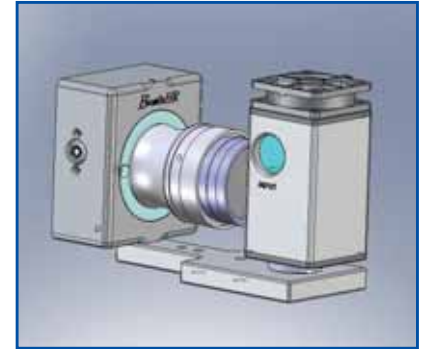
Specifications



CCD Head Drawing



Full accessories set



Accessories combination

CCD Head Specifications

Camera Type:	Monochrome interline transfer progressive scan, 1.4 Megapixel CCD 1/2" format
Pixel size:	4.65µmX4.65µm
Sensor active area:	7.6mmX6.2mm
Weight:	165 gr.
Trigger in:	RCA female jack, 4.5V square wave TTL
Power consumption:	6V, 4Watts
Mounting threads:	M30x0.75 and 1"X32 (C-Mount)
Accessories included:	3XND 1.8 filters in housing about 500:1, mounting post, adaptor ring for filters

General Specifications

PC interface:	High speed USB2.0 (480Mbits/sec)
RS232:	Data out
Operating temp:	0°C to 50°C
Humidity:	5% - 95% non-condensing
CE compliance	

Host computer Requirements

Pentium IV 2GHz , 512MB RAM , 10MB Free HDD
64MB 24 bit color VGA card, resolution (min) 1024x768,
1 Free High Speed USB2.0 port, CD ROM any type, Win XP

System performance with software

Spectral response:	350-1310nm
Max frame rate:	15fps at 1392x1040, 30 fps with binning (2X)
Image resolution:	1392X1040
Shutter speed:	0.6sec to 1µsec
Gain control:	X1 to X23
Dynamic range:	60DB not including filters
Damage threshold:	50W/cm ² with filters
Sensitivity:	5nW/cm ² @ 633nm, 60µW/mm ² @ 1310nm
Saturation:	2mW/cm ²
Operation with pulsed lasers:	Ability to capture and replay images from slowly pulsing lasers (1-100Hz) while filtering out frames with no laser pulse. Provision for displaying single shot pulses.
Hardware triggering:	in pulsed mode set threshold by slide bar to display frames with captured pulses

Ordering Information

BeamOnHR	The system comes with a camera, a standard USB2.0 cable, a post, a set of 3XND filters in housing, power supply 6V DC, software on CD disk, carrying case.
Accessories:	
SAM1	Beam sampler (ratio 3X10 ⁽⁻³⁾)
SAM2	Beam sampler (ratio 1X10 ⁽⁻⁶⁾)
RDC	Beam reducer (ratio 2.5X1)
MountB	Mounting base
ND-FILT	1/8 ND filter, M37X0.75
NG-Filters	1.6mm thick Schott colored filter in mount with adaptor, types: NG4 / NG9 / NG10
Acc-Set	Full set of accessories (see sketch)



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