

$\lambda$  Range: 2 - 16  $\mu\text{m}$   
 Smallest pixel: 35  $\mu\text{m}$   
 Smallest Beam: 350  $\mu\text{m}$   
 Imaged Areas: 13.4 x 10 mm

## NEW WinCamD-FIR-2-16 Microns!

Compact, Portable, Port-Powered, USB 2.0 **10.6  $\mu\text{m}$**  Beam Profiling  
for Windows 7, XP & Vista, 32 or 64 bit operating systems

### Features

- ◇ 35  $\mu\text{m}$  pixel pitch, 384 x 288 pixels, **WinCamD-FIR-216**
- ◇ 2 to 16  $\mu\text{m}$  wavelength range microbolometer
- ◇ **Port Powered USB 2.0**; flexible 3 m cable, *no power brick*
- ◇ **14-bit ADC**, 4 MB image buffer & on-board microprocessor
- ◇ **16 ms time constant**
- ◇ **No Chopper** Measure Pulsed or CW Beams
- ◇ **Room Temperature** - no cooling required

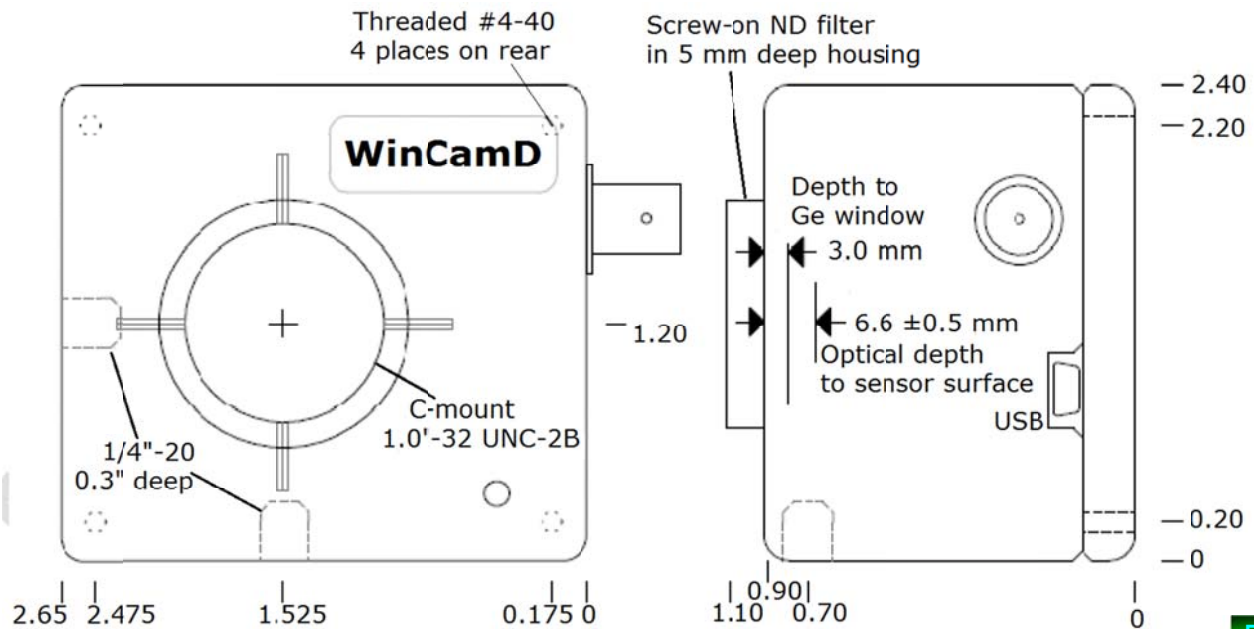
### Applications

- ◇ CO<sub>2</sub>/FIR laser profiling
- ◇ Field servicing of CO<sub>2</sub> lasers and laser-based systems
- ◇ Optical assembly & instrument alignment
- ◇ Beam wander & logging



**DataRay Innovation** - The company that brought you the *first* Windows-based CCD beam profiler, the *first* thin camera for confined spaces, the *first* software slider exposure and electronic auto-shutter, the *first* standard window-free CCD for no fringing, the *first* auto-orientation on the ellipse & the *first* USB 2.0 beam profiling camera has done it again...

**Compact, Room Temperature, Port Powered** WinCamD-FIR cameras.



光技術をサポートする

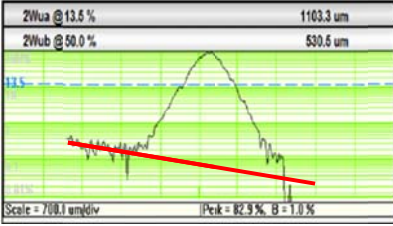
株式会社オプトサイエンス

<http://www.optoscience.com>

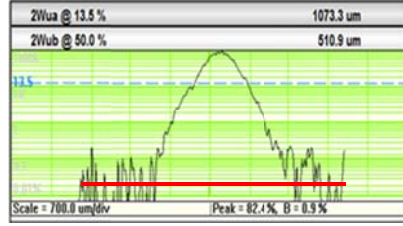
東京本社 〒160-0014 東京都新宿区内藤町1番地 内藤町ビルディング  
 TEL: 03 (3356) 1064 FAX: 03 (3356) 3466 E-mail: info@optoscience.com  
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 名古屋営業所 〒450-0002 名古屋市中村区名駅2-37-21 東海ソフトビル  
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# New - More Powerful Beam Analysis Software

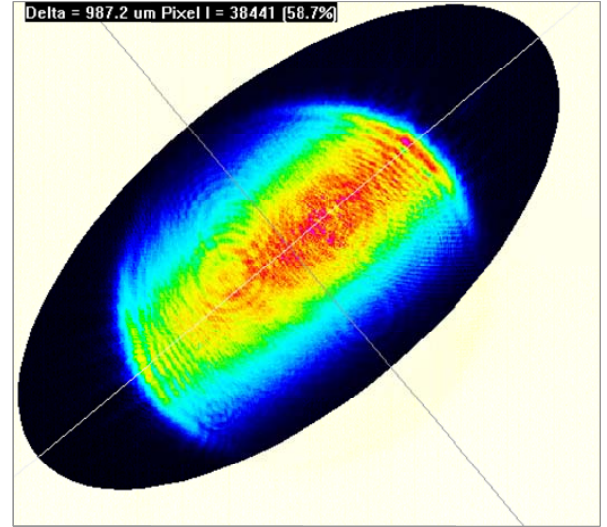
Log profile displays, no averaging.



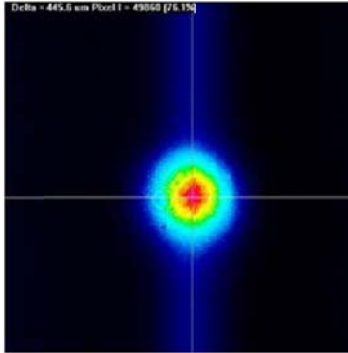
Without HyperCal™  
0.3% noise + baseline tilt



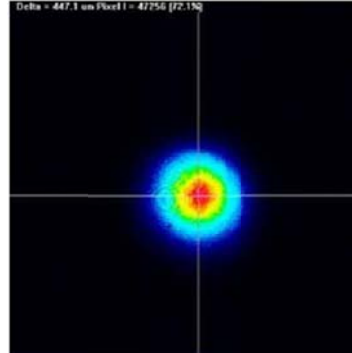
With HyperCal™  
Noise <0.1% & flat baseline



**Auto-Inclusion Region** on an Elliptical Beam  
Automatically isolates the appropriate analysis region.  
With user overrides and multi-beam features.

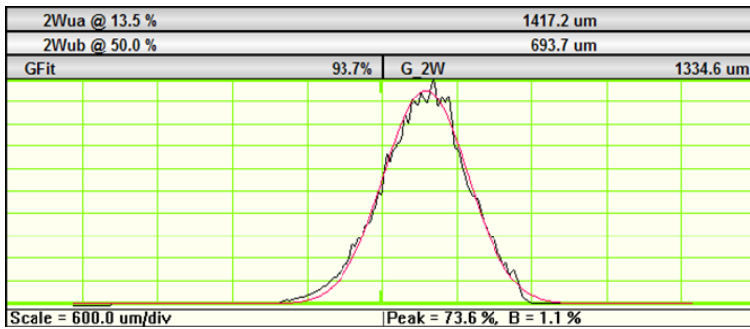


With 1064 nm Comet Tail

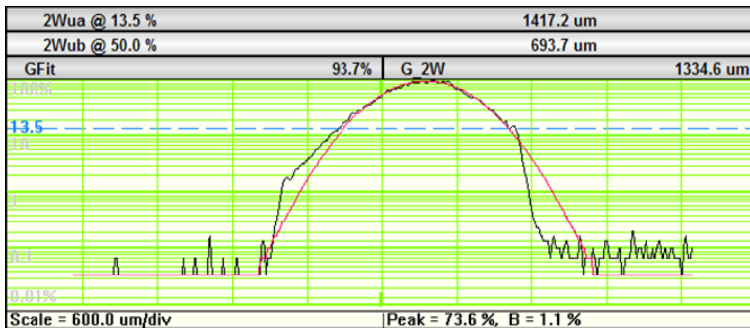


With CTE™

**CTE™ Comet Tail Elimination @ λ > 900 nm**

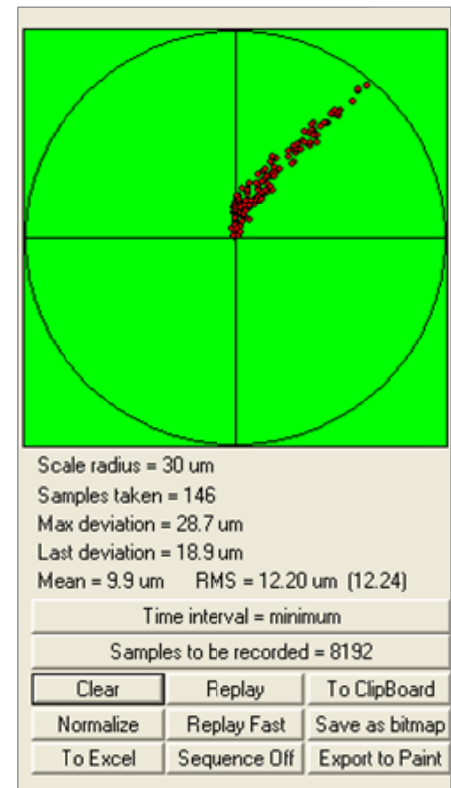


**Standard Linear Profile with Gaussian Fit.**



baseline

**Beam Wander on a drifting Laser**



**Logarithmic Profile** shows more detail near

Mean, RMS and Max. deviation. Replay Fast or Slow.  
Export to Excel, Paint, Bitmap or Clipboard.



## Features:

- ◇ Digital serial link for EMI immunity
- ◇ XY profiles and centroids
- ◇ Linear and logarithmic displays
- ◇ Gaussian and Top Hat least squares fits
- ◇ Ellipse Angle, Major, Minor, Mean Diameters
- ◇ Background capture and subtraction
- ◇ Image & Intensity Zoom
- ◇ Linear and area filters
- ◇ Image Averaging, 1 to continuous
- ◇ PC Or Mac-Intel Operation

## WinCamD-FIR Specifications: [Preliminary specifications- subject to change without notice]

Wavelength Ranges	~2 to 16 $\mu\text{m}$
Pulsed lasers	Auto-trigger sync
Compact	2.40" x 2.65" x 2.05" [61 x 67 x 52.15 mm]
Interface	USB 2.0 for laptops & desktops. 3 m standard thin cable, 5 m option.
ISO 11146	Beam profile Second moment processing
Certification	RoHS, WEEE, CE
Measurable Sources	CW beams, Pulsed sources. User configurable Synchronous, Asynchronous & Variable Delay trigger options.
Measured Beam Powers	<i>See the Saturation Beam Power/Pulse Energy Graph and Notes, below.</i>
Manual Beam Attenuation:	Contact Application Engineer for options
Measurement Accuracy	5 $\mu\text{m}$ processing resolution for interpolated diameters. Absolute accuracy is beam profile dependent – ~10 $\mu\text{m}$ accuracy is frequently achievable. Centroid accuracy is also beam dependent. It can be as good as $\pm 10 \mu\text{m}$ since it is arithmetically derived from all pixels above the centroid clip level.

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**Compact WinCamD cameras:** Fully featured cameras small enough to fit in your shirt pocket, or to fit in a space 0.65" thick.

## Features:

- ◇ Digital serial link for EMI immunity
- ◇ XY profiles and centroids
- ◇ Linear and logarithmic displays
- ◇ Gaussian and Top Hat least squares fits
- ◇ Ellipse Angle, Major, Minor, Mean Diameters
- ◇ Background capture and subtraction
- ◇ Image & Intensity Zoom
- ◇ Linear and area filters
- ◇ Image Averaging, 1 to continuous
- ◇ Compact design 0.65" Probe style for tight applications

## WinCamD-FIR2-16 Sensor Specifications:

**NEW**

WinCamD™	-FIR2-16
Pixel Count & H x V:	76.8 kPixel 384 x 288
Sensor image area (mm):	13.44 x 10.8
Pixel dimension ( $\mu\text{m}$ ):	35 x 35
Min. beam (10 pixels):	350 $\mu\text{m}$
Shutter type:	Synchronous
Max. full frame rate:	10 Hz
Max. 'every pulse' PRR:	10 Hz
Single pulse capture PRR:	TBD
Signal to RMS Noise: (Opt./Elec.* dB):	TBD
Electronic Shutter Dynamic Range:	43 dB
Dynamic Range** - ND+Shutter:	112** dB;
SNR:	$1.6 \cdot 10^{11}:1$
ADC:	14-bit

Subject to change without notice]



Wavelength: Standard	2-16 microns
High dynamic range to 113 dB electronic (see notation under chart**)	1000:1 (30 dB) continuously variable auto electronic shutter, <40 μs to 1.0 s. Additional 10,000:1 ND filter + 5:1 electronic control to give 10 <sup>9</sup> :1.
Pulsed lasers	Auto-trigger sync,
Compact- with ND filter	2.40" x 2.65" x 2.05"
Interface	Port Powered USB 2.0 for laptops & desktops. 3 m standard thin cable, 5 m option.
Multiple Heads:	1 – 8 cameras. Parallel capture, serial read.
ISO 11146	Beam profile Second moment processing
Certification	RoHS, WEEE, CE
Measurable Sources	CW beams, Pulsed sources. CW to 25 kHz with single pulse isolation, user configurable Synchronous, Asynchronous & Variable Delay trigger options. Software programmable trigger input, +ve or -ve edge, 2 kΩ impedance
Measured Beam Powers	See the Saturation Beam Power/Pulse Energy Graph and Notes, below.
Manual Beam Attenuation:	
	Options: C-mount Neutral Density filters. Screw stackable ND 0.5, 1, 2, 3, 4, 5 available. Infra-red beam splitter and ND filters as needed. Contact us.
Measurement Accuracy	5 μm processing resolution for interpolated diameters. Absolute accuracy is beam profile dependent – ~10 μm accuracy is frequently achievable. Centroid accuracy is also beam dependent. It can be as good as ±10 μm since it is arithmetically derived from all pixels above the centroid clip level.
Measured & Displayed Profile Parameters	Beam Diameter: Diameter at two user set Clip levels Gaussian & Second Moment beam diameters Equivalent diameter above a user defined Clip level Equivalent Slit and Knife Edge diameters Beam Fit: Gaussian & Top Hat profile fit & % fit Equivalent Slit profile Ellipticity: Major, Minor & Mean diameters. Auto-orientation of axes. Centroid Position: Relative and absolute Intensity Weighted Centroid and Geometric Center Beam Wander Display and Statistics Smoothing Filter: Triangular running average up to 10% FWHM
Displayed Profiles & Plots	X-Y Profiles, 2D, 3D Plots. Zoom to x10 10, 16, 256 or max. colors or gray. Contoured display at 10 and 16 color.
Processing Options	<b>HyperCal™</b> Real-time electronic baseline correction <b>CTE™</b> Comet Tail Elimination Image & profile averaging, 1, 5, 10, 20, Continuous Background Capture and Subtraction User set rectangular or elliptical Capture region <b>*.job</b> files save all WinCamD custom settings for particular test configurations
Pass/Fail display	On-screen, in selectable Pass/Fail colors. Ideal for QA & Production.
Averaging	Beam dimension running average up to 50 samples
Log data and statistics	Min., Max., Mean, Standard Deviation. Up to 4096 samples
Relative Power Measurement	Rolling histogram based on user's initial input. Units of mW, μJ, dBm, % or user choice (relative to a reference measurement input)
Fluence	Fluence, within user defined area
Camera Head Weight	WinCamD 250 gm (9 oz);
Minimum Computer Requirements:	2 GHz processor running Windows 7/ Vista/XP, 32 or 64-bit; 1 GB RAM; 60 GB Hard Drive space; 1024 x 768 monitor, USB 2.0 hi-power (500 mA) port. PC or Intel- Mac

## ORDERING INFORMATION

◇ 1 Year Warranty      ◇ Free Software Upgrades      ◇ 30 Day Sale or Return on qualified Evaluation POs

A Complete System comprises: USB 2.0 Camera, ND filter, Software, 3 m (10 ft) Cable, User Manual.

