BEAMAGE-M2

Automated M^2 Measurement System

NEW

KEY FEATURES

1. **LARGE APERTURES**
   The only M^2 system on the market equipped with a complete set of 50mm (2") optics. Also, the sensor is 11.3 x 11.3mm

2. **SIMPLE ALIGNMENT**
   Two beam-steering mirrors are included for quick and easy alignment of your laser into the system. The internal mirrors are factory-aligned and the pre-set height also simplify the alignment

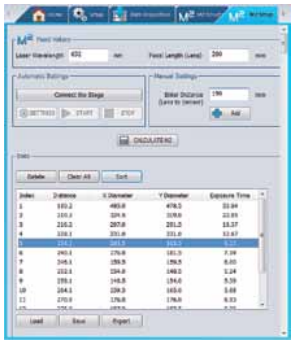
3. **COMPACT**
   The low-profile ingenious mechanics make it easy to fit the device on any optical table

4. **ISO COMPLIANT**
   The calculations are fully compliant to the ISO 11146 and 13694 standards

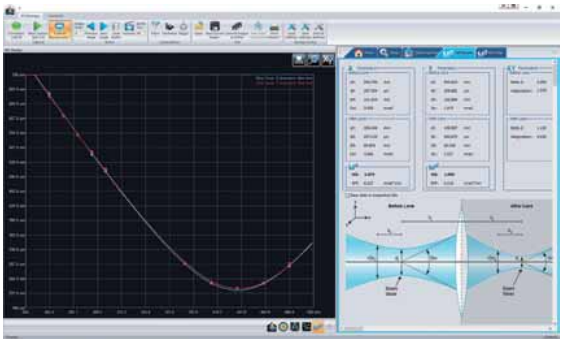
5. **FAST ACQUISITION**
   Make a complete, ISO-compliant measurement in only 20 seconds with the ROI feature and in less than a minute with full-frame acquisition

6. **FLEXIBLE & INTUITIVE SOFTWARE**
   In the easy-to-navigate software, both automatic and manual settings are available, so data points can be added or removed even after an automatic scan is completed

USER INTERFACE



Enter measurement parameters in the M^2 Setup tab.



View and save results with the comprehensive M^2 Results tab.

SEE ALSO

ACCESSORIES FOR BEAM DIAGNOSTICS	**190**
LIST OF REGULAR ACCESSORIES	**206**

BEAMAGE-M2

SPECIFICATIONS

	NEW BEAMAGE-M2
SENSOR TECHNOLOGY	Beamage-4M included
EFFECTIVE APERTURE	Ø 48 mm optics 11.3 x 11.3 mm sensor
MEASUREMENT CAPABILITY	
System Wavelength Range	350 - 1100 nm
Attenuation Range	3 Flip-mount attenuators for 8 levels of attenuation: no attenuation, ND0.5, ND1, ND2, ND1.5, ND2.5, ND3, ND3.5
Beam Diameter Range [a]	55 µm to 11.3/3 mm
Translation Stage	
Mechanical Travel Range	200 mm
Effective Optical Path Range	400 mm
Lens Focal Length	3 AR-coated lenses included: 200 mm, 250 mm and 300 mm
Typical M^2 Accuracy [b]	±5%
Typical M^2 Repeatability [b]	±2%
Applicable Light Sources	CW and pulsed
Typical Measurement Time	45 sec with full-frame acquisition
DAMAGE THRESHOLDS [c]	
Maximum Average Power	1 W with ND filter
Maximum Density (1064 nm)	CW: 10 W/cm² ; Pulsed: 300 µJ/cm²
PHYSICAL CHARACTERISTICS	
Dimensions	
Main Enclosure	357 mm (L) x 165 mm (W) x 135 mm (H)
Total (including external mirrors)	602 mm (L) x 193 mm (W) x 172 mm (H)
Optical Axis Height	86 mm
Weight	6.6 kg
Power Supply	48V DC, 1.25A out
SOFTWARE	
Displays	2D, 3D, XY, Beam Tracking and M^2
Beam Diameter Definitions	D4σ $1/e^2$ along crosshairs (13.5%) FWHM along crosshairs (50%) Custom (%)
Beam Quality Definitions	Laser beam quality M^2: M^2_x, M^2_y (ISO compliant) Beam Propagation Factor: BPP_x, BPP_y Width at waist: W_x, W_y Waist location and offset: Z_x, Z_y, ΔZ Divergence angle: θ_x, θ_y Rayleigh length: Z_{Rx}, Z_{Ry} Astigmatism
Printing and Reports	Full report in print-ready format
ORDERING INFORMATION	
Product Name	Beamage-M2
Product Number	Call

Specifications are subject to change without notice

Specifications in the table above are for the use with a Beamage-4M beam profiler (included in the Beamage-M2 kit)

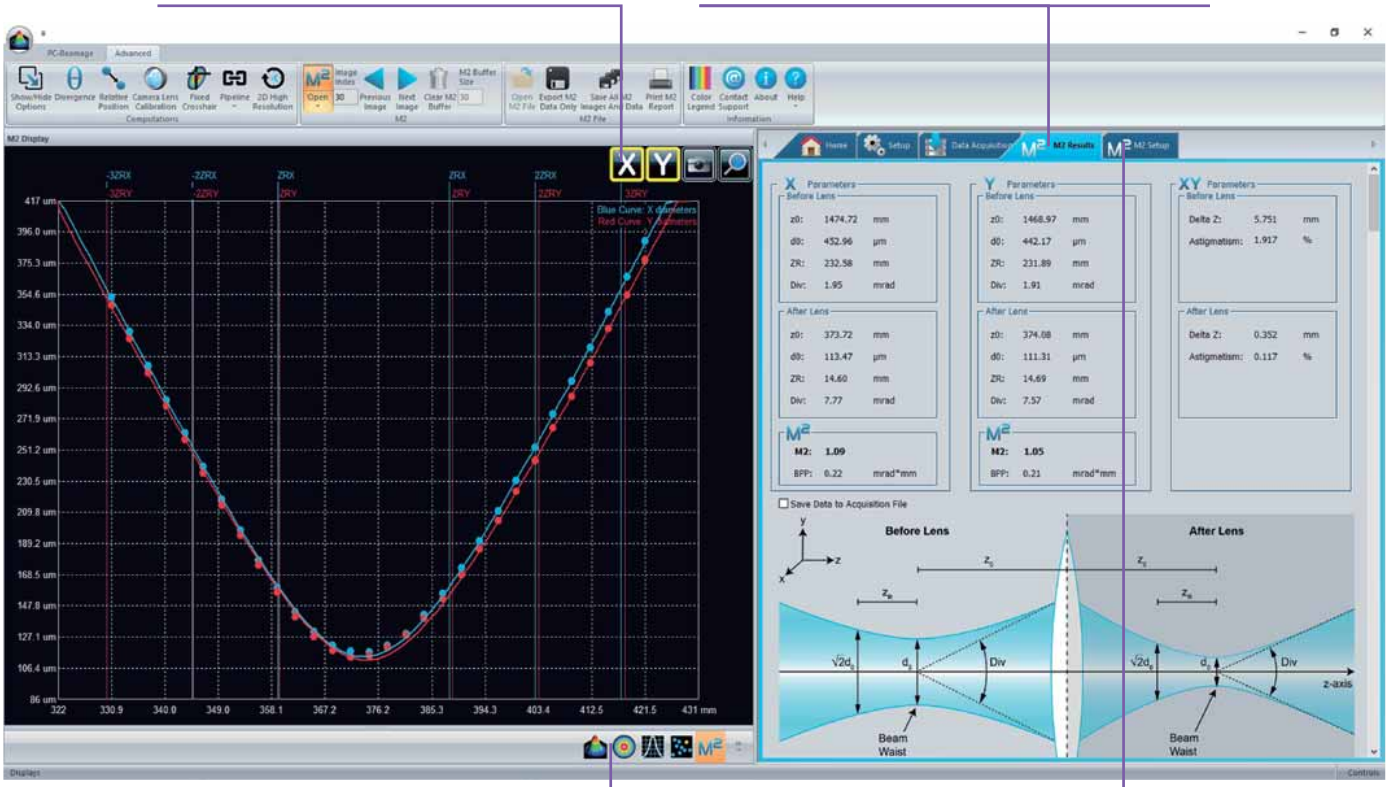
a. At the Beamage sensor
b. Depending on the beam quality and optical configuration
c. With ND4 filter at the Beamage

BEAMAGE-M2

INTUITIVE SOFTWARE INTERFACE

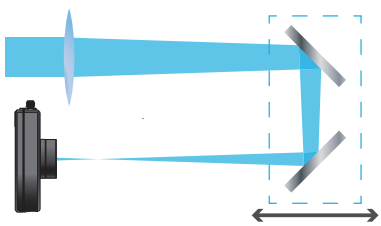
Select which set of Rayleigh range boundaries to display on the graph: X, Y or both

M2 Results tab:
View and understand all the measured parameters quickly, for both the initial laser beam and the beam inside the BEAMAGE-M2 system



Switch to 3D or 2D displays to see each of the measured profiles

M2 Setup tab:
Control your acquisition parameters



AUTOMATED MEASUREMENTS

Inside the BEAMAGE-M2, a computer-controlled motorized rail allows precise positioning of two folding mirrors, which in turn allow a 400 mm beam path difference. At each position of the translation stage, a beam profile is acquired and the beam diameter is measured. The automation of the translation stage allowed by the software is the key to a fast measurement.

BEAMAGE-M2

AUTOMATED & EASY TO USE, YET POWERFUL & FLEXIBLE

ISO-COMPLIANCE MADE SIMPLE

With the "ISO SCAN" button, the software automatically defines new parameters for a more precise M^2 measurement. The "ISO SCAN" data set complies with the ISO-11146 M^2 measurement standard, being spread between $-3Z_R$ and $+3Z_R$.

The automatic settings are updated after each calculation, considering the values of Z_0 and Z_R from the latest measurement.

By default, the results graph always shows the calculated positions of the first three Rayleigh distances on each side of the waist. The "X" and "Y" button toggles them on or off.

FULL CONTROL ON YOUR DATA

During an M^2 scan, each of the measured profiles is saved and the flexible software gives you complete control on your acquired data.

- View each acquired profile in 2D display or 3D display.
- Add measurement points to a data set at the position of your choice with the "ADD" button.
- Remove unwanted profiles from your data set & recalculate the measurements.
- Change the beam diameter definition and the crosshair mode.

PRACTICAL ALIGNMENT TOOL

Each BEAMAGE-M2 system includes an alignment tube that helps you set up the system faster. Simply use the two alignment mirrors to center your laser beam onto both irises, and you will be ready to start measuring in no time!

The fluorescent material around the pinholes also helps to align beams that are in the NIR range without having to use an IR viewer.

FAST ATTENUATION

Add or remove attenuation with the flick of a finger. The software adjusts the exposure time at each frame during an acquisition, and advises the user on the required attenuation.