CAM SQUARED

M2 meter
The smart one

Compact
Alignment-Free
Ultra short measurement cycle

imagine optic

CAM SQUARED +

A great choice for almost any lab or industrial application, the CAM SQUARED is Imagine Optic's innovative answer to the need for laser quality testing and M^2 measurement.

Finally an M2 meter as easy and quick to set up as a beam profiler.

APPLICATIONS

Laser beam quality testing is of utmost importance in many laser-based applications where beam waist and beam divergence matter:
+ Manufacturing, machining, welding for fluence
+ Imaging, for resolution
+ Fiber optics, for coupling
+ Free space optical communications and laser radar systems (LIDAR) for better propagation through turbulent atmosphere.

CAM SQUARED performs multiple measurements : M^2, divergence, focus diameter, waist position, Rayleigh length, thermal effects.

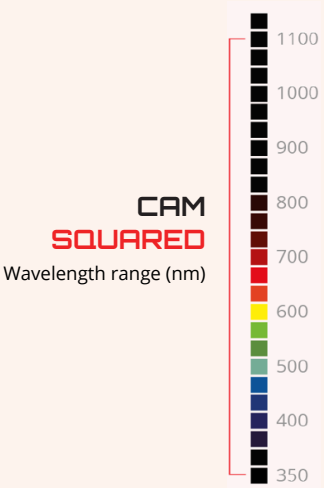
FEATURES

+ **ISO 11146 standard compliant**. The measurement of intensity combined with phase allows to generate 10 to ∞ of intensity frames from which is calculated the M^2 factor, such as described in the ISO 11146 standard.
+ **Self aligned**. CAM SQUARED requires no alignment, making setup quick and easy.
+ **Short measurement cycle**. C A M SQUARED requires no translation, making measurement cycle very short and the solution perfectly adapted to pulsed lasers and dynamic applications.
+ **Optics free**. As no mirrors nor lenses are necessary, there are no optics introducing aberrations which impair the beam quality. There are also no coatings limiting the range of use of the sensor.
+ SM1 thread on the front of the sensor for easy mounting of optical densities in order to adapt to the power of the laser to be tested.

SPECIFICATIONS*

OPERATING SPECS

Aperture dimensions	6.9 x 5.1 mm² (L) 4.5 x 3.7 mm² (M)
Recommended beam diameter	min.: 0.7 mm @ 1/e² (0.8 mm @ 1/e³) max. (L): 4.2 mm @ 1/e² (5 mm @ 1/e³) max. (M): 3 mm @ 1/e² (3.6 mm @ 1/e³)
Maximum acquisition frequency	L : 55 Hz (USB 3.0) or 30 Hz (GigE) M : 125 Hz (USB 3.0) or 30 Hz (GigE) SWIR : ? (USB 3.0) or 30 Hz (GigE)
Wavelength range	350 - 1100 nm
Minimum power	0.15 nW
External trigger	TTL signal
Operating system	Windows 10 & 11
Measurement cycle time	~ ms typically, depending on settings
Travel range	not limited by translation stage
Typical M² accuracy	5%
Pulsed sources	full compatibility
Damage thresholds	100 mW / cm² in CW mode 100 uJ / cm² in Pulsed mode



MISC

Dimensions (Height x Width x Length)	50 x 50 x 55 mm³ (USB 3.0)
Weight for USB version	200 g
Mounting configuration	horizontal or vertical
Working temperature	15 - 30 °C
Interface	USB 3.0 or GigE
Power consumption	3.1 W

OPTION

CAM SQUARED can be upgraded in option for wavefront sensing. In this case, in addition to the M² meter, you get access to a complete wavefront sensor with the following features:

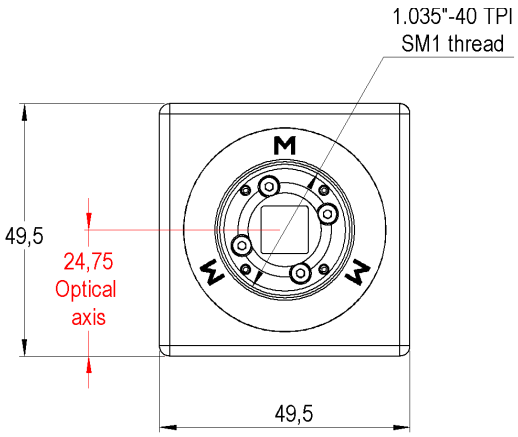
Repeatability	< λ/200 RMS
Absolute wavefront measurement accuracy	~ λ/100 RMS*
Tilt dynamics range	> ± 3°
Focus dynamics range	± 0.008 m to ± ∞

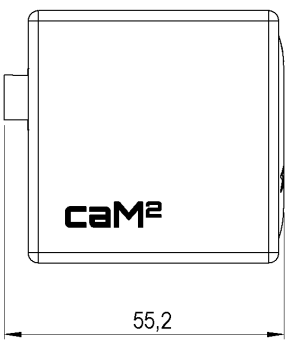
(* ≤ 6 nm RMS between 350-600 nm for CAM SQUARED L)

Wavefront error measurement provides detailed quantitative knowledge of the cause of aberrations and beam quality

*Subject to changes without further notice

DIMENSIONS** (mm)



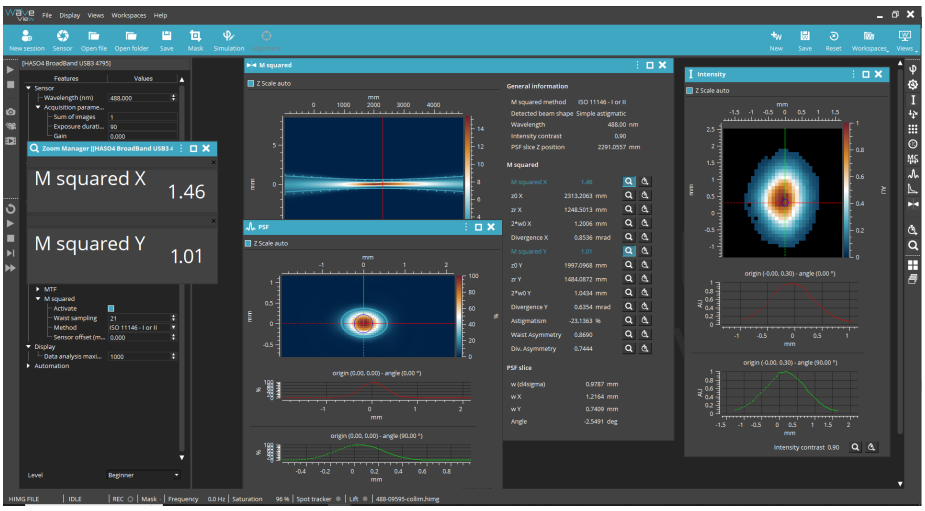


**USB 3.0 model

SOFTWARE

Application M2 based on WAVEVIEW™ Metrology Software

+ Optimized display of laser quality metrics
+ Optional phase measurement extension for wavefront diagnostic and analysis (alignment, collimation, optical aberrations analysis and more than 150 features)
+ Optional SDK in C/C++, LabVIEW and Python



ACCESSORIES

+ Several mounting options are available, including adapters for the most common mechanical stages and magnetically coupled top and bottom plates, allowing to mount, remove, and replace CAM SQUARED with a high repeatability.

APPLICATION NOTES

+ M2 measurement with CAM SQUARED

CONTACT US

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