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**. CAM 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

	M	L	XL / XXL (on request)	SWIR
Aperture dimensions	4.5 x 3.7 mm²	6.9 x 5.1 mm²	13.8 x 10.2 / 22 x 22 mm²	9.3 x 7.4 mm²
Recommended beam diameter min. @ 1/e² (min. @ 1/e³)	 0.7 mm (0.8 mm)	 0.7 mm (0.8 mm)	 0.7 mm / 1,2 mm (0.8 mm / 1.4 mm)	 1.6 mm (1.9 mm)
max. @ 1/e² (max. @ 1/e³)	3 mm (3.6 mm)	4.2 mm (5 mm)	8.2 mm / 17.8 mm (10.1 mm / 21.9 mm)	6 mm (7.3 mm)
Maximum acquisition frequency	125 Hz (USB 3.0) 30 Hz (GigE)	55 Hz (USB 3.0) 30 Hz (GigE)	30 Hz (USB 3.0) / 10 Hz (10GigE)	150 Hz (USB 3.0) 49 Hz (GigE)
Wavelength range	350 - 1100 nm			980 - 1650 nm
Minimum power	0.15 nW		0.15 nW / 0.7 nW	0.3 pW
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	50 mW / cm² in CW mode 50 uJ / cm² in Pulsed mode			

MISC

Dimensions (Height x Width x Length)	50 x 50 x 55 mm³	56 x 56 x 60 mm³ / TBD	70 x 70 x 71 mm³
Weight for USB version	200 g	200 g / 800 g	250 g
Mounting configuration	horizontal or vertical		
Working temperature	15 - 30 °C		
Interface	USB 3.0 or optional GigE converter	USB 3.0 / 10GigE	USB 3.0 or option. GigE converter
Power consumption	3.1 W	3.6 W / 14 W	5 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 (see HASO datasheets for more information):

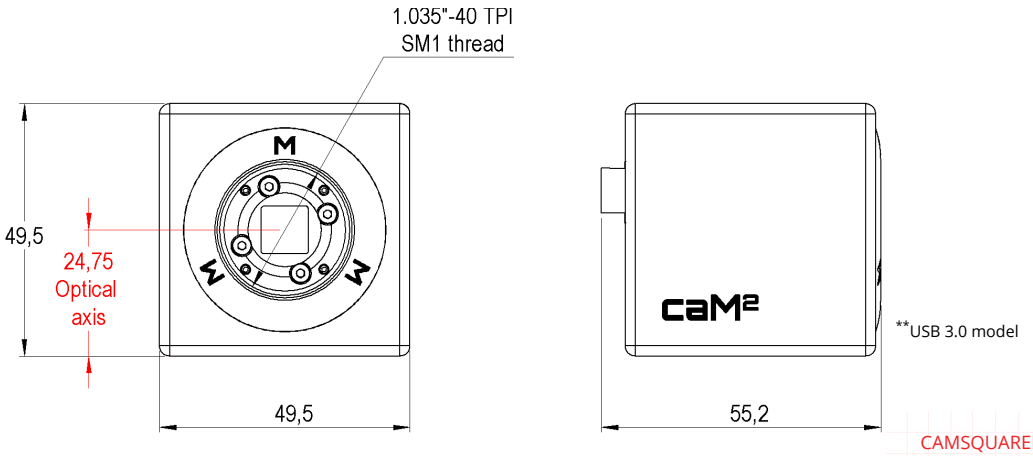
Repeatability: < λ/200 RMS

Absolute wavefront measurement accuracy: ~ λ/100 RMS

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

*Subject to changes without further notice

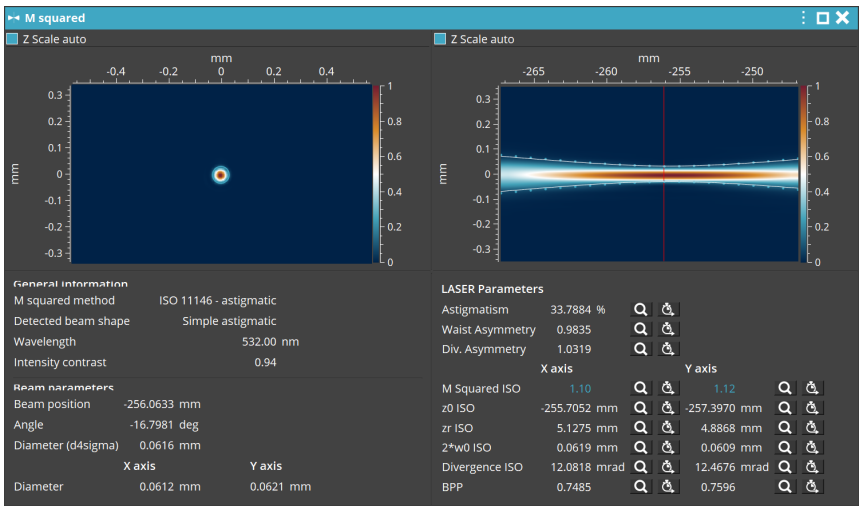
DIMENSIONS** (mm)



SOFTWARE

WAVESQUARED

+ Optimized display of laser quality metrics
+ Beam pointing adjustment and stability measurement
+ 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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