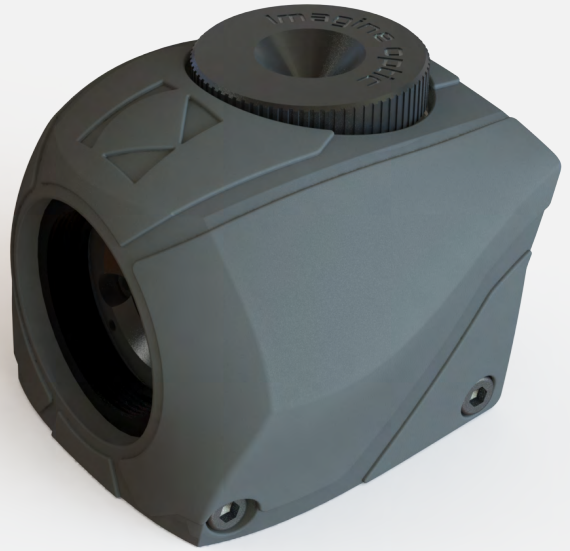# HASO4 FIRST

IDEAL WAVEFRONT
SENSOR FOR VIS AND NIR

ADVANCED
METROLOGY WAVEFRONT SENSOR

COMPACT
AND VERSATILE

EASY
TO USE

"An excellent instrument, indeed ! So powerful and easy to use."

Bill Dougherty PhD, Senior Scientist
Applied Precision
A GE Healthcare Company

A UNIQUE SET OF ADVANTAGES

- $\lambda/100$ rms absolute accuracy over 400 λ dynamic range
- Custom wavelength calibration in the 400 -1100 nm range
- Patented technology for simultaneous and independent measurements of phase and intensity
- Acquisition 99 Hz with full pupil
- External trigger capability

- Ideal for laser applications
- C-mount compatible entrance aperture
- Easy to deploy with USB 3.0 connectivity
- Bundled with WaveView, the industry's most advanced metrology software
- Compatible with WaveKit (Software Development Kit) in C, MATLAB, and LabVIEW

Contact us for more information: contact@imagine-optic.com or +33 1 64 86 15 60

imagine optic

HASO4 FIRST : THE ADVANCED METROLOGY WAVEFRONT SENSOR

Providing outstanding performance, the HASO Wavefront Sensor family is used in the most demanding applications in optical metrology, microscopy and laser diagnostics worldwide. We offer a unique combination of expertise in high quality microlens production, software development and accurate factory calibrations. This allows the HASO4 FIRST to provide a level of performance beyond comparison.

- λ/100 rms absolute accuracy on a huge dynamic range (see the graph below)
- Patented wavefront correction algorithms for intensity beam variations (laser, Gaussian, hyper Gaussian, apodized beams…)
- Measurement up to 64 Zernike polynomials with individual accuracy better than 2nm rms
- Custom calibrations for one (included) or two (option) specific wavelengths in the 400-1100nm range

HASO4 FIRST typical dynamic range on a Ø3.6mm pupil with 10nm accuracy
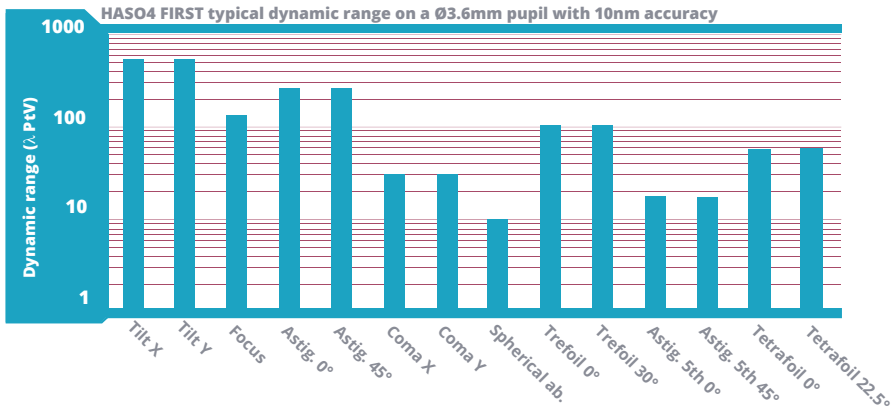
OUTSTANDING PERFORMANCE EXAMPLES WITH : HASO4 FIRST

- Beam collimation with an accuracy better than 200m radius of curvature
- A 20mm focal length measurement with a sensitivity of 1µm rms
- Direct wavefront acquisition of converging and diverging F/5 beams with an accuracy of λ/100 rms including astigmatism and high order aberrations
- Control and adjustment of axial laser beam deviation better than 5µrad rms
- 3D localization of a focal spot up to 0.1µm rms and 1µm rms for lateral and axial resolution respectively (0.1 NA beam)

SOFTWARE

- WaveView is the most advanced wavefront measurement and analysis software. It offers more than 150 functions and tools optimized for a wide range of highly demanding applications. WaveView development philosophy is based on tens of years of customer's feedback, improving the user experience at each version. Modules dedicated to PSF, Strehl ratio, MTF, M² are available.

- WaveKit is a SDK in C, LabVIEW and MATLAB, providing the basis blocks on which one can build a fully customized software for specific HASO based applications or WaveView data processing routines. WaveKit is available on request.

Operating mode	Full pupil	High speed (option)*
Aperture dimension	3.6 x 4.5 mm²	1.8 x 2.3 mm²
Number of microlenses	32 x 40	16 x 20
Tilt dynamic range	> ± 3 °	> ± 3 °
Focus dynamic range	±0.018 m to ±∞	±0.018 m to ±∞
Repeatability (rms)	< λ/200	< λ/200
Wavefront measurement accuracy in absolute mode (rms)	~ λ/100	~ λ/100
Spatial sampling	~ 110 µm	~ 110 µm
Maximum acquisition frequency	99 Hz	165 Hz
External trigger	TTL signal	TTL signal
Wavelength range	400-1100 nm	400-1100 nm
Dimensions / weight	46x 57x 57 mm /150g	46x 57x 57 mm /150g
Working temperature	15 – 30° C	15 – 30° C
Interface / Power supply	USB 3.0 / 2.7 W via USB	USB 3.0 / 2.7 W via USB
Operating system	Windows 7 and 10	Windows 7 and 10

This option is not available for some countries. Please contact us for details.

www.imagine-optic.com