

# HASO3™

**WIDE**  
DYNAMIC RANGE

**Large**  
PUPIL SIZE

**UNEQUALED**  
ACCURACY



Imagine Optic's HASO3 128GE2 wavefront sensors offer professionals with unsurpassed quality, precision and ease of use.

## A UNIQUE SET OF ADVANTAGES

- $\lambda/100$  absolute accuracy over 100% dynamic range
- High resolution with 16,384 independent measurement points
- 14.6 mm x 14.6mm pupil size
- Patented technology for simultaneous and independent measurements of phase & intensity
- Selectable calibration wavelength range
- Giga Ethernet connection



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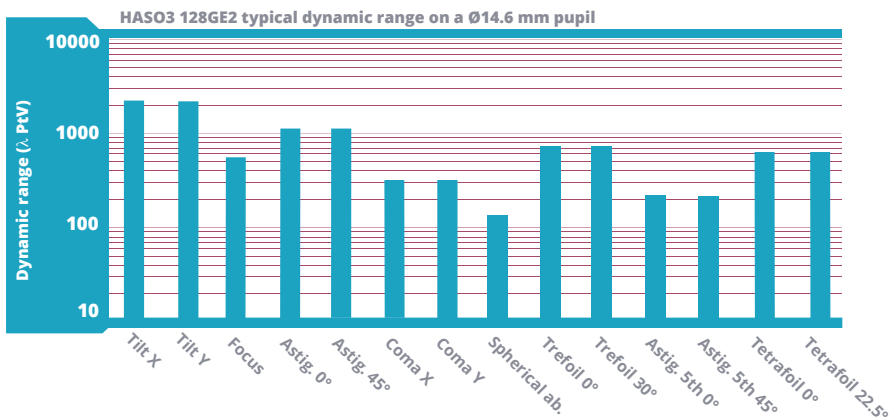
imagine[ ]optic™



## EXCEPTIONAL RESULTS COME FROM ACCURATE MEASUREMENT

Exceptional results come from accurate measurement. We conceive, build and support our products to meet and exceed our customers' needs. After 20 years, Imagine Optic's wavefront sensors have become an industry standard for reliability and traceability. Their independent yet simultaneous measurements of phase and intensity are the keys in consistently providing customers with the high-quality wavefront metrology results they can rely on.

HASO3 GE2 is based on our patented Shack-Hartmann technology. Fast, performing and easy to integrate, their insensitivity to vibration and compact design make them the ideal choice for demanding industrial and scientific applications. Even more, it is equipped with Giga Ethernet port for fast and easy control over a local network.



## OUTSTANDING PERFORMANCE EXAMPLES WITH HASO3 128GE2

- Beam collimation with an accuracy better than 1000m radius of curvature
- A 20 mm focal length measurement with a sensitivity of 1µm rms
- Direct wavefront acquisition of converging and diverging F/5 beams with an accuracy of about  $\lambda/100$  rms including astigmatism and high order aberrations
- Control and adjustment of axial laser beam deviation better than 1µrad rms
- 3D localization of a focal spot up to 0.05 µm rms and 0.5µm rms for lateral and axial resolution respectively (0.1 NA beam)

## WaveView SOFTWARE

- WaveView is the most advanced wavefront measurement and analysis software. It offers more than 150 features 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, M<sup>2</sup> 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.

Aperture dimension	14.6 x 14.6 mm <sup>2</sup>
Number of microlenses	128 x 128
Tilt dynamic range	> ± 3 ° (1500 λ)
Focus dynamic range	15 mm
Maximum NA	> 0.1
Repeatability (rms)	< λ / 200
Wavefront measurement accuracy in relative mode (rms) <sup>1)</sup> in absolute mode (rms) <sup>2)</sup>	~ λ / 150 ~ λ / 100
Tilt measurement sensitivity (rms)	< 1 µrad
Focus measurement sensitivity (rms)	2.5x10 <sup>-4</sup> m <sup>-1</sup>
Spatial sampling	~110 µm
Working wavelength range	400 - 1100 nm
Calibrated wavelength range	400 - 600 nm, 500 - 700 nm, 630 - 900 nm, or 800 - 1100 nm
Extended wavelength range	400 - 700 and 500 - 900 nm
Interface	Giga Ethernet
Maximum acquisition frequency	7.5 Hz
Working temperature	15 - 30 °C
Dimension / Weight	115 x 51 x 60 mm <sup>3</sup> / 400 g
Power supply	12 V / 6 W
Operating system	Windows 7 and 10

1) Difference between the real wavefront and a reference wavefront obtained in similar conditions (10 Å of shift maximum).

2) Wavefront as seen by the wavefront sensor. Performance is kept on the whole calibrated spectral range.

[www.imagine-optic.com](http://www.imagine-optic.com)