


HASO4

FAST

The Optical Metrology
kHz

400-900 nm
High-speed
Wavefront Sensor

 compatible



HASO4 FAST



Ideal for measurements of fast changes in wavefronts, the HASO4 FAST Shack-Hartmann Wavefront Sensor, with a frame rate of 1 kHz, responds to all demanding applications.



This instrument is compatible with the **Optical Engineer Companion** metrology system.

APPLICATIONS

- + Quantify the optical system's aberrations
- + Align the system to ensure that it performs at its best
- + Drive a deformable mirror to do high frame rate adaptive optics
- + Quantify the transitional regime of active optical elements such as variable focal length lenses
- + Verify that the optics comply with specifications
- + Directly measure the optical system's wavelength dependency
- + Quantify the pointing stability of high frame rate laser
- + Check whether the optical mount overly distorts the optics

FEATURES

- + Direct wavefront acquisition of converging and diverging F/5 beams with an accuracy of $\lambda/100$ rms including astigmatism and high-order aberrations
- + Perfect knowledge of the measurement time by using the external trigger feature
- + Latency optimized to less than 2.2ms, including wavefront measurement, allowing high performance adaptive optics
- + Only 1 nW power level needed on the sensor to acquire the wavefront with an accuracy of $\lambda/100$ rms at 1kHz
- + Patented technology for simultaneous and independent measurements of phase and intensity



SPECIFICATIONS

OPERATING SPECS

Aperture dimension	1.19 x 1.19 mm ²
Number of microlenses	16 x 16
Maximum acquisition frequency	1 kHz
Calibrated wavelength range	400-900 nm
Minimum power	0.15 nW
External trigger TTL signal	

OPERATING SYSTEM

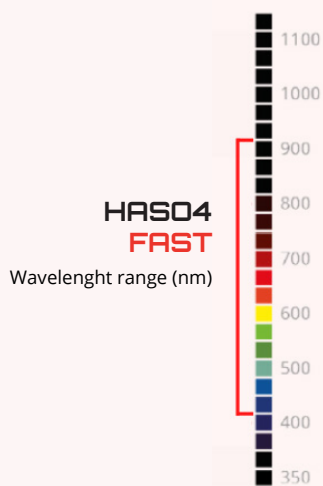
Windows 7 & 10

OPTICAL SPECS

Repeatability	$\lambda/200$ rms
Wavefront measurement accuracy in absolute mode	
· λ between 400-600 nm	≤ 6 nm rms
· λ between 600-900 nm	$\sim \lambda/100$ rms
Spatial sampling	$\sim 75 \mu\text{m}$
Tilt dynamics range	$> \pm 3^\circ$
Focus dynamics range	± 0.008 m to $\pm \infty$

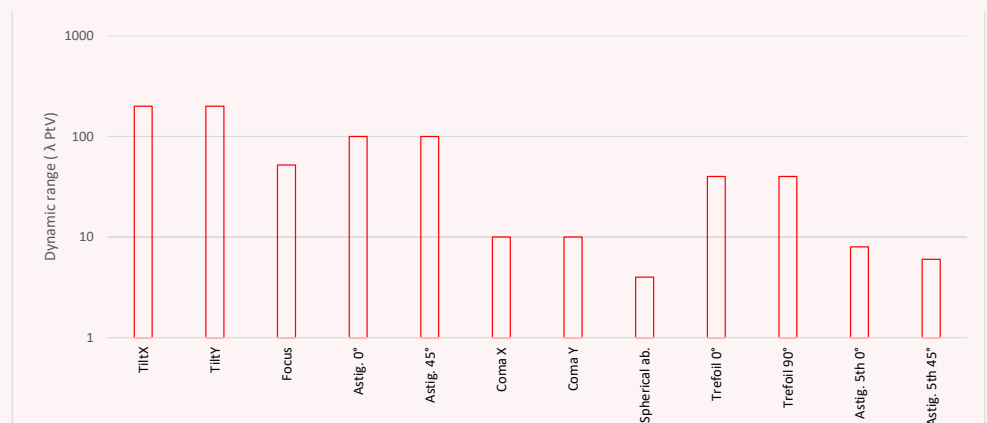
MISC

Dimension/weight for USB version	60 x 48 x 42 mm ³ / 185 g
Working temperature	15 - 30 °C
Interface / Power consumption	USB 3.0 / 3 W

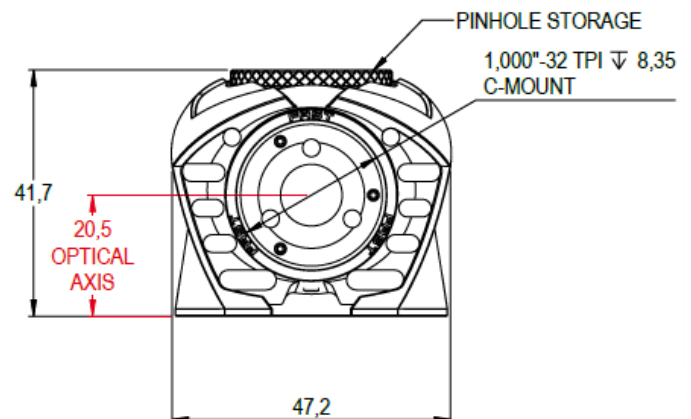
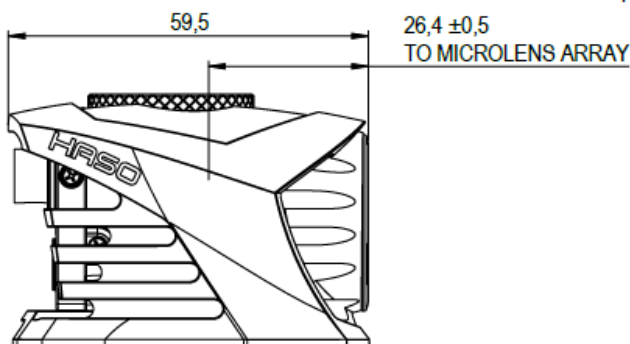


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Dynamic range



DIMENSIONS (mm)

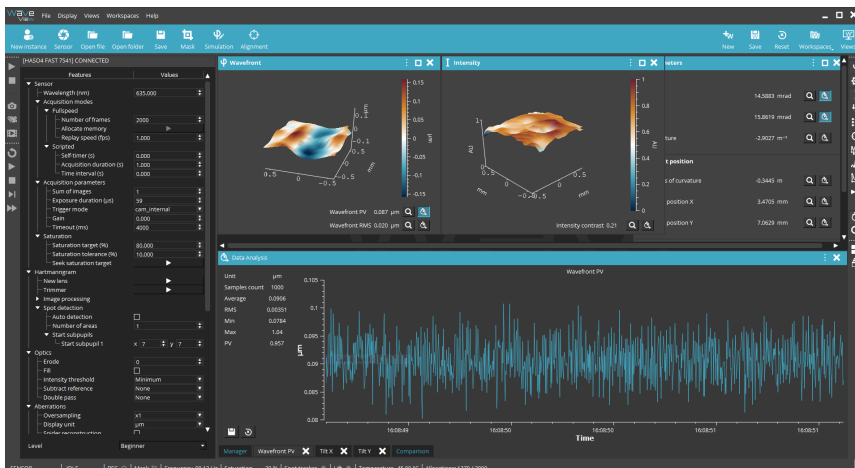


SOFTWARE

WAVEVIEW 4.3 Metrology 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.

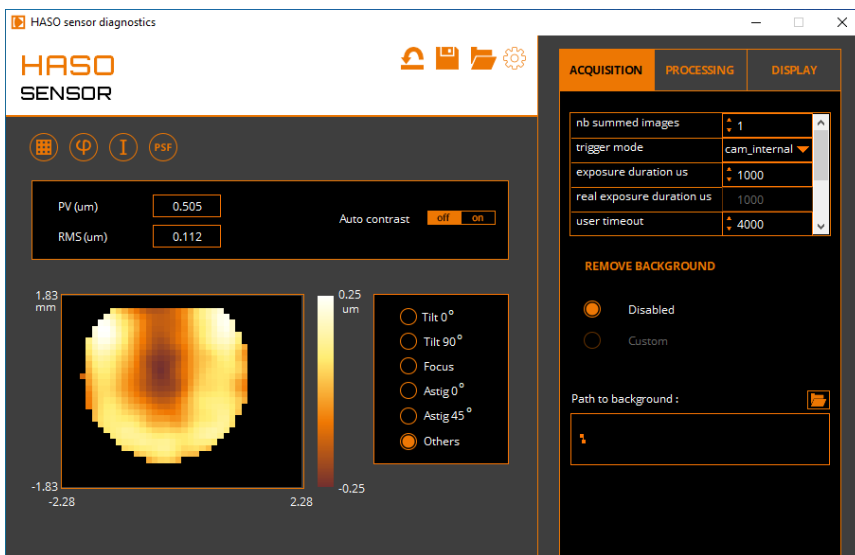
- + Extensions for PSF, MTF, Msquare and Strehl ratio
- + Optional SDK in C/C++, LabVIEW and Python
- + Windows10 64 bits compatible



WAVETUNE 4.3 Adaptive Optics Software

WaveTune is a unique software that seamlessly combines wavefront measurement and correction features with extensive instrument diagnostics. It is perfectly adapted to our HASO wavefront sensors, ILAO Star, and MIRA0 deformable mirror, as well as to a wide range of active components.

- + Compatibility with many deformable mirrors
- + Optional SDK in C/C++, LabVIEW and Python



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