

HASO4

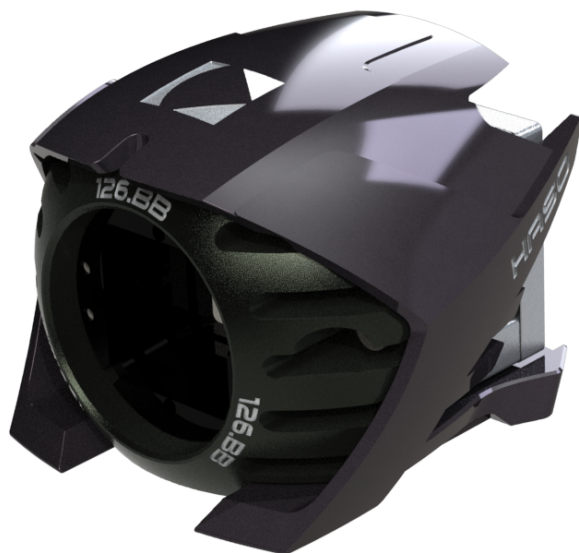
126 BROADBAND

HIGH ACCURACY
WAVEFRONT SENSOR

HIGH RESOLUTION
21420 MICROLENSES

CALIBRATED FOR
350-1100 nm

EASY TO USE
AND INTEGRATE



**Wavefront measurement tool
for optical systems alignment and characterization**

A UNIQUE SET OF ADVANTAGES

- Wavefront sensor on the latest CMOS camera for the 350-1100 nm range
- 170 x 126 sampling points over a 13.77 mm x 10.22 mm sensing area
- 6 nm RMS or $\lambda/100$ rms absolute measurement accuracy
- 30 Hz acquisition frequency⁽¹⁾
- External trigger capability
- SpotTracker eliminates alignment requirements
- Patented technology for simultaneous and independent measurements of phase and intensity
- USB 3.0 connectivity
- Compatible with WaveKit (SDK) in C/C++, LabVIEW and Python
- Compatible with R-Flex2 for optics alignment and characterization

(1) 30Hz in sequence mode, 10Hz for wavefront display

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126 BB

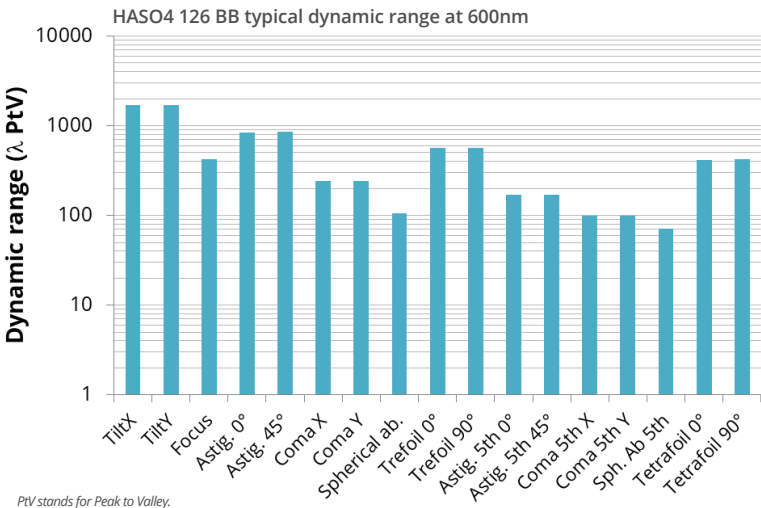
LARGE APERTURE, BROADBAND WAVEFRONT SENSOR

Providing outstanding performance, the HASO wavefront sensor family is used worldwide in the most demanding applications in optical metrology, industrial control, microscopy and laser diagnostics. We offer a unique combination of expertise in high-quality microlens production, software development and accurate factory calibrations. This allows the HASO4 126 BB to provide high performance for applications requiring a high spatial frequency and very large dynamic range.

- Acceptable tilts up to +/-3°, and NA up to 0.1

■ Large dynamic range (see the graph below)
- Independent phase (wavefront) and intensity (amplitude) measurements

■ Easy hardware and software integration



EXAMPLES OF APPLICATIONS

- Optical metrology such as for freeform optics, parabolic mirrors, etc.
- Product quality control
- High spatial-frequency aberration detection

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 feedback, improving the user experience with each version. WaveView provides a function to analyze segmented wavefronts and allows autosave for sequence measurements. Modules dedicated to PSF and MTF are available.
- WaveKit is the SDK in C/C++, LabVIEW and Python, providing the basic 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.

SPECIFICATIONS

Aperture dimension	13.78 x 10.21 mm²
Number of microlenses	170 x 126
Tilt dynamic range	± 3 °
Focus dynamic range	± 0.010 m to ± ∞
Absolute accuracy	6 nm or λ/100 RMS
Repeatability	<λ/200 rms
Spatial sampling	~ 81 μm
Maximum acquisition frequency	30 Hz ¹⁾
External trigger	TTL signal
Calibrated spectral range	350 - 1100 nm
Dimensions / weight	47 x 60 x 62 mm³ / 200g
Working temperature	15 - 30 °C
Interface / Power consumption	USB 3.0 / 3.6W
Operating system	Windows 10
Minimum power	3 nW ²⁾

1) 30 Hz in sequence mode, 10 Hz for WF display
2) At 30 Hz, the maximum exposure duration is 33ms.



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