

HASO LIFT 212

HIGH RESOLUTION
54 400 PHASE POINTS

HIGH ACCURACY
WAVEFRONT SENSOR

COMPACT
ROBUST AND VERSATILE

EASY TO USE
AND INTEGRATE



WELCOME TO LIFT ERA

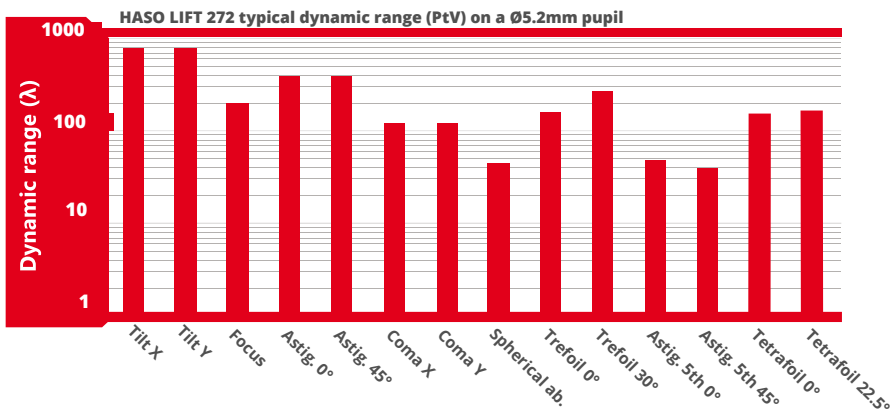
All the advantages of Shack Hartmann technology combined with the power of phase retrieval

A UNIQUE SET OF ADVANTAGES

- Ultra high spatial resolution
- Wavefront sensor in-house calibration for 400 - 800 nm
- $\lambda/100$ rms absolute accuracy over 800 λ dynamic range
- Patented technology for simultaneous and independent measurements of phase and intensity
- 20 Hz acquisition frequency
- External trigger capability
- **S**pot Tracker eliminates alignment requirements.
- C-mount compatible entrance aperture
- USB 3.0 and Ethernet connectivities available
- Bundled with WaveView, the industry's most advanced metrology software
- WaveKit (SDK) available in C/C++, LabVIEW and Python
- Compatible with R-Flex2 and R-Flex LA for optics alignment and characterization

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. Developed from the design of HASO4 126 VIS, the HASO LIFT 272 is as powerful as its counterpart in terms of accuracy and dynamic range, while offering an unequaled resolution of 272 x 200 phase points. This allows the HASO LIFT 272 to provide high-level of performance for applications requiring high accuracy, high dynamic range and high spatial resolution.

- $\lambda/100$ rms absolute accuracy on a huge dynamic range (see the graph below)
- 54 400 phase point resolution on 7.0 x 5.2 mm²
- Measurement up to 64 Zernike polynomials with individual accuracy better than 1 nm RMS
- Spot Tracker provides easy HASO alignment and the capability to precisely follow absolute tilt/wavefront evolution over time



OUTSTANDING PERFORMANCE EXAMPLES WITH HASO LIFT272

- Beam collimation with an accuracy better than 300m 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 about $\lambda/100$ rms including astigmatism and high order aberrations
- Control and adjustment of axial laser beam deviation better than 3µrad rms
- MTF measurement with an accuracy better than 99%

SOFTWARE

- WaveView4 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. WaveView4 development philosophy is based on tens of years of customer's feedback, improving the user experience with each version. WaveView4 provides a function to analyze segmented wavefronts and allows autosave for sequence measurements. Modules dedicated to PSF, MTF, and M² are available.
- WaveKit is 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 WaveView4 data processing routines. WaveKit is available on request.

Aperture dimension	7.0 x 5.2 mm ²
Phase sampling	272 x 200
Tilt dynamics range	> ± 3 °
Focus dynamics range	± 0.010 m to ± ∞
Repeatability	< $\lambda/200$ rms
Wavefront measurement accuracy in absolute mode λ between 350-600 nm λ between 600-1100 nm	≤ 6 nm rms ~ $\lambda/100$ rms
Spatial resolution	~ 25 µm
Maximum acquisition frequency	20 Hz
External trigger	TTL signal
Calibrated wavelength range	400 800 nm
Dimension/weight for USB version	42 x 47 x 60 mm ³ / 185g
Working temperature	15 - 30 °C
Interface / Power consumption	USB 3.0 / 2.9 W Ethernet / 2.9 W
Operating system	Windows 7 and 10
Minimum power	0.15 nW*

* At 635nm and 20Hz acquisition frequency on the 5.2mm maximum pupil diameter