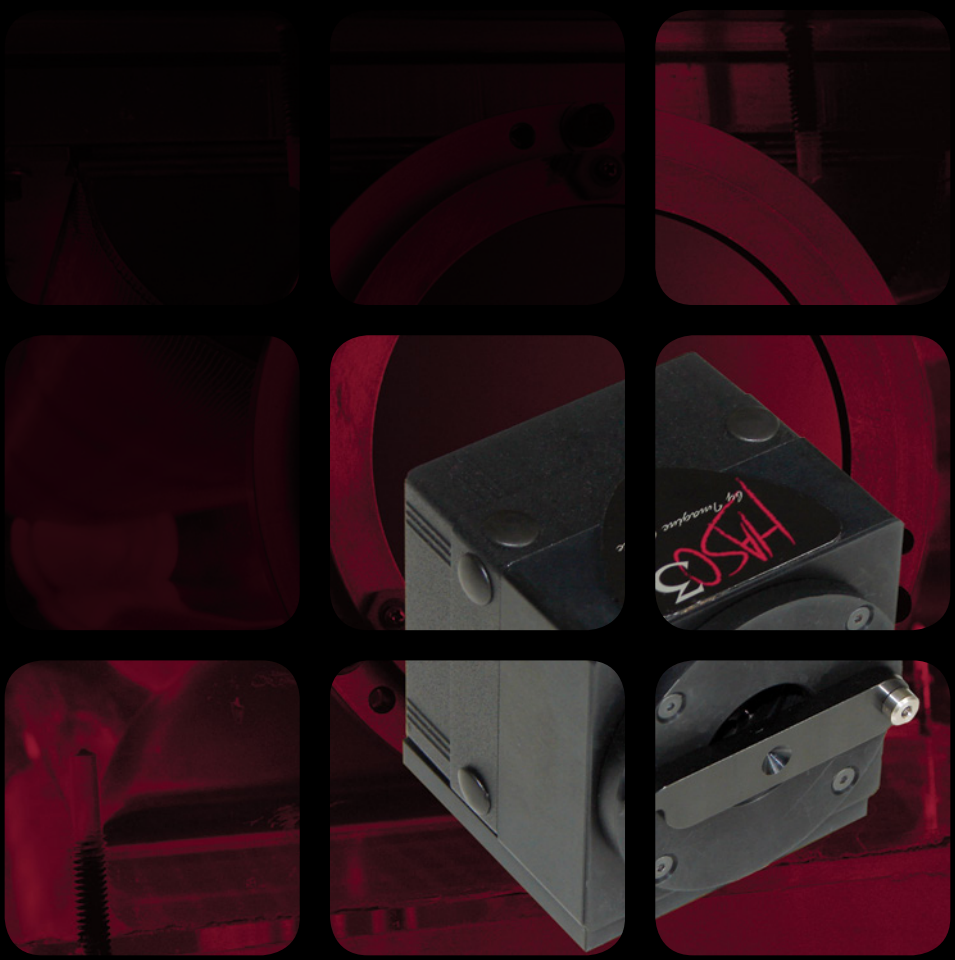
HASO3™

Imagine Optic's HASO family of wavefront sensors offer professionals unsurpassed quality, precision and ease of use. Key features include:

- high-resolution - from 1,280 to 16,384 independent measurement points
- simultaneous and independent measurement of both phase & intensity
- true absolute measurement
- unbeatable accuracy and dynamic range



Imagine Optic™

HASO3™

- **Wide dynamic range**
- **Unequaled precision**
- **True absolute measurement**

Exceptional results come from accurate measurement. We conceive, build and support our products to meet and exceed our customers' needs. For over 10 years, Imagine Optic's wavefront sensors have become an industry standard for reliability and durability. Their independent yet simultaneous measurements of both phase and intensity are key in consistently providing customers with the high-quality wavefront metrology results they can depend on.

HASO3 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, our HASO3 76 GE, 128 GE, and WSR-58 GE are equiped with Giga Ethernet ports for fast and easy control over local networks.

In laser and optical metrology, your HASO3 wavefront sensor used with HASOv3 software enables you to:
- conduct zonal and modal wavefront reconstruction
- visualize the spot diagram and raw camera data
- calculate the PSF*, MTF* and Strehl* ratio
- obtain the M^2* parameter

For adaptive optics, HASO3 coupled with our CASAO™ software, lets you:
- perform precision metrology to control your active components including deformable mirrors and SLM
- perfect your beam's shape and optimize its focal spot

If you would like more information on our products, please call the office nearest you (see back) or visit imagine-optic.com.

Dynamic Spot Tracking™ & Auto Spot Finder™	provide HASO3's exceptional dynamic range
Refractive microlenses	their exceptional optical quality (λ/50) enables HASO3's precision and dynamic range
Absolute measurement	thanks to our proprietary calibration technology, HASO3 provides outstandingly accurate absolute measurements every time, without the need for a reference beam
Independent phase and intensity measurement	patented technology that lets you directly measure both the phase and intensity simultaneously, independently and in real-time
Dynamic range and accuracy	HASO3 offers the best combination of dynamic range and accuracy available

	Standard range			Wavelength ← Extended range → Accuracy	
	HASO3-32	**HASO3-76 GE**	**HASO3-128 GE**	**HASO3 WSR-58 GE**	**HASO3 HP-16**
Aperture dimension	4.9 x 6.1 mm²	8.7 x 11.4 mm²	14.6 x 14.6 mm²	8.9 x 11.3 mm²	4.7 x 5.8 mm²
Number of microlenses	32 x 40	76 x 100	128 x 128	58 x 74	16 x 20
Tilt dynamic range	>±3° (520λ)	>±3° (1100λ)	>±3° (1500λ)	>±3° (1000λ)	>±3° (500λ)
Focus dynamic range - minimum local radius of curvature	20 mm	15 mm		30 mm	40 mm
Focus dynamic range - maximum NA	> 0.1			> 0.1	> 0.06
Repeatability	< λ/200			< λ/200	< λ/400
Wavefront measurement accuracy in relative mode (rms)[1]	~λ/150			~λ/150	~λ/300
Wavefront measurement accuracy in absolute mode (rms)[2]	~λ/100			~ λ/100	~ λ/200
Tilt measurement sensitivity (rms)	3 µrad	<1 µrad		<1 µrad	1 µrad
Focus measurement sensitivity (rms)	10^{-3} m^{-1}	5.10^{-4} m^{-1}	$2.5.10^{-4}$ m^{-1}	5.10^{-4} m^{-1}	2.10^{-4} m^{-1}
Spatial resolution	~160 µm			~150 µm	~290 µm
Working wavelength range	350 - 1100 nm			350 - 1100 nm	
Calibrated wavelength range	400 - 600 nm, 500 - 700 nm, 630 - 900 nm, 800 - 1100 nm			400 - 800 nm or 532 - 1,064 nm	400 - 600 nm, 500 - 700 nm, 630 - 900 nm, 800 - 1100 nm
Extended wavelength range	400 - 700 nm, 500 - 900 nm, 650 - 1100 nm			n/a	400 - 700 nm, 500 - 900 nm, 650 - 1100 nm
Interface	FireWire	Giga Ethernet		Giga Ethernet	FireWire
Maximum acquisition frequency	50 Hz	11 Hz	7.5 Hz	11 Hz	50 Hz
Processing frequency (CPU 3Ghz, 512 Mb RAM)	20 Hz	10 Hz	5 Hz	10 Hz	30 Hz
Working temperature	15 - 30° C			15 - 30° C	
Dimension / weight	75 x 62 x 68 mm / 510 g	115 x 51 x 60 mm / 400 g		115 x 51 x 60 mm / 400 g	75 x 62 x 68 mm / 510 g
Power supply	12 V / 6 W			12 V / 6 W	

1) Difference between the real wavefront and a reference wavefront obtained in similar conditions (10 λ of shift maximum). 2) Wavefront as seen by the wavefront sensor. Performance kept on the whole spectral range.

* Sold separately.

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