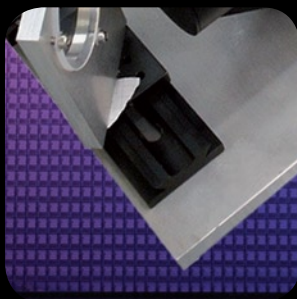


SH-LTP™

Shack-Hartmann Long-Trace Profiler

The SH-LTP is the ideal solution for characterizing large surfaces with extreme precision. Key pluses include:

- 2D surface characterization
- Superior accuracy by stitching methods
- Sub-microradian performance (accuracy, sensitivity, repeatability)
- Simple, compact and robust design
- Wide curvature dynamic range
- Sub-millimeter spatial resolution



Imagine Optic™

SH-LTP™

Shack-Hartmann Long-Trace Profiler

The ideal solution for:

- Surface metrology and characterization of large optical components and semiconductor wafers (synchrotron x-ray optics, silicon wafers, optics for aerospace applications)
- Post-polishing control and surface local finishing
- Spatial quality control of light beams
- High-accuracy, non-contact measurement of the radius of curvature along orthogonal directions (surface astigmatism) in one single procedure

Imagine Optic's Shack-Hartmann Long-Trace Profiler (SH-LTP), developed in conjunction with the SOLEIL synchrotron, is the ideal solution for performing highly accurate, bidimensional, sub-microradian characterization of large optical component surfaces and planeness of semiconductor wafers. Even more, its wide curvature dynamic range enables it to characterize highly-curved objects (spherical, elliptical, toroidal).

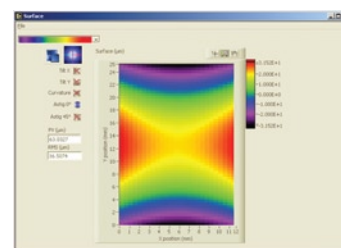
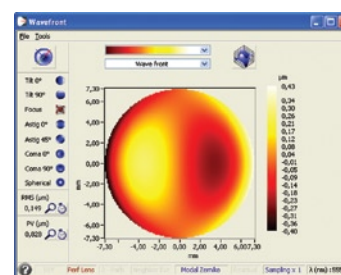
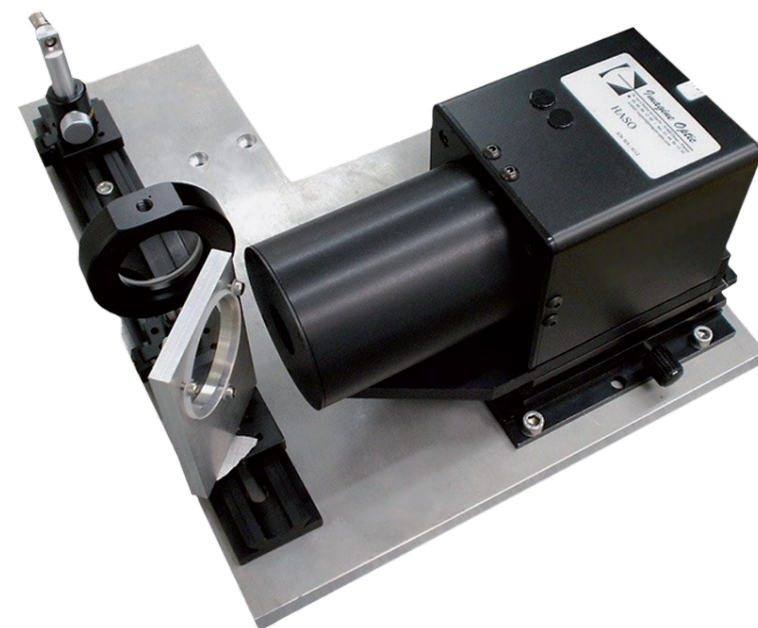
The SH-LTP is comprised of an illumination system functioning at 405 nm and a high-accuracy Shack-Hartmann wavefront sensor that incorporates our patented rotated-square technology in the microlens array to increase spatial resolution to the sub-millimeter level. Compact, robust and easy to integrate into existing setups, this flexibly designed system can also be delivered with its own translation stage.

Our proprietary software package, StitchWave™, enables the SH-LTP to accurately measure the surface of large optics at the sub-microradian level, while minimizing translation effects.

If you would like more information, please call +33 (0)1 64 86 15 60 or visit imagine-optic.com.

	Shack-Hartmann Long-Trace Profiler*
Aperture dimension	11.7 x 11.7 mm ² (L x W mm ² before stitching)
Number of sub-apertures dedicated for analysis	26 x 26 (N x M before stitching)
Tilt dynamic range	± 1 ° (120 λ)
Radius of curvature dynamic range	± 0.7 m to ± ∞
Slope measurement sensitivity (rms)	< 0.1 μrad
Slope measurement accuracy (rms)	0.1 μrad
Tilt measurement sensitivity	0.05 μrad
Curvature measurement sensitivity ¹	5.10 ⁻⁵ m ⁻¹
Spatial resolution	450 μm
Max acquisition frequency	7.5 Hz
Coupling ratio	Adjustable (>80% required for sub-microradian performances)
Working wavelength	405 nm
Working temperature	20 - 25° C
Dimensions / weight	350 x 287.5 x 150.25 mm / 5 kg

* Specifications for a typical setup. They may change following individual needs 1) Curvature $C=1/R$ (R =Radius of curvature), $dC=dR/R^2$



HASO™v3

- All the functionalities of HASOv3 are available for the alignment of the SH-LTP with the surface to be measured.
- Move and Measure option: this HASOv3 option manages the translation stages and performs the acquisition of the surface local slopes at different locations.
- The dimensions of the tested surface and the stage steps (coupling ratio for stitching) are chosen by the user.

StitchWave™

- The reconstruction of the local slopes (X and Y slopes) is performed by stitching together the acquisitions from the different locations.
- Surface reconstruction is obtained by numeric integration following either zonal or modal methods. In modal reconstruction, modal coefficients can be visualized.
- Reconstructed slopes and surfaces are displayed (2D mappings with PV and RMS value indicators).
- Parameters including tilt and radii of curvature in orthogonal directions are calculated via the globally reconstructed data.
- The first 5 aberrations (tilt, focus, astigmatism) can be filtered out so that slope and profile errors can be visualized.
- Additional functionalities allow the extraction of sub-regions of interest and spatially-averaged monodimensional traces.
- Several software utilities are available (stage control, averaging of several acquisition files).

Imagine OpticTM



imagine-optic.com

Imagine Optic SA (main office)

18 rue Charles de Gaulle
91400 Orsay France

Telephone: +33 (0)1 64 86 15 60

Fax: +33 (0)1 64 86 15 61

E-mail: contact@imagine-optic.com

Imagine Optic, Inc. (North America)

Cambridge Innovation Center
One Broadway, 14th floor

Cambridge, MA 02142, USA

Telephone: 1-617-401-2198

Fax: 1-617-930-9818

2415 Third Street

San Francisco, CA 94107

Telephone: 1-415-525-5557

Fax: 1-415-525-5558

E-mail: contact_us@imagine-optic.com

COSINGO (Imagine Optic Spain SL)

Mediterranean Technology Park

Av. del Canal Olímpic s/n

08860 Castelldefels (Barcelona) Spain

Telephone: +34 935 534 148

Fax: +34 935 534 000

E-mail: info@cosingo.com