

Metrology Systems

3D Optical Profilers
Laser Interferometers
Nano-Position Sensors
Custom Metrology Solutions

Laser Interferometers

Verifire™
Verifire™ HD
Verifire™ HDX
DynaFiz®
Mx™ Software
Interferometer Accessories

Special Applications

Verifire™ MST
Infrared Interferometers
Verifire™ VTS
Verifire™ XL
Large Aperture Systems
Upgrades

Unique Technologies

QPSI™
DynaPhase®

Important Features:

- Resolves mid-spatial frequency surface features with unprecedented precision
- QPSI™ and DynaPhase® technologies provide reliable measurements in production and extreme environments
- Industry-leading reliability with unmatched 3-year laser warranty

Verifire™ HDX

UltraHigh Resolution Interferometry for Precise Mid-Spatial Frequency Characterization

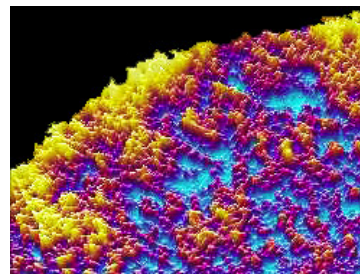
ZYGO's new Verifire HDX interferometer is designed and built for mid-spatial frequency content characterization of extreme performance optical components and systems. The system includes all the great features of the popular Verifire HD – such as QPSI, and a long-life stabilized laser – and adds important enhancements like new best-in-class imaging and resolution for high instrument transfer function (ITF), superior characterization of mid-spatial frequency content and high-slope surface deviations, as well as ZYGO's DynaPhase® dynamic acquisition technique (optional) that eliminates problems due to vibration and enables precision metrology in nearly any environment.



Verifire™ HDX Interferometer System

Designed for Optimal Resolution and Performance

The Verifire HDX system has an all-new optical design that was rigorously engineered to support pixel-limited performance for its 3.4k x 3.4k (11.6 megapixel) sensor, delivering enhanced imaging which reveals surface features that have been difficult to discern with lower resolution interferometers. This ultrahigh spatial resolution *doesn't come at the expense of speed*. The system operates at a frame rate of 96 Hz, at full resolution – up to 10X faster than other high resolution interferometers that can have limited capability due to noise entering the much slower measurement.

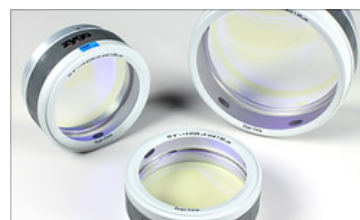


Mid-spatial frequency content in optical surface measurement

Power Spectral Density (PSD) and diffraction analysis tools round out the mid-spatial frequency characterization capability of the Verifire HDX system, and dissect and report comprehensive surface characteristics through a simple and intuitive user interface.

Superior Reference Optics And Accessories

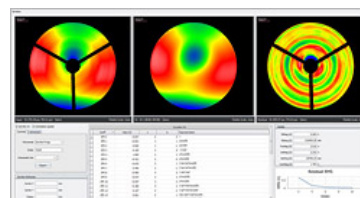
UltraFlat™ Transmission Flats are recommended for use with the Verifire HDX interferometer in order to realize full performance capability of the system. Ultraflat Transmission Flats are certified at $\lambda/40$ PVR or better, and are manufactured with strict control of PSD signature to minimize mid-spatial frequency content. These high-precision reference optics are designed to meet this level of precision regardless of whether they are used in a vertical or horizontal orientation, which affords more flexibility in your test setup.



UltraFlat and UltraSphere $\lambda/40$ Transmission Elements

Mx™ Software

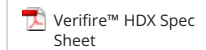
ZYGO's proprietary Mx™ analysis software offers a wide range of operational features and a comprehensive data analysis suite including Zernike, slopes, PSD/MTF/PSF, prism angle, corner cube, and many more. This full-featured instrument control, data acquisition, and analysis software package has the tools for integrating with manufacturing processes, running automation, and reporting critical mid-spatial frequency characteristics. It has a simple and intuitive interface for efficient operation and easy learning curve. It also includes



Mx Software, Zernike Analysis Results

Brochures ▶

Spec Sheets ▼



Application Notes ▶

Manuals ▶

Technical Papers ▶

Note: Login Required to download Application Notes; Click for details.

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What's New at ZYGO?

- » **Blog:** AMETEK Essential Businesses Remain Open During COVID-19 Outbreak
- » **Blog:** ZYGO's Statement on the COVID-19 Outbreak
- » **Blog:** New Interferometer System Boosts Productivity for Spherical Optics Manufacturers
- » **Blog:** Measuring Surface Form of Thin Plane-Parallel Optics, the Quick and Easy Way
- » **Blog:** Characterizing Cylinder Surfaces at Each Step of the Thermal Barrier Coating Process
- » **Blog:** Nano-Positioner Manufacturer Chooses ZYGO DMI System to Characterize Performance

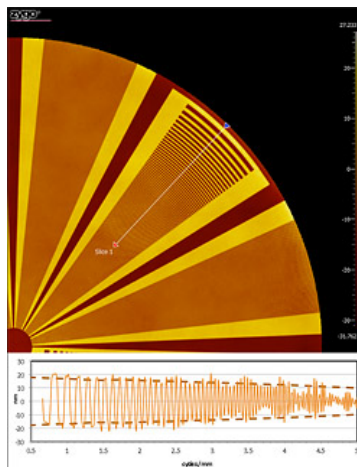


Instrument Transfer Function – What it is, and Why it's Important

Optical surfaces have been specified for form error for many years, but as demands on optical system performance increase, so too does the importance of controlling mid-spatial frequency (MSF) characteristics. Tight control of MSF characteristics is needed to reduce light scattering and improve optical efficiency for extreme performance applications.

Small-tool deterministic polishing techniques, which are extremely efficient in correcting form error, can also impart unwanted mid-spatial frequency content onto an optical surface. Depending on the frequency and slope of the surface characteristics, traditional interferometer systems – which are well-suited for measuring surface form – are unable to measure and quantify higher-frequency surface characteristics due to limited resolution. The lack of resolution means that higher frequency details are attenuated (see image at right), and may not show up at all in the measurement results.

This is where Instrument Transfer Function (ITF) comes in. An interferometer system will attenuate surface information based on its design (optical design, camera, wavelength), which determines its ITF... *its ability to measure spatial frequency content of an optical surface*. The Verifire HDX system, with its high-resolution 3.4k x 3.4k sensor and optimized optical design, has a higher ITF than any commercially available interferometer system, making it an invaluable tool for reliably measuring and quantifying mid-spatial frequency characteristics of optical surfaces. This provides optical designers with the ability to confidently specify optical surfaces to a higher degree of precision, and define ITF testing requirements to meet system performance goals.



Measured phase data of chirped artifact with steps varying in frequency radially, constant 40 nm step height, and (bottom) a profile of chirped artifact, showing measured step height decreasing as spatial frequency increases. (click image to enlarge)

Inquiry Form

Please use the form below to contact us with any questions you have regarding ZYGO's Verifire HDX interferometer system, or interferometry in general.

First Name *	<input type="text"/>	Last Name *	<input type="text"/>
Phone Number	<input type="text"/>	E-mail Address *	<input type="text"/>
Company or Organization *	<input type="text"/>	Job Title or Function *	<input type="text"/>
Street Address	<input type="text"/>	City	<input type="text"/>
State/Province †	<input type="text"/>	Zip/Postal Code	<input type="text"/>

Country/Region *

Check this box to provide consent for ZYGO to contact you in the future. **

Please indicate your level of interest... *

Current Need Upcoming Need Possible Need Gathering Data

Please type your inquiry below:

* Required entries

† Required for USA and Canada

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