

3D OPTICAL METROLOGY

## ContourX-1000 Profilometer

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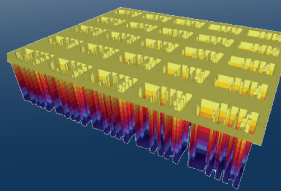
Self-Calibrating, Fully Automated Solution  
for Research and Production

# ContourX-1000 3D Optical Profilometer

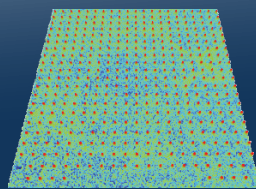
The floor-standing ContourX-1000 white light interferometry (WLI) system incorporates the very latest Bruker hardware and software innovations for fully automated 3D areal measurements of surface texture and roughness. New one-click Advanced Find Surface™ with auto-focus and auto-illumination improves user experience and time-to-result, eliminating the need to manually register the surface before each measurement. Combined with its self-adapting measurement mode USI and guided, simplified VisionXpress™ interface, the ContourX-1000 provides uncompromised metrology on any surface, by any operator, even in multi-user high-volume production facilities.

## Only the ContourX-1000:

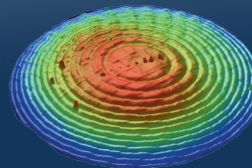
- Provides fast and flexible production-floor metrology with tip/tilt head, dual-light source, and advanced automation
- Ensures extreme accuracy and reliability with self-calibrating laser and integrated vibration isolation
- Enables most user-friendly measurement and analysis software with guided, simplified routines and recipes



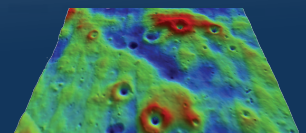
High-aspect-ratio MEMS structure



High-density bump interconnect



Stitched measurement of a bifocal contact lens showing form



Technical polymer film



# Embodying the Power and Versatility of Non-Contact Surface Metrology

## Culmination of Latest Optical Profiling Hardware Advances

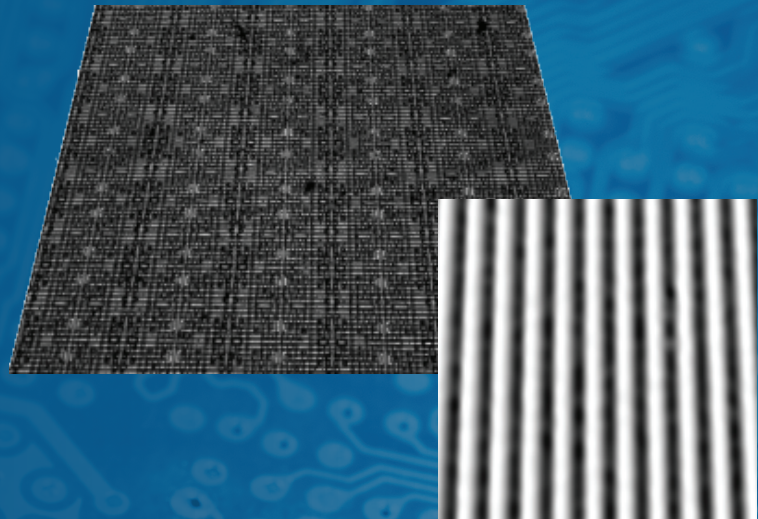
The ContourX-1000 features a combination of Bruker's patented tip/tilt head, proprietary dual-LED light source, automated turret and stages, and selection of wafer chucks. These and other innovations enable rapid optimization for almost any development and production application, including difficult surfaces and deep trenches.

## Benchmark for Accuracy and Robustness

In addition to the unmatched measurement and imaging capabilities of Bruker-exclusive interferometry technology, the ContourX-1000 is equipped with a proprietary internal laser reference and integrated vibration isolation for maximum stability and tool-to-tool matching. The system ensures gage-capable metrology performance even in noisy environments.

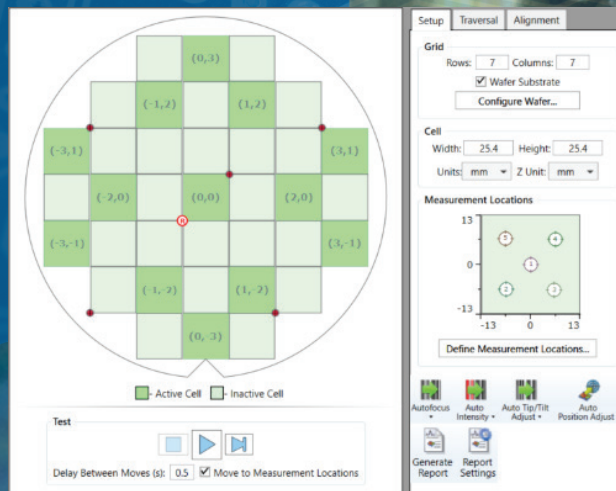
## Paragon of Powerful Automated Measurement and Analysis

Universal Scanning Interferometry (USI) self-adapting measurement mode automatically determines the optimal measurement parameters to maintain nanometer-level resolution even over a range of tens of microns. The guided, simplified VisionXpress interface decouples analysis quality from operator experience level for fast time to best metrology results. Even in multi-user environments, each user is empowered to obtain quality results with the Advanced Find Surface capability, triggering an auto-focus and auto-illumination adjustment process. With a full suite of compatible software packages, from SureVision and Multi-Region Analysis to Vision64 Map™ and Film Measurement, ContourX-1000 allows for uncompromised metrology to match your specific application.



Background: IC chip topography with overlay of automated optical inspection (AOI) image

Foreground: 1  $\mu\text{m}$  periodic polymer grating



Automation graphical user interface (GUI) with wafer map

## ContourX-1000 Specifications

Measurement Modes	PSI, USI, VSI, Optional Film
Max. Scan Range	≤10 mm
Vertical Resolution <sup>1</sup>	<0.01 nm
Lateral Resolution	0.38 μm minimum (Sparrow criterion); 0.13 μm (with AcuityXR <sup>®</sup> )
Step Height Accuracy <sup>2</sup>	<0.75%
Step Height Repeatability	<0.125% 1 sigma repeatability
Max. Scan	≤122 μm/sec (with laser reference)
Sample Reflectivity	0.05% to 100%
Max. Sample Slope	≤40° (shiny surfaces); ≤87° (rough surfaces)
Sample Height	≤100 mm
Sample Weight	≤45 kg
XY Sample Stage	300 mm automated (0.5 μm encoders); Integrated vibration isolation table
Z Focusing	100 mm automated
Tip/Tilt Function	±5° automated in head
Optical Metrology Module	Patented dual-LED illumination
Objectives	Parfocal: 2.5X, 5X, 10X, 20X, 50X, 100X, 115X; LWD: 1X, 2X, 5X, 10X; TTM: 2X, 5X, 10X, 20X; Bright Field: 2.5X, 5X, 10X, 50X Single-objective adapter; Optional motorized five-position turret
Available Zoom Lenses	0.55X, 0.75X, 1X 1.5X, 2X auto-sensing modules
Camera	5 MP monochrome with 1200 x 1000 data array; Optional color camera
Software System	Vision64 <sup>®</sup> and VisionXpress on Windows 10 LTS 64-bit OS
Software Packages	AcuityXR; Advanced PSI; Automatic Pattern Alignment; MATLAB; Multiple Region Analysis; Optical Microlens Analysis; Production Mode; SDK; TCP/IP; SureVision; Vision64 Map
Reporting Languages	English; German; French; Italian; Spanish; Japanese; Chinese; Polish; Korean; Brazilian Portuguese; Russian
Automation	Auto-focus; Auto-intensity; Auto-saving; Auto-stitching; On-fly analysis; Scattered and grid automation; Recording in database
Calibration	Via NIST/PTB traceable step height and lateral ruler standards; Optional auto and continuous internal laser signal
System Footprint	852 mm x 793 mm x 1608 mm (W x D x H)
Weight	493 kg
Warranty	12 months
Certification	CE-Certification; ANSI B46.1 compliant

<sup>1</sup> As demonstrated by taking the one sigma Sq value of 30 PSI repeatability measurements on an SiC reference mirror.

<sup>2</sup> Absolute accuracy for step heights 8 μm and higher.

## Bruker's Industry-Best Service and Support

Bruker has a long tradition of partnering with our customers to solve real-world application issues. After developing next-generation technologies with industry leaders and assisting customers in selecting the right system and accessories, this partnership continues through training and extended service long after the tools are sold. Our highly trained and certified team of support engineers, application scientists, and subject-matter experts are wholly dedicated to maximizing your productivity with system service and upgrades, as well as application support and training across a very wide range of disciplines.

### Bruker Nano Surfaces and Metrology

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