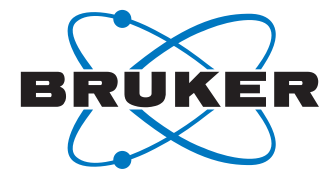

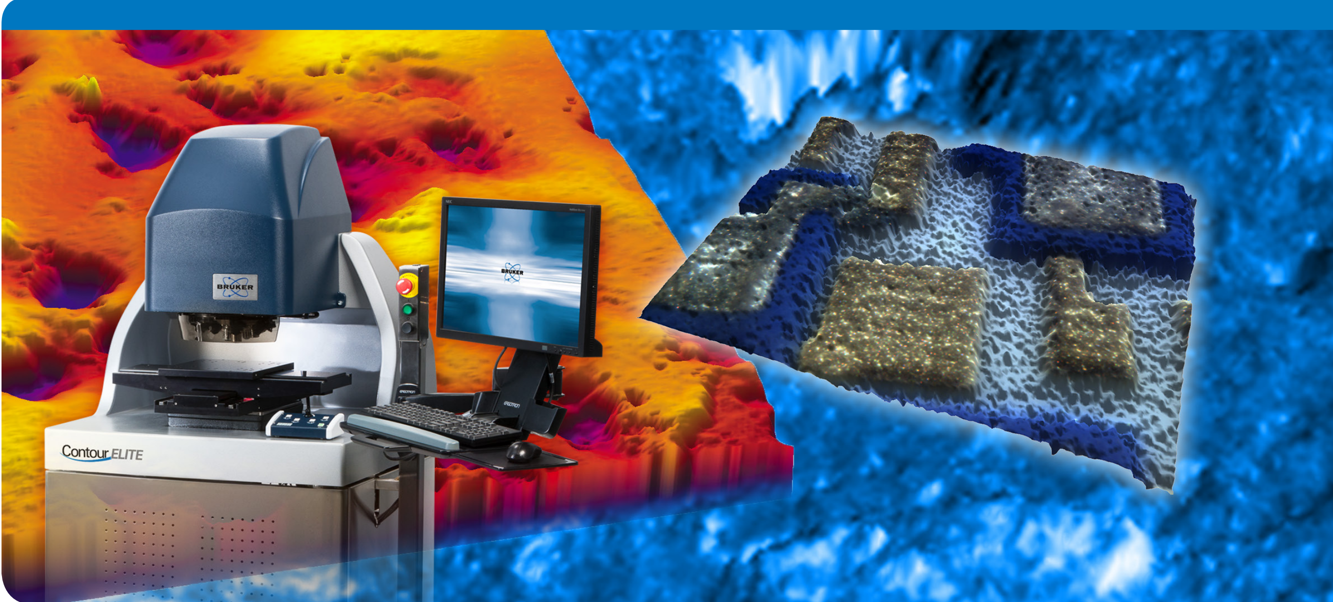

Contour Elite X 3D Optical Microscope

Fully Automated and Optimized Metrology with Imaging for R&D and Production

The fully automated, large-sample Contour Elite X 3D Optical Microscope combines unmatched measurement capabilities with highest vertical resolution over the industry's largest field of view. Designed from the ground up for the most demanding R&D, quality assurance, and process quality control needs, the Contour Elite X offers the ultimate gauge-capable 3D optical microscopy solution. With its patented tip/tilt head, a patented self-calibrating laser reference, integrated pattern recognition, high-fidelity color or monochrome imaging, and a host of other proprietary interferometry innovations, no other metrology system provides the non-contact accuracy, throughput, operator convenience, and imaging capabilities to address such a vast range of production metrology applications.

Reliable, Accurate Measurements Enhanced by High-Fidelity Imaging

- Industry-best Z-resolution enhanced by high-fidelity color or grayscale imaging
- Unique metrology sensor design with patented dual-LED light source
- Increased detail of sample surface revealed

Fastest, Easiest Nanometer-Scale Measurements and Analyses

- Fully automated, optimized real-time measurements
- Streamlined, intuitive, and customizable production interface
- Extensive library of filters and custom analysis options

Robust, Vibration-Resistant Design

- Integrated, vibration-isolation floor-mount design
- Self-calibrating, metrology-optimizing laser reference
- Accurate and motorized XY stage for up to 300 mm samples

Most Accurate Metrology Plus High-Fidelity Imaging

The Contour Elite X is the culmination of more than three decades of proprietary Wyko® optical innovation and industry leadership in non-contact surface metrology, characterization, and imaging. The gauge-capable system provides the low noise, high speed, accuracy, and precision results that quantitative metrology requires. With the use of multiple objectives and integrated feature recognition, features can be tracked over a variety of fields of view and at sub-nanometer vertical resolution, providing automated scale-independent results for quality control and process monitoring applications in very diverse industries.

Streamlined Operator Interface

The Contour Elite X features Bruker's award-winning Vision64® software and the industry's most functional and streamlined graphical user interface for production operators. It provides intuitive access to easy-to-use tools to customize process workflow, automate mapping, and load measurement recipes, which enable rapid in-line analysis to improve manufacturing reliability. Vision64 provides the operator with an extensive library of pre-programmed filters and analyses for LEDs, solar cells, thick films, semiconductors, ophthalmic and medical devices, precision machining, MEMS, and tribology applications.

Robust, Production Gauge-Capable Reliability

In addition to the unmatched measurement and imaging capabilities of Bruker-exclusive interferometry technology, the Contour Elite X is equipped with a proprietary internal laser reference and custom-designed industrial cabinet for maximum stability and robustness. The system's automation-ready configuration includes everything necessary for almost any production environment, including an air table stabilizer kit for enhanced X, Y, Z wafer placement accuracy, optimization of PDU, EMO and vacuum systems for integration, and modified vacuum chucks for autoloader end-effector compatibility.

Specifications Contour Elite X

Max. Scan Range	>10 mm
RMS Repeatability (PSI)	<0.03 nm; 0.02 nm typical*
Lateral Resolution	0.38 µm min (Sparrow criterion); 0.26 µm (with AcuityXR®)
Step Height Accuracy	<0.75%**
Step Height Repeatability	<0.1% 1 sigma repeatability
Max. Scan	114 µm/sec (with standard camera)
Sample Reflectivity	0.05% to 100%
Max. Sample Slope	Up to 40° (shiny surfaces); Up to 87° (rough surfaces)
Sample Height	Up to 100 mm (4 in.)
Sample Weight	Up to 23 kg (50 lbs)
XY Sample Stage	300 mm (12 in.) automated; 0.5 µm encoders
Z Focusing	100 mm (4 in.) automated
Tip/Tilt Function	±6° automated, computer-controlled tip/tilt head
Optical Metrology Module	Patented dual-LED illumination; Single-objective adapter; Single or auto-zoom lenses
Objectives	Parfocal: 2.5X, 5X, 10X, 20X, 50X, 115X; LWD: 1X, 1.5X, 2X, 5X, 10X; TTM: 2X, 5X, 10X, 20X; Brightfield: 2.5X, 5X, 10X, 50X
Available Zoom Lenses	0.55X, 0.75X, 1X, 1.5X, 2X auto-sensing modules
Camera	Standard-resolution monochrome: 640x480; High-resolution monochrome (option): 1376x1032; Standard-resolution color (option): 640x480; High-resolution color (option): 1376x1032
Software System	Vision64 analysis software on Windows 7, 64-bit OS
Software Packages	Production Interface; AcuityXR; Annual Analysis; High-Speed AF; Optical Analyses; Advanced Image Processing; SDK; TCP/IP; Thick and Thin Film; MatLab scripts
XY Automation	Automated stitching, scatter, and grid automation
Calibration	Via traceable step standards; Optional continuous self-calibration based on laser signal
System Footprint	852 mm (W) x 793 mm (D) x 1608 mm (H)
System Weight	493 kg (1084 lbs)
Warranty	12 months

*As demonstrated by taking the one sigma Sq value of 30 PSI repeatability measurements on an SIC reference mirror.

**Absolute accuracy for step heights 8 µm and greater.

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