

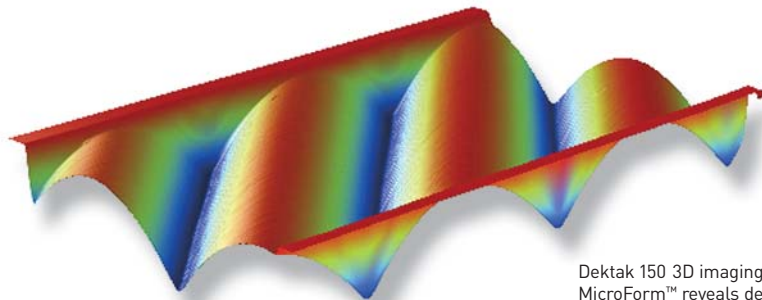
Dektak 150 Surface Profiler

High-Performance Versatility and Value

- Most Sample Flexibility
- Low Noise Floor
- Highest Repeatability
- Best Value



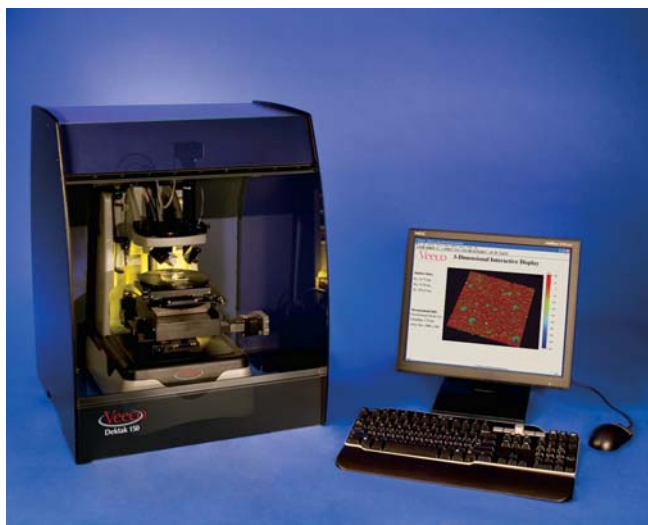
Solutions for a nanoscale world.™



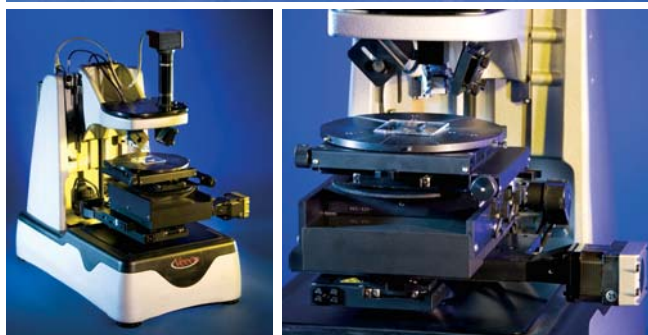
Dektak 150 3D imaging with MicroForm™ reveals details of hybrid glass replicas. Image courtesy of INO.

Dektak 150

Unmatched Performance and Versatility



The Dektak® 150 Surface Profiler is the culmination of over three decades of stylus profiler technology innovations. The system boasts the industry's best performance, best repeatability, and largest standard scanning range, while offering a variety of configurations and add-on options for superior programmability, low-force characterization, and detailed analysis. Simply stated, there has never been a more powerful profiler at a better price.

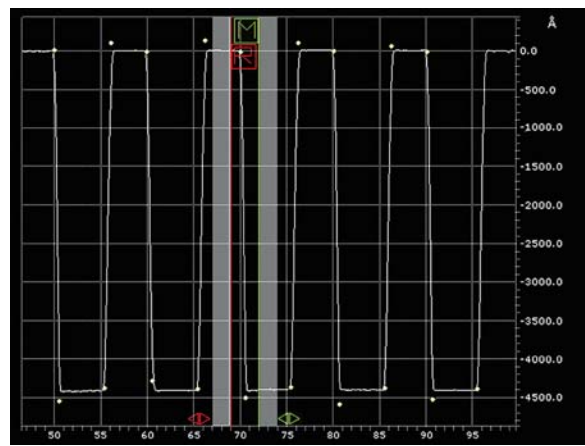


The New Industry Standard

- Largest standard Z range of 524 microns enables larger step measurements
- Optional X-Y automated stage delivers programmability of over 200 locations
- Optional Y automated stage offers 3D mapping capability
- Cast aluminum frame and rigid support elements drastically improve repeatability and lower noise floor



High-resolution long scans up to 55 mm (150 mm with stitching) enable curve and post-process stress measurements.



The exclusive Step Detection feature automatically levels, detects and measures multiple steps in a single scan, as well as provides an average of all the steps.

NEW CAPABILITIES FOR MORE APPLICATIONS

Veeco's newest stylus profiler system is available with three configurations to permit the best possible match to your research or industry application. The standard Dektak 150 utilizes a new-design, 4 x 4-inch X-Y stage with manual theta.

3D MAPPING AND AUTOMATION PACKAGES

The Dektak 150 also can be configured with a 4-inch Y auto stage that enables 3D imaging. Or it can be equipped with a 6-inch X-Y auto stage that, in addition to 3D mapping, provides automation and programmability of over 200 sample sites.

LARGER SAMPLES AND LONGER SCANS

The innovative design of the Dektak 150 accommodates samples up to 4-inches thick, performs long scans of 55 millimeters, and provides a larger X-Y translation than competing systems. With the scan-stitching package, the system can perform even longer scans for stress measurements on larger wafers. Other stage features include wafer alignment pins for ease of use, three-point suspension for stress, lateral calibration for 99.9% accuracy, and a larger scan block for improved baseline stability.

SUPERIOR REPEATABILITY

With 6-angstrom step-height repeatability, the Dektak 150 profiler provides the flexibility to perform precise step-height measurements for thin films down to less than 100 angstroms, as well as thick-film measurements up to several hundred microns thick. The Low-Inertia Sensor 3 (LIS 3) head incorporates key technology advances to deliver extremely accurate measurements with unprecedented sensitivity.

LARGER VERTICAL RANGE

The 512-micron vertical range is the best standard Z performance in the industry, and a 1-millimeter option extends the vertical range of these systems even further. The result of all these features is exceptional horizontal and vertical resolution, enabling precise planarity scans for measuring radius of curvature, flatness, and waviness, as well as characterizing thin-film stress on wafers.

POWERFUL, EASY-TO-USE SOFTWARE

The Windows® XP software interface allows the operator to quickly become a Dektak 150 expert. Analysis functions are both comprehensive and intuitive, from simple one-button load-and-go testing to automatic comparisons of analytical results from multiple scans. The Vision® analysis package further extends the usefulness of the Dektak 150 data, enabling true 3D mapping, bearing ratio, and over 200 additional analyses.

MICROFORM MEASUREMENTS, LOWEST STYLUS FORCE

The new MicroForm™ package reveals difficult shapes and overcomes steep slopes, improving accuracy to within 0.25°. Similarly, the Low-Force option improves stylus sensitivity to 0.03 milligrams to enable non-destructive characterization of delicate surfaces. Plus, additional analysis capabilities have been added, such as histogram and advanced automation program summary for pass/fail analysis.

CUSTOMIZED FOR YOUR APPLICATIONS

Whatever your application, we can configure a system to meet your specific requirements.

- Metal etch uniformity on wafers
- Thin-film stress calculations
- Transparent films/photoresist thickness, thin- and thick-film measurements
- Large-step MEMS characterization
- Microlens height/curvature and V-groove depth analyses
- Roughness studies on machined parts
- Aspheric lens characterization
- Surface quality and defect review
- High aspect ratio trench depth measurements
- And much, much more!

DEKTAK 150 SPECIFICATIONS

SYSTEM

Measurement Technique	Stylus profilometry
Measurement Capability	Two-dimensional surface profile measurements
Sample Viewing	640 x 480-pixel (1/3in.-format) camera, USB; fixed magnification, 2.6 mm FOV (166X with 17in. monitor); optional manual zoom, variable 0.67 to 4.29 mm (644X to 100X with 17in. monitor)
Stylus Sensor	Low-Inertia Sensor (LIS 3)
Stylus Force	1 to 15 mg with LIS 3 sensor; 0.03 to 15 mg with N-Lite sensor option
Stylus Options	Stylus radius options from 50 nm to 25 μ m; High Aspect Ratio (HAR) tips 10 μ m x 2 μ m and 200 μ m x 20 μ m
Sample Stage	Manual X/Y/ Θ , 100 x 100 mm X-Y translation, 360° rotation, manual leveling; optional Y auto stage, 100 mm (4 in.) travel, 1 μ m repeatability, 0.5 μ m resolution; optional X-Y auto stage, 150 mm (6 in.) travel, 1 μ m repeatability, 0.5 μ m resolution
Computer System	PC with Celeron® or Sempron™ processor (optional Pentium® or Athlon™); optional 17 in. flat panel display
Software	Dektak software running under Windows XP; Step Detection software (std.); optional Stress Measurement software; optional 3D Vision analysis software; optional Stitching software; optional 3D Mapping software; optional Cantilever Deflection software
Vibration Isolation	Optional vibration isolation table; optional table-top vibration isolation system

PERFORMANCE

Scan Length Range	55 mm (2.16 in.)
Data Points Per Scan	60,000 maximum
Max. Sample Thickness	Up to 100 mm (4 in.), depending on configuration
Max. Wafer Size	150 mm (6 in.)
Step Height Repeatability	6 Å, 1 sigma on 1 μ m step
Vertical Range	524 μ m (0.02 in.) standard; 1 mm (0.039 in.) optional
Vertical Resolution	1 Å max. (at 6.55 μ m range)

ENVIRONMENT

Temperature Range	Between 18 and 24°C (64 to 75°F)
Humidity Range	60% \pm 20°C, non-condensing

DIMENSIONS

292 mm W x 508 mm D x 527 mm H
(11.5 in. W x 20 in. D x 20.75 in. H)

WEIGHT

34 kg (75 lbs.)

POWER REQUIREMENTS

Input Voltage	100 to 120 VAC/200 to 240 VAC, 50 to 60 Hz
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Note: Performance specifications are subject to change without notice.

Front cover images: Dektak 150 provides detailed measurement for many materials, including (from top to bottom) porous ceramic, a microlens, and a pcb board.



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B509, Rev A

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Worldwide Customer Support from the Industry Leader

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