

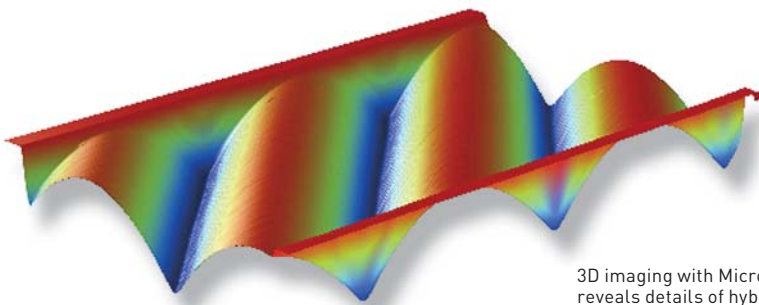
Dektak 150+ Surface Profiler

High-Performance, Versatility and Value

- Best Measurement Repeatability
- Greatest Sample Flexibility
- Lowest Noise Floor
- Highest Value
- Optimum Modularity



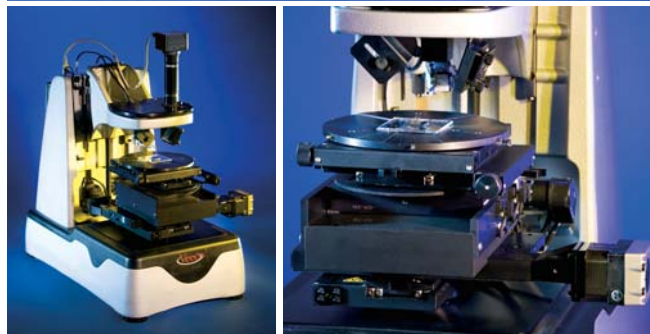
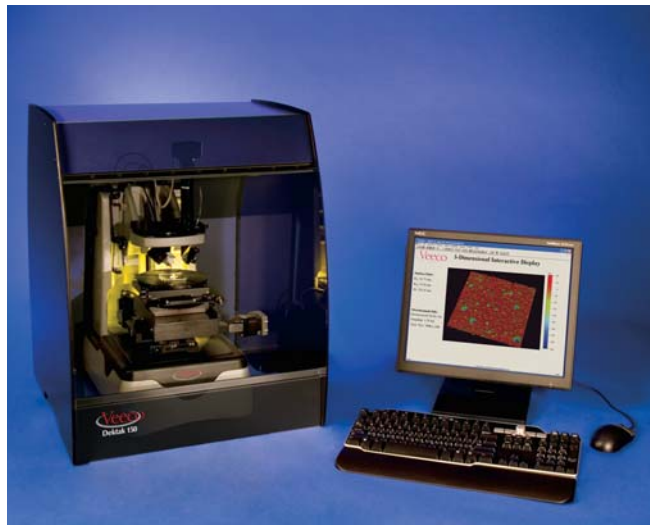
Solutions for a nanoscale world.™



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

Dektak 150 with 200mm Wafer Support

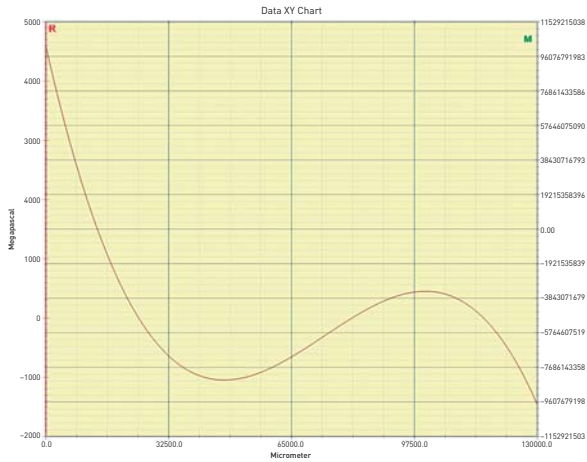
Unmatched Performance and Versatility



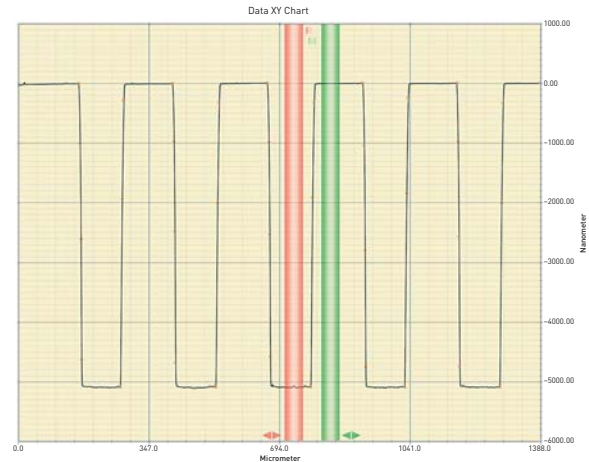
The Dektak® 150+ Surface Profiler is the culmination of four decades of stylus profiler technology innovations. The system boasts the industry's best performance, best repeatability, and largest standard scanning range, while offering a variety of configurations and add-on options for superior repeatability, 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

- Large standard Z range of 1 millimeter enables larger step measurements
- Optional D150+ low-noise electronics provides industry-best 4-angstrom repeatability
- Optional X-Y automated stage delivers programmability of over 200 locations
- Optional Y automated stage offers economical 3D mapping capability
- Cast aluminum frame and rigid support elements drastically improve repeatability and lower noise floor



High-resolution long scans up to 55mm (200mm 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, 100 x 100-millimeter X-Y stage with manual theta.

3D MAPPING AND AUTOMATION PACKAGES

The Dektak 150 also can be configured with a 100-millimeter Y auto stage that enables 3D imaging. Or it can be equipped with a 150-millimeter 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 90 millimeters 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 long scans up to 200 millimeters 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 4-angstrom step-height repeatability using optional ultra-low-noise electronics, the Dektak 150+ profiler provides the flexibility to perform precise step-height measurements for thin films down to 10 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 system's 1-millimeter standard vertical range coupled with up to 120,000 data points per scan deliver exceptional capability. 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 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 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
- Solar cell finger width and height
- 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!

SPECIFICATIONS

SYSTEM

| | |
|------------------------|--|
| Measurement Technique | Contact stylus profilometry |
| Measurement Capability | Two-dimensional surface profile measurements |
| Sample Viewing | 640 x 480-pixel (1/3in.-format) camera, USB; fixed magnification, 2.6mm HFOV (166X with 17in. monitor); optional manual zoom, variable 0.67 to 4.29mm HFOV (644X to 100X with 17in. monitor) |
| Stylus Sensor | Low-Inertia Sensor (LIS 3) |
| Stylus Force | 1 to 15mg with LIS 3 sensor; 0.03 to 15mg with N-Lite sensor option |
| Stylus Options | Stylus radius options from 50nm 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 100mm X-Y translation, 360° rotation, manual leveling; optional Y auto stage, 100mm travel, 1 μ m repeatability; optional X-Y auto stage, 150mm travel, 1 μ m repeatability; optional 200mm wafer vacuum chuck |
| Computer System | PC with Pentium® D or Athlon™ processor |
| Software | Dektak software running under Windows® XP; Step Detection software (std.); optional Stress Measurement software; optional 3D Mapping with Vision analysis software; optional Stitching software |
| Vibration Isolation | Optional vibration isolation table; optional table-top vibration isolation system |

PERFORMANCE

| | |
|---------------------------|---|
| Scan Length Range | 55mm standard; up to 200mm with stitching option |
| Data Points Per Scan | 120,000 maximum |
| Max. Sample Thickness | Up to 90mm, depending on configuration |
| Max. Wafer Size | 150mm (200mm with Advanced Automation Package) |
| Step Height Repeatability | $\leq 6\text{\AA}$ (D150); $\leq 4\text{\AA}$ (D150+ option); 1 sigma on 0.1 μ m step |
| Vertical Range | 1mm |
| Vertical Resolution | 1 \AA max. (at 6.55 μ m range) |
| Lateral Accuracy | <0.1% (on 55mm scan) |

ENVIRONMENT

| | |
|-------------------|---|
| Temperature Range | Between 20 and 25°C (68 to 77°F) |
| Humidity Range | $\leq 50\% \pm 20^\circ\text{C}$, non-condensing |

POWER REQUIREMENTS

| | |
|---------------|---|
| Input Voltage | 100 to 120VAC/200 to 240VAC, 50 to 60Hz |
|---------------|---|

DIMENSIONS

292mm W x 508mm D x 527mm H

WEIGHT

34kg (75lbs.)

CERTIFICATION

CE, NRTL, S2, S8*, China RoHS, EU RoHS*

Note: Performance specifications are subject to change without notice.
*Consult Factory for details.

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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1-800-366-9956

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B509, Rev A3

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Worldwide Customer Support from the Industry Leader

Veeco Instruments Inc. provides solutions for nanoscale applications in the worldwide semiconductor, data storage, HB-LED/wireless and scientific research markets. Our Metrology products are used to measure at the nanoscale and our Process Equipment tools help create nanoscale devices. Veeco's manufacturing and engineering facilities are located in New York, New Jersey, California, Colorado, Arizona and Minnesota. Global sales and service offices are located throughout the United States, Europe, Japan and Asia Pacific.