



Alpha-Step D-500

METROLOGY

Development Series Profilers

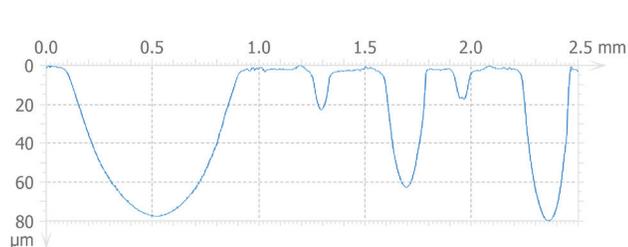
The Alpha-Step® D-500 offers high resolution 2D profiling, 2D stress, profile stitching, and many more features in an easy-to-use platform with the best price-to-performance available in the market. The D-500 system includes an innovative optical lever sensor technology that provides the highest vertical range at 1200 μm , sub-Angstrom resolution plus low force, 0.03 to 15 mg. The ability to measure a wide range of applications, from nanometer to millimeter steps, high resolution roughness, soft materials, and thin film stress enables the D-500 to serve various industries in research and development and production environments.

The D-500 includes a 140 mm manual stage. The system features advanced optics, a high resolution 5 MP camera with a 4x digital zoom and enhanced video controls for highly versatile sample visualization.

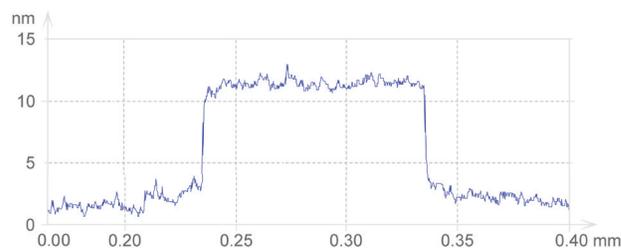
Applications

The D-500 is capable of addressing a wide range of measurements and applications:

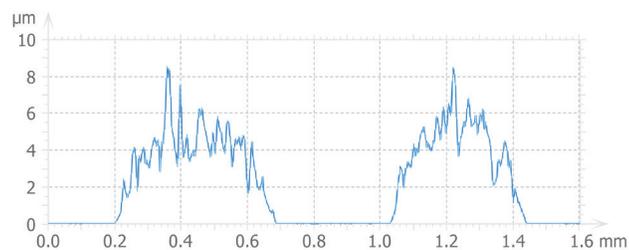
- Precision step height
- Surface form, bow
- Surface texture
- Material characterizations
- Thin film stress



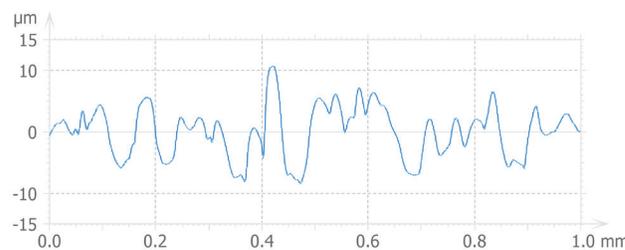
2D Step Height: 2.5 mm scan of 80 μm tall patterned glass



Sensitivity for Thin Steps: 8 nm step height measurement



Step Height and Cross-Sectional Area: 1.6 mm scan of silver trace on PET printed circuit with a 5.0 μm silver step height and 1775 μm^2 area



Surface Texture: 1 mm surface texture measurement with 0.4 μm RMS roughness

Alpha-Step D-500 Stylus Profiler

PRODUCT FEATURES

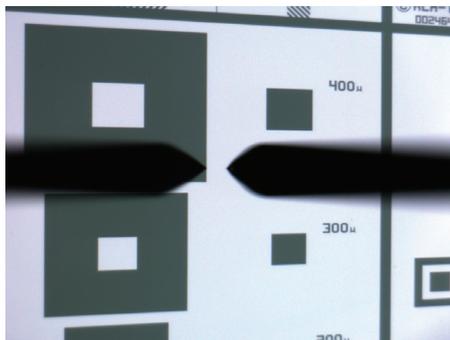
The D-500 stylus profilers provide a wide range of application specific capabilities, meeting the needs of the research, engineering, and production communities.

Stylus Profiling

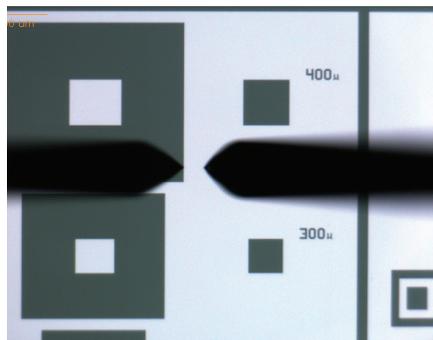
The 140 mm sample stage supports scan lengths up to 30 mm in a single scan and up to 80 mm utilizing the stitching function. The D-500 provides the highest vertical range at 1200 μm and low force sensor technology at 0.03 mg, ensuring scan precision on an array of applications, including thin films, soft materials, tall steps, bow, and stress.

High Resolution Camera

The D-500 features advanced optics that includes a high resolution 5 MP color camera with 4x digital zoom and enhanced lighting controls.



Video from side view optics



Video after application of keystone correction

Keystone Correction

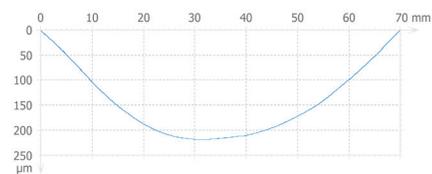
New keystone correction software automatically removes video view sample distortion due to the angled optics.

Arc Correction

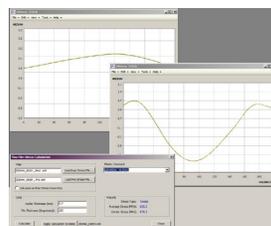
New arc correction software removes arc motion error during scanning, improving accuracy for sidewall angles and step width measurements.

2D Stress (optional)

2D stress utilizes Stoney's Equation and changes in sample bow, before and after processing, to calculate thin film stress.



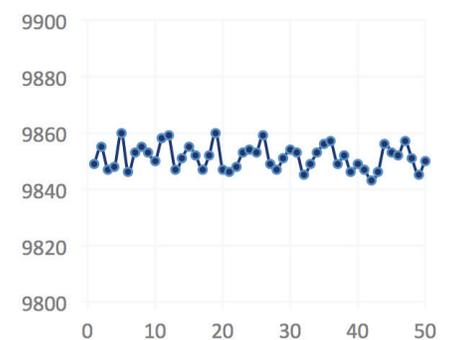
206.5 μm sample bow



Thin film stress

Step Height Repeatability

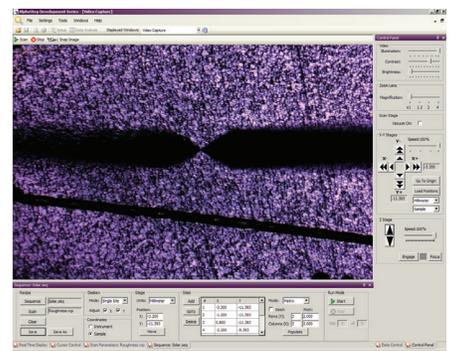
A sub-Angstrom resolution, optical lever sensor translates into the most repeatable low mass, low noise sensor design. This enables step height repeatability of 5 \AA on a 1 μm step for demanding process needs.



4.3 \AA repeatability, one-sigma on a 1 μm standard

Intuitive User Interface

New user interface controls enable automatic focusing on the sample surface, separate control of lamp and camera brightness, contrast controls, and up to 4x digital zoom.



Recipe and system hardware controls are shown in the same display for quick sample positioning and measurement. Raw data is saved, enabling data re-analysis without the need for new measurements.

KLA-TENCOR SERVICE/SUPPORT

Customer service is an integral part of KLA-Tencor's portfolio that enables our customers to accelerate yield. Our vast customer service organization collaborates with worldwide customers to achieve the required productivity and performance at the lowest overall cost. K-T Services includes comprehensive contracts, time and materials, spares, asset management, customer training, and yield consulting.

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