

# Alpha-Step D-600

METROLOGY

## Development Series Profilers

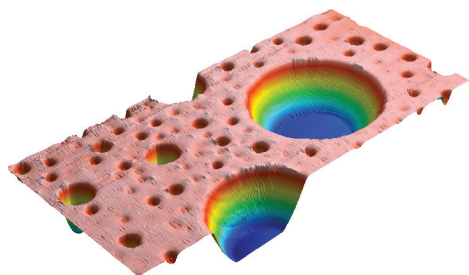
The Alpha-Step® D-600 offers high resolution 2D & 3D profiling, 2D stress, profile stitching, and many more features in an easy-to-use platform with the best price-to-performance available in the market. The D-600 system includes an innovative optical lever sensor technology that provides the highest vertical range at 1200  $\mu\text{m}$ , 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-600 to serve various industries in research and development and production environments.

The D-600 includes a 200 mm motorized stage, with 150 x 178 mm X-Y range of motion. The new sequencing software features manual deskew alignment and programming up to 1000 locations on a sample. 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.

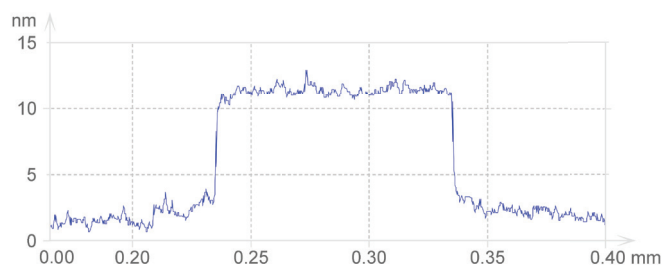
### Applications

The D-600 is capable of addressing a wide range of measurements and applications:

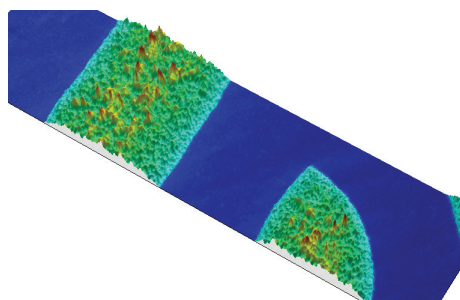
- Precision step height
- Surface form, bow
- Surface texture
- Material characterizations
- Thin film stress
- 3D scanning



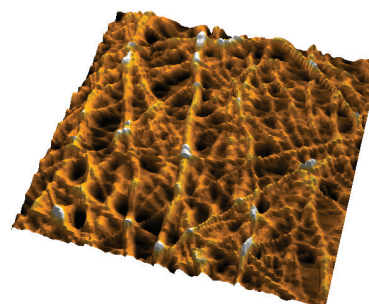
**3D Step Height:** 3 x 1.4 mm scan of 117  $\mu\text{m}$  tall patterned glass



**Sensitivity for Thin Steps:** 8 nm step height measurement



**Step Height and Volume:** 1.8 x 0.5 mm scan of silver trace on PET printed circuit with a 5.0  $\mu\text{m}$  silver step height and 847,130  $\mu\text{m}^3$  volume



**Surface Texture:** 1 x 1 mm surface texture measurement with 4.8  $\mu\text{m}$  RMS roughness

# Alpha-Step D-600 Stylus Profiler

## PRODUCT FEATURES

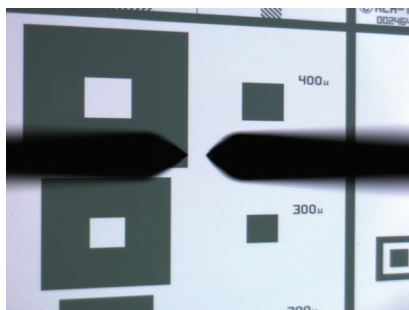
The D-600 stylus profilers provide a wide range of application specific capabilities, meeting the needs of the research, engineering, and production communities.

### Stylus Profiling

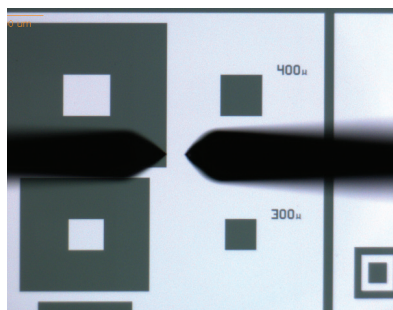
The 200 mm sample stage supports scan lengths up to 55 mm in a single scan and up to 200 mm utilizing the stitching function. The D-600 provides the highest vertical range at 1200  $\mu\text{m}$  and low force sensor technology at 0.03 mg, ensuring scan precision on an array of applications, including thin films, soft materials, tall steps, bow, and stress.

### High Resolution Camera

The D-600 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

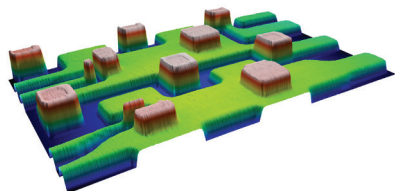
New keystone correction software automatically removes video view sample distortion due to the angled optics.

### Arc Correction

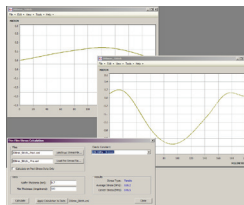
New arc correction software removes arc motion error during scanning, improving accuracy for sidewall angles and step width measurements.

### 3D Scanning & 2D Stress (optional)

3D scanning produces photo-realistic surfaces, enabling detailed surface topography analysis of step height, texture, and sample form. 2D stress utilizes Stoney's Equation and changes in sample bow, before and after processing, to calculate thin film stress.



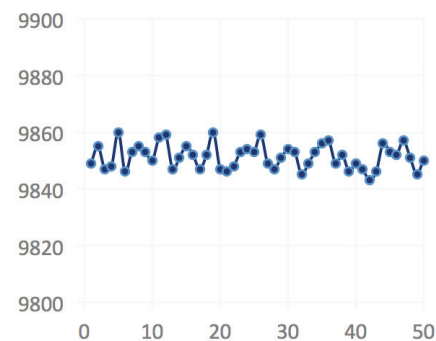
3D scanning of complex surfaces



Thin film stress with automated stitching

## Step Height Repeatability

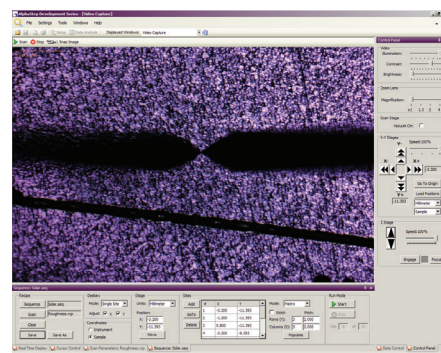
A sub-Angstrom resolution, optical lever sensor translates into the most repeatable low mass, low noise sensor design. This enables step height repeatability of 5 Å on a 1  $\mu\text{m}$  step for demanding process needs.



4.3 Å repeatability, one-sigma on a 1  $\mu\text{m}$  standard

## Intuitive User Interface

New, simplified recipe creation enables quick setup of 3D scans, sequencing for multiple site measurements, sequence alignment reference points, and automated stitching for film stress.



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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