

Production Series

METROLOGY

P-17 Stylus Profiler

The P-17 is the 8th generation of the P-series stylus profiler, building on over 35 years of profilometry expertise. The system offers a programmable scan stage, low noise, and high-quality, high-resolution long scans enabling measurement of a variety of surfaces and applications.

The P-17 offers industry leading measurement repeatability for reliable measurement performance. The system has 200 mm scan length standard — the only stylus profiler on the market to offer long scan capability without the need for stitching. The UltraLite® sensor includes dynamic force control, excellent linearity, and the highest vertical resolution making it the best sensor available on a stylus profiler. The P-17 includes many features to enhance the user experience such as top and side view optics, and motorized theta/leveling stages. Finally, the system includes point-and-click operation and the productivity package to offer the easiest to use tool on the market with the features required by university, R&D, and production environments.

The P-17 OF (open frame) includes all of the capability of the P-17, but allows the user to load larger samples on the 9.5 by 9.5-inch square stage or 300 mm sample chuck.

APPLICATIONS

▪ Semiconductors

CMP dishing, pattern-dependent erosion, surface topography characterization, and oxide planarity for greater device performance and yield loss reduction. Measures height, co-planarity and roughness of bumps for flip chip technology. Performs etch depth monitoring on open geometries with automated analysis and simple process set-ups.

▪ Data Storage

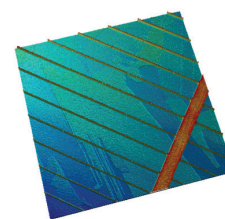
Thin film head wafers and sliders, hard disks, optical and magnetic media. Wafer applications include plating thickness, coil heights, and CMP planarity. Slider applications include pole-tip recession analysis, air bearing cavities, and laser texture bump characterization that includes bump height, width, and depth analysis.

▪ MEMS and Opto-Electronics

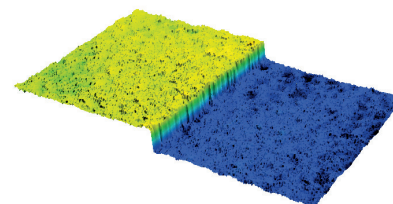
MEMS and opto-electronics step heights, micro-lens height and curvature, and DWDM etch depths.

▪ Other Applications

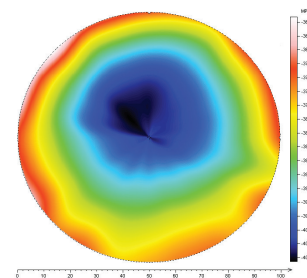
Hybrid circuits and ceramic substrates, paper and foil finishes, polished and machined surfaces, coated or painted surfaces, and precision-machined surfaces of any kind.



High Resolution 3D Scanning Capability



Thin Film Step Height Measurement Capability



3D Stress = Full Surface Stress Control

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PRODUCT FEATURES AND OPTIONS

Stylus Profiling

The precision scan stage design enables high quality scans over the entire 200 mm sample stage area with up to 200 mm scan length and 1 mm Z range. This design ensures the highest quality 2D and 3D scans resulting in a higher level of metrology quality.

Step Height Repeatability

A step height repeatability of 4 Å, one-sigma or better on samples up to 1 µm tall offers the best measurement precision in the industry. This performance is ensured with ultra-low-noise electronics, and a low-mass, low-inertia capacitive sensor with sub-Angstrom resolution, and superior scan flatness.

Apex Software

Apex software contains advanced filtering, leveling, and analysis functions to support R&D and production environments. This includes over 40 key surface parameters to analyze depth, step height, roughness, waviness, slope, flatness, radius of curvature, stress, bearing ratio, distance, volume and peak count distribution, to name a few of the parameters available. Apex is fully integrated into profiler software, enabling production use of Apex capability. Apex has a simple and intuitive format that allows for an easy creation of customized reports, automatic processing of data, including multiple language support.

Productivity Package

The Productivity Package includes pattern recognition, 1000 sequence sites, and the sequence queue function for improved throughput and enduser/fab productivity. The productivity package when combined with Feature Detection, Feature Find, and integrated Apex software enables fully automated data collection and reporting.

3D Imaging

3D imaging enables 3-dimensional imaging and viewing of surface topography in photo-realistic, color-coded, and rotatable 3D or top-down contour maps. This allows comprehensive analysis of scanned features as they appear in 3D and in 2D by examining cross-sections.

2D or 3D Stress Analysis

Stress is measured in 2D or 3D using Stoney's equation to calculate the stress of a processing step, such as thin film deposition, by measuring the change in curvature of the substrate.

Offline Analysis Software

Offline software enables creation of scan and sequence recipes as well as analysis of data in profiler or Apex software.

BENEFITS

Extensive list of standard features including Apex 2D, 20-site sequence and dual view optics

Advanced multi-language Apex surface analysis software for improved user-friendliness and larger worldwide acceptance

Optional productivity package for increased automation and throughput

Fast, accurate location of measurement features with minimum operator intervention

Unmatched repeatability and reproducibility for reliable measurements

Long-scan capability and vertical range for flexibility in large topography variations

Semi S2-0703, S8-0705 and S14-0704 compliance. RoHS compliance for computer and all peripherals

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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