

1. 探针传感器设计更加科学，闭环回路设计使得探针性能更加稳定，准确；
2. 独特的平台设计，使得平台移动时更加的平稳，使得量测出的数据更加精确；



Production Series

METROLOGY

P-7 Stylus Profiler

KLA-Tencor's P-7 stylus profiler provides advanced surface measurement and analysis capabilities. This mid-range platform is ideal for research and development and production environments offering the best features-to-value of any stylus profiler on the market.

精度更高，误差降低6~8倍

The P-7 features industry leading step height repeatability due to superior sensor and scanning stage design.

	Steps ≤ 1 μm	Steps > 1 μm
Repeatability ¹	4 Å	0.10%
Reproducibility ¹	15 Å	0.25%

1. Repeatability and reproducibility are defined as standard deviation of 30 trials using best known methods on a well-defined step height.

The UltraLite[®] sensor is a linear variable differential capacitive (LVDC) sensor with the lowest mass, lowest noise, and highest resolution of any sensor available. It is the only sensor technology with constant force control over the entire vertical range.

	Standard	Low Force	Extended
Total Dynamic Range	327 μm	131 μm	1000 μm
Vertical Resolution	0.01 / 0.04 / 0.20 Å low / mid / high range	0.01 / 0.02 / 0.10 Å low / mid / high range	0.01 / 0.08 / 0.60 Å low / mid / high range
Stylus Force	0.5 – 50 mg	0.03 – 50 mg	0.5 – 50 mg
Force Control	constant	constant	constant
Vertical Linearity ²	± 0.5% > 2000 Å 10 Å ≤ 2000 Å	± 0.5% > 2000 Å 10 Å ≤ 2000 Å	± 0.5% > 2000 Å 10 Å ≤ 2000 Å
Sampling Rate	5 to 2000 Hz	5 to 2000 Hz	5 to 2000 Hz

2. Vertical linearity is measured by the maximum non-linearity component divided by the vertical range.

The P-7 is the only system available that offers a 150 mm scan length with no stitching required.

150mm的扫描长度，可以探测更多表明形貌；可以量测整个6 wafer

	2D Scanning	3D Scanning
Maximum Scan Length	150 mm – no stitching required	any rectangle inscribed within a 150 mm diameter circle
Lateral Resolution	0.025 μm	0.5 μm
Maximum Points per Scan	2 million	4 million
Scanning Speed	2 μm/sec to 25 mm/sec	-

The P-7 has superior scan flatness over the entire scan length for excellent short scan, long scan, and stress measurements.

	Specification	Conditions
Scan Flatness	20 nm over 0.5 mm scan 30 nm over 2 mm scan 40 nm over 30 mm scan 75 nm over 60 mm scan 170 nm over 130 mm scan	1/20 λ, 150 mm optical flat
Bow Repeatability	0.1%	20 m radius mirror
Stress Repeatability	2.5%	with polynomial fit enabled

3. Contact KLA-Tencor for the best known recipe conditions.

kT 采用 2um的探针量测重复性；此两个参数可以证明设备的稳定性和精确性；

垂直方向的最小分辨率是 0.01A

标准配置：

P7 可以量测 wafer 应力 (选购)

量测平整度

P-7 Stylus Profiler

P7平台XY轴都可以电脑控制自动移动;

The P-7 has motorized X, Y and Z stages. The system includes manual theta stage with stops at 45° increments and optional fine theta adjustment of ± 5°.

	Stage Specifications
X and Y Stage	2 µm repeatability
Z Stage	soft touch stylus null

The P-7 microhead V offers top or side view optics (user preference), at the highest camera resolution.

	Optics Specifications
Top View: FoV	1700 x 1400 µm
Side View (optional): FoV	1050 x 850 µm
Camera	4.9 MP, color
Zoom	4x, digital

The P-7 offers a full range of styli, plus custom designs:

	Radius	Angle
Standard	2 – 50 µm	60°
Submicron	0.2 µm	> 90°
High Aspect Ratio	0.2 - 2 µm	20 – 45°

All P-7 systems include a vacuum chuck, with universal chuck design including movable stop and stress pins.

	Chucks
Standard	universal
Optional	solar

P-7 recipes offer enhanced productivity (standard):

- Feature Detection and Feature Find
- Manual and single site deskew sample alignment
- 20 measurement sites with site naming
- Multi-analysis, correlation scanning, link to Apex
- Automatic saving, export, printing

Productivity packages (optional):

- 1000 measurement sites with site naming
- Pattern recognition deskew alignment: XY and θ
- Site pattern recognition
- Sequence queue to run multiple sequence recipes

The P-7 complies with the latest industry standards:

- CE compliance; EC directives
- Harmonized safety and electromagnetic standards
- SEMI S2-0703, S8-0705, S14-0704
- RoHS compliance for computer and peripherals

P-7 computer specifications (minimum):

P7电脑配置:

	Computer
Processor	2.9 GHz quad core
RAM	4 GB
Hard Drive	500 GB
Access	USB and Ethernet
Software	Win 7, 64-bit with MS Office
Monitor	23-inch optional secondary monitor

The P-7 dimensions:

	Dimensions
Height	43 cm
Width	57 cm
Depth	67 cm
Weight	80 kg

Best results using a solid workbench or isolation table.

	Environment
Relative Humidity	30 – 40% non-condensing
Temperature	16 – 25°C rate of change ≤ 2°C/hr
Floor Vibration	≤ 250 µ-inch/sec 1 to 100 Hz
Audio Noise	≤ 80 dB C-weighting scale
Laminar Airflow	≤ 100 ft/min down blowing

P-7 facilities requirements:

	Facilities
Electrical	90 – 260 V 50 – 60 Hz
Power	430 VA
Vacuum	500 mm Hg 27 liters/min

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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