Alpha-Step® 500

Surface Profiler

SPECIFICATIONS

PERFORMANCE

General

Scan Length: 10 mm (400 mil)

Scan Speed: 2 µm/sec (0.08 mil/sec) to 200 µm/sec (8 mil/sec)

Scan Method: Bi-directional moving stylus, stationary stage

Sampling Rate: 50, 100, 200/sec nominal

Vertical Range/Resolution: ±6.5 µm (±260 µin)/1Å (0.004 µin)
300 µm (12 mil)/25Å (1 µin)

Stylus Force: Adjustable between 1-100 mg. Software measures and displays on monitor.

Variable Image Magnification: 70-210X

Repeatability

Step Height Repeatability, 1σ: 10Å maximum in the 13 µm range

Note: Measured at 10 mg stylus force with the isolation hood, repeated ten times at one position on a 9400Å VLSI step height standard.

SAMPLE HANDLING

Scan Access: Capable of measuring any point on a 162 mm sample. Can accommodate larger samples with limited access.

Maximum Sample Stage Movement

	Manual	Motorized
X-Axis:	5.94 in (151 mm)	5.91 in (150 mm)
Y-Axis:	3.15 in (80 mm)	3.11 in (79 mm)
Theta:	360°	180°

Maximum Sample Thickness: 0.82 in (21 mm)
0.67 in (17 mm) with Motorized X Y Stage option

Maximum Sample Weight: 2.2 lbs (1 kg)

MEASUREMENT CONTROL

Single Scan Mode: Scan parameters are programmed in a recipe.

Repeat and Average Mode: Repeats any scan up to ten times and displays computed average.

LEVELING

- Automatic data leveling
- Software-assisted stage leveling

DATA ANALYSIS/OUTPUT

Data Screen: Displays scan, roughness and waviness traces with a data summary table listing up to 39 parameters. The traces can be zoomed in for detailed analysis. When measurement cursors are moved, real-time data displays are automatically updated.

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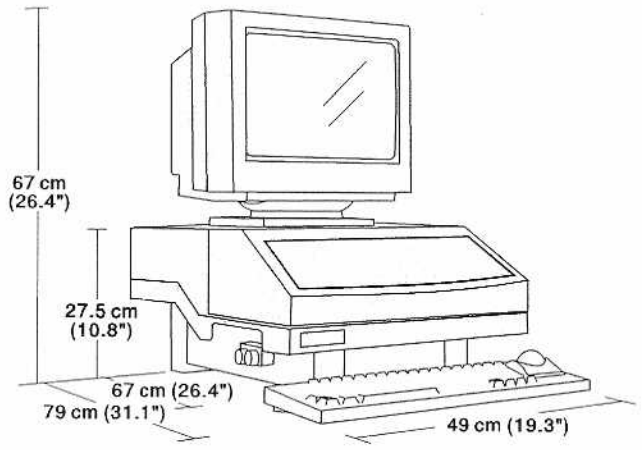
Automatic Cursor Positioning: Automatic leveling and measurement of the height and width of a step within the trace. Can be programmed to detect the number of steps and calculate the average height of multiple steps. In addition, this cursor positioning can be used to measure the apex of curved surfaces.

Database Manager: Allows users to save and retrieve data according to multiple (up to seven) user-defined categories.

ASCII Output: Individual scan data is exportable to DOS or Windows®-based commercial spreadsheet programs for further analysis.

DATA PROCESSING/STORAGE

Microprocessor: Pentium® 133 MHz or faster
RAM: 16 MB
Hard Drive: 1.2 GB or greater
Floppy Drive: 3.5 in, 1.4 MB
Monitor: 14 in VGA
Keyboard: Enhanced 101 AT



PHYSICAL CHARACTERISTICS

Weight
Systems: 90 lb (41 kg)
Shipping Weight: 130 lbs (59 kg)

Installation Requirements
Electrical: 90-110V, 50/60 Hz
110-130V, 50/60 Hz
180-260V, 60/60 Hz
Power: 150VA
Acoustic Noise: 80 dB maximum
Vibration: 0.2 mG maximum (G = 9.8 m/s²)

Options

SOFTWARE

Additional Surface Parameters: In addition to the standard 30 parameters, this option provides the following parameters:

- Bearing ratio
- Cutting depth
- Peak count
- High spot count
- Mean peak spacing
- Mean peak height
- RMS slope
- RMS wavelength
- Standard deviation of heights

HARDWARE

Motorized X Y Stage: Control the X Y stage with the trackball or arrow keys on the keyboard. Load/unload and measurement positions can be programmed for convenient sample positioning. Factory installed only.
Extended Vertical Range: Increases the vertical range from standard 300 µm (12 mil) to 2 mm (80 mil). Factory installed only.
Color Camera: Replaces standard black and white camera. Factory installed only.
High-Magnification Optics: Replaces 70-210X optics with 160-480X. Factory installed only.
Printer Color: HP DeskJet Color Printer (or equivalent)

Specifications subject to change.

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