



CP7300™



ZYGO CORPORATION'S CP7300™ Wafer Metrology System

- Fast accurate, repeatable 3D areal surface mapping – in just seconds!
- Noncontact measurements – under ambient conditions!
- Patented, proprietary vertical scanning technology provides superior vertical resolution (~0.1 nm) – in a single measurement!
- Large, dynamic vertical (Z) scan range – from 0.1 nm to 20 mm!
- 0.5X – 200X magnification range – to meet all your lateral resolution and field size needs!
- Automated sample measurement and positioning capabilities – for increased ease-of-use!
- Standard and custom solutions and configurations available – to meet your application requirements!

Many semiconductor manufacturing processes, including chemical mechanical polishing (CMP), require critical control and monitoring of surface metrology parameters. Rapid insight into process variations are key to increasing yields by enabling faster refinements and corrections to manufacturing processes.

Today's continuous drive toward reductions in feature size and increasing demands on device specifications are pushing the requirements for value-added process monitoring and metrology. The CP7300 allows semiconductor manufacturers faster process development, parametric control and optimization of the chemical mechanical polishing (CMP) and wafer thinning process by providing precise, nanometer-scale surface height and wafer topography measurements.

Employing proprietary optical scanning technology, the CP7300 provides fast, noncontact, automated 3D surface height, roughness, and local area planarity and uniformity measurements on wafers for rapid, quantitative characterization of photo-lithographic, etch, and polishing process effects. Surface metrology applications include, but are not limited to, measurement and process control of critical surface texture parameters on bare and patterned wafers.

Programmable and automated measurement sequences and sample positioning allows for surface characterization at multiple sites and locations. Integral to each system is a comprehensive and powerful software analysis package with application-specific modules, providing full 3D imaging and data reporting of many surface topography parameters.

CP7300™ Specifications

SYSTEM

- **Measurement Technique** Noncontact, three-dimensional, scanning white light interferometry
- **Objectives** 1X, 2.5X, 5X, 10X, 20X, 50X, and 100X; Individually or turret mounted; motorized turret optional
- **Image Zoom** Motorized system zoom (standard), with three indexed positions; tube lens options: 0.5, 0.75, 1.0, 1.5, 2.0X
- **Field-of-View** From 0.06 to 13 millimeters; larger areas can be imaged with field stitching; objective dependent
- **Focus** Motorized manual and auto focus
- **Measurement Array** Selectable; standard selections include: 640x480, 320x240, 160x120
- **Maximum Sample Size** 300 mm wafer (standard); other optional configurations available
- **Sample Loading** Manual wafer loading standard Automated handling versions optional
- **Automated Stages** 6-axis automated system including: motorized tip-tilt head cradle stage (+/- 6 deg.), motorized 300 mm, travel (+/- 150 mm) x-y translation stage, motorized z-stage and rotary/ theta stage w/ vacuum wafer chuck
- **Computer** High performance Dell PC with LCD monitor
- **Software** ZYGO MetroPro™ software running under Windows XP
- **Dimensions** ~74" x 36" x 74" (W x D x H)
- **Weight** ~2500 lbs (1125 kgs)

PERFORMANCE

- **Scanner** Closed-loop, piezo-based with highly linear capacitive sensors
- **Vertical Scan Range** 150 μm standard; extended range up to 20 mm
- **Data Scan Rate** Up to 135 μm/sec; dependent upon sampling array
- **Step Height Accuracy** ≤0.75%
- **Step Height Repeatability** ≤0.1% @1σ
- **Max. Data Points** 307,200; dependent upon sampling array

SAMPLE SPECIFICATIONS

- **Material** Various; opaque and transparent surfaces; coated and uncoated; specular and nonspecular
- **Reflectivity** ~ 0.4% to 100%
- **Size (WxDxH)** Up to 300 mm wafers



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**Contact ZYGO today to arrange for a free analysis of your samples
and a CP7300 demonstration at a location near you!**

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