

Tropel® FlatMaster® Surface Form Analysis System

Fast and Precise Measurements of Ground, Lapped, Honed, Polished and Superfinished Components



The Tropel® FlatMaster® offers industry-leading performance for surface form measurements to precision component manufacturers. Our non-contact optical technique analyzes the entire surface in seconds. The FlatMaster offers one nanometer resolution and a standard accuracy of 50 nanometers (2.0 μinch). It rapidly and accurately measures flatness, line profile, radius and other surface parameters from a variety of surfaces.

A FlatMaster on your shop floor or in your QC lab will significantly improve your process, yield and productivity with full-form measurements with unprecedented speed and throughput.

Powerful

- High resolution and accuracy
- Large dynamic range capability
- Fast measurements - complete surface analysis in seconds!

Flexible

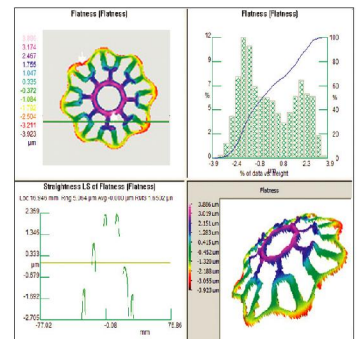
- Measures many different material types
- Measures a variety of surface finishes

Easy to Use

- Place part and measure, little or no fixturing required
- Intuitive recipe-driven operation
- Suitable for production, quality control, or laboratory environments

Key Benefits

- Improves product quality, manufacturing yield, and throughput
- Lowers manufacturing costs
- Reduces time-to-market
- Increases customer satisfaction



The FlatMaster® series offers the capability to measure parts ranging from 5 mm to 200 mm. Each system includes a laser-based grazing incidence interferometer and a Windows® based PC with Corning Tropel's TMS software.

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FlatMaster® System Specifications

Measurement Method

Grazing Incidence Interferometry

Performance

Accuracy ¹	50 nm (2.0 μ")
Repeatability ¹	15 nm (0.6 μ") (1 sigma)
Resolution	5 nm (0.2 μ")
Dynamic Range ²	
FlatMaster 40	> 50 μm
FlatMaster 100	> 100 μm
FlatMaster 200	> 100 μm
Part Size Range ³	
FlatMaster 40	5 mm - 40 mm
FlatMaster 100	25 mm - 100 mm
FlatMaster 200	25 mm - 200 mm
Measurement Data Points	Up to 230,000 points per measurement
Measurement Time	5 seconds typical
Measurement Datums	Least squares, minimum zone
Standard Measurements	Flatness, line profile, surface profile, spherical radius
Filtering	ISO standard included
Data Analysis	3-D, topographic, yield, distribution, and x, y, circular and radial slice, flat, spherical, conical fit data, local flatness analysis, slope, surface profile

Materials and Surfaces

Materials	Metals, polymers, ceramics, glass and other materials
Surface Finishes	Ground, lapped, honed, polished, and super-finished
Reflectivity	Minimum of 10% at 85° incidence angle
Maximum Roughness	1.0 μm (40 μ") Ra (typical at 4 μm/fringe)

Data Management

Data Storage	80 Gb Hard Drive
Communications	10 / 100-BASE-T Ethernet
Operating System	Windows® XP

Weights and Dimensions

FlatMaster 40	103 cm x 57 cm x 26 cm, 60 kg (41 in x 22 in x 10 in, 132 lb)
FlatMaster 100 / FlatMaster 200	76 cm x 65 cm x 34 cm, 75 kg (30 in x 26 in x 13 in, 165 lb)

Options

Electronics console
Extended Range (XR) Option: FlatMaster 100 & FlatMaster 200, increased dynamic range over standard configuration
Extended Range & Accuracy (XRA) Option: FlatMaster 100 & FlatMaster 200, increased dynamic range and increased accuracy over standard configuration

Describes typical specifications at 2 μm/fringe sensitivity and subject to change based on specific customer requirements.

¹ Refers to instrument limited accuracy as measured on NIST traceable artifact. See FlatMaster Acceptance Procedure for further details.

² Typical, limited by surface slope

³ Smaller parts may be measured at different performance characteristics. Contact Corning Tropol.

Corning Tropol reserves the right to change detailed specifications as may be required to improvements in the design. This product may be covered by one or more U.S. or international patents.

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For additional information about the FlatMaster® System or other Tropol® Metrology Instruments, please contact:

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