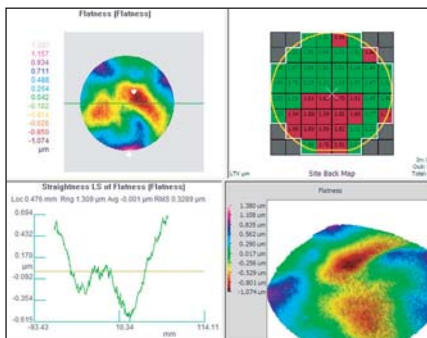
Tropel® FlatMaster® Wafer Wafer Form Analysis System

Fast and precise wafer flatness measurements

Corning Tropel Metrology Instruments

FlatMaster® Wafer systems use a wide range of easy-to-load wafer chucks to allow clamped or free-state measurements. Windows®-based software simultaneously tests wafers to multiple user-definable global and local site flatness parameters.



The continued demand for higher density chips with smaller critical dimensions leads to tighter substrate form tolerances both on the global scale and on the individual die-site scale. We have optimized our patented grazing-incidence interferometry technology for the highest precision wafer flatness measurements. The Tropel® FlatMaster® Wafer Analysis System is ideal for processes development, particularly for new, non-silicon materials. From wire saw to finished wafer, you can quickly and accurately measure wafer flatness to verify that you or your customers have the ability to achieve the required device yields.

The FlatMaster Wafer system measures flatness, taper, thickness variation, thickness, stress, bow, warp, SORI, and many other parameters including stepper simulation of any wafer surface. Industry standard chucks are easy to load and are non-damaging to wafers. Combined with our state of the art optical fabrication techniques and Tropel's renowned phase-shifting analysis software, the FlatMaster Wafer offers full form surface information with 50 nanometer accuracy in seconds.

Specifications	FlatMaster® 100 & 200 Wafer
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]	> 100 μm
Part Range	50 mm - 200 mm
Measured Data Points	≤ 230,000 per measurement
Measurement Time	5 seconds (typical)
Measurement Datums	Front referenced, back referenced, clamped and local site
Standard Measurements	Bow, warp, SORI, TTV, LTV, LDOF, thickness, stress and many more
Filtering	ISO standard included
Data Analysis	3-D, contour plot, slice plots: x, y, circumferential and radial, histogram plots, wafer site analysis plots

Materials and Surfaces	
Materials	Silicon, silicon carbide, gallium arsenide, gallium nitride, gallium phosphide, indium phosphide, sapphire, quartz, germanium, lithium niobate and many others
Surfaces	Wire sawn, ground, lapped, polished, etched

Data Management	
Data Storage	40 GB Hard Drive
Communications	10 / 100-BaseT Ethernet, RS-232c port
Hard Copy	High speed color inkjet printer
Operating System	Windows® 2000

Weights and Dimensions	
Interferometer Housing	76 cm x 65 cm x 34 cm, 75 kg (30 in x 26 in x 13 in, 165 lb)

Options

- Electronics console or computer cart
- Extended Range (XR) Option: Allows measurements at greater dynamic range
- Extended Accuracy (XA) Option: Allows measurements at increased accuracy
- Extended Range & Accuracy (XRA) Option: Includes XR and XA options
- TTV measurement for optically transparent substrates
- Vacuum chuck (ring or pin-style) for notched or flat wafers - standard and custom sizes available
- Bow chucks for free-state measurement - standard and custom sizes available

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 Tropel Acceptance Procedure for further details.

[2] Typical, limited by surface slope.

We reserve the right to change the detail specifications as may be required to permit improvements in the design.

This product may be covered by one or more U.S. or international patents.

TROPEL®
METROLOGY INSTRUMENTS

For more information, please contact Corning Tropel Corporation:

Phone: 585.388.3612
Fax 585.388.3414
Email: metrology_info@corning.com

Corning Tropel Corporation
60 O'Connor Road
Fairport, New York 14450 USA

www.tropel.com