

Tropel® FlatMaster® 1400

Large LCD Image Mask Measurement System

Fast and precise measurements of ground, lapped, polished, and coated image masks



Corning Tropel
Metrology
Instruments

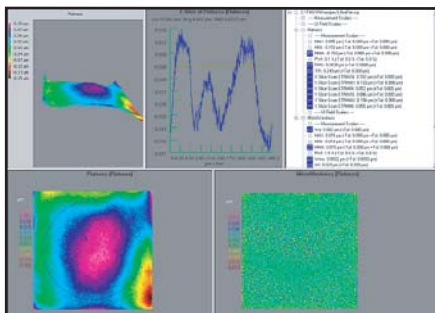


The FlatMaster® 1400 offers rapid, non-contact measurement of large LCD image masks up to 1220 mm x 1400 mm. Each system comes with an interferometer, a dual axis motion stage and a Windows®-based PC with Corning Tropel TMS software.

As part of its successful line of optical, non-contact, metrology instruments, Corning Tropel is proud to introduce the Tropel FlatMaster® 1400. Corning Tropel is one of the industry leaders in providing flatness measurement technology and has now expanded its capabilities to include measuring large LCD Image Masks. The FlatMaster® 1400, which utilizes Corning Tropel's grazing incidence interferometry technology, provides flatness measurements of LCD Image Masks with superior repeatability and accuracy to meet next generation flatness requirements.

Key Benefits

- *Industry leading measurement repeatability and accuracy capabilities*
- *Measures flatness of a wide range of surface finishes*
- *Designed to meet current and emerging measurement specifications*
- *Customizable to fit individual customer requirements*



Application

- *LCD Image Mask flatness measurement - polished and unpolished*

Specifications	FlatMaster® 1400
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Measurement Method	Grazing-Incidence Interferometry
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Performance

Accuracy ¹	± 1.0 µm
Repeatability ¹	± 0.2 µm
Resolution	0.005 µm
Dynamic Range	> 100 µm
Measured Data Points ²	> 230,000 per section
Data Density	> 600 points per cm ²
Measurement Time ³	35 seconds per section including step, align, measure; plus 9 minutes of handling time (30 minute for 800 mm x 920 mm)
Measurement Datums	Least squares, minimum zone planes
Standard Measurements	Flatness, line profile, surface profile, spherical radius, thickness, others
Filtering	ISO standard included
Data Analysis	3-D, topographic, yield, distribution, and x,y, circular and radial slice, flat, spherical, conical fit, local flatness, slope, surface profile, polyfit

Options

LCD Substrate Size	1220 mm x 1400 mm to 500 mm x 750 mm, other sizes available upon request, consult sales representative
LCD Substrate Thickness	8 mm - 14 mm, other sizes available upon request, please consult sales representative
Thickness Measurements ⁴	TTV, Thickness

Materials and Surfaces

Materials	Glass, metals, ceramics, polymers
Surfaces	Ground, lapped, honed, polished, superfinished
Reflectivity	Minimum of 10% at 85° incidence angle
Maximum Roughness	320 grit or 1.0 µm (40 µ") Ra

Data Management

Data Storage	80 GB Hard Drive
Communications	10 / 100-BaseT Ethernet
Operating System	Windows® XP

Weights and Dimensions

Interferometer*	280 cm x 282 cm* x 254 cm, 6360 kg (110 in x 111 in x 100 in, 14000 lb)
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* part handling system open

¹ Typically, accuracy and repeatability are specified as a percentage of part tolerance (10% for accuracy, 2% for repeatability); for example, if the flatness tolerance on a finished 850 mm x 1200 mm LCD image mask is 20 micrometers, then the accuracy specification is +/- 2 micrometers, and the repeatability specification is 0.4 micrometers (1 σ). If the measured part is not within the specified flatness tolerance, then the actual flatness TIR value of the part is used to calculate accuracy. Measurement accuracy and repeatability are independent of mechanical stage errors of stage set-up.

² Each section is 200 mm x 200 mm. Total number of data points is determined by multiplying 230,000 per section by the number of overlapping sections required to cover the entire panel.

³ Measurement time is independent of data density.

⁴ TTV and Thickness measurement capability is provided, subject to further discussion

For configurations and options not detailed in this document, please contact Corning Tropel Corporation. 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.



For more information, please contact Corning Tropel Corporation:

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