Tropel® FlatMaster® Surface Form Analysis System

Fast and Precise Measurement of Ground, Lapped, Honed, Polished and Super-finished 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 of the part in seconds, regardless of its size or complexity. The FlatMaster provides five nanometer resolution and a standard accuracy of 50 nm (2.0 µ”). It rapidly and accurately measures flatness, line profile, radius and other surface parameters on a variety of materials and surface finishes.

A FlatMaster on the shop floor or in the QC lab will significantly improve processes, yields and productivity via full-form measurements with unprecedented speed and throughput.

Key Benefits

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

Power

- High resolution and accuracy
- Large dynamic range
- Fast measurements -- complete surface analysis in seconds
- Excellent reproducibility results from operator to operator

Flexibility

- Measures a variety of material types
- Measures a wide range of surface finishes

Easy to Use

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

Issued Oct 2019
**Tropel® FlatMaster® System Specifications**

### Performance

<table>
<thead>
<tr>
<th>Part Size Range</th>
<th>FlatMaster 40</th>
<th>FlatMaster 100</th>
<th>FlatMaster 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>5 mm — 40 mm (0.2 in — 1.6 in)</td>
<td>25 mm — 100 mm (1.0 in — 4.0 in)</td>
<td>25 mm — 200 mm (1.0 in — 8.0 in)</td>
</tr>
<tr>
<td>Dynamic Range</td>
<td>&gt;50 µm</td>
<td>&gt;100 µm</td>
<td>&gt;100 µm</td>
</tr>
<tr>
<td>Measurement method</td>
<td>Grazing Incidence Interferometry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>50 nanometers (2.0 µinches)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>15 nanometers (0.6 µinches) (1 sigma)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>5 nanometers (0.2 µinches)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement time</td>
<td>5 seconds typical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measured data points</td>
<td>up to 230,000 per measurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement Datum</td>
<td>Least squares, minimum zone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filtering</td>
<td>ISO standard included</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Materials and Surfaces

- **Materials**: Metals, glass, polymers, ceramics, and many others
- **Surfaces**: Ground, lapped, polished, honed, super-finished and others
- **Reflectivity**: Minimum of 10% at 85° incidence angle
- **Maximum roughness**: 1.0 µm (40 µinches) Ra (typical at 4 µm/fringe)

### Environmental and Facility

- **Temperature**: 15 °C to 30°C (59 °F to 86 °F)
- **Rate of temperature change**: <2° C, with no more than 0.5°C per half hour period
- **Humidity**: 35% - 75% non-electrostatic and non-condensing
- **Power**: 100-240 VAC, 50/60 Hz, 4 Amp
- **Air/Vacuum**: n/a

**FlatMaster 40 System dimensions/weight**: 103 cm x 57 cm x 26 cm / 60 Kg (41 in x 22 in x 10 in / 132 lb)

**FlatMaster 100/200 System dimensions/weight**: 76 cm x 65 cm x 34 cm / 75 kg (30 in x 26 in x 13 in / 165 lb)

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1. Smaller parts may be measured at different performance characteristics.
2. Typical, limited by surface slope.
3. Refers to instrument limited accuracy as measured on NIST traceable artifact. See FlatMaster Acceptance Procedure for further details.

This product is covered by one or more U.S. patents.

All specifications are subject to change.

FlatMaster® is a registered trademark of Corning Incorporated.

For more information about the Tropel® FlatMaster product line, or any other of our Tropel® Metrology Instruments, please contact:
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