UltraSurf™
Non-Contact Metrology Systems

Specifications*

<table>
<thead>
<tr>
<th></th>
<th>UltraSurf 4X 300</th>
<th>UltraSurf 5X 400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travels</td>
<td>X - Axis Travel</td>
<td>X - Axis Travel</td>
</tr>
<tr>
<td></td>
<td>Y - Axis Travel</td>
<td>Y - Axis Travel</td>
</tr>
<tr>
<td></td>
<td>Z - Axis Travel</td>
<td>Z - Axis Travel</td>
</tr>
<tr>
<td></td>
<td>B - Axis Travel</td>
<td>C - Axis Travel</td>
</tr>
<tr>
<td>Resolution</td>
<td>Linear: 5 nm</td>
<td>Linear: 5 nm</td>
</tr>
<tr>
<td></td>
<td>Rotary: .05 arc-sec</td>
<td>Rotary: .05 arc-sec</td>
</tr>
<tr>
<td>Maximum Velocity</td>
<td>Linear: Up to 20 mm/sec</td>
<td>Linear: Up to 20 mm/sec</td>
</tr>
<tr>
<td></td>
<td>Rotary: 66 RPM</td>
<td>Rotary: 22 RPM</td>
</tr>
<tr>
<td></td>
<td>Max Scanning Speed**</td>
<td>Max Scanning Speed**</td>
</tr>
</tbody>
</table>

* Specifications subject to change. Contact OptiPro for the latest specifications.
** 1,000 Hz with appropriate probe configuration.

Unparalleled Dedication to Customer Success

Sales
Developing Partnerships

Service
Reinforcing Relationships

Support
Ensuring Excellence

www.optipro.com/the-optipro-difference

OptiPro Systems
6368 Dean Parkway
Ontario, NY 14519 USA
585.265.0160
sales@optipro.com
www.optipro.com

OptiPro Systems
6368 Dean Parkway
Ontario, NY 14519 USA
585.265.0160
sales@optipro.com
www.optipro.com

UltraSurf 4X 300
UltraSurf 5X 400

Innovation Machines for Precision Optics and Technical Ceramics

CNC Optical Grinding Machines
Ultrasonic Machining Centers
Optical Centering Machines
CNC Spherical Polishing Machines
CNC Asphere/Freeform Polishing Machines
Planetary Polishing Machines
Non-Contact Metrology Solutions
A metrology solution for today’s requirements.

Advancements in optical manufacturing technology have motivated optical designers to implement steep aspheres, high departure surfaces, and freeform optics into their systems. Expand your metrology capabilities and take on more challenging jobs with confidence with the UltraSurf non-contact metrology system. UltraSurf is a fast, precise, and reliable solution to qualify the form and figure of ANY asphere up to 400mm in diameter, as well as other complex optical components such as acylinders, freeforms and more. With multiple non-contact probes available, companies can safely measure radius, surface form, center thickness and wedge - all in one measurement.

Intelligent Software Technology

UltraSurf Software: User-friendly yet highly capable

- Many options for defining the surface of the optic to be measured
- Easy to setup non-rotationally symmetric (freeform) optics with on-machine alignment by measuring datums
- Optimized data acquisition for fast 2D and 3D measurements
- Full control of analysis process and ability to export data to several file formats

High Performance Machines

Engineered for precision and repeatability

High Precision Non-Contact Metrology:
- 4 or 5 axis bearing system
- Y, Z & C axis move the part
- 3 & 6 axes move the probe
- High resolution feedback

Reliability:
- Rigid wall-enclosure reduces entry from outside elements

High Speed:
- Innovative software with optimized data acquisition for fast 2D and 3D measurements

Typical Asphere Measurement Times

<table>
<thead>
<tr>
<th>Ø50 mm</th>
<th>Ø100 mm</th>
<th>Ø150 mm</th>
<th>Ø200 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 mm sag</td>
<td>10 mm sag</td>
<td>15 mm sag</td>
<td>20 mm sag</td>
</tr>
<tr>
<td>245,000 data points</td>
<td>600,000 data points</td>
<td>1,150,000 data points</td>
<td>1,300,000 data points</td>
</tr>
</tbody>
</table>

Ideal for a wide range of applications:

- Complex geometries:
  - Steep aspheres (1)
  - Axicons (2)
  - Acylinders
  - Freeform optics

- A variety of materials:
  - Optical glasses
  - Technical ceramics
  - Crystals
  - Metals (3)

- Different surfaces:
  - Ground surfaces
  - Polished Surfaces
  - Diamond-turned surfaces (4)
  - High or low reflectivity

Capabilities

- UltraSurf 4X 300: 4-axis non-contact metrology
  - Standard Features:
    - Optical pen for measuring single surface to 0.25 um PV
    - UltraSurf Software for analyzing measurements
  - Optional Features:
    - Optical pen for dual-surface scanning

- UltraSurf 5X 400: 5-axis non-contact metrology
  - Standard Features:
    - Optical pen for measuring single surface to 0.25 um PV
    - UltraSurf Software for analyzing measurements
  - Optional Features:
    - Optical pen for dual-surface scanning
    - Extended Z-Axis Travel to 600mm
UltraSurf™ Non-Contact Metrology Systems

**UltraSurf 4X 300**
- Capable of measuring radius, surface form, center thickness, and wedge of rotationally symmetric optics such as spheres, aspheres, hemispheres, hyper-hemispheres, and paraboloids.

**UltraSurf 5X 400**
- In addition to having all the capabilities of the UltraSurf 4X 300, efficiently measure freeform surfaces with 5 axes of computer-controlled motion.

### Specifications*

<table>
<thead>
<tr>
<th></th>
<th>UltraSurf 4X 300</th>
<th>UltraSurf 5X 400</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Travels</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X - Axis Travel</td>
<td>300 mm (11.8&quot;)</td>
<td>400 mm (15.7&quot;)</td>
</tr>
<tr>
<td>Y - Axis Travel</td>
<td>6 mm (0.24&quot;)</td>
<td>200 mm (7.87&quot;)</td>
</tr>
<tr>
<td>Z - Axis Travel</td>
<td>140 mm (5.5&quot;)</td>
<td>200 mm (7.87&quot;)</td>
</tr>
<tr>
<td></td>
<td>+/± 120°</td>
<td>600 mm (optional)</td>
</tr>
<tr>
<td></td>
<td>360° Continuous</td>
<td>360° Continuous</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td>5 nm</td>
<td>5 nm</td>
</tr>
<tr>
<td></td>
<td>0.05 arc-sec</td>
<td>0.05 arc-sec</td>
</tr>
<tr>
<td><strong>Maximum Velocity</strong></td>
<td>Up to 20 mm/sec</td>
<td>Up to 20 mm/sec</td>
</tr>
<tr>
<td>Linear</td>
<td>66 RPM</td>
<td>22 RPM</td>
</tr>
<tr>
<td></td>
<td>1,000 HP</td>
<td>1,000 Hz</td>
</tr>
<tr>
<td>Rotary</td>
<td></td>
<td><strong>Max Scanning Speed</strong>**</td>
</tr>
</tbody>
</table>

- Specifications subject to change. Contact OptiPro for the latest specifications.
- **Max Scanning Speed** with appropriate probe configuration.

---

Unparalleled Dedication to Customer Success

**Sales**
- Developing Partnerships

**Service**
- Reinforcing Relationships

**Support**
- Ensuring Excellence

www.optipro.com/the-optipro-difference

Unparalleled Dedication to Customer Success

OptiPro Systems
6368 Dean Parkway
Ontario, NY 14519 USA

585.265.0160
sales@optipro.com
www.optipro.com

---

Innovative Machines for Precision Optics and Technical Ceramics

- CNC Optical Grinding Machines
- Ultrasonic Machining Centers
- Optical Centering Machines
- CNC Spherical Polishing Machines
- CNC Asphere/Freeform Polishing Machines
- Planetary Polishing Machines
- Non-Contact Metrology Solutions