LAUE-HT
Single Crystal Orientation Measurement Systems

TECHNOLOGY THAT DELIVERS ACCURATE RESULTS™

For High-Throughput Production Environments

PROTO
LAUE-HT OVERVIEW

High-throughput single crystal orientation measurements. Utilizing the Laue technique, measurements can be performed in as little as a few seconds. Excellent for nickel-based alloy single crystal orientation turbine blade inspection.

ANGLE CAPABILITIES

The LAUE-HT is capable of measuring both US and UK primary angles.
- US angles: gamma, delta, alpha, beta
- UK angles: gamma, delta, theta, alpha, kappa, rho, omega
- R-value grain misorientation measurement

WE HAVE A SOLUTION FOR YOUR PRODUCTION ENVIRONMENT

LAUE-HT STANDARD
For smaller components such as aerospace turbine blades.

LAUE-HT VERTICAL
Ideal for large aerospace components.

LAUE-HT HIGH CAPACITY
Available for large, heavy power generation components.

AVAILABLE LAUE MEASUREMENT GEOMETRIES

60º SIDE-REFLECTION
- optimal balance between sensitivity and accessibility

90º SIDE-REFLECTION
- improved sensitivity with some reduction in accessibility

BACK-REFLECTION
- reduced sensitivity with highest part accessibility for large parts and R-values

AEROSPACE • POWER GENERATION • TURBINE BLADES
SINGLE CRYSTALS • WAFERS • INGOTS • DIAMONDS
XRDWIN LAUE SOFTWARE

At the heart of the LAUE-HT system is our powerful yet user-friendly XRDWIN software, which includes a comprehensive set of controls for data collection, and analysis of LAUE patterns. This modular program can be customized for each customer’s workflow.

FEATURES:
- 001, 011 & 111 overlays for manual matching of Laue patterns
- Editable custom hkl overlays
- Space mouse control for rotation of overlay
- Live Image mode for real-time viewing of Laue patterns
- Orientation detection limit ±0.1º
- R-value calculations available using: REL cos (R-2cos), REL rms (R-2RMS), DIFF cos (R-3cos), DIFF rms (R-3RMS), Single-angle cos (R-1cos)
- Off orientation mode with both nearest 001 reference option and a local reference option
- Option to do set angle and disposition requirements within the software for each type of casting
- Automated indexing and computerized matching of patterns
- Multiple user level access control for program configuration and preferences

FEATURES & OPTIONS

VIDEO CAMERA
Assists operator in viewing individual grains while measuring R values.

LASER DISTANCE SENSOR
Digital read-out of sample to detector distance.

SAMPLE POSITIONING
Automated X and Y axes

LASER DISTANCE SENSOR
Digital read-out of sample to detector distance.

JOYSTICK
Control of XY Slides

TECHNOLOGY THAT DELIVERS ACCURATE RESULTS
**STANDARD**

- Horizontal sliding door
- Can measure parts up to 500 mm
- Recommended for smaller aerospace turbine blades & parts

<table>
<thead>
<tr>
<th>Overall Size (W x D x H)</th>
<th>2030 mm x 965 mm x 2055 mm (80 x 38 x 81 in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabinet Size (W x D x H)</td>
<td>1370 mm x 913 mm x 1049 mm (54 x 36 x 41 in)</td>
</tr>
<tr>
<td>Load Capacity</td>
<td>25 kg (55 lbs)</td>
</tr>
<tr>
<td>Maximum Sample Length</td>
<td>500 mm (20 in)</td>
</tr>
<tr>
<td>Camera Option</td>
<td>side-reflection</td>
</tr>
<tr>
<td>Motorized Sample Stage</td>
<td>Z-axis (Up/Down) 175 mm (7 in), Y-axis (In/Out) 200 mm (8 in) Travel</td>
</tr>
<tr>
<td>Manual Sample Positioning</td>
<td>X-axis focusing (Left/Right) 200 mm (8 in)</td>
</tr>
</tbody>
</table>

**VERTICAL**

- Vertical sliding door
- Can measure parts up to 860 mm
- Recommended for large turbine blades & parts

<table>
<thead>
<tr>
<th>Overall Size (W x D x H)</th>
<th>1675 mm x 1220 mm x 3225 mm (66 x 48 x 127 in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabinet Size (W x D x H)</td>
<td>1450 mm x 1090 mm x 1090 mm (57 x 43 x 43 in)</td>
</tr>
<tr>
<td>Load Capacity</td>
<td>25 kg (55 lbs)</td>
</tr>
<tr>
<td>Maximum Sample Length</td>
<td>860 mm (34 in)</td>
</tr>
<tr>
<td>Camera Option</td>
<td>side-reflection</td>
</tr>
<tr>
<td>Motorized Sample Stage</td>
<td>Z-axis (Up/Down) 175 mm (7 in), Y-axis (In/Out) 200 mm (8 in) Travel</td>
</tr>
<tr>
<td>Manual Sample Positioning</td>
<td>X-axis focusing (Left/Right) 200 mm (8 in)</td>
</tr>
</tbody>
</table>

**LARGE CAPACITY**

- Vertical sliding door
- Heavy duty XYZ sample positioning stages for large power generation blades and parts
- Sample transfer cart
- Back-reflection camera option

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<th>Overall Size (W x D x H)</th>
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</thead>
<tbody>
<tr>
<td>Cabinet Size (W x D x H)</td>
<td>1450 mm x 1090 mm x 1090 mm (57 x 43 x 43 in)</td>
</tr>
<tr>
<td>Load Capacity</td>
<td>100 kg (220 lbs)</td>
</tr>
<tr>
<td>Maximum Sample Length</td>
<td>860 mm (34 in)</td>
</tr>
<tr>
<td>Camera Type</td>
<td>side-reflection or back-reflection</td>
</tr>
<tr>
<td>Motorized Sample Stage</td>
<td>Z-axis (Up/Down) 305 mm (12 in), Y-axis (In/Out) 355 mm (14 in)</td>
</tr>
<tr>
<td>Manual Sample Positioning</td>
<td>X-axis focusing (Left/Right) 355 mm (14 in), Y-axis (In/Out) 508 mm (20 in)</td>
</tr>
</tbody>
</table>
**Main Offices**

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  protoeurope@protoxrd.com

**Power Requirements**

- **200-240V, 24 Amps, 50/60Hz, Single Phase**
- **X-Ray Tube**
  Tungsten (W)
- **X-Ray Power Supply**
  3000 W (60 kV / 50 mA)
- **Geometry**
  side-reflection or back-reflection
- **X-ray Beam Apertures**
  0.5, 0.75, 1.0, 1.25, 1.5, 2.0 mm
- **Computer**
  desktop computer included
- **Software**
  PROTO XRDWIN Laue
- **System Compliance**
  ANSI N43.2, CE, ASTM E82

**Notes:** PROTO Manufacturing engages in continuous research and development, therefore specifications in this publication are subject to change. Please call for details. Various items and methods in this brochure are covered by patents or patents pending.