High-end cameras
Ruler E600 HB, Gigabit Ethernet, Ruler, Ruler E600

Ruler-E2221
High-end cameras
Ruler E600 HB, Gigabit Ethernet, Ruler, Ruler E600

Model Name  > Ruler-E2221
Part No.  > 1050303

At a glance
• Factory calibrated 3D in millimeters at full production speed
• High accuracy 3D for measurement widths from 100 mm up to 1.5 m
• Capture 3D, grayscale, and scatter at the same time
• Easy to integrate without need for external lights
• Rugged housing for tough environments and operation down to -30 °C
• Remote operation over long cable distances with Gigabit Ethernet

Your benefits
• High-speed measurement allows you to increase production throughput and still ensure product quality
• Accurate size and position measurement in 3D, regardless of an object's height or color, creating reliable solutions
• Simultaneously capturing 3D, scatter, and grayscale, allows for more reliable quality control and inspection
• Factory calibrated 3D with built-in lighting instantly provides results in millimeters, which makes integration easy
• Designed for tough industrial environments to ensure a long and problem-free life time

Features
Task: Inspection, Measuring, Positioning
Description: Ruler E600 HB - 3B Laser, Heating elements, up to 10 k profiles/second. Gigabit Ethernet interface, 1,536 px x 512 px.
Technology: 3D LineScan
Example field of view (H x W): 250 mm x 600 mm
Field of view width: 450 mm ... 820 mm
Working distance: 415 mm ... 865 mm
Maximum height range: 450 mm
Data synchronization: Encoder triggered
External trigger
Free running
Grayscale measurements: ✅
Scatter measurement: -
Spectral range: Ca. 630 nm ... 690 nm
Heating element: -
Light source: Visible red light (laser, 660 nm, ± 15 nm)
### Laser class:
3B (IEC 60825-1 : 2008-01)

### Factory calibrated:
✓

### Performance

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser class</td>
<td>3B (IEC 60825-1 : 2008-01)</td>
</tr>
<tr>
<td>CMOS</td>
<td></td>
</tr>
<tr>
<td>Maximum performance</td>
<td>10,000 3D profiles/s</td>
</tr>
<tr>
<td>Image sensor</td>
<td>CMOS</td>
</tr>
<tr>
<td>Sensor resolution</td>
<td>1,536 px x 512 px</td>
</tr>
<tr>
<td>3D profile resolution</td>
<td>1,536 px</td>
</tr>
<tr>
<td>Typical height resolution</td>
<td>0.2 mm</td>
</tr>
<tr>
<td>Gray line resolution</td>
<td>1,536 px</td>
</tr>
<tr>
<td>Typical height resolution</td>
<td>0.2 mm</td>
</tr>
</tbody>
</table>

### Interfaces

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration software</td>
<td>Ranger Studio</td>
</tr>
<tr>
<td>Communication interfaces</td>
<td>Gigabit Ethernet</td>
</tr>
<tr>
<td>Operating system</td>
<td>Windows 7, Windows XP Pro</td>
</tr>
<tr>
<td>Programming interface</td>
<td>iCon API</td>
</tr>
<tr>
<td>Digital inputs</td>
<td>3 x HIGH = 10 V ... 28.8 V</td>
</tr>
<tr>
<td>Digital outputs</td>
<td>2 x B-type, &lt; 100 mA in total</td>
</tr>
<tr>
<td>Encoder interface</td>
<td>RS-422</td>
</tr>
<tr>
<td>Maximum encoder frequency</td>
<td>2 MHz</td>
</tr>
</tbody>
</table>

### Mechanics/electronics

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectors</td>
<td>Harting Push Pull (Ethernet)</td>
</tr>
<tr>
<td>M12, 4-pin male connector (heating)</td>
<td>M12, 8-pin socket (encoder)</td>
</tr>
<tr>
<td>M12, 8-pin male connector (power I/O)</td>
<td></td>
</tr>
<tr>
<td>Connector material</td>
<td>Ethernet: thermoplast/anodized aluminum, M12: nickel-plated brass</td>
</tr>
<tr>
<td>Power consumption</td>
<td>7 W</td>
</tr>
<tr>
<td>Current consumption</td>
<td>&lt; 1 A</td>
</tr>
<tr>
<td>Ripple</td>
<td>&lt; 5 Vpp</td>
</tr>
<tr>
<td>Enclosure rating</td>
<td>IP 65</td>
</tr>
<tr>
<td>Housing material</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Housing color</td>
<td>Gray, varnished</td>
</tr>
<tr>
<td>Window material</td>
<td>Float glass, AR-coated</td>
</tr>
<tr>
<td>Weight</td>
<td>7 kg</td>
</tr>
<tr>
<td>Dimensions (L x W x H):</td>
<td>420 mm x 107 mm x 163 mm</td>
</tr>
</tbody>
</table>

### Ambient data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shock load</td>
<td>15 g, 3 x 6 directions</td>
</tr>
<tr>
<td>Vibration load</td>
<td>5 g, 58 Hz ... 150 Hz</td>
</tr>
<tr>
<td>Ambient operating temperature</td>
<td>-30 °C ... +40 °C 1)</td>
</tr>
<tr>
<td>Ambient storage temperature</td>
<td>-30 °C ... +70 °C 2)</td>
</tr>
</tbody>
</table>

1) Non-condensing
Dimensional drawing

[Diagram showing various dimensions and parts labeled as:
1. Image sensor
2. Laser unit
3. Fastening threads (M8 x 15 length)]

Measuring details

[Diagram showing measuring details with axes labeled as Width, Length, and Height with a top view and a 3D view showing the measurement process]
Connection type

Connection diagram, Heating connection

1. Power
2. GND
3. GND
4. Power
5. Out A

brn
wht
blu
blck
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