Capture 3D point clouds in-line using the ZEISS AIMax cloud

ZEISS AIMax cloud

The ZEISS AIMax cloud optical 3D sensor for generating point clouds is the new benchmark in robot-based 3D in-line technology for metalworking and car body construction. This sensor enables the high-precision analysis of complex features in a fraction of a second – ensuring 100% measurement in short cycle times.

ZEISS AIMax cloud benefits

- Dense point clouds created quickly using structured illumination
- DLP® technology optimized for in-line use
- Intuitive and fast setup of feature extraction
- Greater robustness as compared to standard image processing through feature extraction in the point cloud
- Measurability and testability of even smallest features thanks to high 3D resolution
- Highly compact sensor design for optimal accessibility
- Problem-free measurements on sheet metal and paint
- Simultaneous analysis of multiple features in one sensor position

ZEISS AIMax cloud applications

- Inspection of assembly and welding processes
- In-line measuring technology for car body construction, metalworking and structural parts
- Attribute feature recognition for data matrix codes, availability checks and type differentiation
- Robot-based coordinate measuring technology
- Gap-and-flush measurement in body shell work and final assembly
- Measurements of features previously difficult to analyze (e.g. nut behind metal, rivets)
- Measurements of characteristic design lines

The robot-based sensor can be used for 3D metrology in-line and at-line and in metalwork and car body construction.
One benefit of dense point clouds is that multiple features, such as bending edges, rivets, surfaces, and T pins, can be measured with just a single capture.

Examples: features
(1) bending edge
(2) rivet
(3) surface point
(4) T pin

The feature to be measured is selected in the 2D image. An algorithm generates the 3D point cloud. The measuring result is visualized immediately.

Example: bolt
Example: a nut under sheet metal
**ZEISS AI Max**

**Technical Data**

<table>
<thead>
<tr>
<th>Camera</th>
<th>Digital (GigE) camera technology (monochrome)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera resolution</td>
<td>2048 pixels x 2048 pixels</td>
</tr>
<tr>
<td>Illumination</td>
<td>DLP® projector in the range of 450 nm to 620 nm</td>
</tr>
<tr>
<td>Measuring distance</td>
<td>165 mm</td>
</tr>
<tr>
<td>Measuring range</td>
<td>80 mm x 80 mm x 40 mm</td>
</tr>
<tr>
<td>Dimensions</td>
<td>96 mm x 168 mm x 145 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>3 kg</td>
</tr>
<tr>
<td>Measuring time</td>
<td>&lt; 0.5 seconds/measuring position for typical features</td>
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</tbody>
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