More Precision

boreCONTROL Sensor // Non-contact inspection of bore holes
Non-contact inspection of bore holes

boreCONTROL Sensor

- Non-contact measurement
- Measurement of a wide variety of materials, also sensitive surfaces
- High precision and detailed statements about dimensions and quality of interior walls
- Short measurement cycles due to high sampling rate
- Large measuring ranges
- Fast setup

Non-contact measurement of diameter in cylindrical geometries
The boreCONTROL sensor is designed for non-contact diameter measurement and surface assessment. The sensor is easy to set up and configure, providing high precision statements about the quality of bore holes or cavities in the diameter range from 4mm up to 16mm.

Measuring procedure
The underlying confocal chromatic measuring principle offers the following advantages:
- Non-contact measurement with small light spot
- High resolution in radial & axial direction
- High dynamics (sampling rate up to 25kHz)
- Applicable for most diverse materials

Applications
- Measurement of rivet holes in aircraft construction
- Surface assessment & defect detection
- For numerous applications in the automotive industry, aircraft industry, medical engineering and in machine building

Diameter  Steps  Cavity
### Measurement device

<table>
<thead>
<tr>
<th></th>
<th>boreCONTROL Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power supply</strong></td>
<td>24VDC ±15%</td>
</tr>
<tr>
<td><strong>Accuracy of rotation unit</strong></td>
<td>±0.04°</td>
</tr>
<tr>
<td><strong>Temperature range</strong></td>
<td>10°C ... 40°C</td>
</tr>
<tr>
<td><strong>Rotation frequency</strong></td>
<td>0.1Hz ... 10Hz</td>
</tr>
</tbody>
</table>

### Sensor lance

<table>
<thead>
<tr>
<th>Sensor lance</th>
<th>BCS2412-4/10</th>
<th>BCS2412-8/12.8</th>
<th>BCS2413-10/16</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurable diameters</strong></td>
<td>4 - 10mm</td>
<td>8 - 12.8mm</td>
<td>10 - 16mm</td>
</tr>
<tr>
<td><strong>Sampling rate</strong></td>
<td>max. 25kHz</td>
<td>max. 25kHz</td>
<td>max. 25kHz</td>
</tr>
<tr>
<td><strong>Measurement spot diameter</strong></td>
<td>approx. 40µm</td>
<td>approx. 30µm</td>
<td>approx. 30µm</td>
</tr>
<tr>
<td><strong>Dynamic repeatability</strong></td>
<td>± 1µm</td>
<td>± 1µm</td>
<td>± 1µm</td>
</tr>
<tr>
<td><strong>Linearity Ø</strong></td>
<td>± 5µm</td>
<td>± 5µm</td>
<td>± 5µm</td>
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</table>

1) In the midrange  
2) Specified accuracy to the following general conditions: min. sampling rate 1kHz; 60 rotations (repetitions) within 1 min; temperature drift: <1K/h; calibration ring (DIN 2250C); accuracy of center position ±50µm; As the accuracy varies with different surfaces and their properties, we recommend you contact us directly. We will be pleased to check the technical feasibility of your measurement task.
System Components

The boreCONTROL sensor consists of a rotating unit with exchangeable sensor lance, motor controller and sensor controller. The rotary drive is operated by the motor controller. The sensor controller serves for set-up and signal processing. Via the Ethernet interface of the controller, boreCONTROL provides a data package with distance, angle and intensity figures. For customer software development, a SDK is included.

<table>
<thead>
<tr>
<th>Parameter set up and signal processing</th>
<th>Controls the rotating unit</th>
<th>Rotates the sensor lance in the interior wall</th>
<th>Detects the geometry of an interior wall Available for different diameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data output via Ethernet</td>
<td>Provides the sensor controller with angle information</td>
<td></td>
<td></td>
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</table>

**Software:**

boreCONTROL SDK  
Software Development Kit for customer software integration (included in scope of supply)

**Accessories:**

- **C2400/PT-x**  
  Optical-fiber cable (3m, 5m, 10m, customer-specific length up to 25m; optionally suitable for use with robots)

- **PC2410-x**  
  Power supply and signal cable (3m, 5m, 10m, customer-specific length up to 25m, optionally suitable for use with robots)

- **SC2410-0.5**  
  Synchronization cable (0.5m)

- **One-Click-Cleaner**  
  Cleans the optical connections

**Optional accessories:**

- **BCS2412-4/10 Dummy sensor**  
  For customer simulation of z movement during machine or robot setup

- **BCS2412-8/12.8 Dummy sensor**  
  For customer simulation of z movement during machine or robot setup

- **BCS2413-10/16 Dummy sensor**  
  For customer simulation of z movement during machine or robot setup

- **MA2400-45**  
  Mounting adapter for rotating unit

- **Y adapter cable for encoder**  
  Cable for encoder signal input of customer-specific linear axis (z movement of sensor) into the IFC2461 controller

- **PS2020**  
  Power supply 24V / 2.5A