More Precision

induSENSOR // Linear inductive displacement sensors
The new MSC7401 controller is designed to be operated with LVDT and LDR measuring gauges and displacement sensors. Due to its robust aluminum housing protected to IP67, this single-channel controller is predestined for industrial measurement tasks.

A large variety of compatible, inductive displacement sensors and gauges from Micro-Epsilon combined with an optimized price/performance ratio opens up numerous fields of applications in automation technology and machine building. The controller is easily set up using buttons or software.

Exemplary configuration
MSC7401 with DTA-5G8-3-CA gauge:

<table>
<thead>
<tr>
<th>Technical Data</th>
<th>Channel with DTA-5G8-3-CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>± 5 mm</td>
</tr>
<tr>
<td>Linearity</td>
<td>30 µm</td>
</tr>
<tr>
<td>Resolution</td>
<td>~1.2 µm</td>
</tr>
<tr>
<td>Output</td>
<td>analog</td>
</tr>
</tbody>
</table>
**Model** | MSC7401 Miniature sensor controller
---|---
**Power supply** | 5 V \(^{1}\) ... 14 V ... 30 V
**Protection** | reverse polarity protection, overvoltage protection
**Sensor principle** | full-bridge sensor/LVDT (DTA series) and half-bridge sensor (LDR series)
**Input impedance (sensor)** | > 100 kOhm
**Gain** | adjustable via buttons or software
**Zero** | 
**Output signal (adjustable)** | (0)2 ... 10 VDC / 0.5 ... 4.5 V / 0 ... 5 V (Ra > 1 kOhm) or (0)4 ... 20 mA (load < 500 Ohm)
**Resolution \(^{2}\)** | 
| DTA series | 13 bits (0.012 % FSO) at 50 Hz
| | 12 bits (0.024 % FSO) at 300 Hz
| LDR series | 12 bits (0.024 % FSO) at 50 Hz
| | 11 bits (0.048 % FSO) at 300 Hz
**Linearity** | 0.02 % FSO
**Frequency response** | 300 Hz (-3dB)
**Storage** | -40 ... +85 °C
**Operation** | -40 ... +85 °C
**Temperature stability** | 
| DTA series | ±100 ppm FSO/K
| LDR series | ±125 ppm FSO/K
**Protection class** | IP67
**Weight** | approx. 200 g
**Housing material** | aluminum die casting
**Connection** | 
| Cable gland | screw terminal; AWG 16 to AWG 24; with ferrule up to AWG 28
| Connector | power supply: M12x1 plug (5 poles); sensor: M9 socket, 5 poles ( Binder)
**EMC** | DIN EN 61326-1; DIN EN 61326-2-3
**Vibration** | DIN EN 60068-2-6
**Shock** | DIN EN 60068-2-27 (40g, 6ms, 1000 per axis)

FSO = Full Scale Output

\(^{1}\) Restricted with load and signal span

\(^{2}\) Noise: AC RMS measurement via RC low-pass filter of the 1st order with fc = 5 kHz

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**Sensor connector:**
- M12x1.5 cable gland: WS15; Clamping range 1mm...5mm
- Alternative (option 010): M9 5-pole socket, series 712 (Binder)

**Supply and signal connector:**
- M16x1.5 cable gland: WS19; Clamping range 4.5mm...10mm
- Alternative (option 010): M12x1 plug; 5 poles
To monitor the clamping position in machine tools, analog LVP sensors from Micro-Epsilon are used.

The cylindrical sensor is integrated into the release device and directly measures the clamping stroke of the drawbar. On the drawbar, a ring is fastened, which acts as the target for the sensor.

The LVP sensor can be universally used with the most varied types of tool due to an extremely compact sensor design. The sensor supplies an analog signal according to the stroke motion of the drawbar when clamping the tool. Consequently, continuous monitoring is possible without the switching point having to be laboriously set mechanically.

The miniature sensor controller can either be accommodated at the point of measurement or in the control cabinet. Thanks to its high accuracy, the LVP sensor contributes significantly to meeting the ever increasing demands on machine tool precision and availability.
<table>
<thead>
<tr>
<th>Model</th>
<th>LVP-25-Z20-5-CA-AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>25 mm</td>
</tr>
<tr>
<td>Target (included)</td>
<td>article 0482218 for shaft diameter 8 mm</td>
</tr>
<tr>
<td></td>
<td>article 0482219 for shaft diameter 10 mm</td>
</tr>
<tr>
<td>Linearity</td>
<td>typical ± 1.5 % FSO</td>
</tr>
<tr>
<td>Sensor housing</td>
<td>stainless steel</td>
</tr>
<tr>
<td>Temperature stability</td>
<td>&lt; ± 0.01% FSO / °C</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-40 ... +120 °C (higher on request)</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP67</td>
</tr>
<tr>
<td>Medium</td>
<td>air, oil</td>
</tr>
<tr>
<td>Controller</td>
<td>MSC7401 (pages 10 - 11)</td>
</tr>
</tbody>
</table>

FSO = Full Scale Output

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ods 25 - 20 - 5-CA-AC

<table>
<thead>
<tr>
<th>Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target sleeve Ø11.5 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pull rod material</th>
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<tbody>
<tr>
<td>31CrMoV9V, no. 1.8519.05</td>
</tr>
</tbody>
</table>
High performance sensors made by Micro-Epsilon

Sensors and systems for displacement and position

Sensors and measurement devices for non-contact temperature measurement

2D/3D profile sensors (laser scanner)

Optical micrometers, fiber optic sensors and fiber optics

Color recognition sensors, LED analyzers and color online spectrometer

Measurement and inspection systems