More Precision

induSENSOR // Linear inductive displacement sensors
LVDT gauging sensors DTA-xG8 are primarily used for the measurement and inspection of workpiece geometry (length, width, diameter, thickness, depth, height). They are ideally suitable for high volume applications. These gauges have an axial cable output and are equipped with either a plain bearing-guided plunger and spring, or with a pneumatic push rod.

**Probe tips**

<table>
<thead>
<tr>
<th>Standard: type 2</th>
<th>Option: type 11</th>
<th>Option: type 13</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Probe tip" /></td>
<td><img src="image2" alt="Probe tip" /></td>
<td><img src="image3" alt="Probe tip" /></td>
</tr>
</tbody>
</table>

- **Article designation**

<table>
<thead>
<tr>
<th>DT</th>
<th>A-</th>
<th>5-</th>
<th>G8-</th>
<th>3-</th>
<th>CA-</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauging sensor options:</td>
<td>V: pneumatic push</td>
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<tr>
<td>Connection (axial):</td>
<td>CA integral cable (3m)</td>
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</tr>
<tr>
<td>Linearity:</td>
<td>3 (± 0.3 %)</td>
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<tr>
<td>Function: gauging sensor</td>
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<tr>
<td>Measuring range in mm</td>
<td></td>
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<tr>
<td>Excitation AC</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Principle: Differential Transformer (LVDT)</td>
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</tr>
</tbody>
</table>
Model DTA-1G8 DTA-3G8 DTA-5G8 DTA-10G8 DTA-1G8-V DTA-3G8-V DTA-5G8-V DTA-10G8-V
Measuring range ± 1 mm ± 3 mm ± 5 mm ± 10 mm ± 1 mm ± 3 mm ± 5 mm ± 10 mm
Linearity 0.3 % FSO
Repeatability 0.15 µm 0.45 µm 0.75 µm 1.5 µm 0.15 µm 0.45 µm 0.75 µm 1.5 µm
Temperature stability 250 ppm/°C
Temperature range -20...+80 °C (without bellows) / 0...+80 °C (with bellows)
Diameter 8h9 mm
Sensor material stainless steel / FPM
Connection / pin connector open ends
Protection class (sensor) IP65 (with bellows) / IP54 (without bellows)
Cable output axial
Cable length (sensor) 3 m
Life cycle MTBF 5 million cycles
Sensitivity 133 mV/mm/V 85 mV/mm/V 53 mV/mm/V 44 mV/mm/V 133 mV/mm/V 85 mV/mm/V 53 mV/mm/V 44 mV/mm/V
Suitable controller MSC7401 (pages 10 - 11)

FSO = Full Scale

DTA-xG8-3-CA

Cable diameter ca. 3.1mm
Cable length 3m (open ends)

Model A (zero position) B
DTA-1G8-3-CA 83 mm 64.3 mm
DTA-3G8-3-CA 89 mm 68.3 mm
DTA-5G8-3-CA 118 mm 89.5 mm
DTA-10G8-3-CA 155 mm 121.7 mm

DTA-xG8-3-CA-V

for pneumatic connection 3x0.5mm

Cable diameter ca. 3.1mm
Cable length 3m (open ends)

Model A (zero position) B
DTA-1G8-3-CA-V 95 mm 76.3 mm
DTA-3G8-3-CA-V 103 mm 82.3 mm
DTA-5G8-3-CA-V 134 mm 106.3 mm
DTA-10G8-3-CA-V 170.8 mm 137.3 mm
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>
<tr>
<td>Model</td>
<td>MSC7401 Miniature sensor controller</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Power supply</td>
<td>5 V ( \rightarrow ) 14 V ( \rightarrow ) 30 V</td>
</tr>
<tr>
<td>Protection</td>
<td>reverse polarity protection, overvoltage protection</td>
</tr>
<tr>
<td>Sensor principle</td>
<td>full-bridge sensor/LVDT (DTA series) and half-bridge sensor (LDR series)</td>
</tr>
<tr>
<td>Input impedance (sensor)</td>
<td>( &gt; ) 100 kOhm</td>
</tr>
<tr>
<td>Gain</td>
<td>adjustable via buttons or software</td>
</tr>
<tr>
<td>Zero</td>
<td></td>
</tr>
<tr>
<td>Output signal (adjustable)</td>
<td>(0)2 ... 10 VDC / 0.5 ... 4.5 V / 0 ... 5 V (Ra &gt; 1 kOhm) or (0)4 ... 20 mA (load &lt; 500 Ohm)</td>
</tr>
<tr>
<td>Resolution</td>
<td></td>
</tr>
<tr>
<td>DTA series</td>
<td>13 bits (0.012 % FSO) at 50 Hz</td>
</tr>
<tr>
<td></td>
<td>12 bits (0.024 % FSO) at 300 Hz</td>
</tr>
<tr>
<td>LDR series</td>
<td>12 bits (0.024 % FSO) at 50 Hz</td>
</tr>
<tr>
<td></td>
<td>11 bits (0.048 % FSO) at 300 Hz</td>
</tr>
<tr>
<td>Linearity</td>
<td>0.02 % FSO</td>
</tr>
<tr>
<td>Frequency response (only adjustable via software)</td>
<td>300 Hz (-3dB)</td>
</tr>
<tr>
<td>Storage</td>
<td>-40 ... +85 °C</td>
</tr>
<tr>
<td>Operation</td>
<td>-40 ... +85 °C</td>
</tr>
<tr>
<td>Temperature stability</td>
<td></td>
</tr>
<tr>
<td>DTA series</td>
<td>±100 ppm FSO/K</td>
</tr>
<tr>
<td>LDR series</td>
<td>±125 ppm FSO/K</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP67</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 200 g</td>
</tr>
<tr>
<td>Housing material</td>
<td>aluminum die casting</td>
</tr>
<tr>
<td>Connection</td>
<td></td>
</tr>
<tr>
<td>Supply and signal connector:</td>
<td>M16x1.5 cable gland; WS19; Clamping range 4.5mm...10mm</td>
</tr>
<tr>
<td></td>
<td>Alternative (option 010): M12x1 plug; 5 poles</td>
</tr>
<tr>
<td>Sensor connector:</td>
<td>M12x1.5 cable gland; WS15; Clamping range 1mm...5mm</td>
</tr>
<tr>
<td></td>
<td>Alternative (option 010): M9 5-pole socket, series 712 (Binder)</td>
</tr>
<tr>
<td>EMC</td>
<td>DIN EN 61326-1; DIN EN 61326-2-3</td>
</tr>
<tr>
<td>Vibration</td>
<td>DIN EN60068-2-6</td>
</tr>
<tr>
<td>Shock</td>
<td>DIN EN 60068-2-27 (40g, 6ms, 1000 per axis)</td>
</tr>
</tbody>
</table>

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 \( f_c = 5 \) kHz

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**Diagram:**

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

Mounting holes for M4 screws
General accessories
2960031  MC25D  Digital micrometer calibration fixture
2420062  PS2020  Power supply on DIN rail, input 100 - 240 VAC, output 24 VDC / 2.5 A
2984026  Function and linearity inspection certificate incl. protocol with listed measurement data of the linearity inspection and documentation
2213034  IF7001 single-channel USB/RS485 converter

Accessories for LDR series
Connection cables
0157047  C7210-5/3  Sensor cable, 5 m, with cable connector
0157048  C7210/90-5/3  Sensor cable, 5 m, with 90° cable connector

Supply cable
2901087  PC710-6/4  Supply/output cable, 6 m

Spare plungers
0800136  LDR-10  Spare plunger
0800137  LDR-25  Spare plunger
0800138  LDR-50  Spare plunger

Service
Connector installation and adjustment

Accessories for EDS series
Service
2985001  Function and linearity inspection for EDS series incl. pressure inspection and documentation without recalibration

Connection cables
0157043  C703-5  VIP/LVP/EDS 7-pin connection cable for S series, 5 m
02902084  C703-5/U  VIP/LVP/EDS 7-pin connection cable for S series, 5 m for voltage output 1 - 5 V
0157050  C703/90-5  VIP/LVP/EDS 7-pin connection cable for S series, 5 m with 90° cable connector
2901143  C705-5  VIP-/LVP-/EDS 5-pin connection cable for F series, 5 m
2901160  C705-15  VIP-/LVP-/EDS 5-pin connection cable for F series, 15 m

Installation ring
0483326  EDS mounting ring
### Accessories for LVDT series

#### Sensor cables
- **2902004 C701-3**: Sensor cable, 3 m, with cable connector and tin-plated free ends
- **2902013 C701-6**: Sensor cable, 6 m, with cable connector and tin-plated free ends
- **2902009 C701/90-3**: Sensor cable, 3 m, with 90° cable connector and tin-plated free ends
- **2213034 IF7001**: Single-channel USB/RS485 converter for MSC7xxx

#### Service
- **2981010**: Connector installation and calibration

#### Connection cables
- **2901087 PC710-6/4**: Supply/output cable, 6 m, open ends
- **29011154 PC5/5-IWT**: Supply/output cable, 5 m, open ends/M12

#### Spare plungers
- **0800001 DTA-1D**: Spare plunger
- **0800002 DTA-3D**: Spare plunger
- **0800003 DTA-5D**: Spare plunger
- **0800004 DTA-10D**: Spare plunger
- **0800005 DTA-15D**: Spare plunger
- **0800006 DTA-25D**: Spare plunger

#### Flanges
- **0483090.01 DTA-F10**: Mounting flange, slotted for DTA-1D, DTA-3D, DTA-5D, DTA-10D
- **0483083.02 DTA-F20**: Mounting flange, slotted for DTA-15D, DTA-25D

#### Probe tips
- **0459002**: Type 2
- **0459001**: Type 2 (hard metal)
- **0459003**: Type 11
- **0459004**: Type 13

#### Standard probe tip: type 2
- **Option: type 11**:
- **Option: type 13**
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 inline spectrometer

Measurement and inspection systems