



# More Precision

**induSENSOR** // Linear inductive displacement sensors



Micro-Epsilon also develops sensors for special requirements that are not met by the standard models, the inductive sensors from the standard range can be suitably modified. A commercial implementation can already be achieved with medium-sized quantities (depending on the type and number of changes). The standard induSENSOR models form the basis for the modifications.

#### Environmental conditions

Depending on the location, environment, and application, different circumstances occur that require adapted sensors:

- Ambient temperature
- Pressure
- Interference fields
- Dirt, dust, and moisture
- Vibration, shock
- Seawater, IP69K



#### Basic types

Five basic types are available. Measuring ranges and target versions can be combined, based on these technologies.

Technology	Measuring range	Target
① EDS	to 800 mm	pipe
② LDR	to 150 mm	plunger / probe tip
③ LVDT	to $\pm 100$ mm	plunger / probe tip



#### Measuring range / sensor geometry

The installation environments often require an adjustment of the sensor geometry, of the measuring range, and of the protection class. These adjustments include changes to the measuring range, sensor length and width, pressure resistance, target shape, flange and material.



#### Electronics

The electronics is used for control purposes and for processing the signals from the inductive sensors.

Depending on the requirements, the electronics can be integrated in the sensor or remote. The range of functions of the electronics are specifically defined, and range from simple signal output to complex arithmetic.

#### Possible electronics concepts

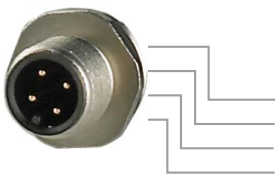
- Integrated electronics
- External electronics



#### Type of connection and cables

The type of connection and cable can be defined depending on the requirements.

- Connector for plugs
- Integrated cable with plug
- Integrated cable with open ends

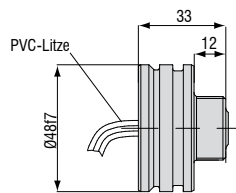


#### Output signal

Depending on the type of integration, one or more output signal types are required. Many types of output are available in combination with the electronics used.

#### Output signals

- Current
- Voltage
- Switching outputs
- Others on request

**EDS-260-Z-LA-I -3L**

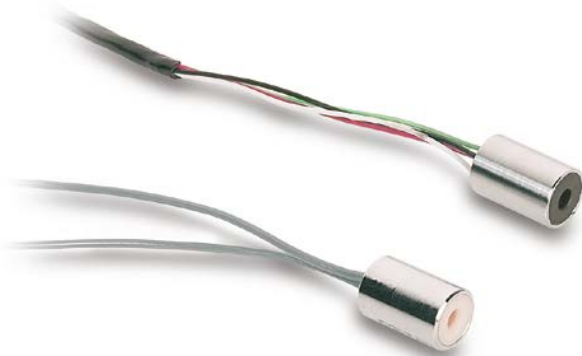
Eddy current long-stroke sensor

Measuring range 260mm  
 Nonlinearity  $< \pm 0.3\%$   
 Power supply 18 ... 30Vdc  
 Output 4 ... 20mA  
 Temperature range -40 ... +85°C  
 Special sealing flange

**EDS-200-F2-CA10-I-METSO**

Eddy current long-stroke sensor

Measuring range 200mm  
 Output 4 ... 20mA  
 Integrated cable 10m  
 Special sealing flange

**DTA-1D-CA-U**

Miniature sensor with axial cable output

Measuring range  $\pm 1\text{mm}$   
 Outer diameter 10mm  
 Sensor cable length 850mm

**DTA-6D-20 (07)**

Inductive LVDT displacement sensor

Measuring range  $\pm 2 \dots \pm 8\text{mm}$   
 Connection 140mm flat cable and IDC (insulation displacement connectors) RM 2.54

**DTA-15D-5-CA(03)**

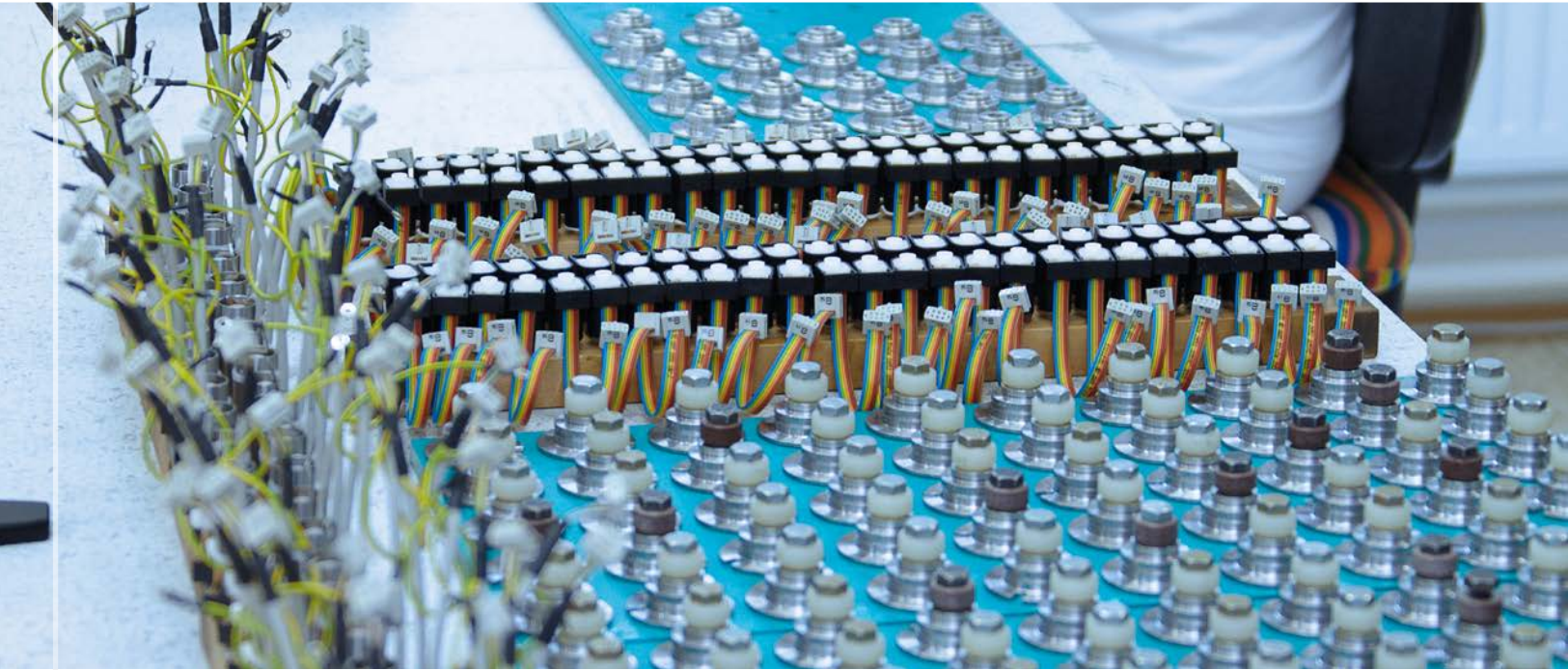
Pressure-tight LVDT sensor with welded flange

Measuring range  $\pm 16\text{mm}$   
 Pressure resistance pressed, up to 350bar (2min.)  
 with mounting flange  
 Connection flat cable axial connector,  
 approx. 140mm long with plug

**EDS-330-F-SRB-I(06)**

Eddy current long-stroke sensor

Measuring range 330mm  
 Output 4 - 20mA  
 Power supply 18 - 30Vdc  
 Flange housing 150mm diameter



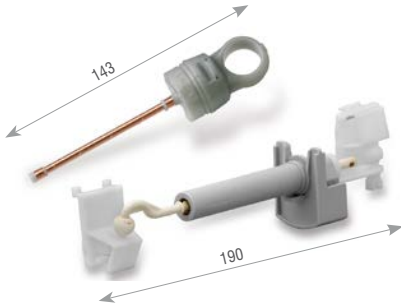
For exceptional applications with large quantities, Micro-Epsilon develops sensors that are precisely tailored to customer requirements. The geometry, electronics and packaging are customised to suit the requirements concerned. Thanks to the high production capacity at Micro-Epsilon, large quantities can be made cost-effectively.

#### **Areas of application**

Customized OEM displacement sensors are often developed for areas of applications where the highest standards apply, such as:

- Applications with high atmospheric pressure
- Environments with high temperatures
- Vacuum
- Explosive hazard environments
- Contaminated installation and measurement rooms

## Realised OEM examples



**DRA-25D-20-SR-02 / ILU-50-0-10-SR**  
Inductive differential inductor (plunger)

- Loading and unbalance detection in washing machines
- Installation integrated into damper or external
- Measuring range 50mm
- External electronics



**LDR-85-BUE**  
Wear-free inductive displacement sensor

- Position measurement of valves
- Measuring range 85mm
- Integrated electronics



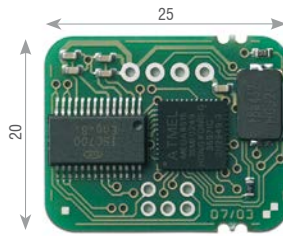
**KRS 719-400**  
Miniaturised LVDT displacement sensor

- For use in textile machines
- External electronics
- Measuring range 2mm
- Shielded sensor



**DTA-3D-5-CR5-G-HP**  
Inductive displacement sensor

- Detection of the shaft position with hermetically sealed pumps
- Measuring range 6mm
- ATEX / FM certification



**ISC7001**  
Subminiature sensor controller

- Subminiature design 20x25mm
- Interfaces 0.5 - 4.5V, PWM (10bit), UART
- Resolution 11bit



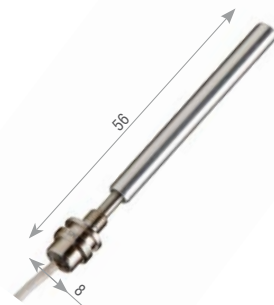
**DTA-1D-20-DDV.02**  
LVDT displacement sensor with coated coil

- Measurement of a hydraulic valve position
- External electronics
- Measuring range 2mm
- Dipped paint seal



**KTL gauging sensors**

- Calibration of robots
- Speed measurement
  - Switching output



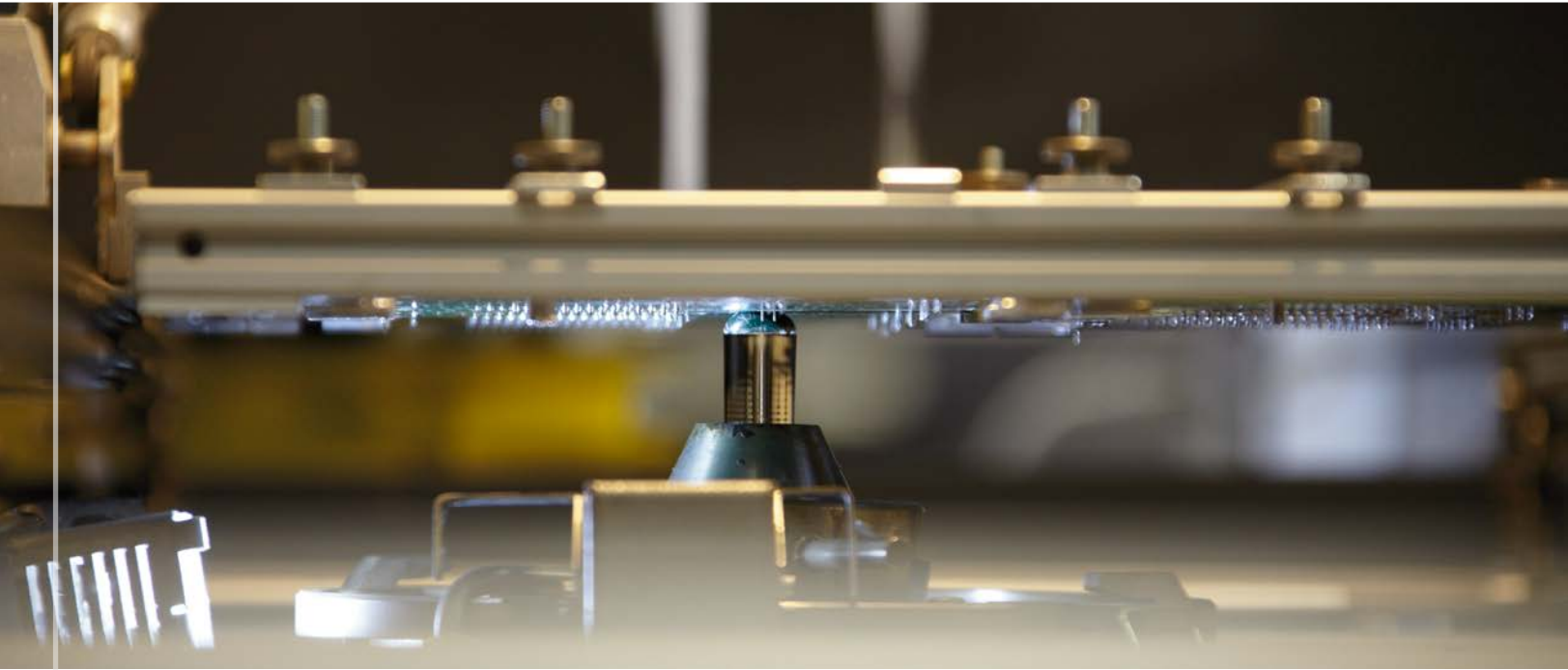
**EDS-28-G-CA-U**  
Rugged inductive miniature sensor with in the cable integrated electronics

- Miniature actor for formula 1
- Measuring range 28mm
- Pressure resistance up to 350bar



**EDS/GPS-180-ZA-I(02)**  
Eddy current long-stroke sensors with integrated electronics

- Measuring the piston position in the glass production
- Measuring range 180mm
- High shock- and vibration-resistance



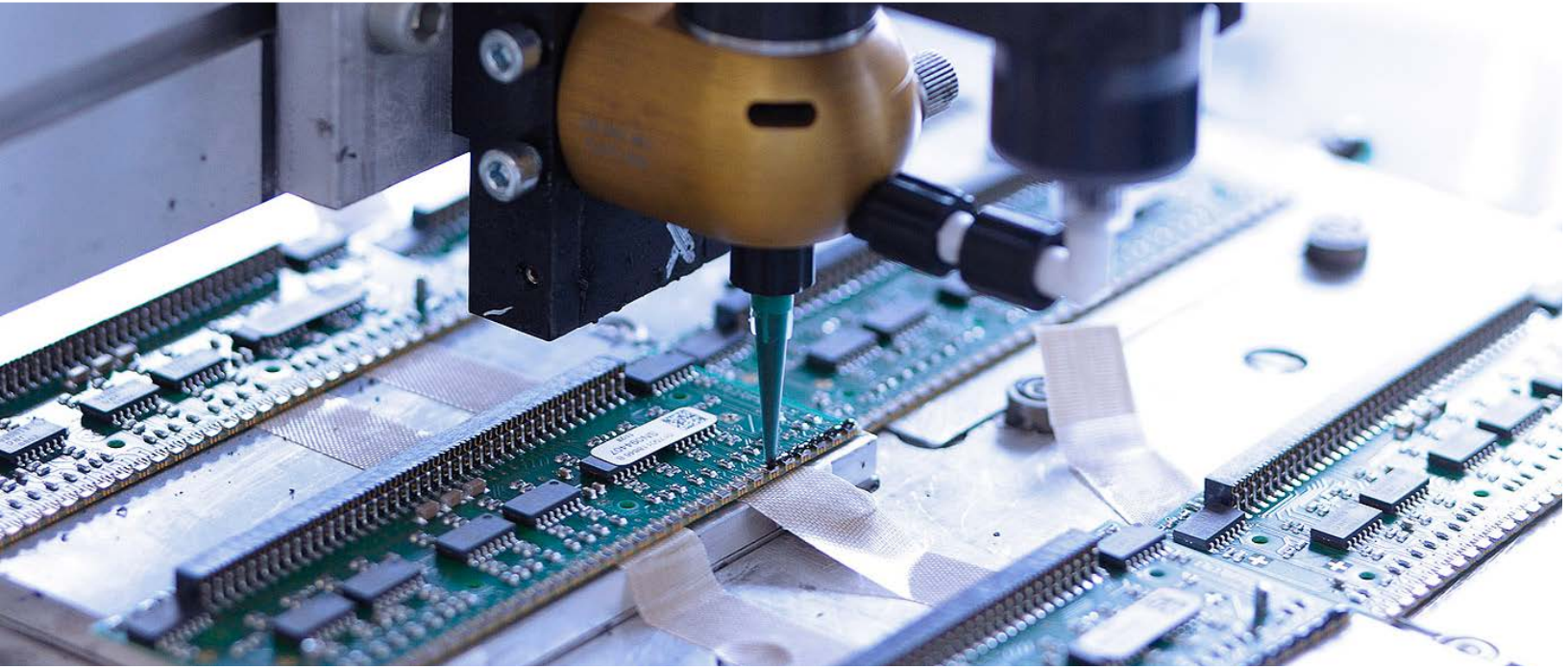
Micro-Epsilon has all the required resources available to supply solutions starting from the idea through to large-scale production, all from one source - and at competitive prices. A cohesive process as a better path to large-scale production. Together with a team of engineers and customer support staff, performance specifications are converted into concepts and designs according to customized requirements. All project participants are integrated into the process. Together with us, you can speed up your development process, prototype building and large-scale production. In achieving this, the complete material logistics is included in the process from an early stage. A total of over 2,000 man-years of engineering experience and more than 300 staff are available to you.

At Micro-Epsilon's head office, development projects are initiated and major projects co-ordinated. The development and marketing of specific sensors for OEM customers in large quantities takes place in direct contact with the development and product specialists.

For the large-scale production of the electronics, modern and automated production systems for screen and silk-screen printing are available with vision systems, automatic SMD assembly up to BF 0402, reflow soldering in computer controlled convection ovens, CFC-free washing in multi-compartment washing systems, automatic die bonding and laser trimming.

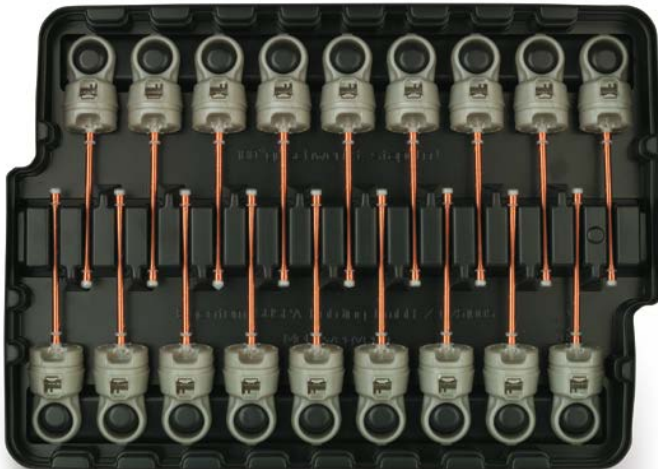






With production capacities of more than one million sensors p.a. and by utilising internal company resources, the sensors are very economical. The production equipment available includes the following:

- CNC lathes and milling machines
- Fully automatic four-spindle winding machine
- Arc welding equipment for welding the coil wires
- Varnish dip system for protecting the coil
- Automatic inspection system for testing the coil parameters
- Laser welding and marking systems



All production systems are supplied in ergonomic and assembly-friendly packaging units. In this respect environmentally friendly and economical reusable packaging is used. Within the scope of Total Quality Management a 100% check is integrated for numerous measurement and inspection processes.

## 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