



# More Precision

**induSENSOR** // Linear inductive displacement sensors



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

#### Ambient conditions

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

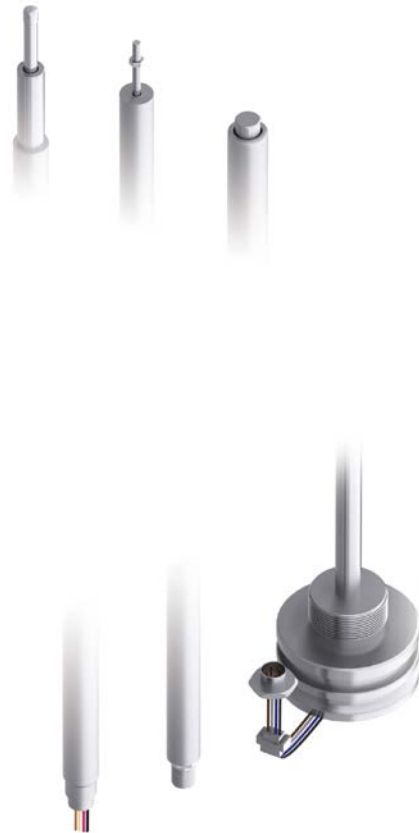
- Ambient temperature
- Pressure
- Interference fields
- Dirt, dust, and moisture
- Vibration, shock
- Seawater, IP69K



#### Basic types

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

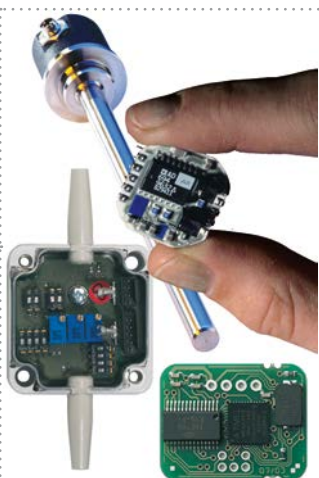
Technology	Measuring range	Target
① EDS	up to 800 mm	tube
② LDR	up to 150 mm	plunger / probe tip
③ LVDT	up to $\pm 100$ mm	plunger / probe tip





#### 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.



#### Controller

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 concepts

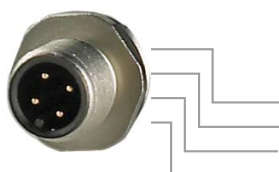
- Integrated controller
- External controller



#### Type of connection & 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

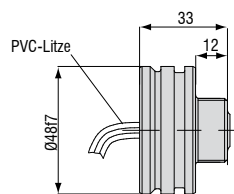


#### Output signal

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**

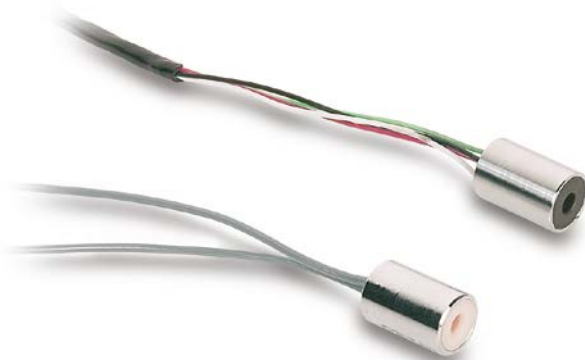
Eddy current long-stroke sensor

Measuring range 260 mm  
 Non-linearity  $< \pm 0.3 \%$   
 Power supply 18 ... 30 VDC  
 Output 4 ... 20 mA  
 Temperature range  $-40 \dots +85^{\circ}\text{C}$   
 Special sealing flange

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

Eddy current long-stroke sensor

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

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

Inductive miniature sensor with axial cable output

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

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

Inductive LVDT displacement sensor

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

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

Pressure-tight LVDT sensor with welded flange

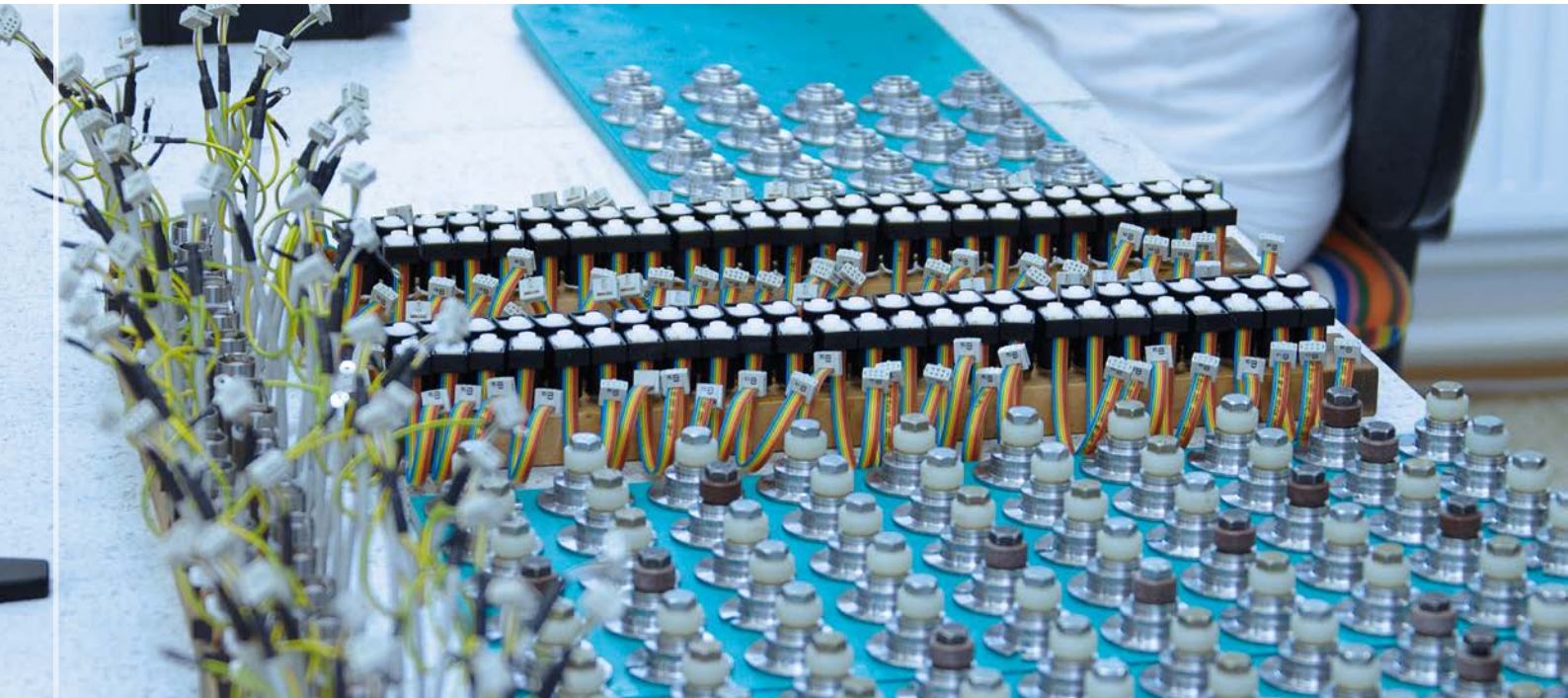
Measuring range  $\pm 16$  mm  
 Pressure resistance pressed, up to 350 bar (2 min.)  
 with mounting flange  
 Connection flat cable axial connector,  
 approx. 140 mm long with plug

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

Eddy current long-stroke sensor

Measuring range 330 mm  
 Output 4 ... 20 mA  
 Supply 18 ... 30 VDC  
 Flange housing diameter of 150 mm





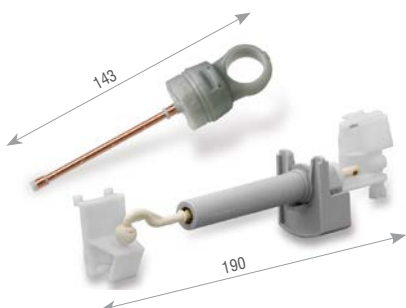
For special applications where high volumes are required, Micro-Epsilon develops sensors that are precisely tailored to the customer's requirements. The geometry, electronics and packaging are custom engineered to suit these specific requirements. Due to the high vertical range of manufacturing at Micro-Epsilon, large sensor volumes can be produced at low cost.

#### **Fields of application**

Customized OEM displacement sensors are often developed for fields of application where the highest standards apply:

- Applications with high ambient pressure
- Environments with high temperatures
- Vacuum
- EX environments
- Contaminated installations and measuring rooms

### Application examples



#### DRA-25D-20-SR-02 / ILU-50-0-10-SR

Inductive differential inductor

- Load and imbalance detection in washing machines
- Integrated in damper or external installation
- Measuring range 50 mm
- External controller



#### LDR-85-BUE

Wear-free, inductive displacement sensor

- Measuring the valve position
- Measuring range 85mm
- Integral controller



#### KRS 719-400

Miniature LVDT displacement sensor

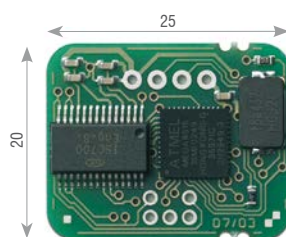
- For use in textile machines
- External controller
- Measuring range 2 mm
- Shielded sensor



#### DTA-3D-5-CR5-G-HP

Inductive displacement sensor

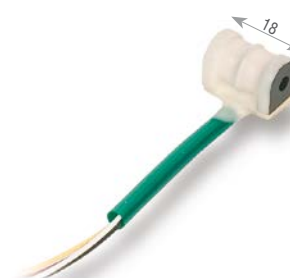
- Detection of the shaft position with hermetically sealed pumps
- Measuring range 6 mm
- ATEX / FM certification



#### ISC7001

Miniature PCB controller

- Miniature design 20x25 mm
- Interfaces 0.5 - 4.5 V, PWM (10 bit), UART
- Resolution 11 bit



#### DTA-1D-20-DDV.02

LVDT displacement sensors with coated coil

- Measuring the position of a hydraulic valve
- External controller
- Measuring range 2 mm
- Dipped paint seal



#### KTL gauging sensors

Robot calibration

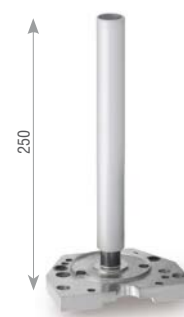
- Speed measurement
- Switching output



#### EDS-28-G-CA-U

Robust, inductive miniature sensor with integrated controller in the cable

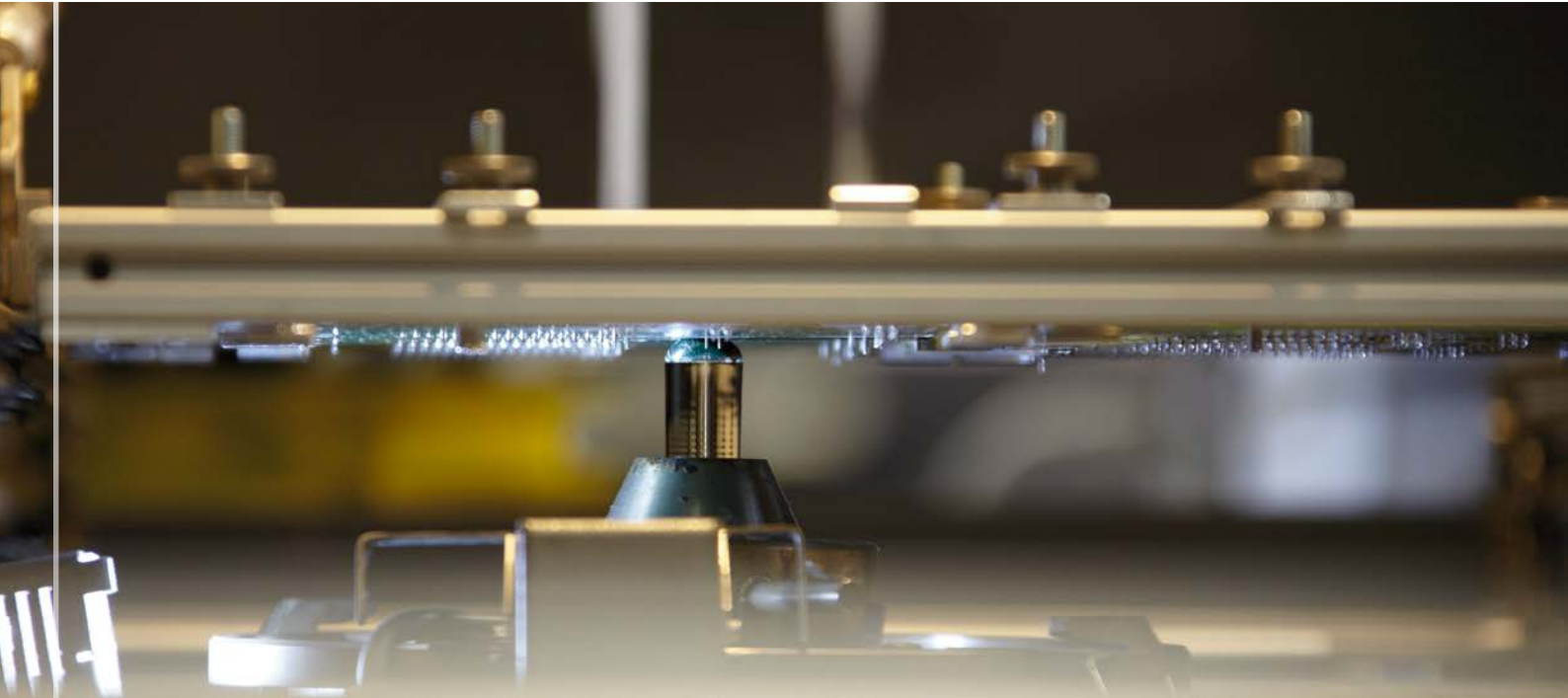
- Miniature actuator for Formula 1 vehicles
- Measuring range 28 mm
- Pressure resistance up to 350 bar



#### EDS/GPS-180-ZA-I(02)

Eddy current long-stroke sensors with integrated controller

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



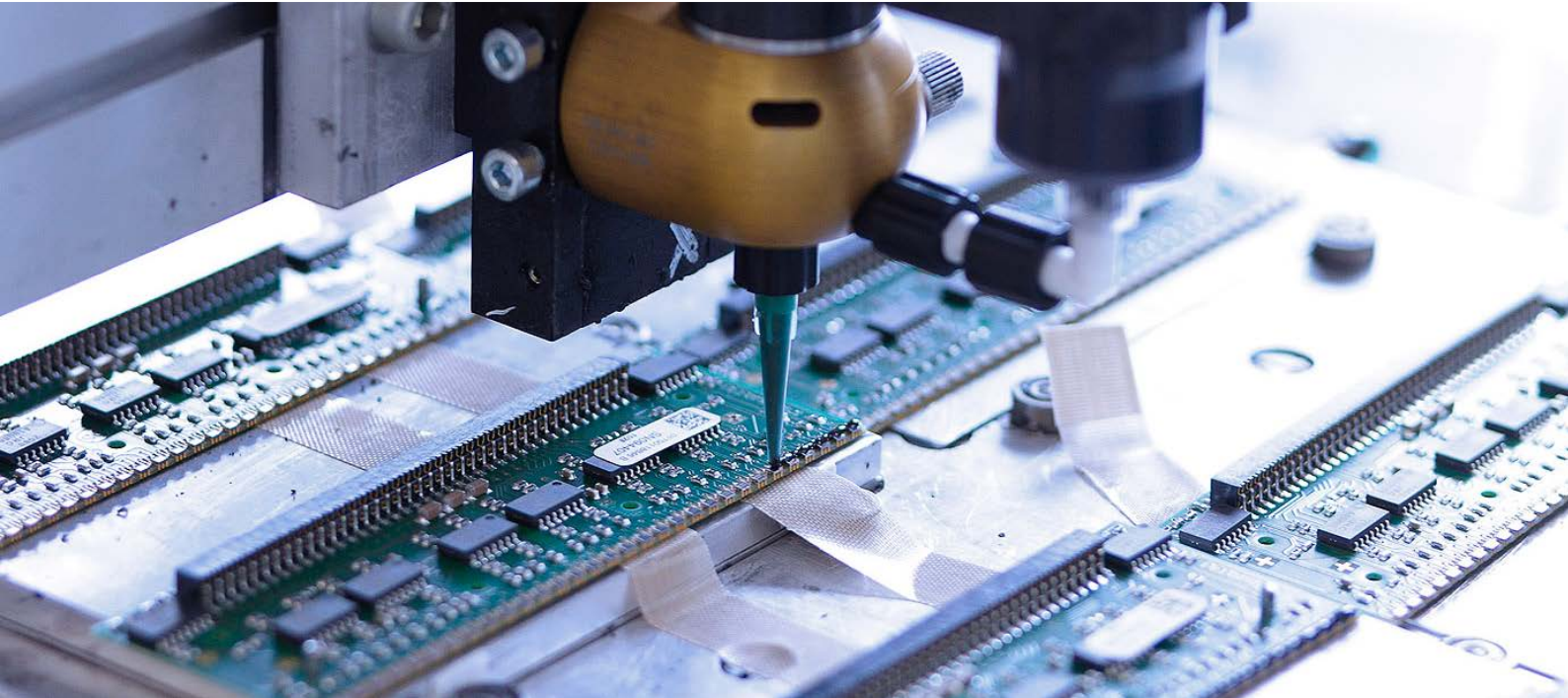
Micro-Epsilon has all the required resources available to supply solutions starting from the idea through to large-scale production, all from one source - and at competitive prices. Together with a team of engineers and customer support staff, performance specifications are converted into concepts and designs according to customized requirements.

All project participants are involved in development, prototype construction and high volume production. A total of over 2,000 man-years of engineering experience and more than 500 staff are available to you.

At the Micro-Epsilon headquarters, development projects are initiated and major projects coordinated. The development and sales of specific sensors for OEM customers in large quantities takes place in direct contact with the development and product specialists.

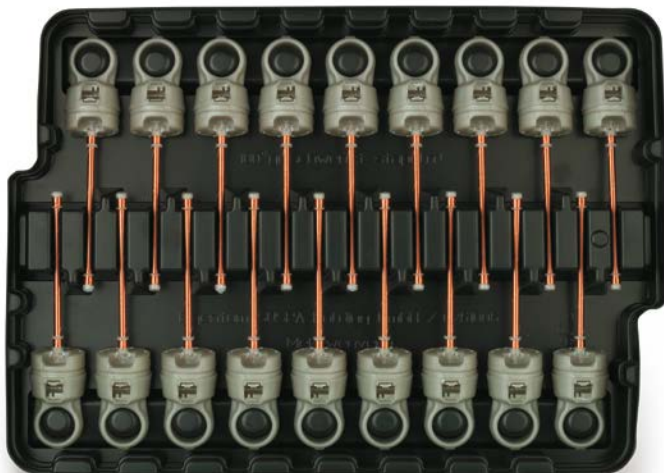
For the large-scale production of the electronics, modern and automated production systems for screen and silk-screen printing are available with vision systems, automatic SMD assembly up to BF 0402, reflow soldering in computer controlled convection ovens, CFC-free washing in multi-compartment washing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





With production capacities of more than one million sensors p.a. and by utilizing internal company resources, the sensors are reasonably priced. The production equipment for sensors 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 inline spectrometer



Measurement and inspection systems