Eddy current principle: non-contact displacement and position sensors

Eddy current displacement sensors measure distances, displacements, or positions of any electrically-conductive target. The principle enables non-contact and wear free measurements. The measurement objects may have either ferromagnetic or non-ferromagnetic properties. Due to its immunity to oil, dirt, dust, moisture, interference fields, etc. the eddy current principle is ideally suitable for applications in harsh industrial environments. Micro-Epsilon’s eddy current sensors are the only ones with active temperature compensation and field calibration capability.

**Advantages**
- Non-contact and wear free
- Highest resolution and linearity
- Very stable measurements
- High measurement rates
- Excellent temperature range and temperature stability
- For industrial applications

**OEM integration in textile machines**
Eddy current sensors measure the thickness variation of thread in textile machines.

**Application in test rigs**
In the automotive industry these systems measure internal dimensional changes inside a running engine.

**In-line quality control**
Eddy current sensors measure the flatness in rolling mills.
### eddyNCDT 3010
Low-Cost single channel system for industrial applications

- **Measuring ranges**: 0.5 - 15 mm
- **Linearity**: ≤0.25 %
- **Resolution**: 0.005 %
- **Bandwidth**: 25 kHz (-3dB)

### eddyNCDT 3300
Intelligent eddy current system (single-channel) for very precise measurements

- **Measuring ranges**: 0.4 - 80 mm
- **Linearity**: ≤0.2 %
- **Resolution**: 0.005 %
- **Bandwidth**: 100 kHz (-3 dB)

Standard and miniature sensors available

### eddyNCDT 3700
Compact eddy current OEM system for differential measurements

- **Measuring ranges**: 0.5 - 6 mm
- **Linearity**: ≤5 %
- **Resolution**: 0.000018 %
- **Bandwidth**: 10 kHz (-3 dB)

Also available as dual differential system

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**Worldwide the largest selection of sensors**

The technological leadership in eddy current sensors, which spans many years, is reflected in the sensor range - more than 400 sensors are available in different versions for the most varied applications.

**Subminiature sensors for confined installation space**

Apart from standard sensors in popular styles, miniature sensors can also be supplied which achieve high precision measurement results with the smallest possible dimensions. Pressure-resistant versions, screened housings, ceramic types and other special features characterize these sensors, which achieve highly accurate measurement results despite the small dimensions. The miniature sensors are employed in high pressure applications, e.g. in internal combustion engines. The subminiature sensors are matched to the controller of the eddyNCDT 3300 Series.

**Suitable for extreme temperatures**

The sensors can be used from -50°C to +235°C. The wide temperature range and the insensitivity to soiling or dust gives an enormous range of applications in industrial environments.

Whereas currently available eddy current sensors exhibit extreme drift with variations in the ambient temperature, an active temperature compensation with the eddyNCDT sensors ensures the highest signal stability. Consequently, measurements can be carried out over large temperature ranges with extreme signal stability.

**Revolutionary eddy current technology**

Micro Epsilon enters the next area of non contact eddy current sensors. With our proprietary ECT technology we push the existing limits of traditional sensors to new levels for:

- Maximum Integration
- Unmatched Stability
- Extreme Environment

without compromising all the benefits of the traditional eddy current sensors

Micro-Epsilon has developed a completely new manufacturing technology for eddy current sensors. Using “Embedded Coil Technology” (ECT), the sensor is embedded in an inorganic substrate material, which provides excellent temperature and form stability.