



More Precision.

eddyNCDT 3100

Non-contact eddy current displacement measurement





System design

Eddy current sensors from Micro-Epsilon are designed for non-contact displacement, distance, movement and position measurements, but also for registering oscillations and vibrations. These sensors are an excellent choice when you need high precision in harsh industrial environments (pressure, dust, temperature). Eddy current sensors from Micro-Epsilon are known for their extreme precision, and they are even used for high-precision nanometre measurements.

The 3100 series sensors offer an extensive temperature operating range. The single-channel displacement measurement system uses a patented temperature compensation method to provide first-class stability.

Benefits

The new eddyNCDT 3100 includes an extremely compact controller and matching innovative sensors. Sensors and cables come with an integrated memory module that stores all the major sensor and cable data. All sensors are factory calibrated to adjust to ferromagnetic and non-ferromagnetic materials. Therefore, a precise definition of the measuring object is not required in advance. The controller automatically receives all the basic data from the sensor. The controller housing is made from solid cast aluminium and is protected to IP65. Each controller comes with a default IP address, which can be used for communications via a web browser. All settings are made in the browser, eliminating the need for any special software. The sensors are connected through a 3m or 9m integrated, high flexible cable.

Smart Easy Sensor replacement,
no additional calibration necessary
Configuration via web browser

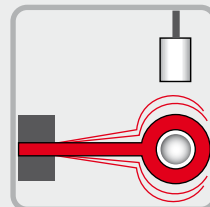
Performance High temperature stability,
resolution and linearity
Ideal for fast measurements

Universal For industrial and laboratory use:
Pressure resistant sensors, flexible cable,
robust controller

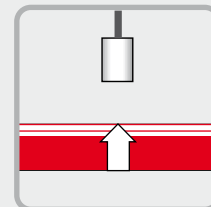
Factory calibration for ferromagnetic and
non-ferromagnetic materials

Multi channel applications:
synchronisation of up to 10 controller
Ethernet (16 bit); 4 - 20 mA; 0 - 10 V

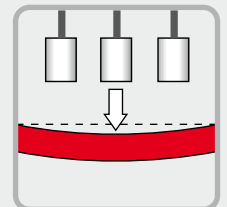
TYPICAL APPLICATIONS



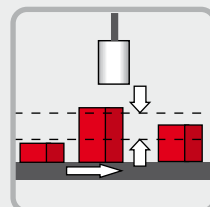
Vibrations, displacement,
oscillations, run-out



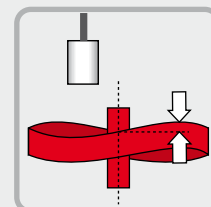
Shift, displacement,
position, expansion



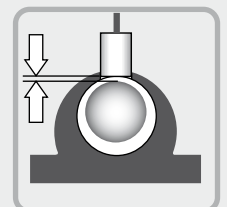
Deflection, deformation,
waviness



Dimensions, dimensional
tolerances, part recognition



Bearing vibrations,
lubricating gap, wear



Bearing vibrations,
lubricating gap, wear

Sensor	EPU05	EPS08	EPU1	EPS2	EPU3	EPU6	EPU15
Shielded		•		•			
Unshielded	•		•		•	•	•
Measurement range	0.5mm	0.8mm	1mm	2mm	3mm	6mm	15mm
Cable length	3m	•	•	•	•	•	•
	9m						
Reference distance	0.05mm	0.08mm	0.1mm	0.2mm	0.3mm	0.6mm	1.5mm
Linearity	$\pm 0.25\% \text{ FSO}$						
Reproducibility	<math>< 0.5\mu\text{m}</math>	<math>< 0.5\mu\text{m}</math>	<math>< 1\mu\text{m}</math>	<math>< 2\mu\text{m}</math>	<math>< 2\mu\text{m}</math>	<math>< 5\mu\text{m}</math>	<math>< 15\mu\text{m}</math>
Resolution ¹⁾	0.05 μm	0.08 μm	0.05 μm	0.1 μm	0.15 μm	0.3 μm	0.75 μm
	0.01 % FSO			0.005 % FSO			
Frequency response	Voltage output 25kHz (-3dB)						
	Digital (Ethernet): 14.4kHz; 7.2kHz; 3.6kHz (16 bit each)						
Temperature compensation range	Standard: +10 to +65°C						
Temperature range	Controller	Operation mode: +10 to +50°C					
	Sensors	-30 to +100°C					
Temperature stability	Sensors (MMR)	$\pm 0.025\% \text{ FSO } / ^\circ\text{C}$					
	Electronics (MMR)	0.05 % FSO / °C					
Outputs	0 ... 10V / -5 ... +5V / 4 ... 20mA and Ethernet						
Power supply	24VDC (11 ... 30V) / approx. 5W						
Synchronisation	only for DT3100-SM	via cable SC 3100-0,3 (accessory)					
Protection class	Controller IP 65 (connected plug-in connections/covers)						
	Sensors IP 67+						

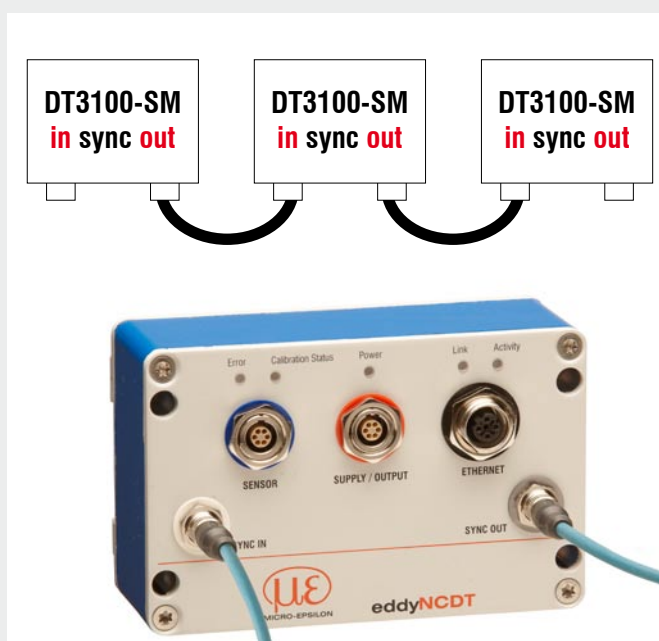
FSO = Full scale output

MMR = Centre of measuring range

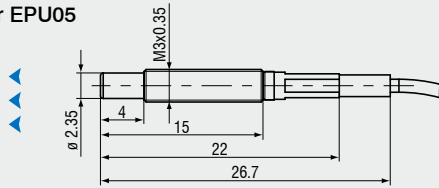
¹⁾ Static resolution, relates to centre of measuring range

Synchronisation

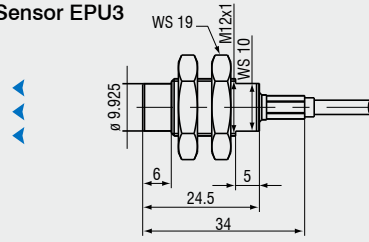
In the case that more sensors of the series eddyNCDT 3100 are operated next to each other, an influence due to a hardly different oscillator frequency (beat frequency) is possible. This can be avoided by synchronisation. The eddyNCDT 3100-SM is equipped with two additional connectors for the oscillator output („SYNC OUT“) and for the input („SYNC IN“). The electronics is working independently until a connection is built. By means of the connections with the synchronisation cable SC3100-0,3, the electronics switch automatically to synchronisation mode. In this way, two up to ten systems can be synchronised with each other.



Sensor EPU05

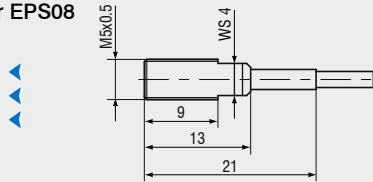


Sensor EPU3

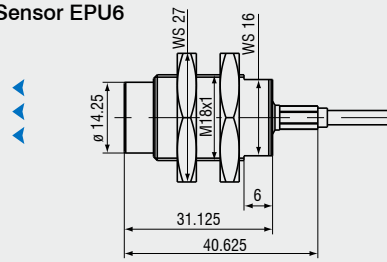


Measuring direction

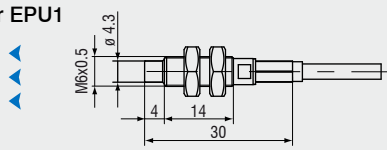
Sensor EPS08



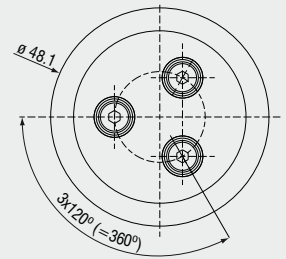
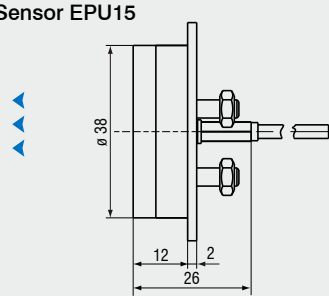
Sensor EPU6



Sensor EPU1

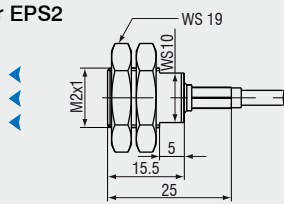


Sensor EPU15

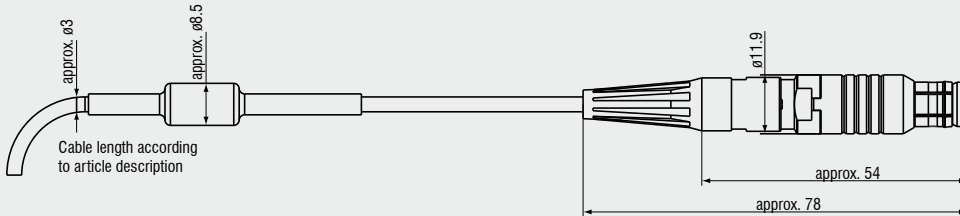


Bore hole for fixing screws \varnothing 20mm

Sensor EPS2



Connector DT3100



Controller DT3100 / DT3100-SM

