










# More Precision

**eddyNCDT** // Inductive sensors based on eddy currents



# Compact eddy current measuring system

## eddyNCDT 3005

-  Compact and robust design
-  Temperature compensation up to 180 °C
-  High measurement accuracy
-  Frequency response 5 kHz (-3dB)
-  Measuring rate 75 kSa/s
-  Versions for ferromagnetic and non-ferromagnetic targets
-  Robust design IP67



### Robust eddy current measuring system

The eddyNCDT 3005 is a powerful eddy current measuring system for fast, high precision displacement measurements. The system comprises a compact controller, a sensor and an integrated cable and is factory-calibrated for ferromagnetic and non-ferromagnetic materials.

As sensor and controller are temperature-compensated, high measurement accuracies can be achieved even in fluctuating temperatures. The sensors are designed for ambient temperatures up to max. +125 °C but can optionally be custom engineered for temperatures from -20 °C to 180 °C. The measuring system is pressure-resistant up to 10 bar and so is ideally suited to machine integration.

### Integration into plant and machinery

The eddyNCDT 3005 provides ease of use and high measurement accuracy, offering an outstanding price-performance ratio. Therefore, the sensor is ideal for OEM integration and serial applications in machine building, particularly where pressure, dirt, oil and high temperatures are present. When large quantities are required, customer-specific designs can be tailored to suit individual requirements.



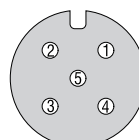
Its compact M12 design allows for the controller to be easily installed in restricted and difficult-to-access places.

Pin assignment for power supply and signal

Pin	Assignment	Color (cable: PCx/5-M12)
1	Supply +24 V	Brown
2	Displacement signal	White
3	GND	Blue
4	RS485 A+	Black
5	RS485 B-	Gray



5-pole M12x1 housing connector  
View on pin side



Model	DT3005-U1-A-C1	DT3005-U1-M-C1	DT3005-S2-A-C1	DT3005-S2-M-C1	DT3005-U3-A-C1	DT3005-U3-M-C1	DT3005-U6-A-C1	DT3005-U6-M-C1
Measuring range	1 mm		2 mm		3 mm		6 mm	
Start of measuring range	0.1 mm		0.2 mm		0.3 mm		0.6 mm	
Resolution <sup>[1]</sup>	0.5 μm		1 μm		1.5 μm		3 μm	
Frequency response (-3dB)	5 kHz							
Measuring rate	Analog output		75 kSa/s (16 bit)					
	Digital interface		1 kSa/s (16 bit)					
Linearity	< ±2.5 μm		< ±5 μm		< ±7.5 μm		< ±15 μm	
Repeatability	< 0.5 μm		< 1 μm		< 1.5 μm		< 3 μm	
Temperature stability <sup>[2]</sup>	Sensor		< 0.25 μm / K		< 0.5 μm / K		< 1.5 μm / K	
	Controller		< 0.25 μm / K		< 0.5 μm / K		< 1.5 μm / K	
Temperature compensation	Sensor		+10 ... +125 °C (optional -20 ... +180 °C)					
	Controller		+10 ... +60 °C (optionally -20 ... +70 °C)					
Sensor type	unshielded		shielded		unshielded		unshielded	
Min. target size (flat)	Ø 24 mm		Ø 24 mm		Ø 48 mm		Ø 72 mm	
Target material <sup>[3]</sup>	Aluminum	Steel	Aluminum	Steel	Aluminum	Steel	Aluminum	Steel
Supply voltage	12 ... 32 VDC							
Power consumption	0.6 W							
Digital interface <sup>[4]</sup>	RS485 / USB / Ethernet / EtherCAT / PROFINET / EtherNet/IP							
Analog output	0.5...9.5 V							
Connection	Sensor: integrated cable, length 1 m, min. bending radius 27 mm (static) Supply/signal: 5-pin M12 connector (cable see accessories)							
Temperature range	Storage		-20 ... +80 °C					
	Operation		Sensor: -20 ... +125 °C (optional -20 ... +180 °C), controller: -20 ... +70 °C					
Pressure resistance	10 bar (sensor, cable and controller on the front), controller on the rear IP67 (plugged in)							
Shock (DIN EN 60068-2-27)	15 g / 6 ms in 3 axes, 2 directions and 1000 shocks each							
Vibration (DIN EN 60068-2-6)	5 g / 10 ... 500 Hz in 3 axes, 2 directions and 10 cycles each							
Protection class (DIN EN 60529)	IP67							
Weight <sup>[5]</sup>	approx. 70 g		approx. 75 g		approx. 77 g		approx. 95 g	

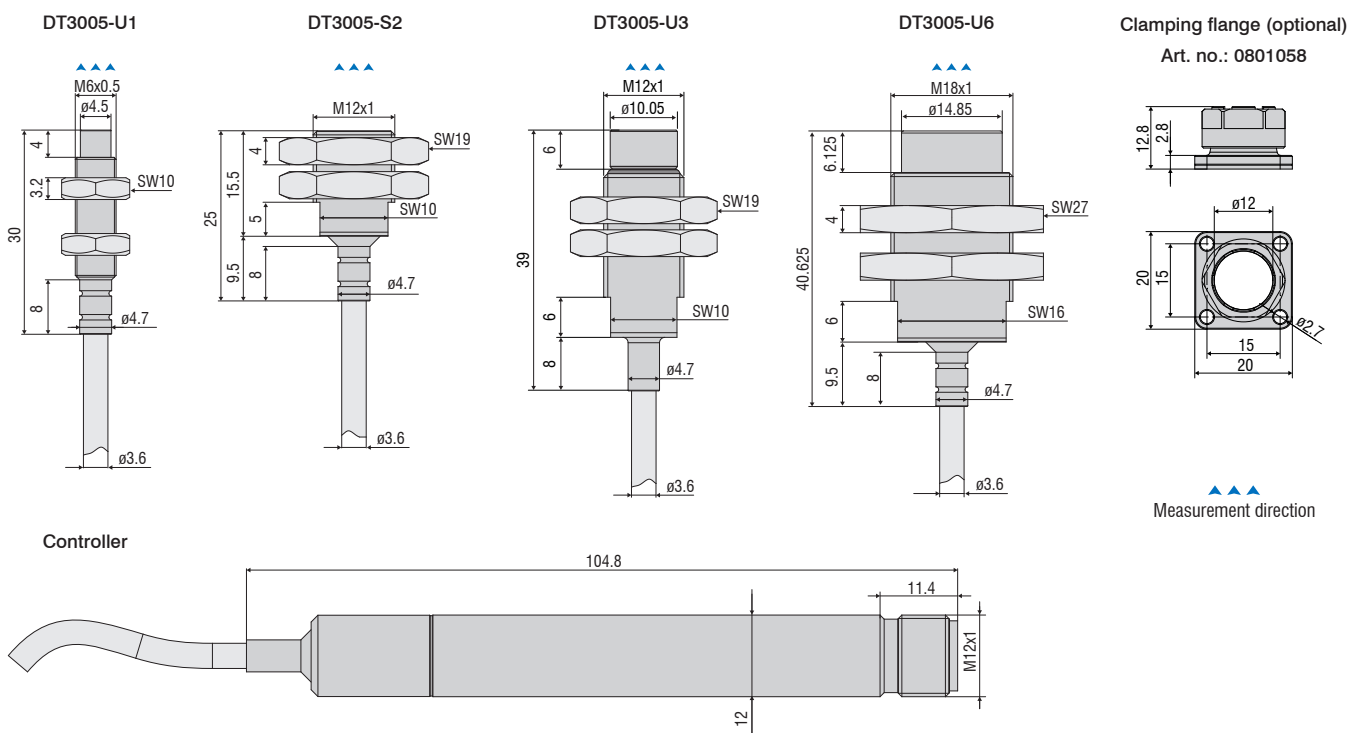
<sup>[1]</sup> RMS noise relates to mid of measuring range at a frequency response of 5 kHz

<sup>[2]</sup> Values are referenced to the mid of the measuring range within the compensated temperature range

<sup>[3]</sup> Steel: St37 steel DIN1.0037; aluminum: AlMg3 Steel: St37 steel DIN1.0037; aluminum: AlMg3

<sup>[4]</sup> USB, Ethernet, EtherCAT, PROFINET and EtherNet/IP require an interface module connection

<sup>[5]</sup> Total weight for controller, cable and sensor



All dimensions in mm, not to scale

# Plug system for vacuum applications

## Vacuum feedthrough eddy/fB0/fB0/triax

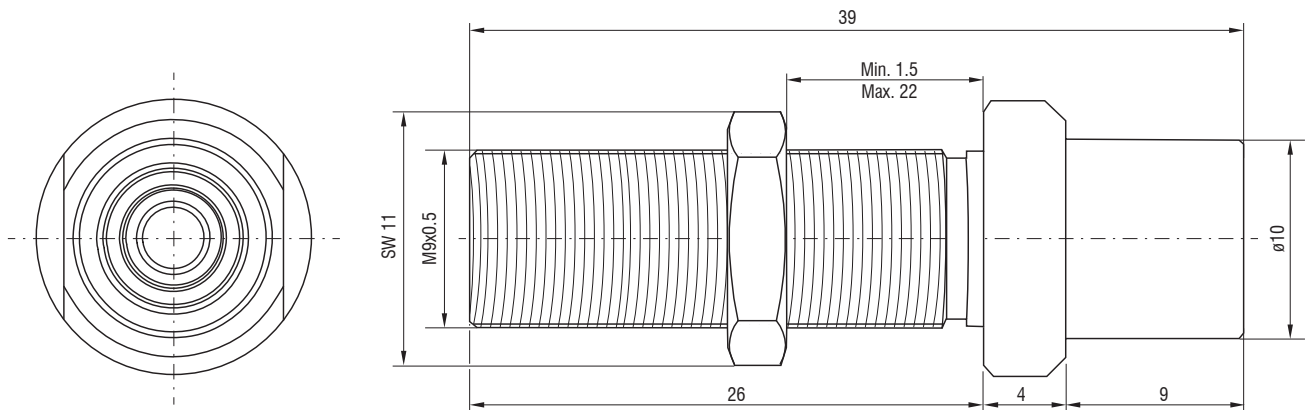
The eddyNCDT series delivers high-precision measurement results even in airless rooms. The eddy/fB0/fB0/triax vacuum feedthrough also enables eddyNCDT products to be used in vacuum applications.

- Application in vacuums
- Application as a wall duct
- Pluggable version
- Compatible with all common eddyNCDT products



Vacuum feedthrough eddy/fB0/fB0/triax	
Housing material	CuZn39Pb3
O-ring material	FPM (Viton®)
Max. leakage rate (IEC standard 60068-2-17)	$<10^{-8}$ mbar $\cdot$ l/s
Operating temperature <sup>[1]</sup>	from -20 °C to 150 °C
Mating cycles (IEC 60512-5-9a)	10,000
Vibration (MIL-STD-202 Method 204 Condition B)	10 to 2,000 Hz, 1.5 mm or 15 g, 12 pass cycles per axis, 20 minutes per 10-2000-10 Hz pass cycle, no discontinuity $>1 \mu$ s
Insulation resistance	$10^{10} \Omega$

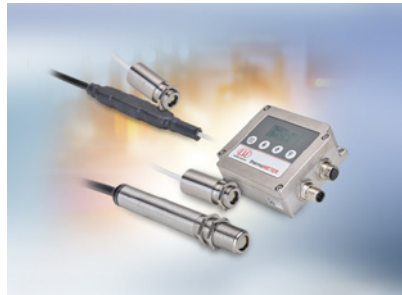
<sup>[1]</sup> Min. connection temperature: 0 °C



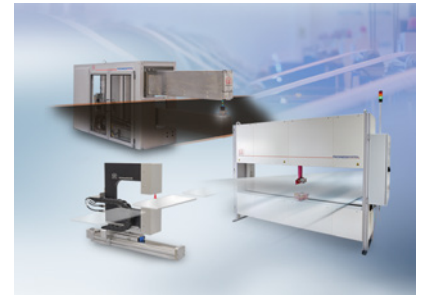
## Sensors and Systems from Micro-Epsilon



Sensors and systems for displacement, distance and position



Sensors and measurement devices for non-contact temperature measurement



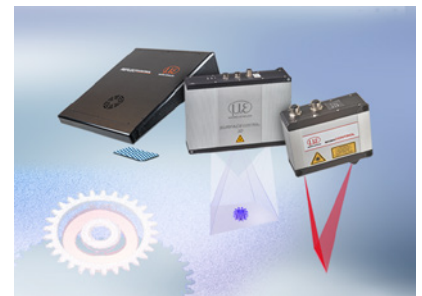
Measuring and inspection systems for metal strips, plastics and rubber



Optical micrometers and fiber optics, measuring and test amplifiers



Color recognition sensors, LED analyzers and inline color spectrometers



3D measurement technology for dimensional testing and surface inspection