



# More Precision

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





- Compact and robust design
- Temperature compensation up to 180 °C
- High precision measurement accuracy
- High frequency response
- Sensors for ferromagnetic and non-ferromagnetic targets
- Easy to use (plug & play)
- Ideal for integration into plant and machinery

#### **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 or 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 -30 °C to 180 °C. The measuring system is pressure-resistant up to 10 bar and so is ideally suited to machine integration.

#### **Ideal for 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 ideally suited to OEM integration and mechanical engineering applications. Particularly where pressure, dirt, oil and high temperatures are present, the eddyNCDT 3005 is suitable. Where high volume orders are required, customer-specific designs can be tailored to suit individual requirements.



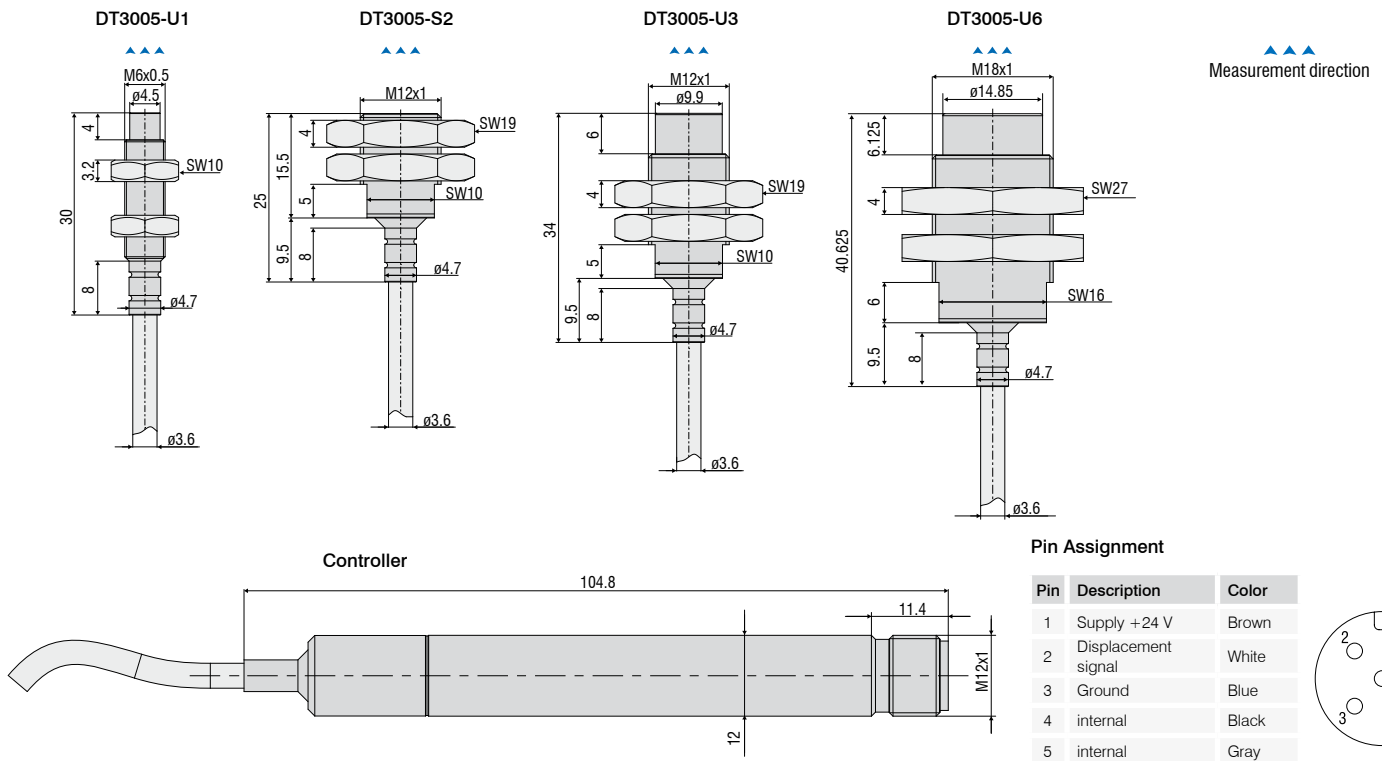
Compact design

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
Target <sup>1)</sup>	aluminum	steel	aluminum	steel	aluminum	steel	aluminum	steel
Measuring range	1 mm		2 mm		3 mm		6 mm	
Offset distance	0.1 mm		0.2 mm		0.3 mm		0.6 mm	
Linearity	$\leq \pm 0.25\%$ FSO		$2.5 \mu\text{m}$		$5 \mu\text{m}$		$7.5 \mu\text{m}$	
Resolution <sup>2)</sup>	$\leq \pm 0.05\%$ FSO		$0.5 \mu\text{m}$		$1 \mu\text{m}$		$1.5 \mu\text{m}$	
Repeatability	$\leq 0.05\%$ FSO							
Sensitivity deviation	$\leq 1\%$							
Frequency response	5 kHz (-3dB)							
Temperature stability (MMR)	0.025 % FSO/°C							
Temperature compensation range	Sensor	-10 ... +125 °C (optional -30 ... +180 °C)						
	Controller	+10 ... +60 °C						
Ambient temperature	Sensor	-30 ... +125 °C (optional -30 ... +180 °C)						
	Controller	-20 ... +70 °C						
Installation	unshielded		shielded		unshielded		unshielded	
Recommended target geometry (flat)	$\varnothing 24$ mm		$\varnothing 24$ mm		$\varnothing 48$ mm		$\varnothing 72$ mm	
Cable length	1 m							
Connection	5-pin M12 plug							
Output	0.5 ... 9.5 V							
Power supply	12 ... 32 V							
Protection class	IP67							
Pressure resistance	10 bar (sensor, cable and controller)							
Weight	70 g		75 g		77 g		95 g	

FSO = Full Scale Output; MMR = midrange

<sup>1)</sup> Steel: ST37 DIN 1.0037 / aluminum: AlCuMgPb3.1645

<sup>2)</sup> RMS noise relates to midrange at a frequency response of 5 kHz



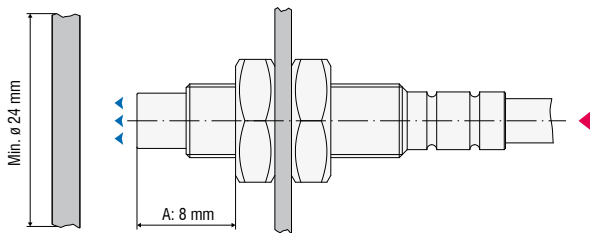
**Installation instructions**

The relative size of the measuring object to the sensor and the position of the mounting nut affect the linearity deviation for eddy current sensors.

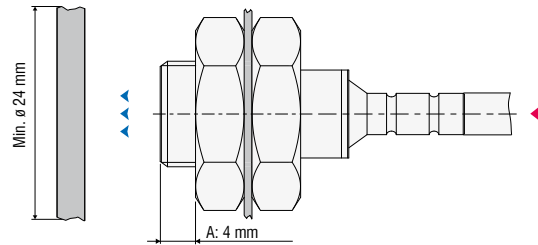
**Please note:**

- Depending on the sensor model, the target geometry shall be 2 or 4 times the sensor diameter.
- The mounting nut must not exceed the indicated dimension A.

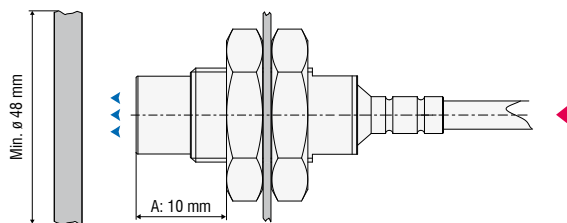
DT3005-U1-x-C1



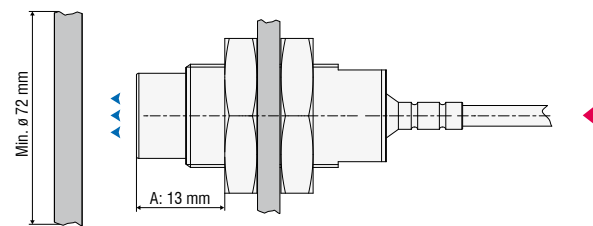
DT3005-S2-x-C1



DT3005-U3-x-C1



DT3005-U6-x-C1



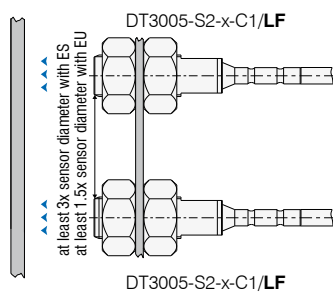
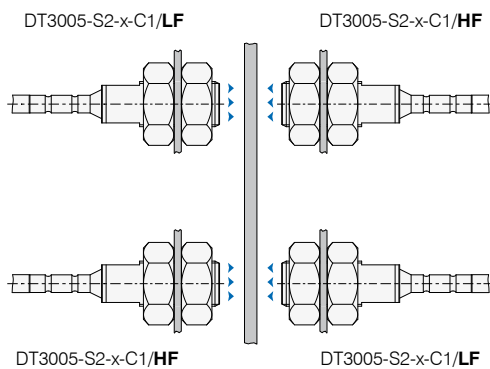
### Multi-channel operation without mutual interference

When two or more systems operate next to one another, there is no need for synchronization using a synchronization cable. For operating several systems, a new frequency separation (LF/HF) is provided, which enables to operate these systems in parallel without influencing one another.

#### Please note:

- 3x sensor diameter distance between two unshielded sensors with the same carrier frequency (e.g. low frequency)
- 1.5x sensor diameter distance between two shielded sensors with the same carrier frequency (e.g. low frequency)
- only two nearby mounted sensors as low frequency and high frequency models

#### Correct LF/HF arrangement



Article	Description	eddyNCDT 3001	eddyNCDT 3005	eddyNCDT 3060	eddyNCDT 3300
PCx/8-M12	Supply and signal cable, 8-pin, lengths: 3 / 5 / 10 / 15 m			•	
PCx/5-M12	Supply and signal cable, 5-pin, 5 m / 20 m	•	•		
SCD2/4/RJ45	Industrial Ethernet cable with M12 connector, 4-pin, 2 m			•	
PS2020	Power supply 24 V / 2.5 A, input 100 - 240 VAC, output 24 VDC / 2.5 A, mounting onto symmetrical standard rail 35 mm x 7.5 mm, DIN 50022;	•	•	•	•
SCAx/5	Signal cable, analog, 3 / 6 / 9 m				•
SCDx/8	Signal cable for switching inputs and outputs, 3 / 6 m (also for 11 - 32 VDC supply); for DT3301				•
PSCx	Supply and synchronization cable 0.3 / 1 m, for DT3300				•
ESCx	Synchronization cable 0.3 / 1 m, for DT3301				•

## 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