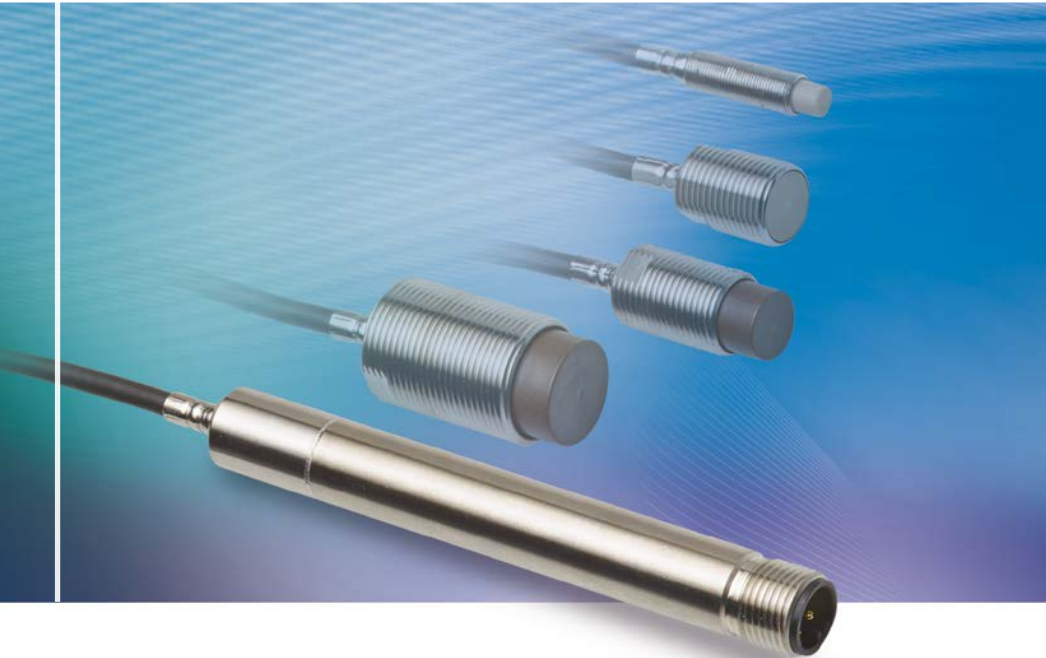




# More Precision

**eddyNCDT** // Eddy current sensors for displacement and position





- Compact and robust design
- Temperature compensation up to 180°C
- High precision measurement accuracy
- High bandwidth
- Sensor for ferro- and non-ferromagnetic targets
- Easy to use (plug & play)
- Perfect for machine integration

#### Eddy current displacement measurement

Eddy current sensors from Micro-Epsilon are designed for displacement, distance, movement and position measurements, but also for detecting oscillations and vibrations. Non-contact operating eddy current sensors from Micro-Epsilon are renowned for their extreme precision, and are even used for micrometre-accuracy measurements.

#### Robust eddy current measurement system

The eddyNCDT 3005 is a new, powerful eddy current measurement 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 -30°C to +180°C. The measurement 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.

#### Multi-channel operation without mutual interference

If two or more systems operate next to one another, there is no need for synchronisation. For operating several systems, a new frequency separation is provided, which enables to operate these systems in parallel without influencing one another. Tuning via synchronisation cable is not necessary.



Compact design

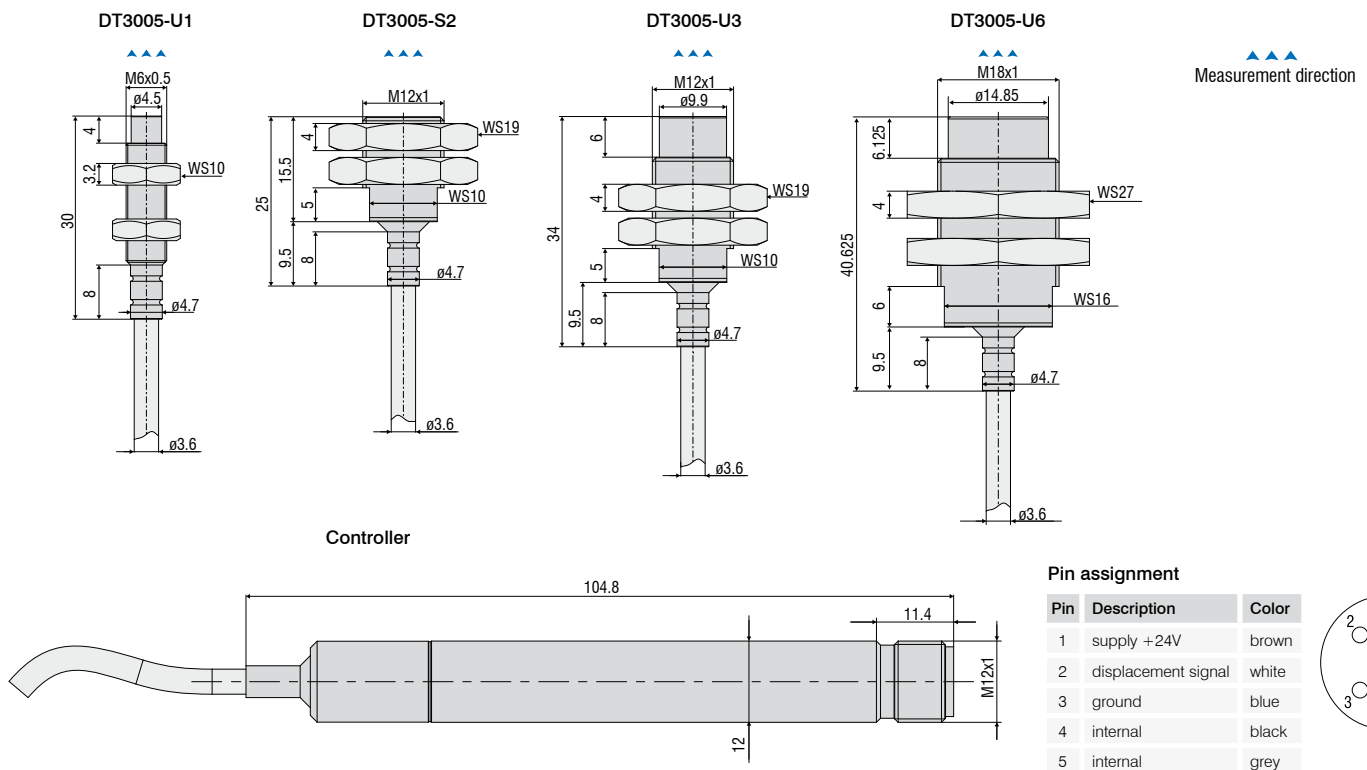
Model	DT3005-U1-A-C1	DT3005-U1-M-C1	DT3005-S2-A-C1	DT3005-S2-M-C1	DT3005-U3-A-C1	DT3005-U3-M-C1	DT3005-U6-A-C1	DT3005-U6-M-C1
Measurement object <sup>1)</sup>	aluminium	steel	aluminium	steel	aluminium	steel	aluminium	steel
Measuring range	1mm		2mm		3mm		6mm	
Offset distance	0.1mm		0.2mm		0.3mm		0.6mm	
Linearity	≤0.25% FSO		5μm		7.5μm		15μm	
Resolution <sup>2)</sup>	≤0.05% FSO		1μm		1.5μm		3μm	
Repeatability	≤0.05% FSO							
Max. sensitivity deviation	≤1%							
Bandwidth	5kHz(-3dB)							
Temperature stability (MMR)	0.025% FSO / °C							
Temperature compensation range	sensor		10°C ... +125°C (optional -30°C ... 180°C)					
	controller		10°C ... +60°C					
Ambient temperature	sensor		-30°C ... +125°C (optional -30°C ... 180°C)					
	controller		-20°C ... +70°C					
Design	unshielded		shielded		unshielded		unshielded	
Recommended measurement object geometry (flat)	ø24mm		ø24mm		ø48mm		ø72mm	
Sensor cable length	1m							
Connection	connector 5-pin M12							
Output	0.5 ... 9.5V							
Power supply	12V ... 32V							
Protection class	IP67							
Pressure resistance	10bar (sensor, cable and controller)							
Weight	70g		75g		77g		95g	

FSO = of full scale output

MMR = midrange

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

<sup>2)</sup> RMS noise relates to centre of measuring range with a bandwidth of 5kHz



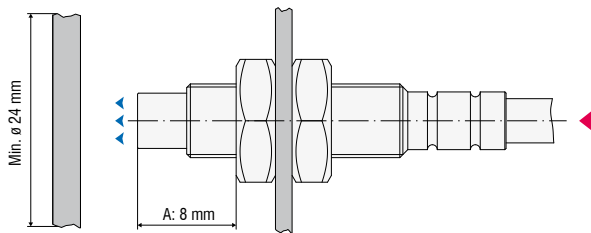
**Installation instructions**

The relative size of the measurement object to the sensor and the position of the mounting nut have effects on the linearity deviation for eddy current sensors.

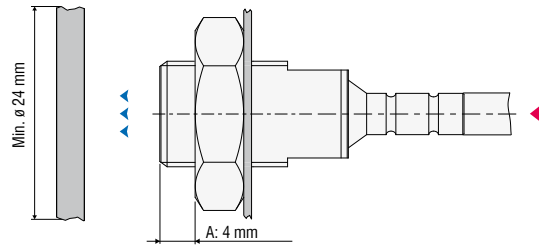
**Please note:**

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

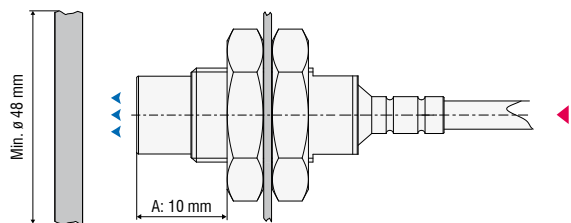
DT3005-U1-x-C1



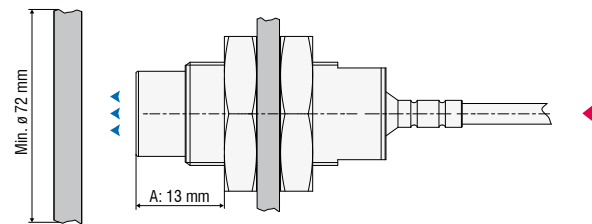
DT3005-S2-x-C1



DT3005-U3-x-C1



DT3005-U6-x-C1

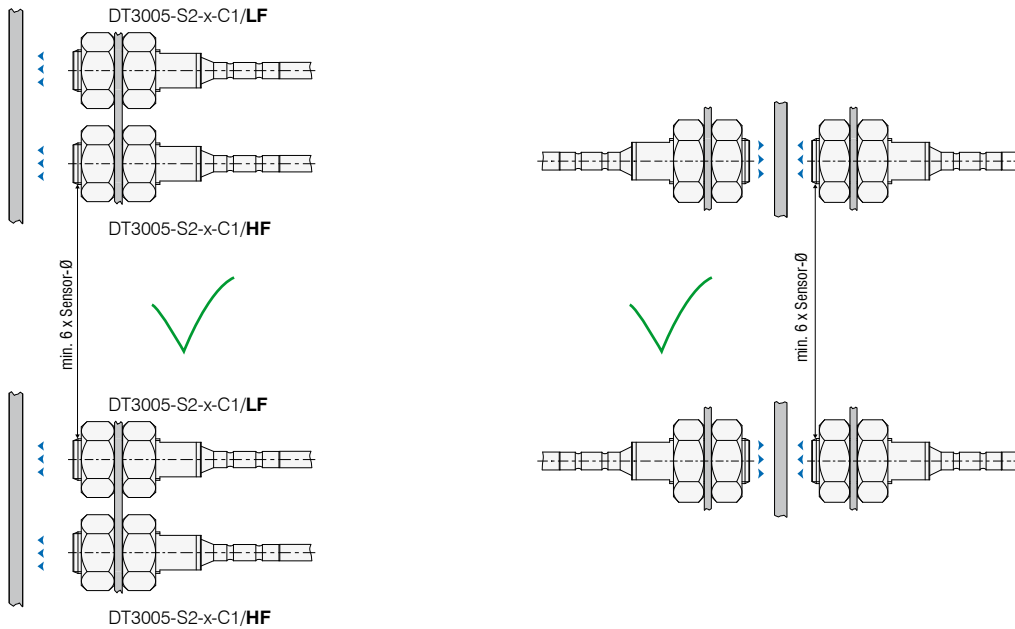


### Multi-channel operation without mutual interference

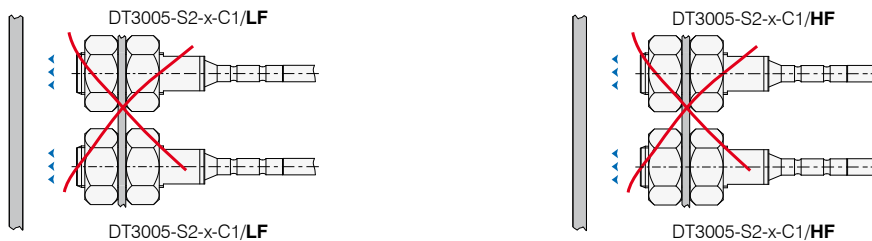
If two or more systems operate next to one another, there is no need for synchronisation using a synchronisation cable. For operating several systems, a new frequency separation is provided (LF/HF), which enables to operate these systems in parallel without influencing one another.

#### Please note:

- The LF/HF sensor arrangement enables to mount two sensors next to one another.
- The distance between two pairs of sensors must be at least 6 times the sensor diameter.
- However, it is not possible to place 2 LF sensors or 2 HF sensors next to one another.



Correct LF/HF arrangement



Arrangement not possible

Articel	Description	eddyNCDT 3001	eddyNCDT 3005	eddyNCDT 3010	eddyNCDT 3100	eddyNCDT 3300
PC3/8	Power- and output cable, 3m, 8 pin			•		
PC5/5	Power- and signal cable	•	•			
SC30	Synchronization cable, 30cm			•		
CSP 301	Digital signal processing and display unit up to 2 channels			•		
PC3100-3/6/BNC	Outputcable and supply unit, 3m				•	
PS2020	Power Supply 24V / 2.5A; Input 100-240 VAC; Output 24 VDC / 2.5A; DIN rail mounting; 35mm x 7.5mm, DIN 50022				•	•
MC2.5	Micrometer calibration fixture, range 0 to 2.5 mm, division 1 $\mu$ m, for sensors EPU05 to EPS2, adjustable offset (zero)			•	•	•
MC25D	Micrometer calibration fixture, range 0 to 25mm, division 1 $\mu$ m, for sensors EPU05 to EPU15, adjustable offset (zero)			•	•	•
ECx	Sensor cable, length selectable up to 15m					•
ECx/90	Sensor cable with 90° connector (sensor-sided) length selectable up to 15m					•
ECx/1	Extension cable for solder connection					•
ECx/2	Extension cable for plug connection					•
SCA3/5	Signal cable analog, 3m					•
SCA3/5/BNC	Signal cable analog with BNC connector, 3m					•
SCD3/8	Signal cable digital (switch input/outout), 3m (also for supply 11 - 32VDC); for DT3301					•
SIC3(07)	Signal cable with BNC connector for direct operation with oscilloscope					•
PSC30	Power / Synchronization cable, 0.3m, for DT3300					•
ESC30	Synchronization cable, 0.3m, for DT3301					•
PS300/12/5	Power supply Input 100 - 240VAC; Output $\leq$ 12VDC / 5.2VDC integrated cable 1.5m; for max. 4x DT3300					•
MBC300	Mounting base for controller DT330x, fixing through M4 threaded holes 166x108x60mm					•
MCT304-SM	Tower for max. 4 controller DT 3300; supply 100 - 240VAC					•
MCT304(01)	Tower for max. 4 controller DT 3301; supply 11 - 32VDC					•

## 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