



# More Precision

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





	<b>Wide range of applications with numerous sensor models</b>
	<b>High temperature stability</b>
	<b>High resolution &amp; linearity</b>
	<b>Frequency response 20 kHz (-3dB)</b>
	<b>Sensors for ferromagnetic and non-ferromagnetic targets</b>
	<b>Analog output (U/I) Digital output</b>
	<b>Intuitive configuration via web interface</b>

#### Performance and universality for industrial use

The eddyNCDT 3070 is a powerful, inductive sensor system based on eddy currents for measuring ranges smaller than 1 mm. The system comprises a compact controller, a sensor and an integrated cable and is factory-calibrated either for ferromagnetic or non-ferromagnetic materials.

#### Ideal for integration into plant and machinery

As sensor and controller are temperature-compensated, a high measurement accuracy can be achieved even in fluctuating temperatures. The sensors are designed for ambient temperatures up to a maximum of +200 °C and an ambient pressure up to 700 bar. The compact controller design as well as the sensor robustness make the measuring system ideal for integration into plant and machinery.

#### New benchmark in controller technology

The industrial-grade M12 Ethernet interface offers a modern fieldbus connection. Configurable analog outputs enable to output the measured values as voltage or current. For multi-system operation, the systems come with a new kind of frequency separation (LF/HF) which enables to operate several sensors next to one another without requiring any synchronization.

Features	Controller type	
	DT3070	DT3071
Active temperature compensation for sensor and controller	✓	✓
Frequency separation (LF & HF)	✓	✓
Industrial Ethernet interface	✓	✓
Intuitive web interface	✓	✓
Multipoint calibration regardless of the distance (up to 3-point calibration)	✓	✓
Scalable measuring range via analog output (teach function)	✓	✓
Scalable analog output	✓	✓
Switching and temperature outputs	-	✓
5-point calibration	-	✓
Storage of multiple characteristic curves	-	✓



When connecting a PC via the Ethernet interface, a modern web interface can be accessed without any further installation and enables the parameterization of sensor and controller. The DT3071 controller provides enhanced features such as 5-point calibration, setting of switching and temperature outputs, as well as storage of multiple characteristic curves.

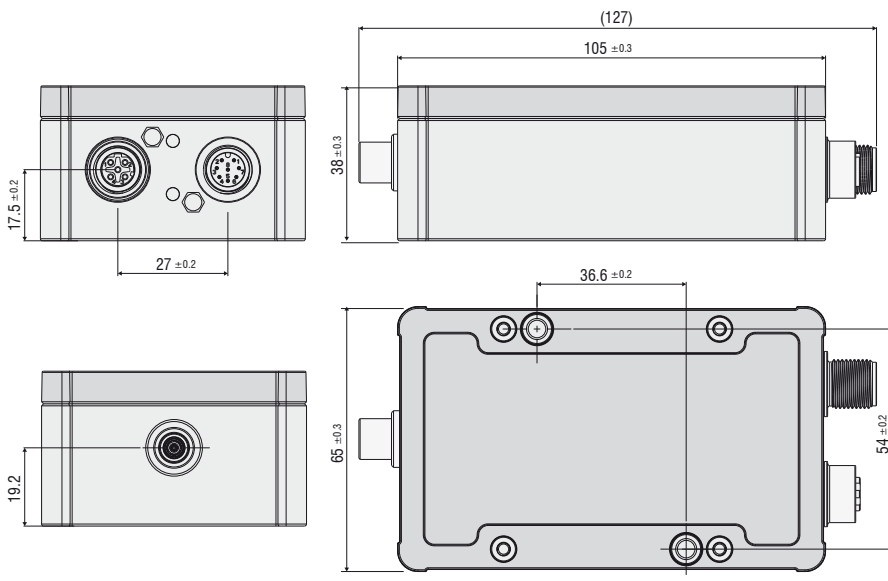
Model	DT3070	DT3071
Resolution <sup>1)</sup>	static (20 Hz)	0.005 % FSO
	dynamic (20 kHz)	0.025 % FSO
Frequency response (-3dB)	selectable (20 kHz, 5 kHz, 20 Hz)	
Measuring rate	50 kSa/s	
Linearity <sup>2)</sup>	< ±0.2 % FSO	< ±0.1 % FSO
Temperature stability	< 0.05 % FSO / K	
Temperature compensation	+10 ... +50 °C	
Synchronization	with LF & HF variants (please consider the notes for frequency separation, p. 46)	
Target material <sup>3)</sup>	Steel, aluminum	
No. of characteristic curves	1	max. 4
Supply voltage	12 ... 32 VDC	
Power consumption	2.5 W	
Digital interface	Industrial Ethernet	
Analog output	0 ... 10 V; 4 ... 20 mA (short circuit proof)	
Connection	Sensor: plug connector triaxial socket; supply/signal: 8-pole M12 connector; Industrial Ethernet: 5-pole M12 connector (cable see accessories)	
Mounting	through bores	
Temperature range	Storage	-10 ... +70 °C
	Operation	0 ... +50 °C
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 (plugged)	
Material	Die-cast aluminum	
Weight	approx. 230 g	

FSO = Full Scale Output

<sup>1)</sup> RMS noise relates to mid of measuring range


<sup>2)</sup> Value with 3-point linearization

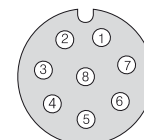
<sup>3)</sup> Steel: St37 Stahl DIN1.0037 / aluminum: AlCuMgPb3.1645 / AlMg3



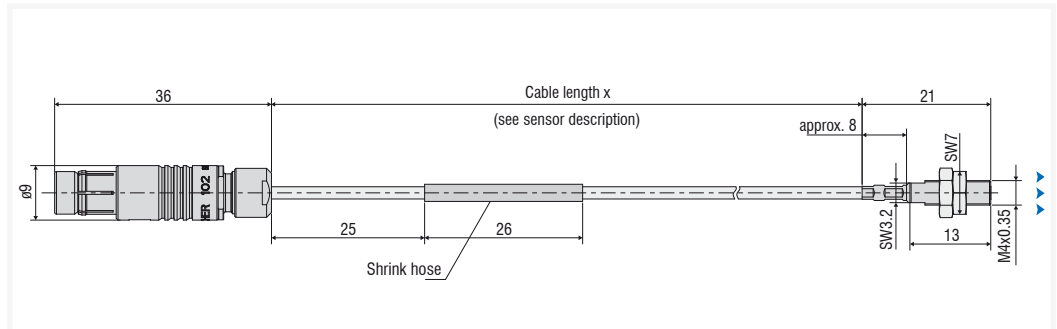
**Pin assignment IN/OUT/24V IN**

Pin	Assignment	Color (cable: PCx/8-M12)
1	Analog output U <sub>Displacement</sub>	White
2	Supply +24 V	Brown
3	Limit value 1 / U <sub>Temp sensor</sub>	Green
4	Limit value 2 / U <sub>Temp controller</sub>	Yellow
5	GND Temperature, limit value	Gray
6	GND analog output	Pink
7	GND supply	Blue
8	Analog output I <sub>Displacement</sub>	Red

 **8-pole M12x1 housing connector**  
View on pin side



▲▲▲  
Measurement direction



Model	ES-S04	
Measuring range	0.4 mm	
Start of measuring range	0.04 mm	
Resolution <sup>1) 2) 3)</sup>	0.02 $\mu\text{m}$	
Linearity <sup>1) 4)</sup>	$< \pm 1 \mu\text{m}$	
Temperature stability <sup>1) 2)</sup>	$< 0.1 \mu\text{m} / \text{K}$	
Temperature compensation	+10 ... +180 °C	
Sensor type	shielded	
Min. target size (flat)	$\varnothing 5 \text{ mm}$	
Connection	integrated cable, axial, length 0.25 m, 0.5 m and 0.75 m <sup>5)</sup> bending radius: static $\geq 10 \text{ mm}$ , dynamic $\geq 20 \text{ mm}$	
Mounting	Cable gland (M4)	
Temperature range	Storage	0 ... +180 °C
	Operation	0 ... +180 °C
Pressure resistance	100 bar (front)	
Shock (DIN EN 60068-2-27)	30 g	
Vibration (DIN EN 60068-2-6)	15 g	
Protection class (DIN-EN 60529)	IP50	
Material	stainless steel and ceramics	
Weight	approx. 25 g	

<sup>1)</sup> Valid for operation with DT307x controller, referred to nominal measuring range

<sup>2)</sup> Relates to mid of measuring range

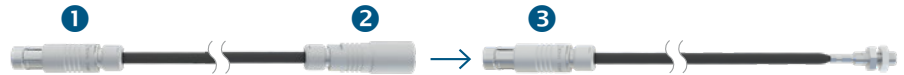
<sup>3)</sup> RMS value of the signal noise, static (20 Hz)

<sup>4)</sup> Only with DT307x controller and 3-point or 5-point linearization

<sup>5)</sup> Length tolerance cable:  $\pm 0,03 \text{ m}$

## Connection cable for DT3070 portfolio sensors

**Sensors with integrated cable: ES-S04-C-CAx/mB0  
and extension cable: ECE-x/fB0/mB0**



### Coaxial cable (sensor cable)

Cable diameter: Ø 2 mm  
Minimum bending radius: static approx. 10 mm / dynamic approx. 20 mm  
Temperature resistance: static up to 200 °C  
Available length: 0.25 m / 0.5 m / 0.75 m

**Sensors with integrated cable and open ends  
for solder connection via adapter cable ECA-x/OE/mB0/D3,6**



### Coaxial cable with Viton sheathing

Cable diameter: Ø 3.6 mm  
Minimum bending radius: static approx. 18 mm / dynamic approx. 36 mm  
Temperature resistance: up to 180 °C  
Available length: 1 m / 3 m / 6 m

**Sensors with integrated cable and A0 plug  
via adapter cable ECA-x/mA0/mB0/D3,6**



### Coaxial cable with Viton sheathing

Cable diameter: Ø 3.6 mm  
Minimum bending radius: static approx. 18 mm / dynamic approx. 36 mm  
Temperature resistance: up to 180 °C  
Available length: 1 m / 3 m / 6 m

## Plug/Socket:

### 1 Triax plug 0323118:

Type S 102 A014-120 D4,1  
Triaxial plug: Type: mB0  
Connection: push-pull  
Temperature resistance: 200 °C (3000 hrs.)



### 4 Triax plug 0323174:

Type S101 A005-120 D4,1  
Triaxial plug: Type: mA0  
Connection: push-pull  
Temperature resistance: 200 °C (3000 hrs.)



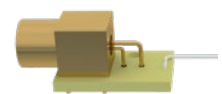
### 2 Triax socket 0323141:

Type KE102 A014-120 D4,1  
Triaxial socket: Type: fB0  
Connection: push-pull  
Temperature resistance: 200 °C (3000 hrs.)



### 5 Triax socket 0323173

Triaxial socket: Type: fA0  
Connection: push-pull  
Temperature resistance: 200 °C (3000 hrs.)



### 3 Triax plug 0323727:

Type S 102 A014-120 D2,1  
Triaxial plug: Type: mB0  
Connection: push-pull  
Temperature resistance: 200 °C (3000 hrs.)



Article	Description	DT3001	DT3005	DT3060	DT3070	DT3300	DZ140	SGS
PCx/8-M12	<b>Supply and signal cable</b> 8-pole with M12 connector Standard length: 3 m Optionally available: 5 m / 10 m / 15 m / 10 m as drag-chain suitable variant			X	X			
PCx/5-M12	<b>Supply and signal cable</b> 5-pole with M12 connector Standard length: 5 m Optionally available: 20 m	X	X					
PC4701-x	<b>Supply and signal cable</b> 8-pole with M12 connector Standard length: 10 m Optionally available: 15 m / 10 m as drag-chain suitable variant							X
SCD2/4/RJ45	<b>Industrial Ethernet cable</b> 4-pole with M12 connector on RJ45 connector Standard length: 2 m			X	X			
SCAx/5	<b>Signal cable, analog</b> 5-pole with M16x0.75 connector Standard length: 3 m Optionally available: 6 m / 9 m					X		
SCDx/8	<b>Signal cable for switching inputs and outputs:</b> 8-pole with M16x0.75 connector Standard length: 0.3 m Optionally available: 1 m					X		
PSCx	<b>Supply and synchronization cable</b> 5-pole with M9 connector Standard length: 0.3 m Optionally available: 1 m					X		
ESCx	<b>Synchronization cable</b> 5-pole with M9 connector Standard length: 0.3 m Optionally available: 1 m					X		
PC140-x	<b>Supply and signal cable</b> 8-pole connector Standard length: 3 m Optionally available: 6 m						X	
PS2020	<b>Power supply unit</b> Input 100-240 VAC output 24 VDC / 2.5 A; mounting onto symmetrical standard rail 35 mm x 7.5 mm, DIN 50022	X	X	X	X	X	X	X

## Sensors and Systems from Micro-Epsilon



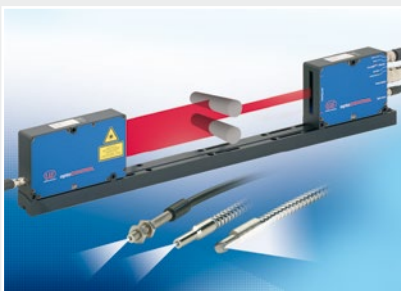
Sensors and systems for displacement, distance and position



Sensors and measurement devices for non-contact temperature measurement



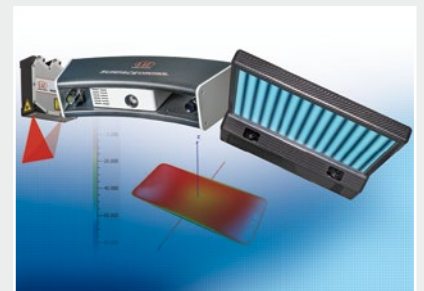
Measuring and inspection systems for metal strips, plastics and rubber



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