



# 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)	✓	✓
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.

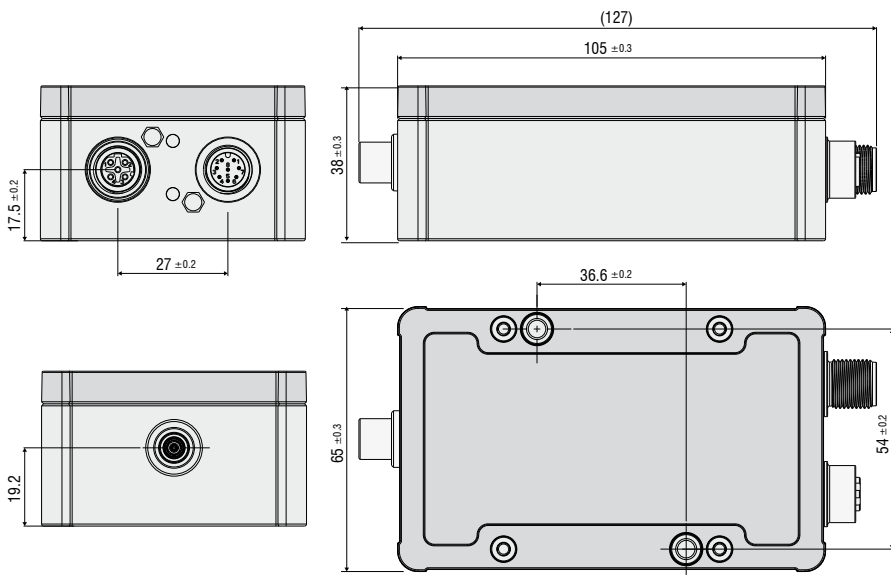
Model	DT3070	DT3071
Resolution <sup>1)</sup>	static (20 Hz)	0.005 % FSO
	dynamic (20 kHz)	0.025 % FSO
Frequency response (-3dB)	selectable (20 kHz, 5 kHz, 20 Hz)	
Measuring rate	50 kSa/s	
Linearity <sup>2)</sup>	< ±0.2 % FSO	< ±0.1 % FSO
Temperature stability	< 0.05 % FSO / K	
Temperature compensation	+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	Ethernet	
Analog output	0 ... 10 V; 4 ... 20 mA (short circuit proof)	
Connection	Sensor: plug connector triaxial socket; supply/signal: 8-pole M12 connector; 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

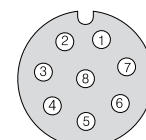


**Pin assignment IN/OUT/24V IN**

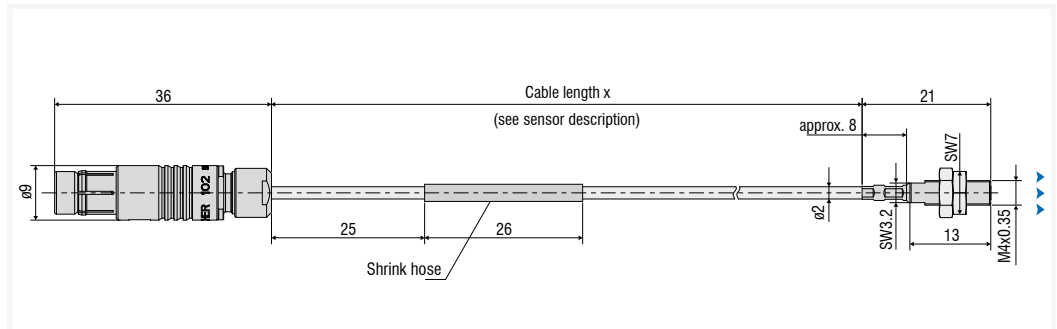
Pin	Assignment	Color (cable: PCx/8-M12)
1	Analog output U <sub>Displacement</sub>	White
2	Supply +24 V	Brown
3	Limit value 1 / U <sub>Temp sensor</sub>	Green
4	Limit value 2 / U <sub>Temp controller</sub>	Yellow
5	GND Temperature, limit value	Gray
6	GND analog output	Pink
7	GND supply	Blue
8	Analog output 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	-50 ... +180 °C
	Operation	-20 ... +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 (extension cable)	Coaxial cable (sensor cable)
Cable diameter	Ø 3.6 mm	Ø 2 mm
Minimum bending radius	static approx. 18 mm / dynamic approx. 36 mm	static approx. 10 mm / dynamic approx. 20 mm
Temperature resistance	up to 180 °C	static up to 200 °C
Available length	1 m / 3 m (6 m / 9 m on request)	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 / 9 m on request)

**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 / 9 m on request)

### 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>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