



More Precision

eddyNCDT // Inductive sensors based on eddy currents



High-performance inductive displacement measuring system for miniature sensors

eddyNCDT 3070

-  Wide range of applications with numerous sensor models
-  High temperature stability
-  High resolution & linearity
-  Frequency response 20 kHz (-3dB)
-  Measuring rate 200 kSa/s
-  Sensors for ferromagnetic and non-ferromagnetic targets
-  Analog output (U/I)
Digital output
-  Intuitive configuration via web interface



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 ¹⁾	static (20 Hz)	0.005 % FSO	
	dynamic (20 kHz)	0.025 % FSO	
Frequency response (-3dB)		selectable (20 kHz, 5 kHz, 20 Hz)	
Measuring rate	Analog output	200 kSa/s (16 bit)	
	Digital interface	50 kSa/s (16 bit)	
Linearity ²⁾		< ±0.2 % FSO	< ±0.1 % FSO
Temperature stability ³⁾		< 0.05 % FSO / K	
Temperature compensation		+10 ... +50 °C	
Target material ⁴⁾		Steel, aluminum	
No. of characteristic curves		1	max. 4
Supply voltage		12 ... 32 VDC	
Power consumption		typ. 2.5 W (max. 2.8 W)	
Digital interface		Ethernet	Ethernet / selectable: switching output (TTL), temperature output (0...5 V)
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	

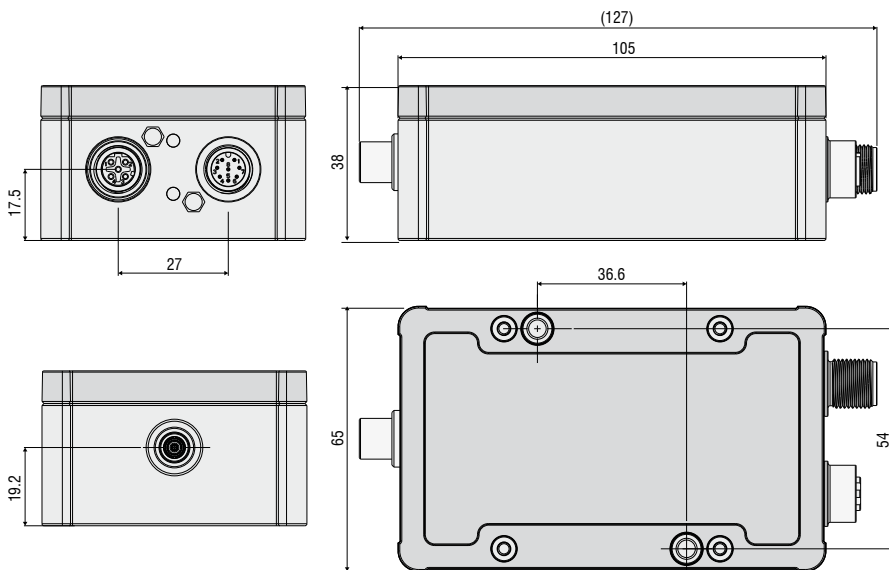
FSO = Full Scale Output

¹⁾ RMS noise relates to mid of measuring range

²⁾ Value with 3-/5-point linearization

³⁾ Relates to mid of measuring range, in the compensated temperature range

⁴⁾ Steel: St37 Stahl DIN1.0037 / aluminum: AlMg3

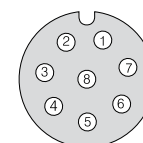


Pin assignment IN/OUT/24V IN

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



8-pole M12x1 housing connector
View on pin side

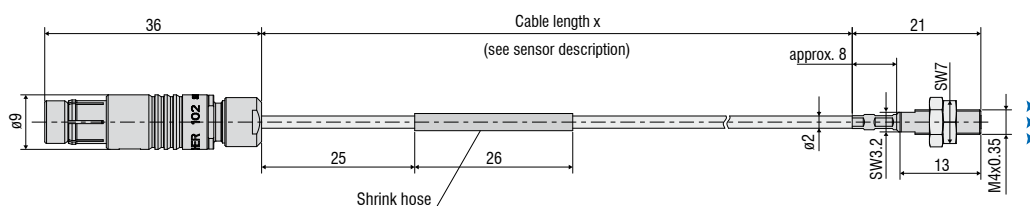


Dimensions in mm, not to scale.

Sensors

eddyNCDT 3070

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Measurement direction



Model		ES-S04-C-CAx
Measuring range		0.4 mm
Start of measuring range		0.04 mm
Resolution ^{1) 2) 3)}		0.02 μ m
Linearity ^{1) 4)}		< $\pm 1 \mu$ m
Temperature stability ^{1) 2)}		< 0.1 μ m / K
Temperature compensation		+10 ... +180 °C
Sensor type		shielded
Min. target size (flat)		$\varnothing 5$ mm
Connection		integrated cable, axial, length 0.25 m, 0.5 m and 0.75 m ⁵⁾ bending radius: static ≥ 10 mm, dynamic ≥ 20 mm
Mounting		Cable gland (M4)
Temperature range	Storage	-20 ... +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

¹⁾ Valid for operation with DT307x controller, referred to nominal measuring range

²⁾ Relates to the mid of the measuring range, in the compensated temperature range

³⁾ RMS value of the signal noise, static (20 Hz)

⁴⁾ Only with DT307x controller and 3-point or 5-point linearization

⁵⁾ Length tolerance cable: $\pm 0,03$ m

Connection cable for DT3070 portfolio sensors

Sensors with integrated cable: ES-S04-C-CAX/mB0/D2,0
and extension cable: ECE-x/fB0/mB0/D3,6



	Coaxial cable (extension cable)	Coaxial cable (sensor cable)
Cable diameter	Ø 3.6 mm	Ø 2 mm
Minimum bending radius	static approx. 27 mm / dynamic approx. 54 mm	static approx. 10 mm / dynamic approx. 20 mm
Temperature resistance	up to 200 °C	static up to 200 °C
Available length	1 m / 3 m (6 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. 27 mm / dynamic approx. 54 mm
Temperature resistance:	up to 200 °C
Available length:	1 m / 3 m (6 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. 27 mm / dynamic approx. 54 mm
Temperature resistance:	up to 200 °C
Available length:	1 m / 3 m (6 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



2 Triax socket 0323141:

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



3 Triax plug 0323727:

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



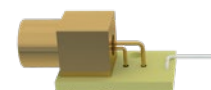
4 Triax plug 0323174:

Type S101 A005-120 D4,1
 Triaxial plug: Type: mA0
 Connection: push-pull
 Temperature resistance: 150 °C



5 Triax socket 0323173

Triaxial socket: Type: fA0
 Connection: push-pull
 Temperature resistance: 150 °C



Article	Description	DT3001	DT3005	DT3060	DT3070	DT3300	DZ140	SGS
PCx/8-M12	Supply and signal cable 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	Supply and signal cable 5-pole with M12 connector Standard length: 5 m Optionally available: 10 m / 20 m / 40 m / 80 m as drag-chain suitable variant	x	x					
PC4701-x	Supply and signal cable 8-pole with M12 connector Standard length: 10 m Optionally available: 15 m 10 m as drag-chain suitable variant							x
SCD2/4/RJ45	Ethernet cable 4-pole with M12 connector on RJ45 connector Standard length: 2 m			x	x			
SCAx/5	Signal cable, analog 5-pole with M16x0.75 connector Standard length: 3 m Optionally available: 6 m / 9 m					x		
SCDx/8	Signal cable for switching inputs and outputs: 8-pole with M16x0.75 connector Standard length: 0.3 m Optionally available: 1 m					x		
PSCx	Supply and synchronization cable 5-pole with M9 connector Standard length: 0.3 m Optionally available: 1 m					x		
ESCx	Synchronization cable 5-pole with M9 connector Standard length: 0.3 m Optionally available: 1 m					x		
PC140-x	Supply and signal cable 8-pole connector Standard length: 3 m Optionally available: 6 m						x	
PS2020	Power supply unit 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