



# More Precision

**induSENSOR** // Linear inductive displacement sensors





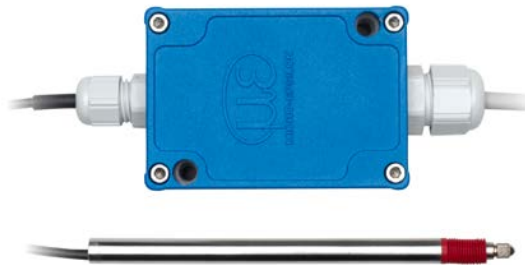
- Compact and robust aluminum housing (IP67)
- High resolution and linearity
- Universal application - compatible with LVDT and half-bridge sensors
- Ideal for high-volume applications in machine building and automation
- User-friendly set up and configuration via buttons or software

The new MSC7401 controller is designed to be operated with LVDT and LDR measuring gauges and displacement sensors. Due to its robust aluminum housing protected to IP67, this single-channel controller is predestined for industrial measurement tasks.

A large variety of compatible, inductive displacement sensors and gauges from Micro-Epsilon combined with an optimized price/performance ratio opens up numerous fields of applications in automation technology and machine building. The controller is easily set up using buttons or software.

#### Exemplary configuration

MSC7401 with DTA-5G8-3-CA gauge:



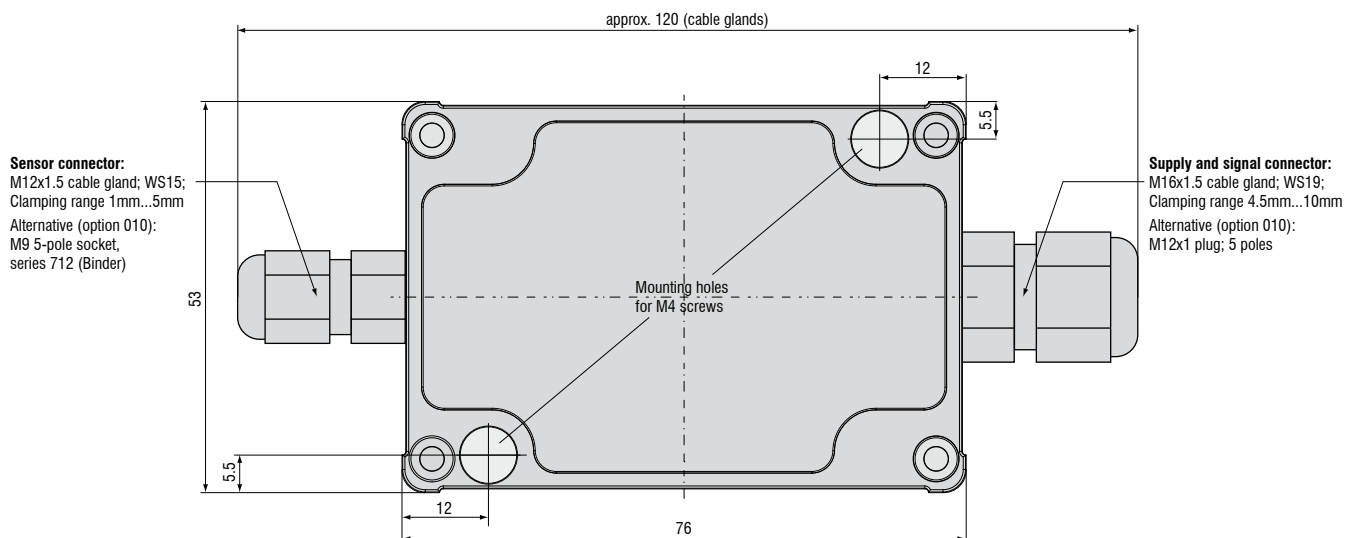
Technical Data	Channel with DTA-5G8-3-CA
Measuring range	$\pm 5 \text{ mm}$
Linearity	$30 \mu\text{m}$
Resolution	$\sim 1.2 \mu\text{m}$
Output	analog

Model		MSC7401 Miniature sensor controller
Power supply		5 V <sup>1)</sup> ... 14 V ... 30 V
Protection		reverse polarity protection, overvoltage protection
Sensor principle		full-bridge sensor/LVDT (DTA series) and half-bridge sensor (LDR series)
Input impedance (sensor)		> 100 kOhm
Gain		adjustable via buttons or software
Zero		
Output signal (adjustable)		(0)2 ... 10 VDC / 0.5 ... 4.5 V / 0 ... 5 V (Ra > 1 kOhm) or (0)4 ... 20 mA (load < 500 Ohm)
Resolution <sup>2)</sup>	DTA series	13 bits (0.012 % FSO) at 50 Hz 12 bits (0.024 % FSO) at 300 Hz
	LDR series	12 bits (0.024 % FSO) at 50 Hz 11 bits (0.048 % FSO) at 300 Hz
Linearity		0.02 % FSO
Frequency response (only adjustable via software)		300 Hz (-3dB)
Storage		-40 ... +85 °C
Operation		-40 ... +85 °C
Temperature stability	DTA series	± 100 ppm FSO/K
	LDR series	± 125 ppm FSO/K
Protection class		IP67
Weight		approx. 200 g
Housing material		aluminum die casting
Connection	Cable gland	screw terminal; AWG 16 to AWG 24; with ferrule up to AWG 28
	Connector	power supply: M12x1 plug (5 poles); sensor: M9 socket; 5 poles (Binder)
EMC		DIN EN 61326-1; DIN EN 61326-2-3
Vibration		DIN EN60068-2-6
Shock		DIN EN 60068-2-27 (40g, 6ms, 1000 per axis)
		DIN EN 60068-2-27 (100g, 6ms, 3 per axis)

FSO = Full Scale Output

<sup>1)</sup> Restricted with load and signal span

<sup>2)</sup> Noise: AC RMS measurement via RC low-pass filter of the 1st order with  $f_c = 5$  kHz





- *Measuring ranges from 75 ... 630 mm*
- *Linearity:  $\pm 0.3$  % FSO*
- *Integrated microelectronics*
- *Robust design: pressure-resistant, oil-resistant and maintenance-free*
- *Short offset ranges*

The sensor elements of the EDS series are protected by a pressure resistant stainless steel housing. The sensor electronics and signal conditioning are completely integrated in a sensor flange.

As a target an aluminum tube is used which is integrated into the piston rod and is passed over the sensor rod in a non-contact, wear-free manner.

Due to the eddy current principle applied, no permanent magnets need to be mounted inside the cylinder.

Its robust design make the EDS long-stroke sensor ideal for the integration into hydraulic and pneumatic cylinders, especially under harsh industrial conditions.

#### Typical applications

Long-stroke EDS sensors are designed for industrial use in hydraulic and pneumatic cylinders for the displacement and position measurement of pistons or valves, e.g. for the measurement of

- displacement, distance, position, gap
- deflection
- movement, stroke
- filling level, immersion depth and spring travel

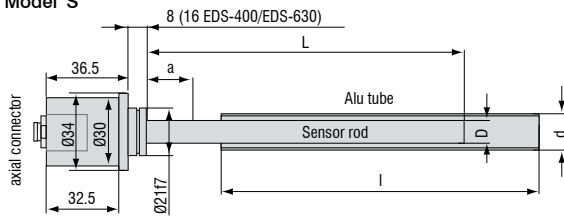


EDS series: integration in a hydraulic cylinder

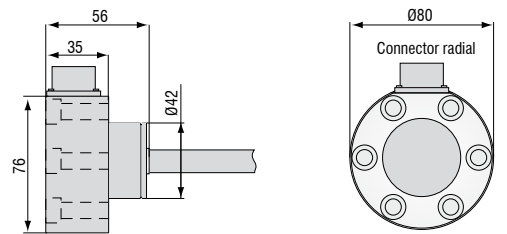
Model	EDS-75	EDS-100	EDS-160	EDS-200	EDS-250	EDS-300	EDS-400	EDS-500	EDS-630	
Series	S	S, F	S, F	S	S, F	S, F	S, F	S	S, F	
Measuring range	75 mm	100 mm	160 mm	200 mm	250 mm	300 mm	400 mm	500 mm	630 mm	
Linearity	± 0.3 % FSO	0.23 mm	0.3 mm	0.48 mm	0.6 mm	0.75 mm	0.9 mm	1.2 mm	1.5 mm	1.89 mm
Resolution	0.05 % FSO	0.038 mm	0.05 mm	0.08 mm	0.1 mm	0.125 mm	0.15 mm	0.2 mm	0.25 mm	0.315 mm
Temperature range	-40 ... +85 °C									
Temperature stability	± 200 ppm / °C									
Frequency response (-3 dB)	150 Hz									
Output signal	4 ... 20 mA									
Output load	500 Ω									
Supply voltage	18 ... 30 VDC									
Current consumption	max. 40mA									
Connection	S Series	7-pin connector (sensor cable as an option) with either radial or axial output								
	F series	5-pin radial bayonet-connector with mating plug								
Pressure resistance	450 bar (sensor rod, flange)									
Protection class	IP67									
Electromagnetic compatibility (EMC)	DIN EN 61326-1:2006 interference emission DIN EN 61326-2-3:2007 interference immunity									
Shock <sup>1)</sup>	40 g, 3000 shocks / axis 100 g radial, 300 g axial									
Vibration	5 ... 44 Hz ± 2.5 mm 44 ... 500 Hz ± 23 g									
Material	V4A-Steel 1.4571									

FSO = Full Scale Output <sup>1)</sup> Half sinusoid 6 ms

**Model S**

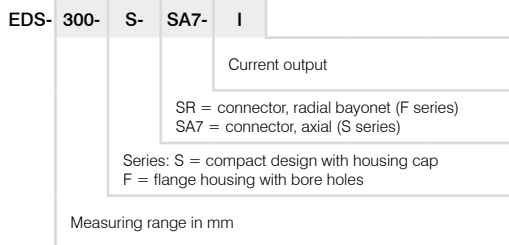


**Model F**



6 mounting holes ø9mm on pitch circle ø63mm

**Article designation**



Measuring ranges	Sensor rod		Aluminum tube		Offset
	L	D	l	d	
75	110	10	110	16	15
100	140	10	140	16	20
160	200	10	200	16	20
200	240	10	240	16	20
250	290	10	290	16	20
300	340	10	340	16	20
400	450	12	450 (S) 460 (F)	18 (S) 26 (F)	25
500	550	12	550	18	25
630	680	12	680 (S) 690 (F)	18 (S) 26 (F)	25

**General accessories**

2960031	MC25D	Digital micrometer calibration fixture
2420062	PS2020	Power supply on DIN rail, input 100 - 240 VAC, output 24 VDC / 2.5 A
2984026		Function and linearity inspection certificate incl. protocol with listed measurement data of the linearity inspection and documentation
2213034		IF7001 single-channel USB/RS485 converter

**Accessories for LDR series****Connection cables**

0157047	C7210-5/3	Sensor cable, 5 m, with cable connector
0157048	C7210/90-5/3	Sensor cable, 5 m, with 90° cable connector

**Supply cable**

2901087	PC710-6/4	Supply/output cable, 6 m
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**Spare plungers**

0800136	LDR-10	Spare plunger
0800137	LDR-25	Spare plunger
0800138	LDR-50	Spare plunger

**Service**

Connector installation and adjustment

**Accessories for EDS series****Service**

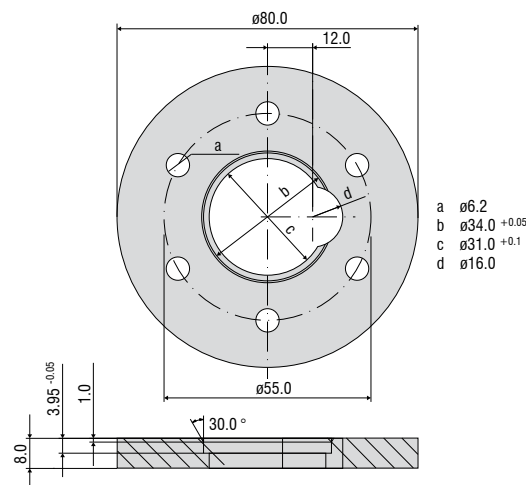
2985001		Function and linearity inspection for EDS series incl. pressure inspection and documentation without recalibration
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**Connection cables**

0157043	C703-5	VIP/LVP/EDS 7-pin connection cable for S series, 5 m
2902084	C703-5/U	VIP/LVP/EDS 7-pin connection cable for S series, 5 m for voltage output 1 - 5 V
0157050	C703/90-5	VIP/LVP/EDS 7-pin connection cable for S series, 5 m with 90° cable connector
2901143	C705-5	VIP-/LVP-/EDS 5-pin connection cable for F series, 5 m
2901160	C705-15	VIP-/LVP-/EDS 5-pin connection cable for F series, 15 m

**Installation ring**

0483326		EDS mounting ring
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Linearity inspection certificate

## 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