








# More Precision

**induSENSOR** // Linear inductive displacement sensors



# Controller for inductive displacement sensors **induSENSOR MSC7602**

-  Ideal for serial applications in machine building and automation
-  High resolution and linearity
-  User-friendly parameter setting via buttons or software
-  Multi-channel capability & synchronous operation
-  **INTER  
FACE** Analog (U/I) / RS485 / PROFINET / EtherNet/IP



The MSC7602 controller is designed to be operated with measuring gauges and displacement sensors of the DTA (LVDT) and LDR (half-bridge sensors) series. A wide 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 ideally suited to multi-channel applications. The bus connector on the rear side significantly reduces wiring effort. The controller can be easily set up via buttons/LEDs or software.

Users can either choose the symmetrical adjustment around the zero point in order to make optimum use of the specific advantages of differential sensors, or teach in two almost arbitrary points within the measuring range. If desired, these settings can be made at the factory and documented with a manufacturer test certificate.



Easy "click-fit" installation with DIN rail

**Long measurement chains with up to 62 subscribers/bus**



Model		MSC7602
Resolution <sup>[1]</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
Frequency response (-3dB)		300 Hz (adjustable only via software)
Linearity		≤ ±0.02% FSO
Temperature stability	DTA series	≤ 100 ppm FSO/K
	LDR series	≤ 125 ppm FSO/K
Supply voltage <sup>[2]</sup>		14 ... 30 VDC (5 ... 30 VDC)
Max. current consumption		80 mA
Input impedance <sup>[3]</sup>		> 100 kOhm
Digital interface <sup>[4]</sup>		RS485 / PROFINET / EtherNet/IP
Analog output <sup>[3] [5]</sup>		(0)2 ... 10 V; 0.5 ... 4.5 V; 0 ... 5 V (Ra 1 kOhm) or 0(4) ... 20 mA (load 500 Ohm)
Connection		Sensor: Screw terminal AWG 16 to AWG 28 Supply/signal: Screw terminal AWG 16 to AWG 28 Supply/sync/RS485: DIN rail bus connector
Mounting		DIN rail 35 mm
Temperature range	Storage	-40 ... +85 °C
	Operation	-40 ... +85 °C
Shock (DIN EN 60068-2-27)		5 g / 6 ms in 6 axes, 1000 shocks each 15 g / 11 ms in 6 axes, 10 shocks
Vibration (DIN EN 60068-2-6)		±2 mm / 10 ... 15.77 Hz in 3 axes, 10 cycles each ±2 g / 15.77 ... 2000 Hz in 3 axes, 10 cycles each
Protection class (DIN EN 60529)		IP20
Material		Polyamide
Weight		approx. 120 g
Compatibility		full-bridge sensor/LVDT (DTA series) and half-bridge sensor (LDR series)
No. of measurement channels		2

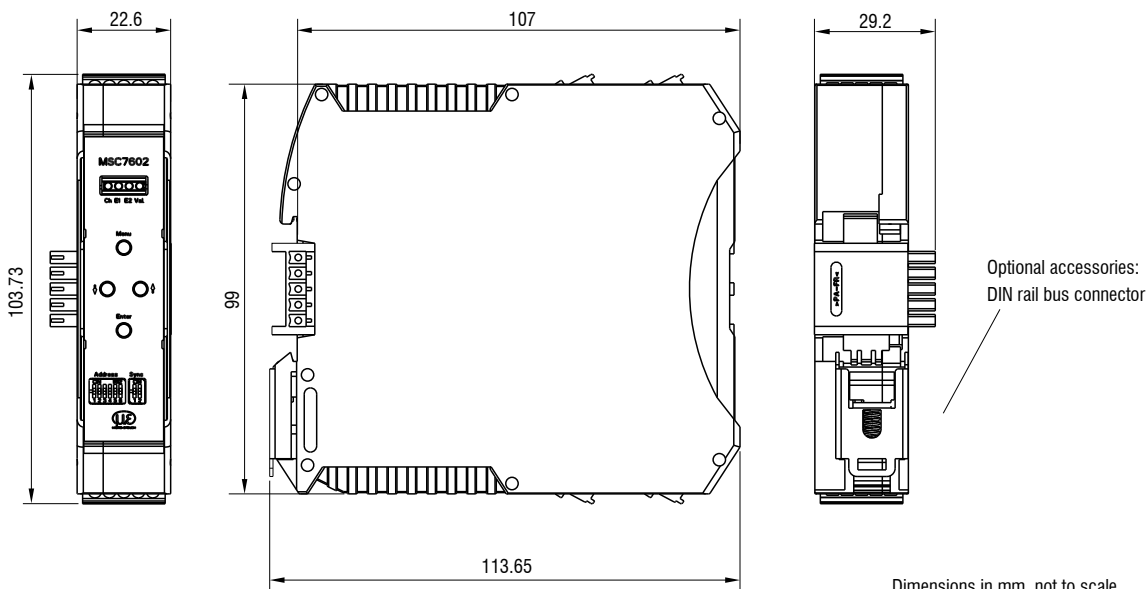
<sup>[1]</sup> Noise: AC RMS measurement via RC low-pass filter of the 1st order with  $f_c = 5$  kHz

<sup>[2]</sup>  $V_+ = 5$  V: no voltage output available; current output: max. load 100  $\Omega$ ;  $V_+ = 9$  V: voltage output: 0.5 V ... 4.5 V or 0 V ... 5 V; current output: max. load 250  $\Omega$

<sup>[3]</sup> Sensor side

<sup>[4]</sup> For PROFINET / EtherNet/IP / Ethernet / EtherCAT: Connection via interface module (see accessories)

<sup>[5]</sup> 0 V  $\pm$  < 30 mV, 0 mA  $\pm$  < 35  $\mu$ A; for controllers with current output, the output signal is limited to approx. 21 mA



# Technology and measuring principle

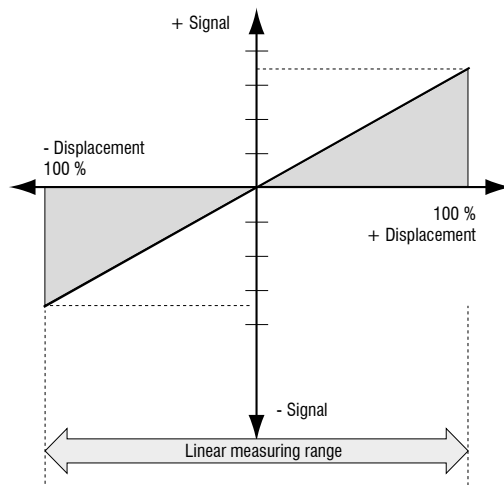
## induSENSOR

### LVDT Gauges and LVDT displacement sensors (DTA series)

LVDT displacement sensors and gauges (Linear Variable Differential Transformer) are constructed with a primary and two secondary coils, which are arranged symmetrically to the primary winding. As a measuring object, a rod shaped soft-magnetic core can be moved within the differential transformer. An electronic oscillator supplies the primary coil with an alternating current of constant frequency. The excitation is an alternating voltage with an amplitude of a few volts and a frequency between 1 and 10 kHz.

Depending on the core position, alternating voltages are induced in the two secondary windings. If the core is located in its "zero position", the coupling of the primary to both secondary coils is equally large. Movement of the core within the magnetic field of the coil causes a higher voltage in one secondary coil and a lower voltage in the second coil. The difference between the two secondary voltages is proportional to the core displacement. Due to the differential design of the sensor, the LVDT series has an output signal which is very stable.

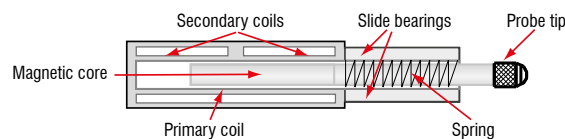
Signal LVDT sensor



Measuring principle gauging sensor



Probe tip



Measuring principle displacement sensor



Plunger

