



# EMSSA

## LINEAR MAGNETOSTRICTIVE ROD TRANSDUCER WITH ANALOGUE OUTPUT

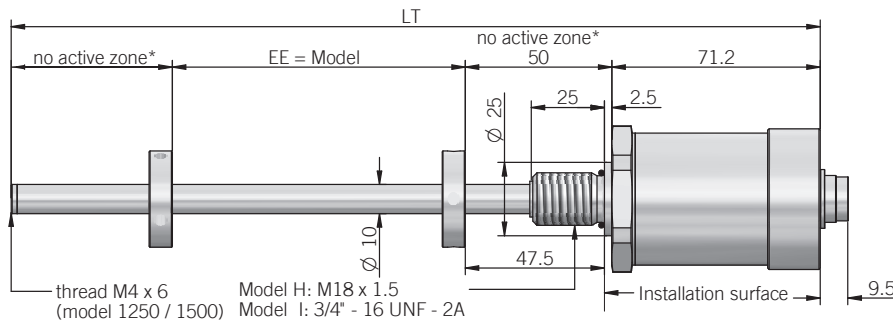


### Specifications

EMSSA is an absolute linear magnetostrictive transducer featuring an analogue interface. Main characteristics of magnetostrictive transducers is the absence of electric contact on the enclosure there is no issue of wear and deterioration during working life guaranteeing high displacement speed and precision. High reliability and simple installation even for applications with mechanical stresses, shocks or high contamination are assured by the compact size and the rugged enclosure. This series has been designed for being mounted internally to high applications (350 bar, 500 bar peak) such as hydraulic or pneumatic cylinders.

ORDERING CODE	EMSSA	500	S	10	H	10	P	A
	<b>SERIES</b> linear magnetostrictive transducer with analogue output	<b>EMSSA</b>						
	<b>STROKE</b> mm from 50 to 1500 <i>see table for stroke availability</i>							
	<b>ENCLOSURE RATING</b> IP 67		S					
	<b>OUTPUT SIGNAL</b> 0 ... 10 VDC 4 ... 20 mA			10				
	<b>THREAD TYPE</b> M18 x 1,5 3/4" - 16 UNF				H			
	<b>DISPLACEMENT SPEED</b> max speed 10 m/s					10		
	<b>OUTPUT TYPE</b> cable (standard length 1 m) DIN 45322 M16 6 pin connector						P C6	
	<b>OUTPUT DIRECTION</b> axial							A

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\* = 55 mm up to stroke 1000 mm, from 1250 mm consider 60 mm due to M4 threaded hole

dimensions in mm

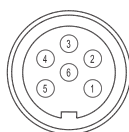
- OR 15,4 x 2,1 (mod.H) / OR 16,36 x 2,21 (mod.I) included
- Cursors and female connector not included, for ordering P/N please refer to Accessories section

ELECTRICAL SPECIFICATIONS	
<b>Resolution</b>	16 bit (max electrical noise 5 mVpp)
<b>Output signal</b>	0 ... 10 VDC 4 ... 20 mA
<b>Output alarm value</b>	10,5 VDC 21 mA
<b>Output value max</b>	12 VDC 30 mA
<b>Power supply</b>	19,2 ... 28,8 VDC
<b>Power ripple</b>	1 Vpp max
<b>Current consumption</b>	70 mA max 90 mA max
<b>Output load</b>	5 kΩ < 500 Ω
<b>Output ripple</b>	< 5 mVpp
<b>Independent linearity</b>	± 0,02% FS (min ± 0,060 mm)
<b>Repeatability</b>	< 0,01 mm
<b>Hysteresis</b>	< 0,01 mm
<b>Sampling time</b>	0,5 ms (mod. 50 ... 200) 1 ms (mod. 400 ... 1000) 1,5 ms (mod. 1250 ... 1500)
<b>Protection against overvoltage</b>	yes
<b>Protection against polarity inversion</b>	yes
<b>Protection against power supply on output</b>	yes
<b>Electrical insulation</b>	500 VDC
<b>Electromagnetic compatibility</b>	according to 2014/30/EU directive

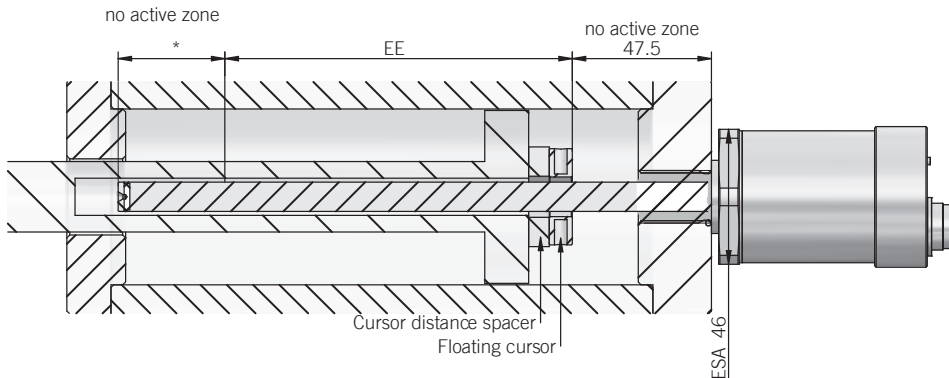
MECHANICAL SPECIFICATIONS	
<b>Stroke</b>	50 - 100 - 150 - 200 - 250 - 300 - 350 - 400 - 450 - 500 - 600 - 700 - 800 - 900 - 1000 - 1250 - 1500 mm
<b>Electric stroke (EE)</b>	see model (mm)
<b>Overall dimensions (LT)</b>	EE + 176,2 mm (mod. 50 ... 900) EE + 181,2 mm (mod. 1000 ... 1500)
<b>Enclosure rating</b>	IP 67 (IEC 60529)
<b>Detected measurement</b>	displacement
<b>Travel speed</b>	10 m/s max
<b>Acceleration</b>	100 m/s <sup>2</sup> max
<b>Speed measurement range</b>	min 0 ... 0,1 m/s max 0 ... 10 m/s
<b>Speed accuracy</b>	< 2%
<b>Shock</b>	100 G, 11 ms, single shock (IEC 60068-2-27)
<b>Vibration</b>	12 G, 10 ... 2000 Hz (IEC 680068-2-6)
<b>Rod / housing material</b>	1.4401 / AISI 316 stainless steel
<b>Operative pressure</b>	350 bar (500 bar peak)
<b>Cursor type</b>	floating cursor
<b>Temperature coefficient</b>	≤ 0,01 % FS / °C
<b>Operating temperature</b>	-30° ... +75°C (-22° ... +167°F)
<b>Storage temperature</b>	-40° ... +100°C (-40° ... +212°F)

CONNECTIONS		
Function	Cable output	C6 6 pin M16 connector
+ V DC	brown	5
OV	white	6
<b>Output cursor 1</b> 0 ... 10 V 4 ... 20 mA	grey	1
<b>OV cursor 1</b>	pink	2
<b>Inverse output cursor 1</b> 10 ... 0 V 20 ... 4 mA	yellow	3
<b>OV inverse output cursor 1</b>	pink	4

C6 connector (6 pin)  
DIN 45322  
solder side view FV



## Cylinder mounting example



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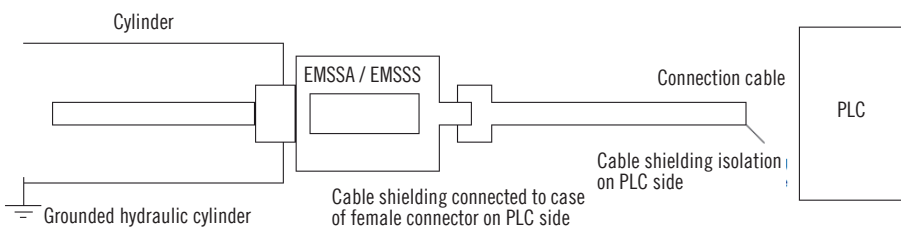
For correct installation of rod-type magnetostrictive transducers in hydraulic cylinders, remember that the cylinder head must be made of non-magnetic material where the threaded hole will be drilled to install the transducer. If not, the residual magnetisation caused by drilling the threaded hole must be less than 4 Gauss. Sealing surface must be free from scratches longitudinal or spiral

Ro 1,6  $\mu\text{m}$  for sealing with non pulsating pressure  
Ro 0,8  $\mu\text{m}$  for seals with pulsating pressure

Suggested o-ring (model H)  
Parker 6-349 15,4 x 2,1  
Material: Viton 90° Shore A  
Mixes: Parker N552-90

Suggested o-ring (model I)  
Parker 3-908 16,36 x 2,21  
Material: Viton 90° Shore A  
Mixes: Parker N552-90

## Electrical connection example



The transducer must be installed away from sources of magnetic fields, both static and 50 Hz (electric motors, solenoids, etc.).

- with floating cursor assembly support must be made with nonmagnetic material
- the transducer connection cable must be wired separate from power cables and/or solenoid controls, drives, or remote switches
- power supply must be drawn from dedicated power supply and connected directly to power terminals as near as possible
- since the transducer cursor is a magnet, make sure there are no iron filings or small fragments of magnetic metal near the transducer. This could produce an accumulation of material on the cursor, with consequent sliding problems
- if the transducer is installed in a cylinder isolated from the ground, the cable shielding on PLC side must be grounded
- with multiple cursors (two or more), cursors distance must be minimum 75 mm each