



# EMSPA

## LINEAR MAGNETOSTRICTIVE TRANSDUCER WITH ANALOGUE OUTPUT

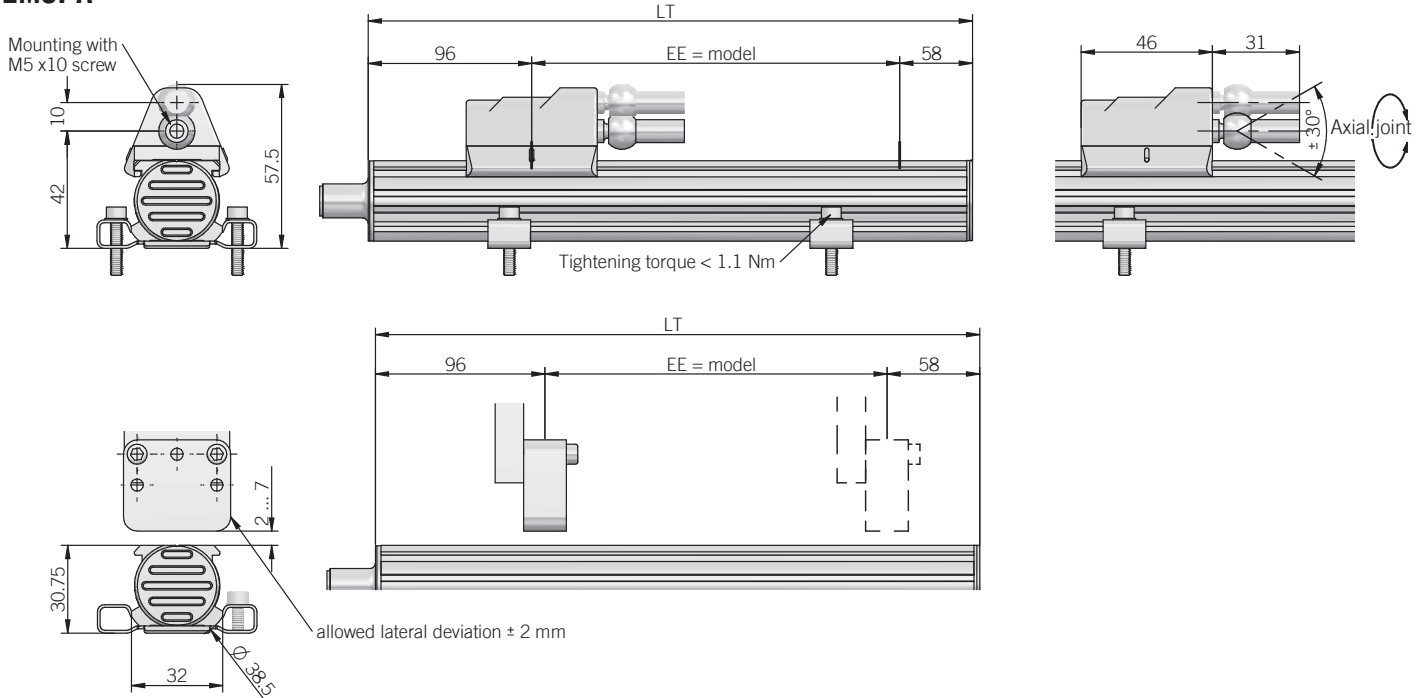


### Specifications

EMSPA is an absolute linear magnetostrictive transducer with analog interface. Thanks to the absence of electrical contact on the enclosure there is no issue of wear and deterioration during working life. Magnetostrictive technology guaranties great performances of speed and accuracy. 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.

ORDERING CODE	EMSPA	500	S	20D	10	P	A
<b>SERIES</b> linear magnetostrictive transducer with analogue output	EMSPA						
<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 / 1 cursor (standard) 0 ... 10 VDC / 1 cursor position/speed 0 ... 10 VDC / 2 cursors (min. stroke 400 mm) 4 ... 20 mA / 1 cursor position/speed 4 ... 20 mA / 2 cursors (min. stroke 400 mm)	10S 10P 10D 20S 20P 20D						
<b>TRAVEL SPEED</b> max speed 10 m/s	10						
<b>OUTPUT TYPE</b> cable (standard length 1 m) M12 5 pin connector M12 8 pin connector M16 DIN 45322 6 pin connector M16 DIN 45326 8 pin connector	P S5 S8 C6 C8						
<b>OUTPUT DIRECTION</b> axial	A						

## EMSPA



dimensions in mm

brackets, 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 max value</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>	$\leq \pm 0,01\%$ FS (min $\pm 0,060$ mm) typical with sliding cursor $\leq \pm 0,02\%$ FS with floating cursor (working distance 2 ... 5 mm) $\leq \pm 0,04\%$ FS with floating cursor (working distance 5 ... 7 mm)	
<b>Repeatability</b>	< 0,01 mm	
<b>Hysteresis</b>	< 0,01 mm	
<b>Sampling time</b>	0,5 ms (50 ... 300) 1 ms (350 ... 1100) 1,5 ms (1200 ... 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

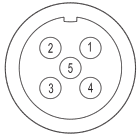
<b>Stroke</b>	50 - 100 - 150 - 200 - 250 - 300 - 350 - 400 - 450 - 500 - 600 - 700 - 800 - 900 - 1000 - 1100 - 1200 - 1300 - 1400 - 1500 mm
<b>Electric stroke (EE)</b>	see model (mm)
<b>Overall dimension (LT)</b>	EE + 154 mm
<b>Enclosure rating</b>	IP 67 (IEC 60529)
<b>Detected measurement</b>	displacement / speed
<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>Housing material</b>	anodized aluminium / Nylon 66 G 25
<b>Cursor type</b>	sliding or floating cursor
<b>Temperature coefficient</b>	0,005 % FS / °C
<b>Operating temperature</b>	-30° ... +75°C (-22° ... +167°F)
<b>Storage temperature</b>	-40° ... +100°C (-40° ... +212°F)

**CONNECTIONS**

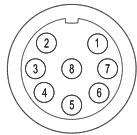
Function	Cable output	S5 5 pin M12 connector	S8 8 pin M12 connector	C6 6 pin M16 connector	C8 8 pin M16 connector
+ V DC	brown	5	7	5	7
0V	white	4	6	6	8
<b>Output cursor 1</b> 0 ... 10 V 4 ... 20 mA	grey	1	5	1	5 (1*)
<b>0V cursor 1</b>	pink	2	1	2	2
<b>Inverse output cursor 1</b> <b>Output cursor 2</b> <b>Output speed</b> 10 ... 0 V 20 ... 4 mA	yellow	3	3	3	3
<b>0V</b> <b>Output cursor 1</b> <b>Output cursor 2</b> <b>Output speed</b>	pink	2	2	4	6

The transducer enclosure has to be connected to ground only on the control system side by the cable shield, to guarantee the correct electrical insulation of the transducer from the machine, always assemble the brackets using the plastic washers included.

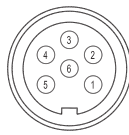
S5 connector (5 pin)  
M12 A coded  
solder side view FV



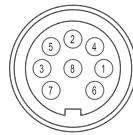
S8 connector (8 pin)  
M12 A coded  
solder side view FV



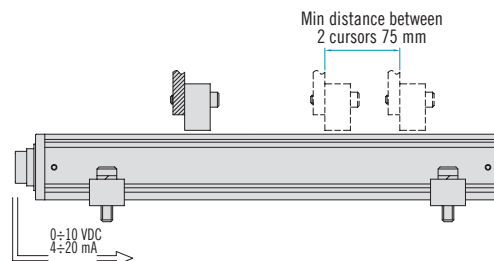
C6 connector (6 pin)  
DIN 45322  
solder side view FV



C8 connector (8 pin)  
DIN 45326  
solder side view FV



### Installation example with two cursors



For multi-cursor model, the cursors have to work in the same conditions of distance and temperature. Cursors must be installed on a support made of non-magnetic material (like brass, aluminium or AISI316 stainless steel).

The installation kit provides two screws, two nuts and two washers (all made of brass).

The cursor must be installed with maximum attention to horizontal alignment with the transducer axis (maximum tolerance is  $\pm 2$  mm), distance from the transducer surface has to be within the range from 2 to 7 mm.

### Current output application example

