

### Main characteristics

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



Magnetostrictive transducer

### Ordering code

EMSPA 1000 S 10S 10 P A

Model of Linear magnetostrictive transducer **EMSPA**

**Stroke (mm)**

50/100/150/200/250/300/350/400  
450/500/600/700/800/900/1000  
1100/1200/1300/1400/1500

*N.B.: Please contact our offices for versions and range availability*

**Protection class**

standard IP67 **S**

**Output signal**

0÷10 Vdc	1 cursor (standard)	<b>10S</b>
0÷10 Vdc	1 cursor position / speed	<b>10P</b>
0÷10 Vdc	2 cursors (min. stroke 400 mm)	<b>10D</b>
4÷20 mA	1 cursor	<b>20S</b>
4÷20 mA	1 cursor position / speed	<b>20P</b>
4÷20 mA	2 cursors (min. stroke 400 mm)	<b>20D</b>

**Output position**

**A** axial

**Output type**

**P** cable output length standard 1 m  
**S5** 5 contacts connector M12  
**C6** 6 contacts connector M16  
**C8** 8 contacts connector M16  
**S8** 8 contacts connector M12

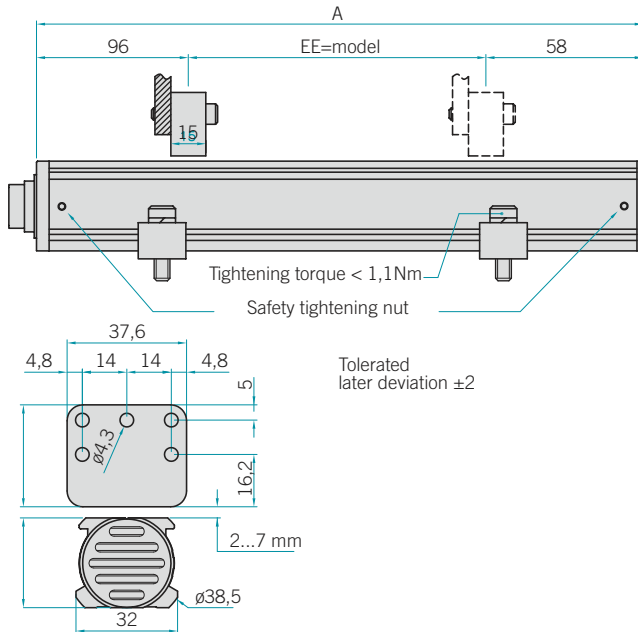
**Displacement speed**

**10** max speed 10 m/s

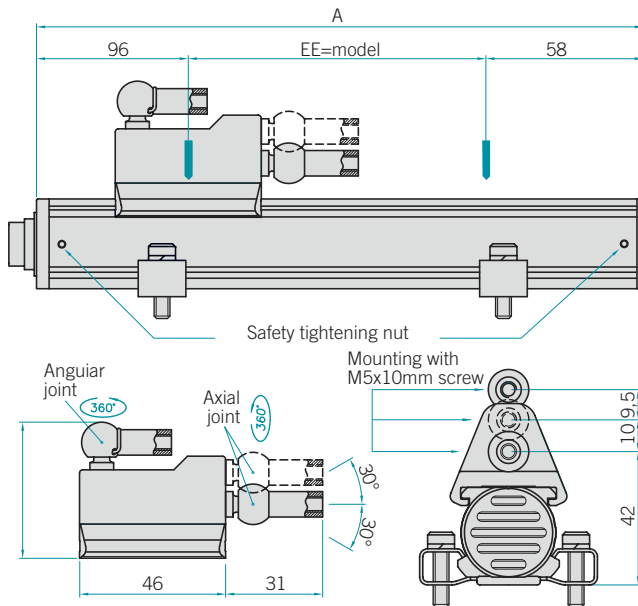
EMSPA

## Mechanical dimensions

EMSPA model with floating cursor



EMSPA model with sliding cursor



## Electrical / mechanical data

<b>Model*</b>	50/100/150/200/250/300/350/400 450/500/600/700/800/900/1000 1100/1200/1300/1400/1500
<b>Electric stroke (EE)</b>	It corresponds to the model (mm)
<b>Independent linearity</b>	±0,04% f.s. max
<b>Overall dimension (A)</b>	EE+154 mm
<b>Repeatability</b>	<0,01 mm
<b>Hysteresis</b>	<0,01 mm
<b>Sampling time</b>	0,5 ms (50÷250), 1 ms (300÷1100), 1,5 ms (1200÷1500)

\*N.B. For further versions models and strokes please contact our offices

## Technical characteristics

<b>Stroke</b>	50÷1500 mm
<b>Protection class</b>	IP67
<b>Detected measurement</b>	position/speed
<b>Displacement 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>EMI CE compatibility</b>	EN 50081-2, EN 50082-1
<b>Shock rating</b>	100 G, 11 ms, singol shot (DIN IEC68T2-27)
<b>Vibrations</b>	12 G, 10÷2000 Hz (DIN IEC68T2-6)
<b>Cursor type</b>	sliding cursor floating cursor
<b>Working temperature</b>	-30÷75 °C
<b>Storage temperature</b>	-40÷100 °C
<b>Thermal coefficient</b>	0,005% e.o.s./°C
<b>Enclosure material</b>	anodized aluminium Nylon 66 G 25

Notes: Use captive and floating cursors, max height of 4mm for strokes >2500mm.  
For multi-cursor model, the cursors have to work in the same conditions of distance and temperature.

## Electrical characteristics

<b>Output signal</b>	0÷10 VDC	4÷20 mA
<b>Power supply</b>	24 VDC ±20%	24 VDC ±20%
<b>Power ripple</b>	1 Vpp max	1 Vpp max
<b>Maximum current with load</b>	70 mA max	90 mA max
<b>Output load</b>	2 kΩ	<500 Ω
<b>Output ripple</b>	<5 mVpp	<5 mVpp
<b>Output value</b>	10,6 V max	25 mA max
<b>Electrical insulation</b>	500 V	500 V
<b>Protection against overvoltage</b>	yes	yes
<b>Protection against polarity inversion</b>	yes	yes
<b>Self-resetting internal fuse</b>	yes	yes

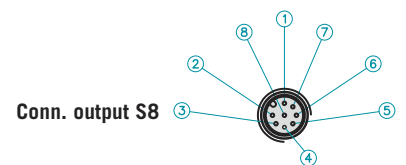
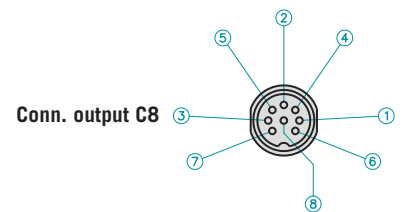
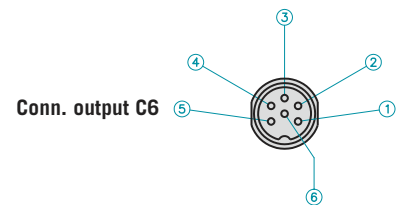
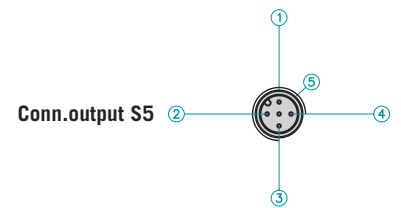
For optional accessories please refer to pg 23

## Electrical connections

Output signal Function	Connector				Cable P
	S5	C6	C8	S8	
	5 cont. M12	6 cont. M16	8 cont. M16	8 cont. M12	output cable
<b>Output cursor 1</b> 0÷10 VDC 4÷20 mA	1	1	5 (1*)	5	grey
<b>GND</b> <b>Output cursor 1</b> 0 V	2	2	2	1	pink
<b>Inverse output cursor 1</b> <b>Output cursor 2</b> <b>Output speed</b> 0÷10 VDC 4÷20 mA	3	3	3	3	yellow
<b>GND</b> <b>Output cursor 1</b> <b>Output cursor 2</b> <b>Output speed</b> 0 V	2	4	6	2	pink
<b>Power supply +</b>	5	5	7	7	brown
<b>GND</b>	4	6	8	6	white
<b>n.c.</b>			4	4	
<b>n.c.</b>			1 (5*)	8	

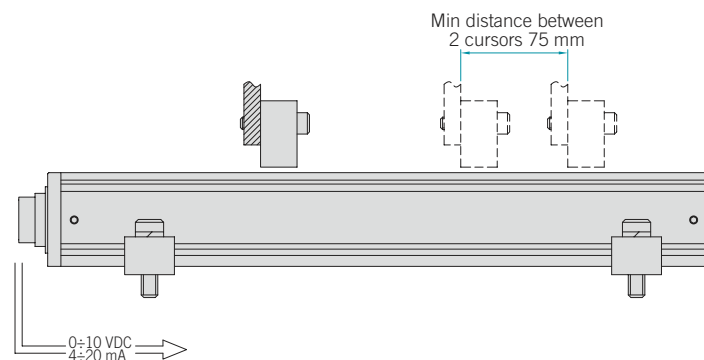
(\*)= for model 4÷20mA

The transducer enclosure has to be connected to ground only on the control system side by the shield.

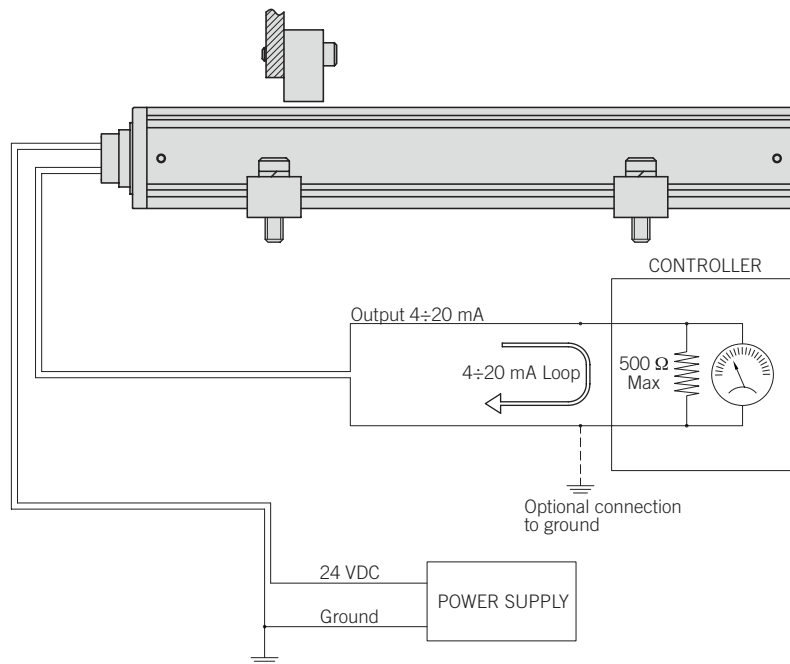


## Analog output

Magnetostrictive transducers of EMSPA series supply a direct analog voltage or current output proportional to the position and the displacement speed of 1 or 2 magnetic cursors. If EMSPA is interfaced with controller or measurement instrument, no electronic signal processing is required thanks to the direct output.



## Current output connection



### Main characteristics

EMSSA is an absolute linear magnetostrictive transducer featuring an analog 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, 700 bar peak) such as hydraulic and pneumatic cylinders and so forth.



### Ordering code

EMSSA 1000 S 10 H 10 C6 A

Linear magnetostrictive transducer with analog output **EMSSA**

**Stroke (mm)**  
100/150/200/300/400  
450/500/600/700/800  
900/1000/1250/1500  
N.B. Please contact our offices for versions and range availability

**Protection class**  
standard IP67 **S**

**Output signal**  
0÷10 VDC or 10÷0 VDC **10**  
4÷20 mA or 20÷4 mA **20**

**Thread type**  
M18 X 1,5 (standard) **H**  
3/4" - 16 UNF **I**

**Output position**  
**A** axial

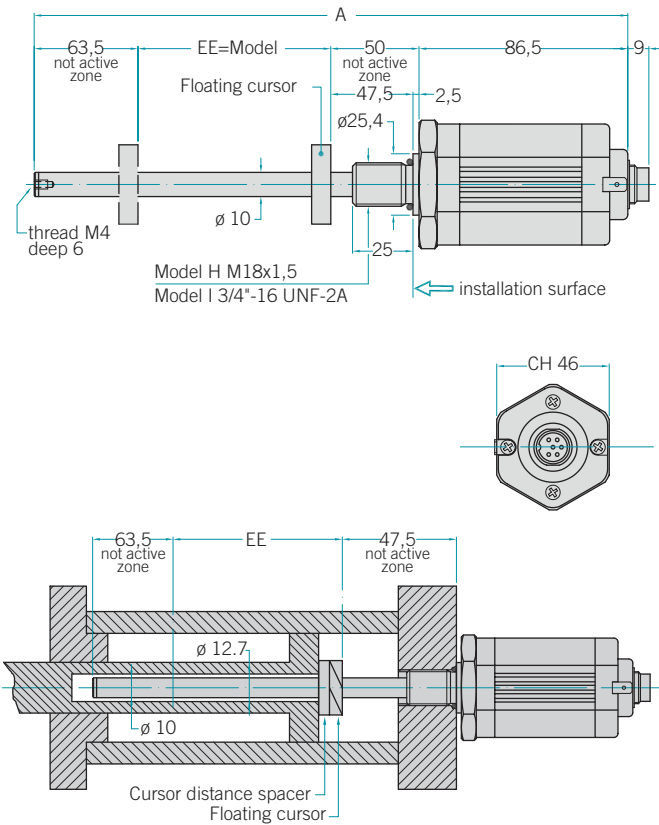
**Output type**  
**P** Standard cable length (PUR) 1 m  
**C6** 6 contacts round connector

**Displacement speed**  
**10** max speed 10 m/s

Magnetostrictive transducer

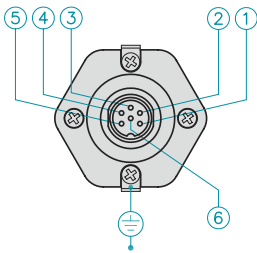
EMSSA

## Mechanical dimensions

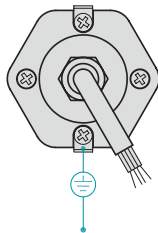


## Electrical connections

Conn. output C6



Cable output P



	Connector	Cable
<b>Function</b>	C6	P
	6 M16 connectors	output cable
<b>0÷10VDC 4÷20mA</b>	1	grey
<b>GND pin1</b>	2	pink
<b>10÷0VDC 20÷4mA</b>	3	yellow
<b>GND pin3</b>	4	green
<b>+ Vdc</b>	5	brown
<b>GND</b>	6	white
<b>n.c.</b>		blue

For optional accessories please refer to pg 33

## Technical characteristics

<b>Stroke</b>	100÷1500 mm
<b>Detected measurement</b>	position
<b>Protection class</b>	IP67
<b>Resolution</b>	≤0,1 mV o ≤0,2 µA
<b>Position measurement time</b>	1 ms
<b>Cursor applicable force</b>	≤1 N
<b>EMI CE compatibility</b>	EN 50081-2, EN 50082-1
<b>Shock rating</b>	100 G, 11 ms, one shot (DIN IEC68T2-27)
<b>Vibrations</b>	12 G, 10÷2000 Hz (DIN IEC68T2-6)
<b>Displacement speed</b>	10 m/s max
<b>Acceleration</b>	100 m/s <sup>2</sup> max
<b>Cursor type</b>	floating cursor
<b>Working temperature</b>	-40÷70 °C
<b>Storage temperature</b>	-40÷100 °C
<b>Thermal coefficient</b>	≤0,01% e.o.s./°C
<b>Output signal</b>	0÷10 VDC o 10÷0 VDC 4÷20 mA o 20÷4 mA
<b>Power supply</b>	24 VDC ±20%
<b>Power ripple</b>	1 Vpp max
<b>Maximum current with load</b>	100 mA max
<b>Output load</b>	≥5 kΩ (tension output) ≤500 Ω (current output)
<b>Electrical insulation</b>	500 V (between alimentation and ground) 500 V (between alimentation and output on request)
<b>Protection against overvoltage</b>	varistor
<b>Protection against polarity inversion</b>	yes
<b>Rod , flange, connector material</b>	stainless steel AISI 316

## Electrical / mechanical data

<b>Model*</b>	100/150/200/300/400/450/500 600/700/800/900/1000/1250/1500
<b>Electric stroke (EE)</b>	It corresponds to the model (mm)
<b>Independent linearity</b>	±0,03% e.o.s. max
<b>Overall dimension (A)</b>	EE + 200 mm
<b>Repeatability</b>	±0,001% of EE
<b>Hysteresis</b>	<0,01 mm

\*N.B. For further versions models and strokes please contact our offices.