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 guarantees 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

<table>
<thead>
<tr>
<th>SERIES</th>
<th>EMSPA</th>
<th>STROKE</th>
<th>mm from 50 to 1500</th>
<th>see table for stroke availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENCLOSURE RATING</td>
<td>IP 67 S</td>
<td>OUTPUT SIGNAL</td>
<td>0 ... 10 VDC / 1 cursor (standard) 10S</td>
<td>0 ... 10 VDC / 1 cursor position/speed 10P</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0 ... 10 VDC / 2 cursors (min. stroke 400 mm) 10D</td>
<td>4 ... 20 mA / 1 cursor 20S</td>
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<td></td>
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<td>4 ... 20 mA / 1 cursor position/speed 20P</td>
<td>4 ... 20 mA / 2 cursors (min. stroke 400 mm) 20D</td>
</tr>
<tr>
<td>TRAVEL SPEED</td>
<td>max speed 10 m/s 10</td>
<td>OUTPUT TYPE</td>
<td>cable (standard length 1 m) P</td>
<td>M12 5 pin connector S5</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>M12 8 pin connector S8</td>
<td>M16 DIN 43222 6 pin connector C6</td>
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<td>M16 DIN 43226 8 pin connector C8</td>
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<tr>
<td>OUTPUT DIRECTION</td>
<td>axial A</td>
<td></td>
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</table>

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EMSPA

**MECHANICAL SPECIFICATIONS**

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

**Electric stroke (EE)**
- see model (mm)

**Overall dimension (LT)**
- EE + 154 mm

**Enclosure rating**
- IP 67 (IEC 60529)

**Detected measurement**
- displacement / speed

**Travel speed**
- 10 m/s max

**Acceleration**
- 100 m/s² max

**Speed measurement range**
- min 0 ... 0,1 m/s
- max 0 ... 10 m/s

**Speed accuracy**
- < 2%

**Shock**
- 100 G, 11 ms, single shock (IEC 60068-2-27)

**Vibration**
- 12 G, 10 ... 2000 Hz (IEC 680068-2-6)

**Housing material**
- anodized aluminium / Nylon 66 G 25

**Cursor type**
- sliding or floating cursor

**Temperature coefficient**
- 0,005 % FS / °C

**Operating temperature**
- -30° ... +75°C (-22° ... +167°F)

**Storage temperature**
- -40° ... +100°C (-40° ... +212°F)

**Electrical Specifications**

**Resolution**
- 16 bit (max electrical noise 5 mVpp)

**Output signal**
- 0 ... 10 VDC
- 4 ... 20 mA

**Output alarm value**
- 10,5 VDC
- 21 mA

**Output max value**
- 12 VDC
- 30 mA

**Power supply**
- 19,2 ... 28,8 VDC

**Power ripple**
- 1 Vpp max

**Current consumption**
- 70 mA max
- 90 mA max

**Output load**
- 5 kΩ
- < 500 Ω

**Output ripple**
- < 5 mVpp

**Indipendent linearity**
- ≤ ± 0,01 % FS (min ± 0,060 mm) typical with sliding cursor
- ≤ ± 0,02 % FS with floating cursor (working distance 2 ... 5 mm)
- ≤ ± 0,04 % FS with floating cursor (working distance 5 ... 7 mm)

**Repeatability**
- < 0,01 mm

**Hysteresis**
- < 0,01 mm

**Sampling time**
- 0,5 ms (50 ... 300)
- 1 ms (350 ... 1100)
- 1,5 ms (1200 ... 1500)

**Protection against overvoltage**
- yes

**Protection against polarity inversion**
- yes

**Protection against power supply on output**
- yes

**Electrical insulation**
- 500 VDC

**Electromagnetic compatibility**
- according to 2014/30/EU directive

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Dimensions in mm
- brackets, cursors and female connector not included, for ordering P/N please refer to Accessories section

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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 ±2 mm), distance from the transducer surface has to be within the range from 2 to 7 mm.

Current output application example

- **Connecting diagram**: Shows the connection between the encoder and the controller. The encoder is connected to the power supply (+V DC, 0V) and outputs a 4...20 mA signal. The controller is connected to the encoder through the power supply and is used to process the output signal. The diagram includes a note about connecting the encoder 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.