

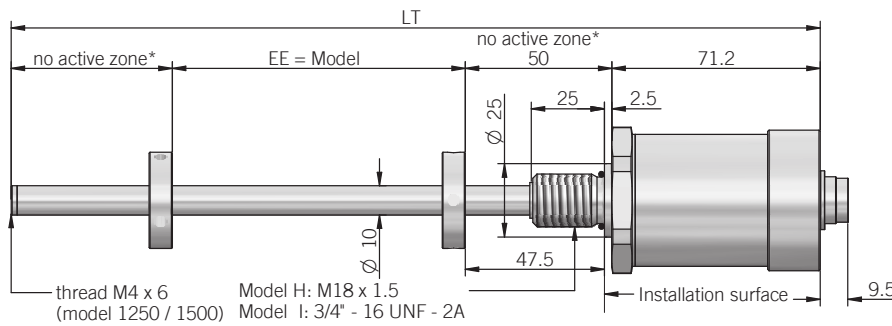
**MAIN CHARACTERISTICS**

EMSSS is an absolute linear magnetostrictive transducer featuring a SSI output.  
 Main characteristics of magnetostrictive transducer is the absence of electric contact on the enclosure so 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 pressure (350 bar, 500 bar peak) such as hydraulic or pneumatic cylinders.



ORDERING CODE	EMSSS	500	S	24	G	H	10	R5	P	A
	<b>SERIES</b> linear magnetostrictive transducer with SSI output <b>EMSSS</b>	<b>STROKE</b> mm from 100 to 1500 see table for stroke availability	<b>ENCLOSURE RATING</b> IP 67 <b>S</b>	<b>DATA LENGTH</b> (FM357) 21+1 bit <b>21</b> 24 bit <b>24</b> 25 bit <b>25</b>	<b>CODE TYPE</b> binary <b>B</b> gray <b>G</b>	<b>THREAD TYPE</b> M18 x 1,5 <b>H</b> 3/4" - 16 UNF <b>I</b>	<b>DISPLACEMENT SPEED</b> max speed 10 m/s <b>10</b>	<b>RESOLUTION</b> 0,005 mm <b>R5</b> 0,010 mm <b>R10</b> 0,020 mm <b>R20</b> 0,040 mm <b>R40</b>	<b>OUTPUT TYPE</b> cable (standard length 1 m) <b>P</b> DIN 45322 M16 6 pin connector <b>C6</b>	<b>OUTPUT DIRECTION</b> axial <b>A</b>

EMSSS



\* = 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, please refer to Accessories

ELECTRICAL SPECIFICATIONS	
<b>Resolution</b>	5 - 10 - 20 - 40 $\mu$ m
<b>Independent linearity</b>	$\pm 0,02$ % FS (min $\pm 0,060$ mm)
<b>Repeatability</b>	< 0,01 mm
<b>Hysteresis</b>	$\pm 0,005$ % FS (min 0,010 mm)
<b>Sampling time</b>	1 ms (mod. 100 ... 1000) 2 ms (mod. 1250 ... 1500)
<b>Power supply<sup>1</sup></b>	10 ... 32 V DC
<b>Power ripple</b>	1 V <sub>pp</sub> max
<b>Max load current</b>	50 mA max
<b>Electrical interface</b>	RS-422
<b>SSI output code</b>	binary or gray
<b>Clock frequency</b>	50 kHz ... 1 MHz
<b>SSI monostable time (T<sub>m</sub>)</b>	16 $\mu$ s
<b>SSI frame</b>	21 / 24 / 25 bit data length
<b>Counting direction</b>	increase
<b>Protection against overvoltage</b>	yes
<b>Protection against polarity inversion</b>	yes
<b>Self-resetting internal fuse</b>	yes
<b>Electrical insulation</b>	500 V DC (+V DC / earth)
<b>Electromagnetic compatibility</b>	according to 2014/30/EU directive
<b>Electromagnetic</b>	according to 2011/65/EU directive

MECHANICAL SPECIFICATIONS	
<b>Stroke</b>	100 - 150 - 200 - 300 - 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. 100 ... 1000) EE + 181,2 mm (mod. 1250 ... 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>	20 ppm FS / °C
<b>Operating temperature<sup>2,3</sup></b>	-30° ... +90°C (-22° ... +194°F)
<b>Storage temperature<sup>3</sup></b>	-40° ... +100°C (-40° ... +212°F)

<sup>1</sup> as measured at the transducer without cable influences

<sup>3</sup> measured on transducer

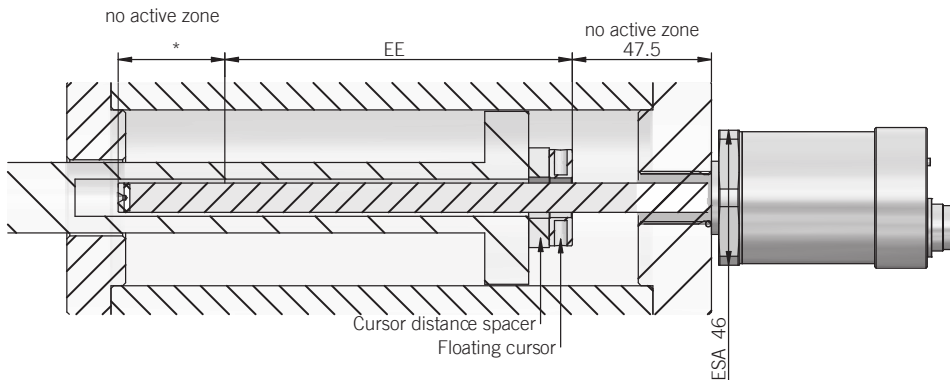
<sup>4</sup> condensation not allowed

CONNECTIONS		
Function	Cable P	6 pin M16 C6
+ V DC	blue / white	5
0 V	blue	6
DATA +	brown / white	2
DATA -	orange	1
CLOCK +	green / white	3
CLOCK -	green	4

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



**INSTALLATION EXAMPLE**



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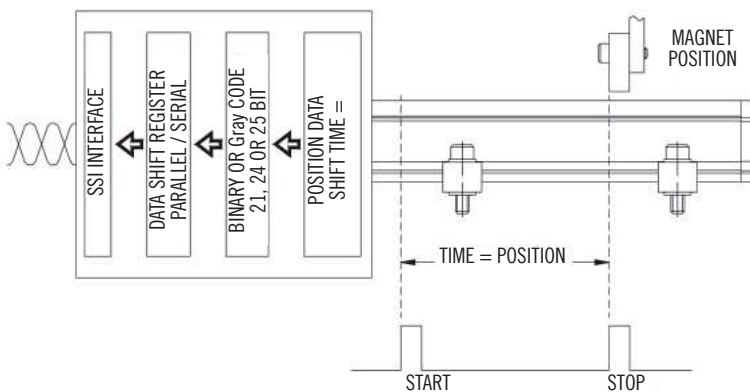
For the correct installation of rod-type magnetostrictive transducers in hydraulic cylinders, remember that the cylinder head must be made of non-magnetic material where the threaded hole will be drilled to install the transducer. If not, the residual magnetisation caused by drilling the threaded hole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

Ro 1,6 µm for sealing with non pulsating pressure  
 Ro 0,8 µm 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

**SSI BLOCK DIAGRAM**



SSI output goes to 0 if the echo is absent (magnet out of measurement range or internal device error)

**SSI CABLE LENGTH**

Cable length	< 3 m	< 50 m	< 100 m	< 200 m	< 400 m
Baud rate	1 Mbaud	400 kbaud	300 kbaud	200 kbaud	100 kbaud

**INSTALLATION NOTES**

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
- cable shield must be connected on both sides (PLC and transducer)
- if the transducer is installed in a cylinder isolated from the ground, the cable shielding on PLC side must be grounded.