EMSPS

LINEAR MAGNETOSTRICTIVE TRANSDUCER WITH SSI OUTPUT

MAIN CHARACTERISTICS

EMSPS is an absolute linear magnetostrictive transducer featuring a digital RS-422 SSI compliant output.
The main characteristic 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.

ORDERING CODE

EMSPS	500	S	25	G	10	R5	P	A

SERIES
linear magnetostrictive transducer with SSI output EMSPS

STROKE
mm from 50 to 1500
see table for stroke availability

ENCLOSURE RATING
IP 67 S

DATA LENGTH
(FM357) 21+1 bit 21
24 bit 24
25 bit 25

CODE TYPE
binary B
gray G

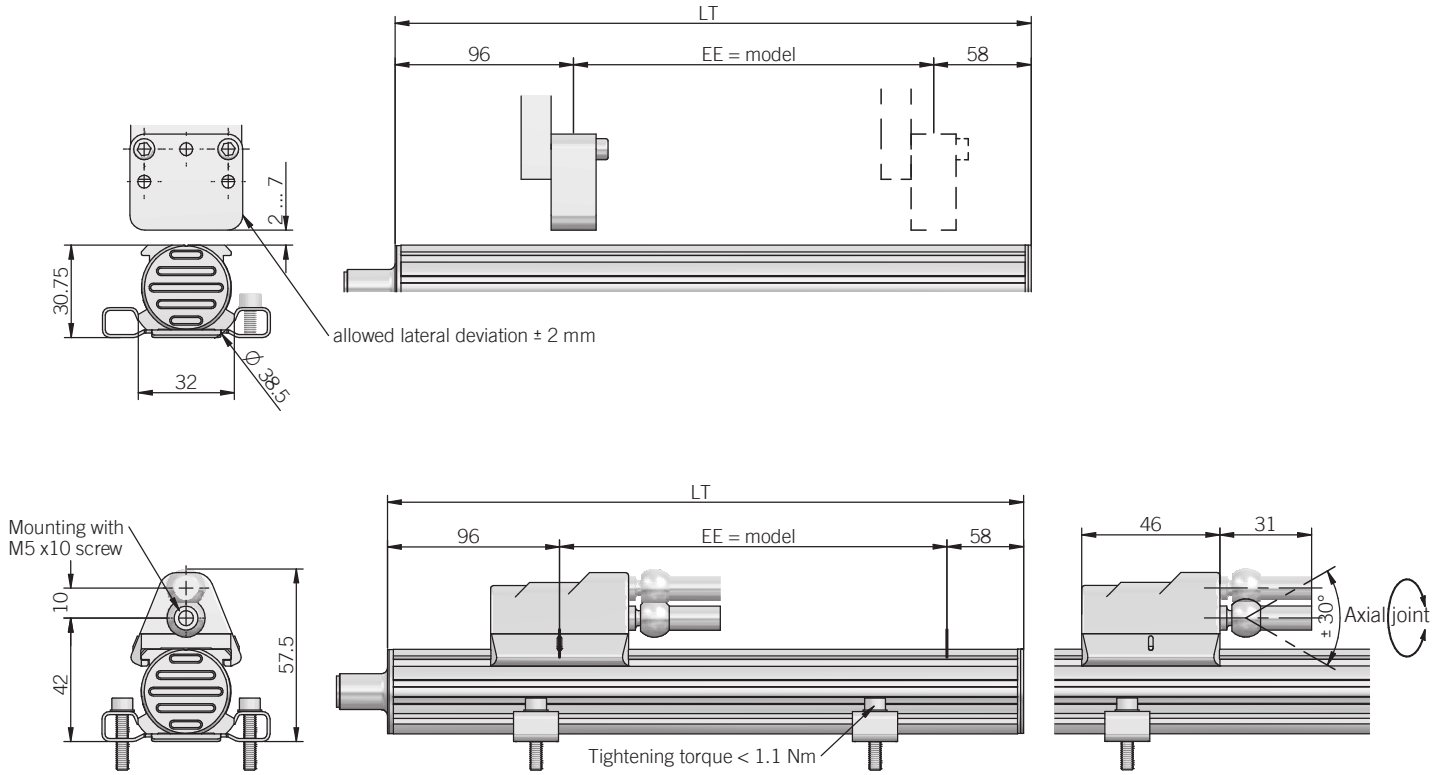
TRAVEL SPEED
max 10 m/s 10

RESOLUTION
0,002 mm R2
0,005 mm R5
0,010 mm R10
0,020 mm R20
0,040 mm R40

OUTPUT TYPE
cable (standard length 1 m) P
DIN 45322 M16 6 pin connector C6
DIN 45326 M16 8 pin connector C8
M12 8 pin connector S8

OUTPUT DIRECTION
axial A

EMSPS



dimensions in mm

· brackets, cursors and female connector not included, please refer to Accessories

ELECTRICAL SPECIFICATIONS

Resolution	2 - 5 - 10 - 20 - 40 µm
Indipendent linearity	≤ ± 0,01 % FS (min ± 0,060 mm) typical with sliding cursor ≤ ± 0,02 % FS typical with floating cursor
Repeatability	< 0,01 mm
Hysteresis	≤ ± 0,005 % FS (min 0,010 mm)
Power supply[1]	10 ... 32 V DC
Power ripple	1 Vpp max
Max load current	50 mA max
Electrical interface	RS-422
SSI output code	binary or gray
Clock frequency	50 kHz ... 1 MHz
SSI monostable time (Tm)	16 µs
SSI frame	21 / 24 / 25 bit data length
Counting direction	increase
Protection against overvoltage	yes
Protection against polarity inversion	yes
Self-resetting internal fuse	yes
Electrical insulation	500 V DC (+V DC / earth)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU directive

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 stroke (mm)
Overall dimensions (LT)	EE + 154 mm
Enclosure rating	IP 67 (IEC 60529)
Detected measurement	displacement
Scale orientation	increasing
Travel speed	10 m/s max
Acceleration	100 m/s² max
Shock	100 G, 11 ms, single shot (IEC 68000-2-27)
Vibration	12 G, 10 ... 2000 Hz (IEC 68000-2-6)
Housing material	anodized aluminium / Nylon 66 G 25
Cursor type	sliding or floating cursor
Temperature coefficient	20 ppm FS / °C
Operating temperature[2, 3]	-30° ... +90°C (-22° ... +194°F)
Storage temperature[3]	-40° ... +100°C (-40° ... +212°F)

[1] as measured at the transducer without cable influences
[3] measured on transducer
[4] condensation not allowed

CONNECTIONS

Function	Cable P	8 pin M12 S8	6 pin M16 C6	8 pin M16 C8
+ V DC	blue / white	7	5	7
0 V	blue	6	6	6
DATA +	orange / white	2	2	2
DATA -	orange	5	1	5
CLOCK +	green / white	3	3	1
CLOCK -	green	1	4	3

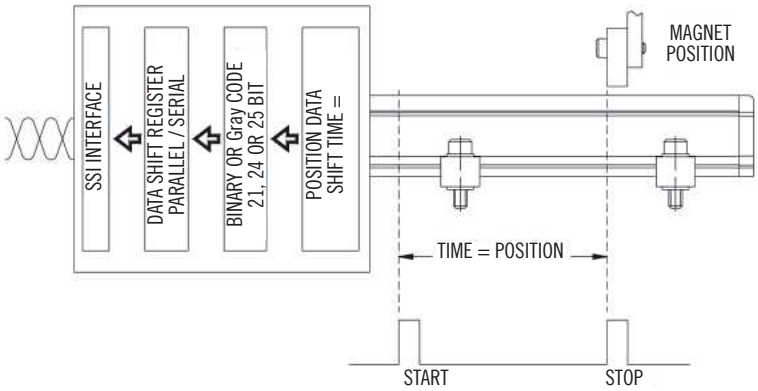
S8 connector (8 pin)
M12 A coded
solder side view FV

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

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

The transducer enclosure and cable shield have to be connected to ground on both sides.

SSI BLOCK DIAGRAM

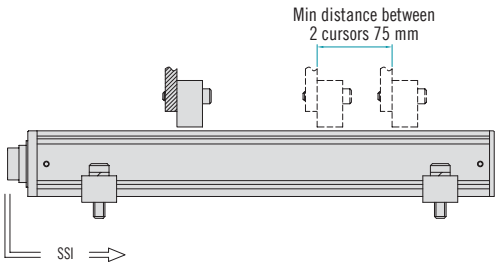


SSI output goes to 0 if the echo is absent (magnet out of measurement range or internal device error)

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 EXAMPLE



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.