EMAX /FEMAX - absolute Length Measuring Systems

⇒ Absolute
⇒ Contactless
⇒ Up to 10 Meters
⇒ Resolution 0.01 mm

EMAX/FEMAX series

Principle of function:

Two sensors are guided above a two-track encoded magnetic tape with one fine interpolation track and one absolute track. The absolute track supplies with a sensor line an absolute value and the fine interpolation track supplies with the interpolation electronic the resolution of 0,01 mm.

Difference EMAX to FEMAX

EMAX consists of the components sensor head and the magnetic tape.
The FEMAX system is guided. The guide rail with the magnetic tape and the guide carriage are included in delivery.

Connections:

Signal wire	RS422	Option RS232
white	0 V	0 V
brown	+ 24 V	+ 24 V
orange	TX -	TX
yellow	TX	RX
violet	RX -	
green	RX	
screen	PE	PE

Sensor head

The sensor technology is placed in a mechanical zinc die cast case and is conceived for rough industrial use. In the poured version the high protection category of IP66 is fulfilled. A considerable advantage of the system is, that the sensor head has not to be slided rigidly, but can be moved in an distance between 0 to 0,8 mm above the measuring tape.

Measuring tape

The measuring tape can be obtained as roller ware up to 10 m measuring length or as a defined measuring length unit. It consists of three components:

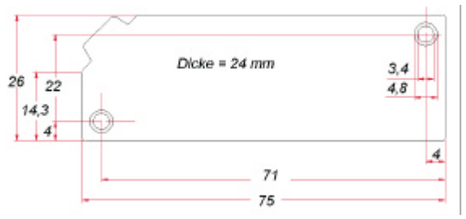
1. Magnetic rubber tape
2. Sticky tape
3. Covering– or protecting band

It simply is mounted by a double-sided sticky tape on the place where an exact measuring shall be made.

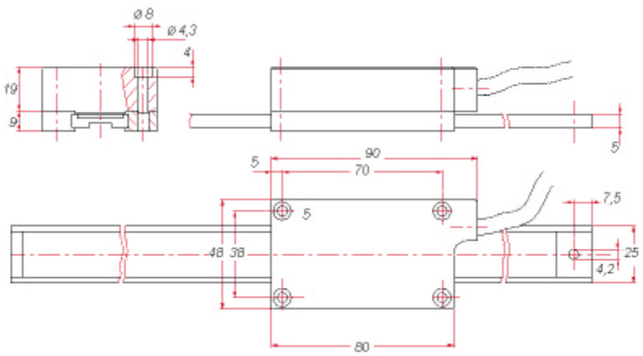
FEMAX

The magnetic tape of FEMAX is factory-bonded in the nut of the aluminium guide rail (possible up to 2 m). In order to realize longer ways, several rails could be arranged in one row. Then the magnetic tape will be delivered in the desired length (as roller ware up to 32 m) and will be fixed afterwards, in the whole length, into the nuts of the arranged rails. On this aluminium guide rail again the sensor, provided with slide-plastic-rails can be moved abrasion-resistant and contactless.

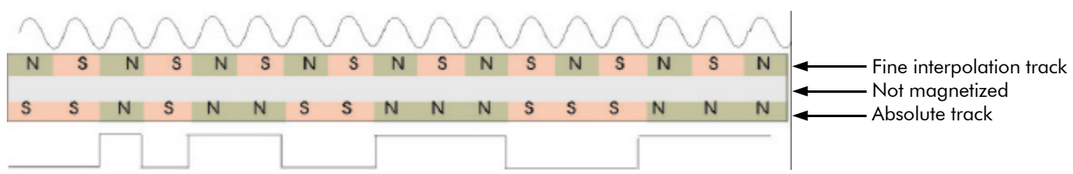
Dimensions of EMAX



Dimensions of FEMAX



Measuring principle of the magnetic tape



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Technical specifications

Power supply	10-30 VDC +/- 10 % allowed ripple < 5 %
Current consumption	max. 150 mA
Output voltage	5 VTTL at RS422
Repeat accuracy	+/- 0,01 mm
System accuracy in mm by 20 °C	+/- (150 + 20 x L) L = Measuring length
Resolution	0,01 mm
Run speed	0,5 m/sec. (faster in preparation)
Data format RS422	9600 Bit/s, 8 Data bits, 1 Stop bit, no parity
Measuring length	max. 10 m
Distance	max. 0,8 mm
Operating temperature	0 - 50 °C
Stock temperature	0 - 70 °C
Humidity	no condensation max. 80 %
Protection	IP 54 Standard IP 67 Option V (sealed)
Magnetic tape	
Extension coefficient	$\alpha = 16 \times 10^{-6} K^{-1}$
Length extension	$\Delta L = L \times \alpha \times \Delta\vartheta$
Dimensions	20 mm x app. 1,8 mm
Bend radius	150 mm
Sensor	
Housing material	Black zinc die cast
Signal Cable	30 m max. length 60 mm min. bend radius

Interface protocol:
In standard version the measuring systems are equipped with RS422 interface (also RS232 possible).
The transmission operates as follows:
9600 Baud
1 Start Bit
8 Data Bits
1 Stop Bit
No Parity

Data protocol
The actual value will be transmitted as follows:
9600 Bits, 8 Data bits, 1 Stop bit, no parity
02h STX
xxh ABS-Datas MSB
xxh ABS-Datas
xxh ABS-Datas LSB
03h ETX
The result of measurement (absolute position) will be displayed in the 3 ABS-data bytes in 0,01 mm resolution.

ELGO- Absolute Measuring Systems

Changes of position will also recognized in power down status. No more datum or referencing is necessary. The maximum of safety is guaranteed.

Type designation

A - B - C - D - E - F

A Series
EMAX or FEMAX

B Version
000 Elgo Standard
001 First special version

C Length of signal wire
01.5 1,5 m (Standard)
others 1,0 / 3,0 / 5,0 / 8,0 / ... / 30,0 m

D Resolution
2 0,01 mm

E Interface
422 RS422 (standard)
232 RS232

F Options
V Sealed version IP67

Example: EMAX-000-03.0-2-422-0
FEMAX-000-10.0-2-422-0-V

Magnetic tape

EMAB	0,2 m min. length 10,0 m max. length Art. No. 731 000 110
Note:	total system length = effective measuring length + 0,15 m

Accessories

Guide rail with tape, up to 2 m (only FEMAX)
Please order FSEMAB for FEMAX in desired length

CCO-SSI	Interface converter for SSI Art. No. 710CCOSSI-0 Binary Code Art. No. 710CCOSSI-1 Gray Code
AB20	Cover band 20 mm wide Art. No. 51100090

EMAX_FEMAX_E_06-03

ELGO ELECTRIC

Positioning- and
Length measuring systems
ELGO Electric GmbH

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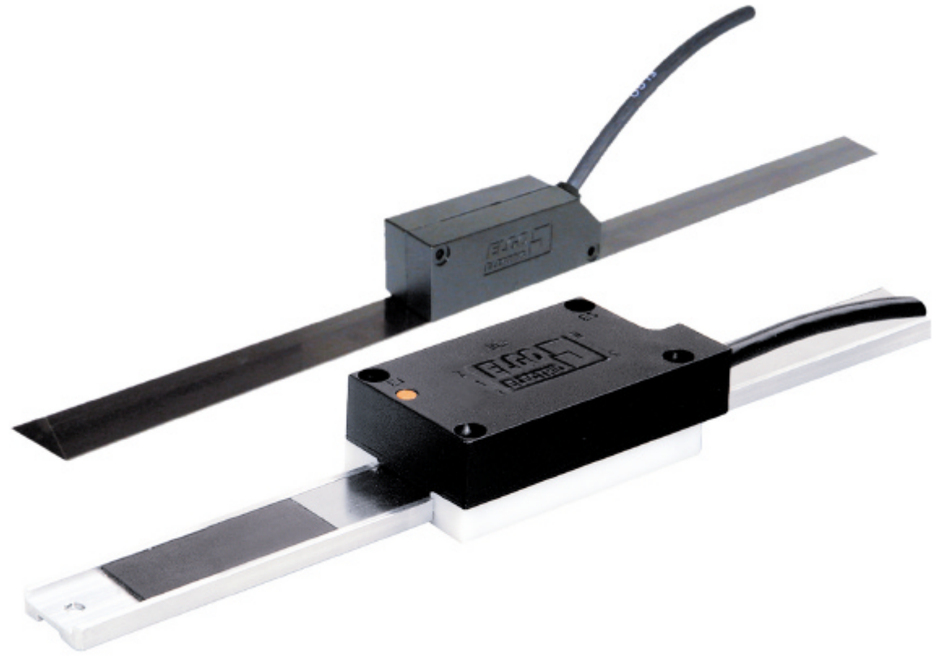
ELGO ELECTRIC



EMAX and FEMAX series

Magnetic, absolute Length Measuring Systems