

# 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

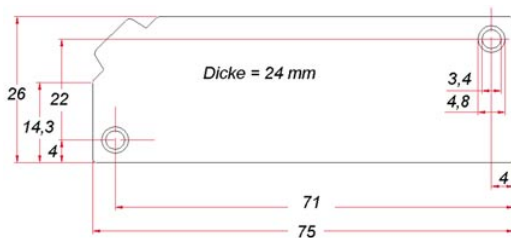
EMAX consists of the components sensor head and the magnetic tape.

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

### Dimensions of EMAX



### 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 slid 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:

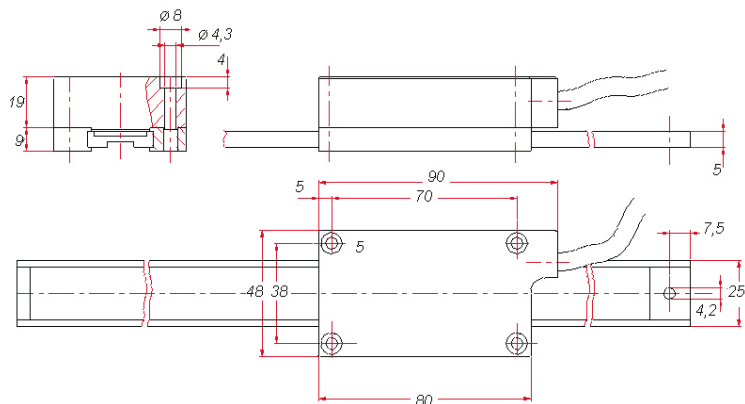
1. Magnetic rubber tape
2. Sticky tape
3. Covering- or protecting band

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

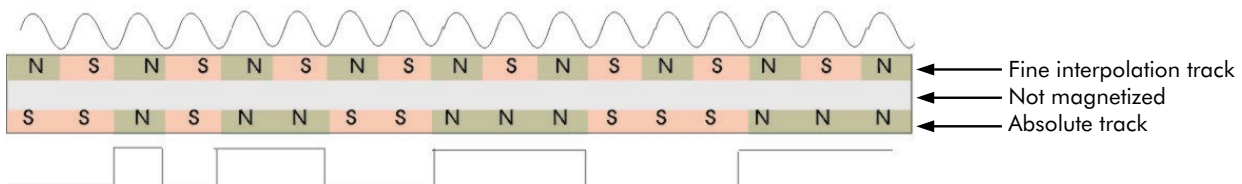
### FEMAX

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 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
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Signal Cable	30 m max. length 60 mm min. bend radius
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### 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.

Between two transmissions of the actual value (seven bytes ever) is an intermission of approx. 4.8 ms duration.

## 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

**AB20-50-20-2-R-11** 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 **AB20-50-20-2-R-11** for FEMAX in desired length

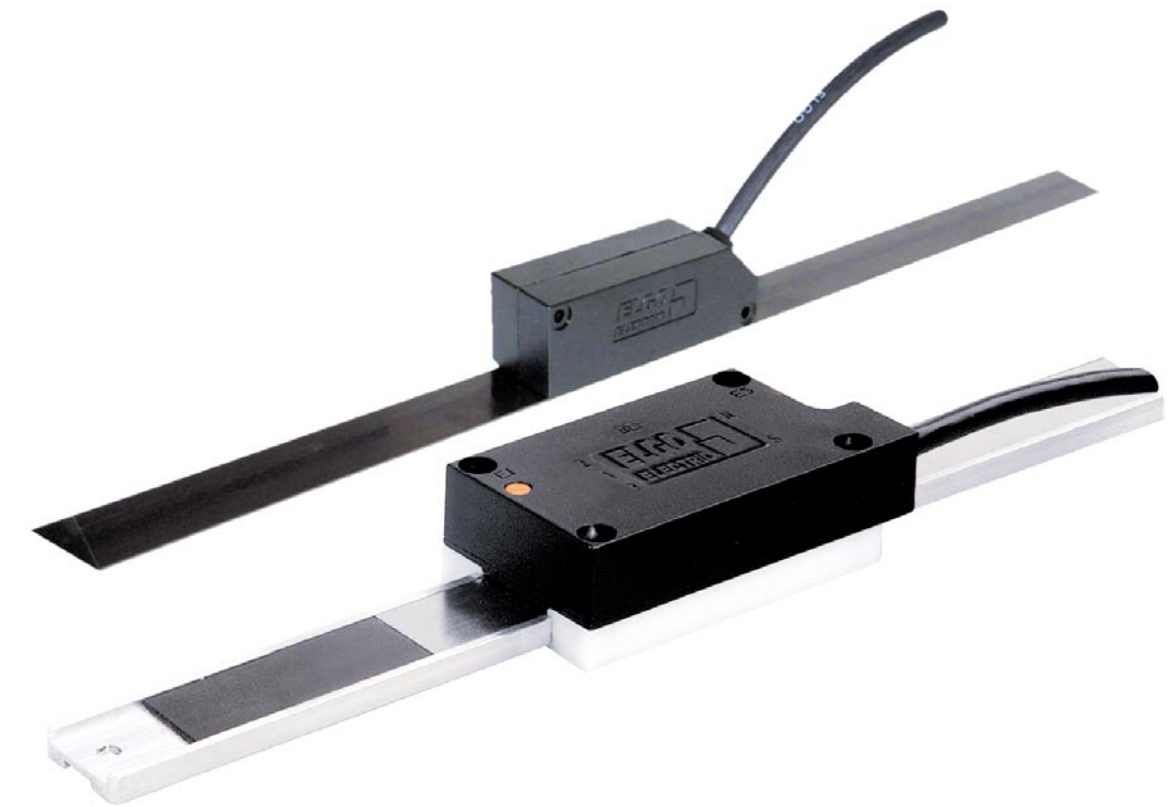
**CCO-SSI** Interface converter for SSI  
Art. No. **710CCOSSI-0 Binary Code**  
Art. No. **710CCOSSI-1 Gray Code**

**AB20** Cover band 20 mm wide



**ELGO**  
**ELECTRIC**  
Measure / Control / Position

**ELGO**  
**ELECTRIC**



**EMAX and FEMAX**  
**series**

Magnetic, absolute  
Length Measuring Systems