

# Guided, magnetic Length Measuring System

- Resolutions 1,0 up to 0,005 mm possible (at 4 edge triggering)
- With reference pulse (FMIX5)
- With integrated end-limits (FMIX5)
- Repeating accuracy +/- 0,01 mm
- Speed-proportional output of square waves

## FMIX series:

Guided, incremental magnetic length measuring system with speed-proportional output of the square wave signals. Owing to direct measurement tolerances become balanced with belt drives, slip or lead errors with spindles. The system is supplied completely with guide carriage and guide rail (with magnetic tape).

FMIX is based on a periodic magnetized tape, which will be factory-bonded on 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 roll 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. A nut on every side of the rail is integrated for sticking the tape (one side for 10 mm, other side for 20 mm magnetic tape).

Both, the signal recordation and the signal processing circuit are integrated into the sensor. From the signal information this "translator" produces rectangle output waves compatible to rotary encoder and optical linear measuring systems.

Three different variants are available:

- FMIX3 without reference pulse and without integrated end switches (tape 10 mm wide)
- FMIX5 with reference pulse (with closed input is available, when the pre-end-switch has been left) and integrated end switches (non potential free opener relays, the sensor made out start and end of the magnetic tape). The end limits will be calibrated to the start/end respective the effective operation length of the magnetic tape. For detection a 20 mm wide tape is necessary.

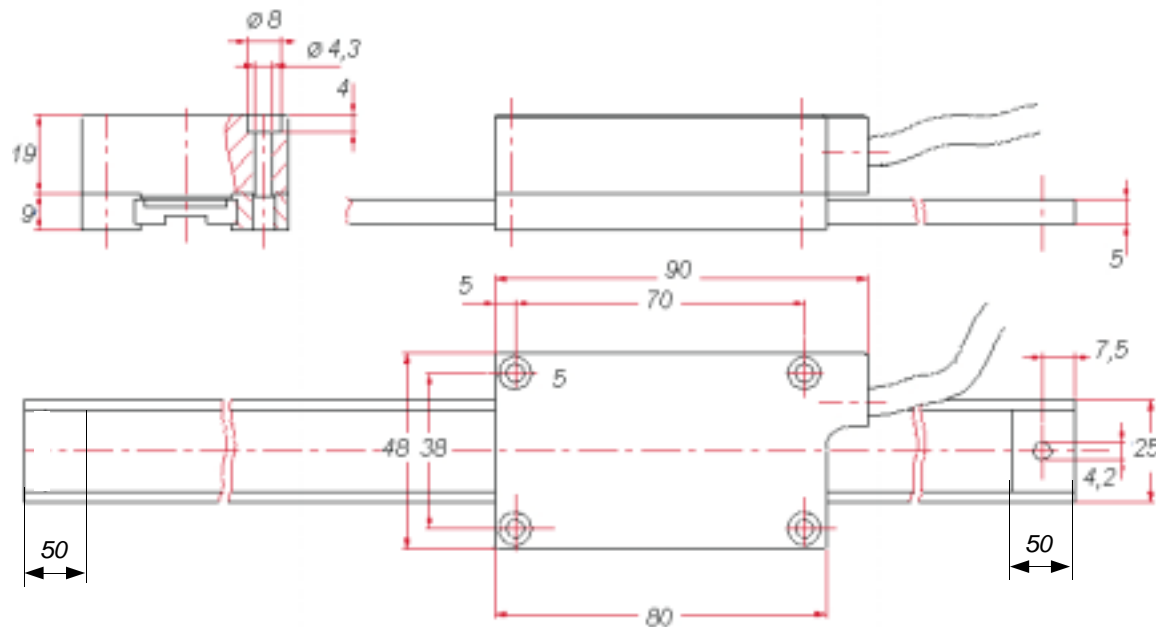
## Standard features for all versions:

1. Six different resolutions, please indicate with order (see type designation)
2. Supply / output levels in 5 V or 10-30 V
3. Inverted signals

## Attention:

In order to reach the desired resolution at each time, the following circuit must evaluate all 4 edges!

## Dimensions



Real rail length = measuring length + 50 mm / side

With FMIX5 the traverse path will be reduced around 25 mm per side, when using the min/max-end-limits.

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## Technical specifications

Measuring principle	incremental
Signal output	Speed-proportional A/A', B/B', Z/Z'
Resolution	0,01 mm Standard others indicate (see Type designation)
Repeating accuracy	+/- 0,01 mm
Operation speed	max. 1,5 m/sec
Max. length of wire	100 m
Max. length of rail	2 m
Counting frequency	max. 400 KHz
Power supply	10-30 VDC
Output levels	5V-TTL Line driver
Protection class	IP54 IP66 (Option V)
Reference pulse (permanent)	ca. 0,2 ms
Operation speed of reference run	max. 0,1 m/s (6 m/min)
Consumption	150 mA
Connections	Open wires
Housing	Die cast zinc

## Cable FMIX3

Drag-chain-suited  
Length max. 30,0 m  
Weight ca. 58,0 g/m  
2 x 0,75 mm<sup>2</sup>, 6 x 0,14 mm<sup>2</sup>  
min. Bending radius 60 mm  
Cable issue

## Magnetic tape

Coefficient of extension  $\alpha = 16 \times 10^{-6} K^{-1}$   
Linear extension  $\Delta L = L \times \alpha \times \Delta \vartheta$   
Bending radius max. 150 mm

## Type designation

FMIX-X -XXX-XX-XX-XX-X

### Type

- 3 = without reference pulse and end limits
- 5 = with reference pulse and two end limits relays

### Version

- 000 = Standard
- 001 = 1. Customer specified version... etc.

### Length of cable

XX = please indicate Meters (standard 1, 3, 5, 8, 10 m)

### X = Resolution (please indicate)

- 0 = 1 mm
- 1 = 1/10 mm
- 2 = 1/100 mm **STANDARD**
- 3 = 5/1000 mm
- 4 = 5/10 mm
- 5 = 5/100 mm

### Supply/Output levels

01 = 10-30 VDC / TTL line driver

### Options

V = sealed version IP66

## Connections

Signal wire	Function
white	0 V
brown	+24 VDC
green	A
yellow	A' inverted
grey	B
pink	B' inverted
blue	Z (Reference pulse)
red	Z' (inverted Reference pulse)
black	End switch MIN
violet	End switch MAX
Grey/pink	End switch ABSOLUTE
red/blue	Reference enable

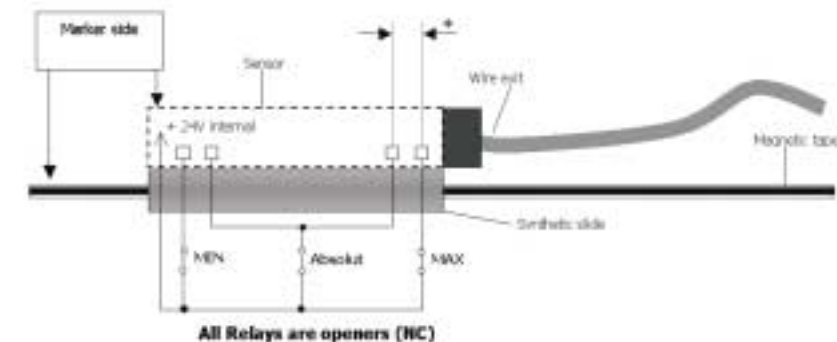
## Accessories

Guide rail with magnetic tape (up to 2 available)

Designation: FS20.50 for FMIX3 - XX.X indicate in meters please!

FS22.50 for FMIX5 - XX.X indicate in meters please!

## Positions of end-switches

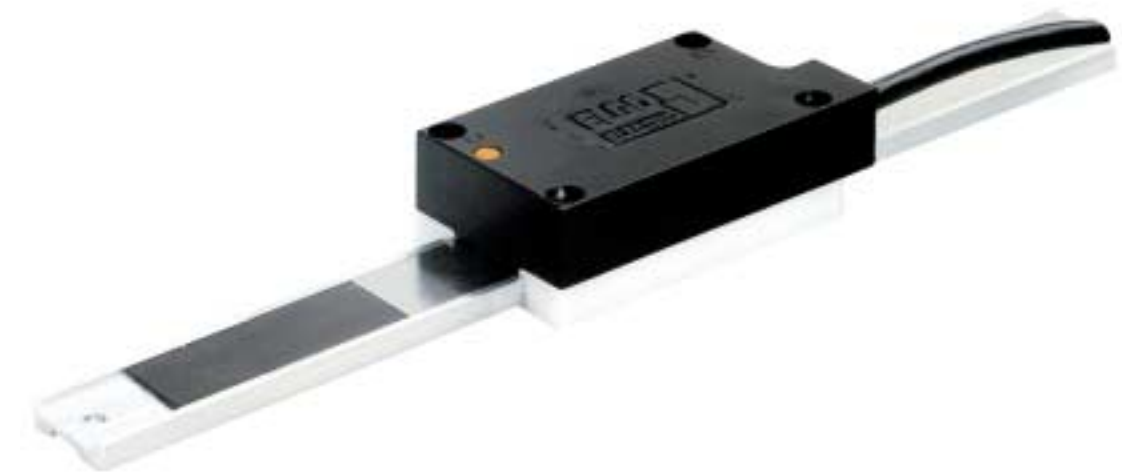


The distance of the absolute end switches for MIN resp. MAX is 3,7 mm approx. (tolerance +/- 0,6 mm).

**IMPORTANT: Interferences of inductive loadings must be suppressed !**



**ELGO**  
**ELECTRIC**



**FMIX series**

Guided, magnetic  
Incremental Measuring System

**ELGO**  
**ELECTRIC** Positioning- und  
Length measuring systems  
ELGO Electric GmbH