

# SERIES MTM-I

## Magnetic translational measuring system - INCREMENTAL

The MTM-I measuring system is based on the physical principle of magnetism and is used for the high-precision determination of the position, the moved path and/or the speed. Based on this wear-free and contactless single-track measuring system, ELGO offers these incremental systems for fixed round profiles, e. g. non-rotating hydraulic cylinders on piston rods.



### System consisting of:

- Round rod resp. piston rod (provided by the customer)
- Single track coding for round rod resp. piston rod (ELGO made)
- Application related sensor (ELGO made)

### Special features:

- Position / path determination at round profile rods
- Wear-free, contactless measurement principle
- Very robust and proven measuring technology
- Insensitive to contamination
- High shock and vibration resistance
- Analog output (current / voltage)
- HTL or TTL output levels
- Power supply 10 ... 30 VDC or 5 VDC available

### Technical specifications:

Mechanical data	Version with 0.025 mm resolution*	Version with 1.0 mm resolution*
Measurement principle	incremental	incremental
Repeat accuracy	± 1 increment	± 1 increment
System accuracy in $\mu\text{m}$ at 20°C	± (160 + 20 x L) L = measuring length in meters	± (1000 + 20 x L) L = measuring length in meters
Distance sensor - piston rod	max. 1.0 mm	max. 7.0 mm
Basic pole pitch of piston rod	5 mm (see next page)	16 mm (see next page)
Measuring length	up to 5000 mm	up to 5000 mm
Sensor cable (PUR)	1.5 m standard length (others on request), drag chain suitable	1.5 m standard length (others on request), drag chain suitable
Weight of the MTM-I-System	Depends on measuring length (= stroke length to be monitored) and application	Depends on measuring length (= stroke length to be monitored) and application
Rod diameters starting from	25 mm	25 mm
Mounting position MTM-I-System	arbitrary	arbitrary
<b>Electrical data</b>		
Power supply voltage	10 ... 30 VDC or 5 VDC	10 ... 30 VDC or 5 VDC
Residual ripple	10 ... 30 VDC <10 % resp. 5 VDC +/-25 mV	10 ... 30 VDC <10 % resp. 5 VDC +/-25 mV
Consumption	max. 150 mA at 10 ... 30 VDC max. 200 mA at 5 VDC	max. 150 mA at 10 ... 30 VDC max. 200 mA at 5 VDC
Output signals	Push-pull, durable short circuit proof, with inverted signals: A, A', B, B', Z, Z'	Push-pull, durable short circuit proof, with inverted signals: A, A', B, B', Z, Z'
Index pulse Z, Z'	periodically, each 5 mm	periodically, each 16 mm
Output levels	HTL or TTL	HTL or TTL
Connection type (signal output)	9 pin SUB-D (male)	9 pin SUB-D (male)
Max. output frequency per channel	100 kHz	5 kHz
Resolution at 4 edge triggering	0,025 mm	1,0 mm
Max. operating speed	Up to 4 m/s	Up to 20 m/s
<b>Ambient conditions</b>		
Store temperature	-25 ... +85° C	-25 ... +85° C
Operating temperature	-10 ... +70° C (-25 ... +85° C on request)	-10 ... +70° C (-25 ... +85° C on request)
Humidity	max. 95 %, none-condensing	max. 95 %, none-condensing
Protection class (system side)	Standard: IP67 Optionally: IP69K	Standard: IP67 Optionally: IP69K

\*) Order information: Please indicate the desired resolution by using the type designation (see next page).

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## Type designation:

Series/Type	Sensor				Round Rod / Piston Rod				
MTMI	XXX	X	XX	XXXX	XXXX	XX	XX	X	XXX

**Version No.:**

- 000 = standard version
- 001 = first special version

**Resolution in  $\mu\text{m}$ :**

- 1 = 0.025 mm at 4 edge triggering
- 2 = 1 mm mm at 4 edge triggering

**Power supply / output levels:**

- 00 = 10 ... 30 VDC / HTL
- 01 = 10 ... 30 VDC / TTL line driver
- 11 = 5 VDC / TTL line driver

**Connections:**

- 0000 = open cable ends
- D9M0 = 9 pin D-SUB (male)
- R8M0 = 8 pin M12 round connector

**Measurement range in mm:**

- 1000 = 1000 mm (example), up to max. 5000 mm possible

**Pole pitch of magnetic track:**

- 05 = 5 mm
- 16 = 16 mm

**Width of magnetic track:**

- 01 = 10 mm
- 02 = 20 mm

**Number of magnetic tracks:**

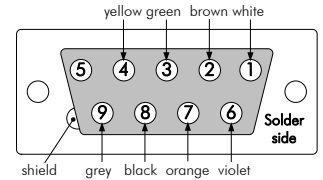
- 01 = single track system
- 02 = dual track system

**Round rod diameter in mm:**

- 050 =  $\varnothing$  50 mm (example)

## Connections:

9-pol. D-SUB



## Pin assignment

Pin	Function
1	GND
2	VCC
3	A
4	B
6	A'
7	B'
8	Z
9	Z'
Shield	PE

## Single track coded system:

## Examples for sensor applications:



## Dimensions:

