ELGO ELECTRONIC

SERIES *RMIX2*

Magnetic Length and Angle Measuring System with 25 µm resolution

- Direct, contactless and wear-free measurement
- Suitable for linear, radial and rotative applications (e.g. length, angle or speed measurement)
- Measuring length theoretically unlimited
- Resolution of 25 µm at 4 edge triggering
- Standard diameters for accessorial magnet rings: 72 mm, 38 mm or 19.75 mm (others on request)
- The distance between sensor and magnetic tape resp. magnet ring can vary between 0.1 and 0.6 mm
- Insensitive to dirt, dust and water (IP67)

RMIX2 - Magnetic Length and Angle Measuring System with 25 µm resolution

General:

RMIX2 is a magnetic measuring system for linear, rotative and radial measuring applications. The sensor system and the required evaluation electronics are placed in the same housing. The RMIX2 sensor can be mounted up to a distance of 0.6 mm from a magnetic tape or magnet ring. The channels A, A´, B, B´, Z, Z´ are available as output signals.

Linear Measurements with Magnetic Tape:

For linear measuring tasks, the incremental encoded magnetic tape MB20-20-10-1-R is glued along the distance to be measured. The width of the magnetic tape is 10 mm. During installation, the respective mounting tolerances must be observed (see last page).

Rotative applications with Magnet Ring:

Für radiale bzw. rotative Messaufgaben stehen drei unterschiedliche Magnetringe aus gesintertem Hartferrit als Zubehör zur Auswahl:

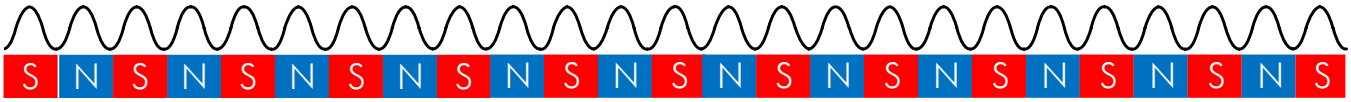
- MR2030 with 30 poles [P] pro Umdrehung; 2 mm Polteilung (dimensions: outer Ø 19.75 mm, inner Ø 14.7 mm, width 4.1 mm)
- MR3860 with 60 poles [P] pro Umdrehung; 2 mm Polteilung (dimensions: outer Ø 72 mm, innner Ø 54 mm, width 7 mm)
- MR72114 with 114 poles [P] pro Umdrehung; 2 mm Polteilung (dimensions: outer Ø 72 mm, innner Ø 54 mm, width 7 mm)

The interpolation factor [IF] for all variants is 200.
Example MR2030: 30 poles x 200 = max. 6000 pulses.

Mounting on the axis is performed either as a thermal fit or by bonding. We recommend the adhesive Loctite AA 326 with pretreatment with the activator Loctite 7649. The alignment of the RMIX2 sensor to the magnetic ring is illustrated on the last page.

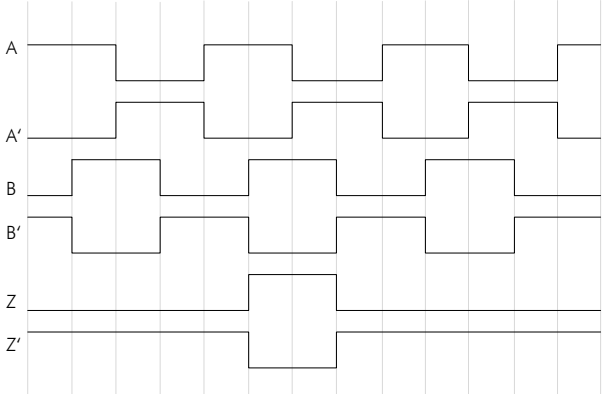
Functional Principle:

The basis of the incremental measuring systems consists of an electronic scanning system which contactlessly scans the north and south poles on the coded magnetic tape strip and generates 1 sine/cosine signal per pole.



This signal is electronically interpolated and, depending on the refinement of the interpolation, together with the pole pitch of the magnetic tape, determines the resolution of the measuring system. The magnetic tape MB20-20-10-1-R and the suitable magnetic rings MR2030, MR3860 and MR72114 have a pole pitch of 2 mm. Special evaluation electronics are used to process the sinusoidal signal. This „translator" generates rectangular output signals from the signal information of the magnetized tape or ring. This signals are compatible with conventional rotary encoders or optical linear measuring systems.

Output Pulse Diagram:



Channels A and B are phase-shifted by 90°.

The index pulse output occurs periodically every 4 mm.

Connections:

Color	Function
white	0 V (GND)
brown	VCC
green	Channel A
grey	Channel B
blue	Channel Z
yellow	Channel A'
pink	Channel B'
red	Channel Z'
blank	PE

RMIX2 - Magnetic Length and Angle Measuring System with 25 µm resolution

Technical Data:

Mechanical Data	
Measuring principle	incremental
Repeat accuracy	± 1 increment
System accuracy at 20°C	±(25 + 20 x L) L = measuring length in meters
Distance sensor - tape / ring	max 0.6 mm
Basic pole pitch	2 mm
Sensor housing material	ABS plastic material
Sensor housing dimensions	L x W x H = 50 x 12 x 25 mm
Required magnetic tape	MB20-20-10-1-R
Maximum measuring length	theoretically unlimited
Connection	open cable ends
Sensor cable	1.5 m standard length (others on request); drag chain suitable
Weight	ca. 40 g without cable
Electrical Data	
Power supply voltage	10 ... 30 VDC or 5 VDC
Residual ripple	10 ... 30 V: < 10 % 5 V: ± 25 mV
Power input	10 ... 30 VDC: max 150 mA 5 VDC: max 200 mA
Output signals	A, A´, B, B´, Z, Z´
Output level	TTL or HTL
Resolution	25 µm at 4 edge triggering
Index pulse	4 mm periodical
Maximum output frequency	200 kHz per channel
Maximum operating speed	20 m/s linear 300.000 rpm / number of pole pairs
Environmental Conditions	
Storage temperature	-25 °C ... +85 °C
Operation temperature	-10 °C ... +70 °C (-25 °C ... +85 °C upon request)
Protection class	IP67

Type Designation:

For orders please use the following code:

RMIX 2 - _ _ _ - _ _ . _ - _ _ _ _ _ - _ _
A A A - B B . B - C C C C - D D

A Version
- 000 = standard version
- 001 = first special version etc.

B Signal Cable Length (in XX.X meters)
- 01.5 = 5 m standard (others on request)

C Resolution
- 0025 = 25 µm (at 4-edge triggering)

D Power Supply / Output Levels
- 00 = 10 ... 30 VDC / HTL
- 01 = 10 ... 30 VDC / TTL
- 11 = 5 VDC / TTL

Order example:

RMIX2 - 0 0 0 - 0 1 . 5 - 0 0 2 5 - 0 1
A A A - B B . B - C C C C - D D

ELGO standard *RMIX2* with a 1.5 m long signal cable, 25 µm resolution, 10 ... 30 VDC power supply / TTL ouput levels

Your order:

RMIX2 - _ _ _ - _ _ . _ - _ _ _ _ _ - _ _
A A A - B B B - C C C C - D D

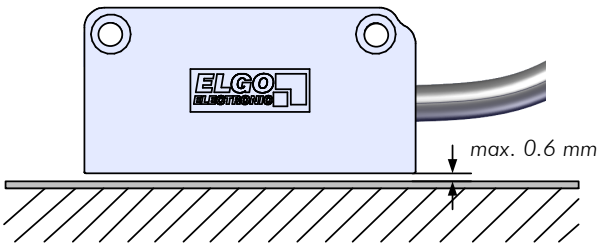
Accessories:

Order Designation	Description
MB20-20-10-1-R-XX.X*	Magnetic Tape with 2 mm pole pitch *) *please specify length in XX.X m*
End cap set 10 mm	2 x end cap for 10 mm wide magnetic tapes and 2 x M3 x 8 screw. Serves as additional fixation and to protect the ends of the magnetic tape.
FS1000 / FS1500 / FS2000	Magnetic tape guide rail (available lengths: 1 m, 1.5 m or 2.0 m). For higher lengths the guide rails can be lined up together.
AP-00-1m** or AP-00-2m**	The 20 mm wide and 2 mm high aluminium cover profile can be used as an alternative to the cover tape. The magnetic tape is glued into the existing 10 mm groove without the cover tape and is therefore optimally protected. ***) available lengths: "AP00-1m" = 1 m or "AP00-2m" = 2 m*
MR2030	Magnet ring with 2 mm pole pitch (dimensions: outer Ø 19.75 mm, inner Ø 14.7 mm, width 4.1 mm)
MR3860	Magnet ring with 2 mm pole pitch (dimensions: outer Ø 38 mm, inner Ø 30 mm, width 6.5 mm)
MR72114	Magnet ring with 2 mm pole pitch (dimensions: outer Ø 72 mm, innner Ø 54 mm, width 7 mm)

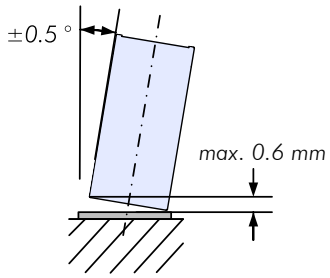
Mounting Tolerances:

The mounting tolerances apply equally for linear measurements with magnetic tape as well as for radial or rotary applications with magnet rings.

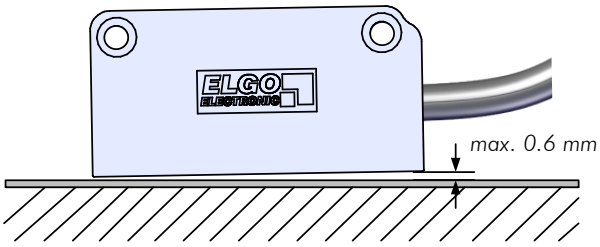
Sensor distance



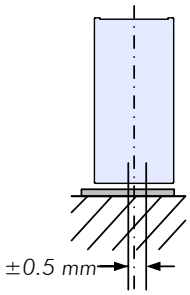
Roll



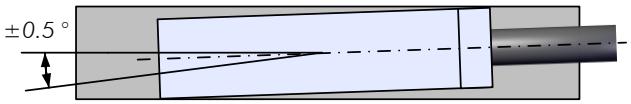
Pitch



Lateral offset

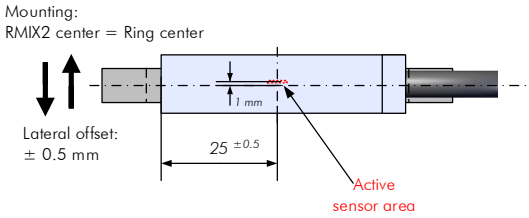


Yaw

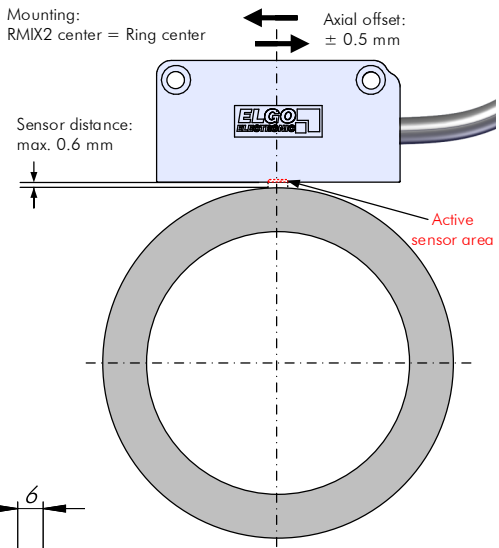


Alignment with Magnet Ring:

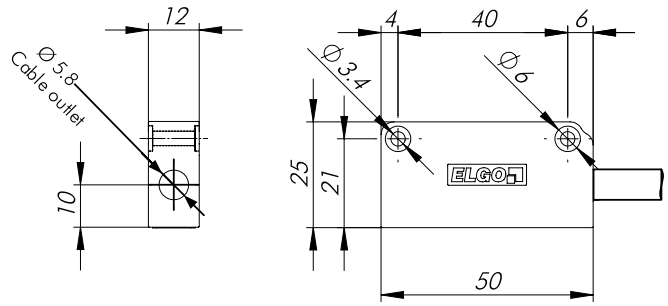
Top view:



Front view:



Sensor Dimensions:



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