

# ***Magnetic rings***



For rotative measurement

# Magnetic rings for rotative measurement

**General:** All the advantages of the magnetic measuring principle can be used for rotary movements by using magnet rings e.g. revolutions -, angular- or circumferential measurements.

The magnetic rings are a wear-free and space-saving alternative to optical rotary encoders and are insensitive against dirt, dust, liquids and vibrations.

For scanning the magnetic rings, ELGO's incremental measuring systems of the product series GMIX, LMIX and EMIX, as well as the incremental position indicators IZ14/IZ15/IZ16 can be used.

The ring - provided with a magnetic code (north/south poles) - is scanned contactless with a magnetic sensor.

At present three different standard magnet ring sizes are available (on request customized versions are possible):

1. *Large:* outer diameter 72 mm, inner diameter 54 mm, width 7 mm
2. *Medium:* outer diameter 38 mm, inner diameter 31 mm, width 6.5 mm
3. *Small:* outer diameter 19.75 mm, inner diameter 14.7 mm, width 4.1 mm

The magnetic rings are available in three different versions and are selected depending on the measuring system:

- 5 mm pole width (for GMIX- and LMIX-sensors)
- 2 mm pole width (for EMIX-sensors)
- 2.5mm pole width (for incremental position indicators IZ14/IZ15/IZ16) (only available with outer diameter of 38mm)

**Assembly with sensor head:** Just like when using magnetic tape, make sure that the active sensor area - taking the radius of the magnetic rings into account - is within the prescribed distance to the magnetic ring. Mounting instructions can be found in the different manuals of the measuring systems.

## Product features:

- Interpolation up to 22800 pulses/revolution possible
- Direct assembly on axes possible (e. g. motor shaft)
- Contactless and wear free measurement principle
- Applicable in roughest environments
- Vibration- and shock-resistant

**Applications:** Rotative or angular measurements like revolutions, speed, angles, drafts etc.



Example: Angle adjustment with customer designed magnetic ring



### Technical specifications:

System accuracy at 20°C	< +/- 1 %		
Total error	< 0,15 ° (standard) / < 0,007 ° (special applications)		
Material	Hard ferrite 8/22 according to DIN 17410, sintered isotrop		
<b>Pole width</b>	<b>2 mm</b>		
<b>Systems</b>	<b>EMIX1/2/3</b>		
Magnetic Rings	MR2030	MR3860	MR72114
Outer Ø in mm	19,75 (- 0,05)	38 (- 0,1)	72 (± 0,05)
Inside Ø in mm	14,7 (+0,2/- 0,15)	30 (± 0,5)	54 (± 0,8)
Width in mm	4,1 (+ 0,05)	6,5 (± 0,05)	7 (± 0,1)
Number of poles (P)	30	60	114
Interpolation factor (IF)	200		
max. pulse/r = IF x P	6000 (MR2030) 12000 (MR3860) 22800 (MR72114)		
<b>Pole width</b>	<b>2,5 mm</b>		
<b>Systems</b>	<b>IZ14/15/16</b>		
Magnetic Rings	MR3848		
Outer Ø in mm	38 (- 0,1)		
Inside Ø in mm	30 (± 0,5)		
Width in mm	6,5 (+ 0,05)		
Number of poles (P)	48		
Interpolation factor (IF)	250		
max. pulse/r = IF x P	12000 (MR3848)		
<b>Pole width</b>	<b>5 mm</b>		
<b>Systems</b>	<b>GMIX2</b>	<b>LMIX1/2/3</b>	<b>GMIX1A</b>
Magnetic Rings	MR2012	MR3824	MR7244
Outer Ø in mm	19,75 (- 0,05)	38 (- 0,1)	72 (± 0,05)
Inside Ø in mm	14,7 (+0,2/- 0,15)	30 (± 0,5)	54 (± 0,8)
Width in mm	4,1 (+ 0,05)	6,5 (± 0,05)	7 (± 0,1)
Number of poles (P)	12	24	44
Interpolation factor (IF)	2	200	500
max. pulse/r = IF x P	24 (MR2012) 48 (MR3824) 88 (MR7244)	2400 (MR2012) 4800 (MR3824) 8800 (MR7244)	6000 (MR2012) 12000 (MR3824) 22800 (MR7244)

## Order reference:

For orders, please use the following order code:

MR -       
    A A A A

### A Format

MR2012

MR3824 (for LMIX and GMIX) pole width 5 mm

MR7244

MR2030

MR3860 (for EMIX) pole width 2 mm

MR72114

MR3848 (for IZ14/IZ15/IZ16) pole width 2.5mm

Currently, 3 mechanical versions are available (through the use of reducing rings are also smaller inner diameters are possible)

1. big: outside Ø 72 mm  
    inside Ø 54 mm  
    width 7 mm
2. medium: outside Ø 38 mm  
    inside Ø 30 mm  
    width 6.5 mm
3. small: outside Ø 19.7 mm  
    inside Ø 14.7 mm  
    width 4.1 mm

### For Example:

MR - 7 2 4 4  
    A A A A

Magnetic ring with 72 mm's diameter, pole width 5 mm, pole number = 46, Type designation: **MR7244**, assembled with LMIX1 (interpolation factor 200), the max. number of pulses results from IF X P:  $200 \times 44 = 8800$  pulses.

Your order:

MR -       
    A A A A

