

# Incremental Encoders

<b>Bearingless Zero pulse, magnetic</b>	<b>RI50 / Limes LI50 (Hollow shaft)</b>	<b>Push-Pull / RS422</b>
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Thanks to its installation depth of only 16 mm, the bearingless magnetic rotary encoder RI50 / LI50, comprising a magnetic ring and sensor head, is ideally suited for plants and machinery where space is very tight. The non-contact measuring principle allows for error-free use even under harsh environmental conditions, as well as ensuring a long service life. In contrast to our measuring system RI20 / LI20, a single zero pulse is also implemented here.

**NEW:** Version for outdoor use with extremely sturdy aluminium housing and stainless-steel cover, wide temperature range as well as a UV-resistant cable. IP68 / IP69k protection, special encapsulation technology and tested resistance to cyclic humidity and damp heat offer the highest levels of reliability, even in exposed outdoor use.



High rotational speed



High protection level



Shock / vibration resistant



Reverse polarity protection

## Hard-wearing and robust

- High shock and vibration resistance
- Sturdy housing with IP67 protection. Option: special housing for maximum resistance against condensation (IP68 / IP69k, resistance to cyclic humidity acc. to EN 60068-3-38 as well as damp heat acc. to EN 60068-3-78)
- Non-contact measuring system, free from wear, ensures a long service life

## Fast start-up

- Function display via LED
- Large mounting tolerance between magnetic band and sensor head
- Requires very little installation space
- Slotted hole fixing ensures simple alignment

## Selection guide magnetic ring RI50 / Limes LI50

Pulse rates/PPR <sup>1)</sup>	Order code Magnetic ring RI50	Order code Magnetic sensor Limes LI50	Max. rotational speed (electronic) <sup>2)</sup>	
			without using index signal	using index signal
1000	8.RI50.031.XXXX.112	8.LI50.11X1.1050	9000	3000
2000	8.RI50.031.XXXX.112	8.LI50.11X1.1100	4000	3000
1024	8.RI50.048.XXXX.112	8.LI50.11X1.1032	9000	2000
2048	8.RI50.048.XXXX.112	8.LI50.11X1.1064	4000	2000
3600	8.RI50.055.XXXX.112	8.LI50.11X1.1100	2500	1700

## Order code Magnetic ring RI50

8.RI50	.	XXX	.	XXXX	.	112
Type		a		b		

### a Outer diameter

031 = 31 mm [1.22"]  
048 = 48.3 mm [1.90"]  
055 = 54.7 mm [2.15"]

### b Bore diameter

0600 = 6 mm [0.24"]  
0800 = 8 mm [0.32"]  
1000 = 10 mm [0.39"]  
1200 = 12 mm [0.47"]  
1500 = 15 mm [0.59"]  
2000 = 20 mm [0.79"]  
2500 = 25 mm [0.98"] <sup>3)</sup>  
3000 = 30 mm [1.18"] <sup>3)</sup>  
3500 = 35 mm [1.34"] <sup>4)</sup>

### Stock types

8.RI50.048.0600.112

## Order code Magnetic sensor Limes LI50

8.LI50	.	X	1	X	1	.	1	XXX
Type		a	b	c	d		e	

### a Model

1 = IP67, standard  
2 = IP68 / IP69k and humidity tested acc. to EN 60068-3-38, EN 60068-3-78

### b Output circuit / Power supply

1 = RS422 / 4.8 ... 26 V DC  
2 = Push-Pull / 4.8 ... 30 V DC

### c Type of connection

1 = cable PUR, 2 m [6.56'] length

### d Reference signal

1 = separate index signal (linked with A and B)

### e Interpolation factor <sup>2)</sup>

032, 050, 064, 100

### Stock types

8.LI50.1121.1032

1) The pulse rate (ppr) results from the combination of the magnetic sensor with the various outer diameters

2) With an input frequency of the evaluation unit of 250 kHz

3) Only possible for outer diameters 048 and 055

4) Only possible for outer diameter 055

# Incremental Encoders

Bearingless Zero pulse, magnetic		RI50 / Limes LI50 (Hollow shaft)	Push-Pull / RS422
Accessories / Display type 572			Order No.
Position display, 6-digit		with 4 fast switch outputs and serial interface	6.572.0116.D05
		with 4 fast switch outputs and serial interface and scalable analogue output	6.572.0116.D95
Position display, 8-digit		with 4 fast switch outputs and serial interface	6.572.0118.D05
		with 4 fast switch outputs and serial interface and scalable analogue output	6.572.0118.D95

Further accessories can be found in the accessories section or in the accessories area of our website at: [www.kuebler.com/accessories](http://www.kuebler.com/accessories)  
Additional connectors can be found in the connection technology section or in the connection technology area of our website at: [www.kuebler.com/connection\\_technology](http://www.kuebler.com/connection_technology)

## Technical data

Mechanical characteristics			Electrical characteristics		
<b>Speed</b>		max. 12000 min <sup>-1</sup>	<b>Output circuit</b>	<b>RS422</b>	<b>Push-Pull</b>
<b>Protection</b>	Model 1	IP67 acc. to EN 60529	<b>Power supply</b>	4.8...26 V DC	4.8...30 V DC
	Model 2	IP68 / IP69k acc. to EN 60529, DIN 40050-9 and humidity tested acc. to EN 60068-3-38, EN 60068-3-78	<b>Power consumption (no load)</b>	typ 25 mA / max. 60 mA	
<b>Working temperature</b>		-20°C ... +80°C [-4°F ... +176°F]	<b>Permissible load/channel</b>	max. 20 mA	
<b>Shock resistance</b>		500 g / 1 ms	<b>Min. pulse edge interval</b>	1 µs	
<b>Vibration resistance</b>		30 g / 10...2000 Hz	<b>Signal level</b>	HIGH	min. 2.5 V
<b>Pole gap</b>		5 mm from pole to pole		LOW	min. +V - 2.0 V
<b>Housing (Sensor)</b>		Aluminium	<b>Reference signal</b>	fixed	
<b>Cable</b>		2 m [6.56'] long, PUR 8 x 0.14 mm <sup>2</sup> [AWG 26], shielded, may be used in trailing cable installations	<b>System accuracy</b>	typ 0.3° with shaft tolerance g6	
<b>Status LED</b>	green	pulse-index			
	red	Error; Speed too high or magnetic fields too weak (8.LI50.XXXX.X050 and 8.LI50.XXXX.X250)			
<b>CE compliant</b> acc. to		EMC guideline 2004/108/EC			
<b>RoHS compliant</b> acc. to		guideline 2002/95/EC			

## Terminal assignment

Output circuit	Type of connection	Cable (isolate unused wires individually before initial start-up)									
1, 2	1	Signal:	0 V	+V	A	$\bar{A}$	B	$\bar{B}$	0	$\bar{0}$	$\perp$
		Cable colour:	WH	BN	GN	YE	GY	PK	BU	RD	shield <sup>1)</sup>

+V: Encoder power supply +V DC  
0 V: Encoder power supply ground GND (0 V)  
A,  $\bar{A}$ : Incremental output channel A  
B,  $\bar{B}$ : Incremental output channel B  
0,  $\bar{0}$ : Reference signal  
 $\perp$ : Plug connector housing (Shield)

1) Shield is attached to connector housing

# Incremental Encoders

**Bearingless**  
**Zero pulse, magnetic**

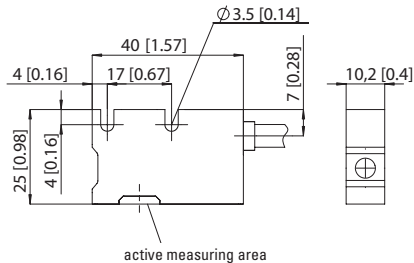
**RI50 / Limes LI50 (Hollow shaft)**

**Push-Pull / RS422**

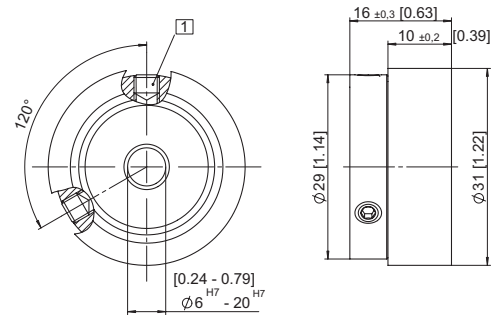
## Dimensions

Dimensions in mm [inch]

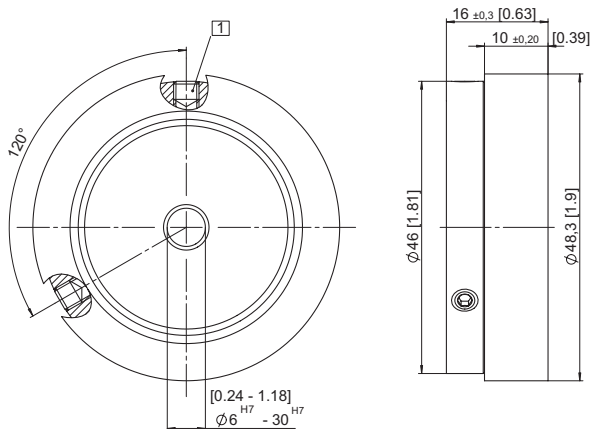
### Measuring head Limes LI50



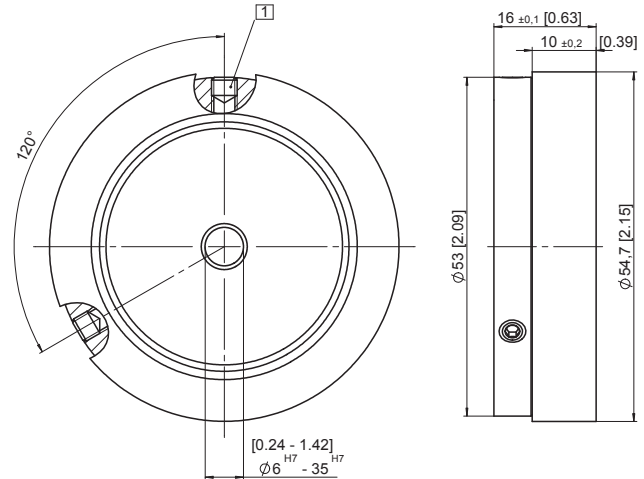
### Magnetic ring, ø 31 [1.22], 8.RI50.031.XXXX.112



### Magnetic ring, ø 48.3 [1.90], 8.RI50.048.XXXX.112



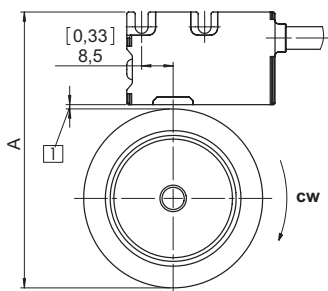
### Magnetic ring, ø 54.7 [2.15], 8.RI50.055.XXXX.112



1 M4 Set screw

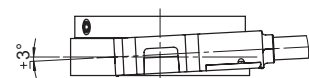
## Mounting orientation and permissible mounting tolerances

### Distances



1 Distance Sensor / Magnetic ring:  
0.1 ... 1.5 [0.004 ... 0.06]  
(1 [0.04] recommended)

### Torsion



### Offset



### Tilting



Magnetic ring	A for distance sensor / magnetic ring = 1 [0.04]
8.RI50.031.XXXX.112	57.0 [2.24]
8.RI50.048.XXXX.112	74.3 [2.93]
8.RI50.055.XXXX.112	80.7 [3.18]

**Warning: When mounting the sensor head, please ensure its correct orientation to the magnetic ring!**