

Incremental Encoders

Bearingless
Zero pulse, magnetic

RI50 / Limes LI50 (Hollow shaft)

Push-Pull / RS422



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 ¹⁾	Order code Magnetic ring RI50	Order code Magnetic sensor Limes LI50	Max. rotational speed (electronic) ²⁾	
			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

Min. order quantity for non-stock types: 10 pieces

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"] 1500 = 15 mm [0.59"] 3500 = 35 mm [1.34"] ⁴⁾
0800 = 8 mm [0.32"] 2000 = 20 mm [0.79"]
1000 = 10 mm [0.39"] 2500 = 25 mm [0.98"] ³⁾ 1587 = 5/8"
1200 = 12 mm [0.47"] 3000 = 30 mm [1.18"] ³⁾ 2540 = 1" ³⁾

Stock types

8.RI50.048.2000.112

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

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Order code Magnetic sensor Limes LI50	<table border="1" style="margin: auto;"> <tr> <td style="padding: 2px 5px;">8</td> <td style="padding: 2px 5px;">.</td> <td style="padding: 2px 5px;">L</td> <td style="padding: 2px 5px;">I</td> <td style="padding: 2px 5px;">5</td> <td style="padding: 2px 5px;">0</td> <td style="padding: 2px 5px;">.</td> <td style="padding: 2px 5px;">X</td> <td style="padding: 2px 5px;">1</td> <td style="padding: 2px 5px;">X</td> <td style="padding: 2px 5px;">1</td> <td style="padding: 2px 5px;">.</td> <td style="padding: 2px 5px;">1</td> <td style="padding: 2px 5px;">.</td> <td style="padding: 2px 5px;">1</td> <td style="padding: 2px 5px;">X</td> <td style="padding: 2px 5px;">X</td> <td style="padding: 2px 5px;">X</td> </tr> <tr> <td colspan="6" style="text-align: center; font-size: small;">Type</td> <td style="text-align: center; font-size: x-small;">a</td> <td style="text-align: center; font-size: x-small;">b</td> <td style="text-align: center; font-size: x-small;">c</td> <td style="text-align: center; font-size: x-small;">d</td> <td style="text-align: center; font-size: x-small;">e</td> <td colspan="7"></td> </tr> </table>	8	.	L	I	5	0	.	X	1	X	1	.	1	.	1	X	X	X	Type						a	b	c	d	e							
8	.	L	I	5	0	.	X	1	X	1	.	1	.	1	X	X	X																				
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	d Reference signal 1 = separate index signal (linked with A and B)	Stock types 8.LI50.1121.1032
c Type of connection 1 = cable PUR, 2 m [6.56'] length	e Interpolation factor 032, 050, 064, 100	optional on request - special cable length	

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
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

Technical data

Mechanical characteristics	
Speed	max. 12000 min ⁻¹
Protection	Model 1 IP67 acc. to EN 60529 Model 2 IP68 / IP69k acc. to EN 60529, DIN 40050-9 and humidity tested acc. to EN 60068-3-38, EN 60068-3-78
Working temperature	-20°C ... +80°C [-4°F ... +176°F]
Shock resistance	500 g / 1 ms
Vibration resistance	30 g / 10 ... 2000 Hz
Pole gap	5 mm from pole to pole
Housing (Sensor)	Aluminium
Cable	2 m [6.56'] long, PUR 8 x 0.14 mm ² [AWG 26], shielded, may be used in trailing cable installations
Status LED	green pulse-index red Error; Speed too high or magnetic fields too weak (8.LI50.XXXX.X050 and 8.LI50.XXXX.X250)
CE compliant acc. to	EMC guideline 2004/108/EC
RoHS compliant acc. to	guideline 2011/65/EU

Electrical characteristics		
Output circuit	RS422	Push-Pull
Power supply	4.8...26 V DC	4.8...30 V DC
Power consumption (no load)	typ 25 mA / max. 60 mA	
Permissible load/channel	max. 20 mA	
Min. pulse edge interval	1 µs	
Signal level	HIGH min. 2.5 V LOW max. 0.5 V	min. +V - 2.0 V max. 0.5 V
Reference signal	fixed	
System accuracy	typ 0.3° with shaft tolerance g6	

Terminal assignment

Output circuit	Type of connection	Cable (isolate unused wires individually before initial start-up)									
1, 2	1	Signal:	0 V	+V	A	Ā	B	B̄	0	0̄	⊥
		Cable colour:	WH	BN	GN	YE	GY	PK	BU	RD	shield ¹⁾

- +V: Encoder power supply +V DC
- 0 V: Encoder power supply ground GND (0 V)
- A, Ā: Incremental output channel A
- B, B̄: Incremental output channel B
- 0, 0̄: Reference signal
- ⊥: Plug connector housing (Shield)

1) Shield is attached to connector housing

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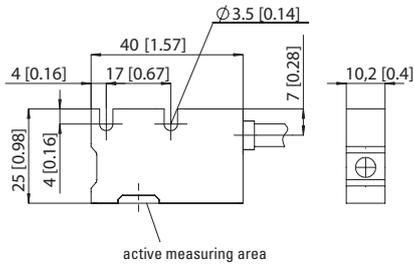
RI50 / Limes LI50 (Hollow shaft)

Push-Pull / RS422

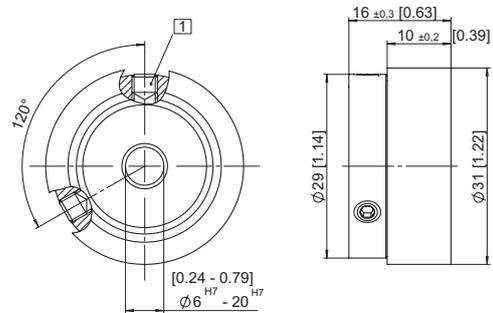
Dimensions

Dimensions in mm [inch]

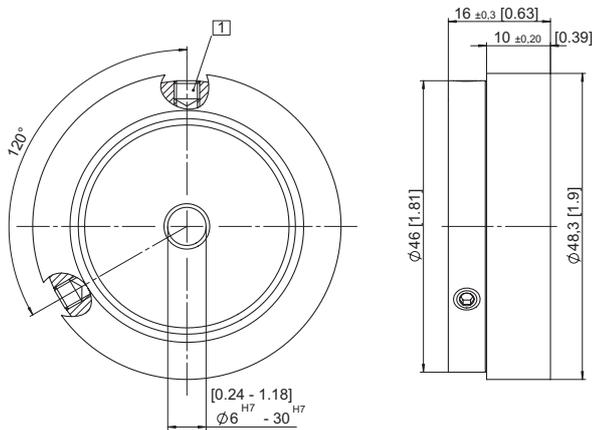
Measuring head Limes LI50



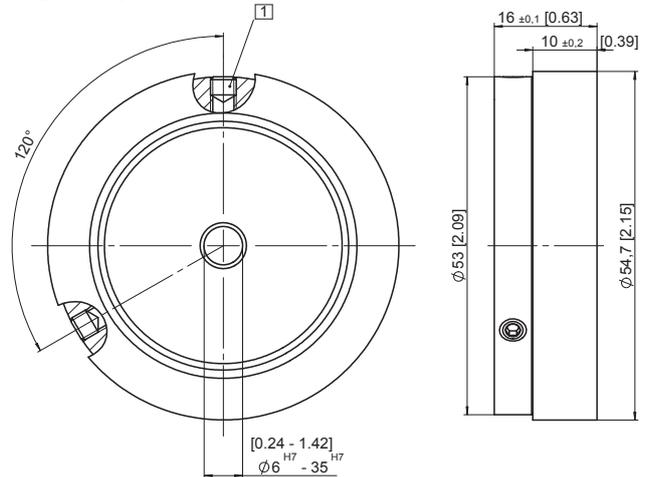
Magnetic ring, ø 31 [1.22], 8.RI50.031.XXXX.112



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



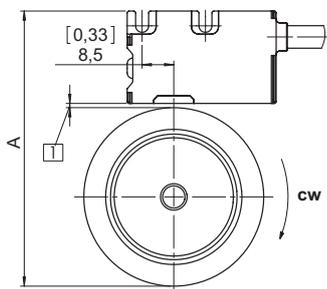
Magnetic ring, ø 54.7 [2.15], 8.RI50.055.XXXX.112



1 M4 Set screw

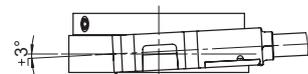
Mounting orientation and permissible mounting tolerances

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!