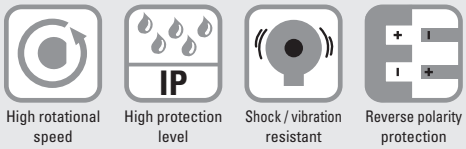
Incremental, standard zero pulse, magnetic | **RI50 / Limes LI50 (hollow shaft)** | **Push-pull / RS422**

Thanks to its installation depth of only 16 mm, the bearingless magnetic rotary encoder RI50 / Limes 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 / Limes LI20, a single zero pulse is also implemented here.

For outdoor use with extremely sturdy aluminum 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 per revolution [1]	Order code magnetic ring RI50	Order code sensor head Limes LI50	Max. rotational speed min^{-1} (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		ⓐ		ⓑ		

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

ⓐ *Outer diameter*
031 = 31 mm [1.22“]
048 = 48.3 mm [1.90“]
055 = 54.7 mm [2.15“]

ⓑ *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“] [3]
3000 = 30 mm [1.18“] [3]
3500 = 35 mm [1.34“] [4]
1587 = 5/8“
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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Incremental, standard zero pulse, magnetic | RI50 / Limes LI50 (hollow shaft) | Push-pull / RS422

Order code Sensor head Limes LI50

8.LI50	.	X	1	X	X	.	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 = radial cable, 2 m [6.56'] PUR
A = radial cable, special length PUR *)
*) Available special lengths (connection type A): 3, 5, 8, 10, 15 m [9.84, 16.40, 26.25, 32.80, 49.21'] order code expansion .XXXX = length in dm ex.: 8.LI50.111A.1032.0030 (for cable length 3 m)

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

e *Interpolation factor*
032, 050, 064, 100

Stock types
8.LI50.1121.1032

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 analog 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 analog 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

Maximum speed		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		5000 m/s^2, 1 ms
Vibration resistance		300 m/s^2, 10 ... 2000 Hz
Pole gap		5 mm from pole to pole
Housing (sensor head)		aluminum
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 2014/30/EU RoHS 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	typ. 25 mA max. 60 mA
Permissible load/channel		120 ohm	+/- 20 mA
Min. pulse edge interval		1 µs	1 µs
Signal level	HIGH	min. 2.5 V	min. +V - 2.0 V
	LOW	max. 0.5 V	max. 0.5 V
Reference signal		1 x per revolution	
System accuracy		typ. 0.3° with shaft tolerance g6	

Terminal assignment

Output circuit	Type of connection	Cable (isolate unused cores individually before initial start-up)									
1, 2	1, A	Signal:	0 V	+V	A	$\overline{A}$	B	$\overline{B}$	0	$\overline{0}$	⏚
		Core color:	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, $\overline{A}$: Incremental output channel A / sine signal
B, $\overline{B}$: Incremental output channel B / cosine signal
0, $\overline{0}$: Reference signal
⏚: Plug connector housing (shield)

1) Shield is attached to connector housing.

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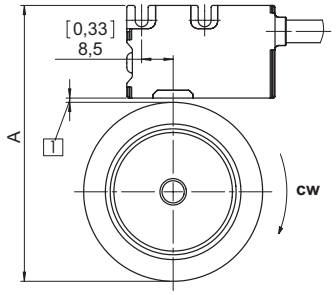
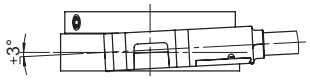
Incremental, standard zero pulse, magnetic | **RI50 / Limes LI50 (hollow shaft)** | **Push-pull / RS422**

Mounting orientation and permissible mounting tolerances

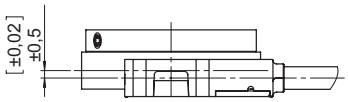
Distances



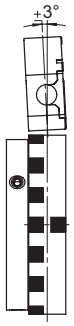
Torsion



Offset



Tilting



1 Distance sensor head / magnetic ring:
0.1 ... 1.5 [0.004 ... 0.06]
(1 [0.04] recommended)

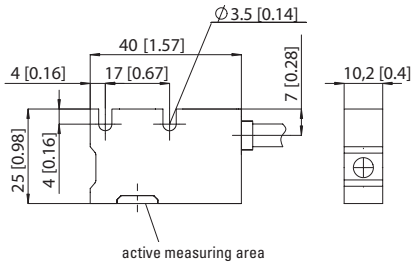
Magnetic ring	A for distance sensor head / magnetic ring = 1 [0.04]
8.RI50.031.XXXX.112	57.0 [2.24]
8.RI50.048.XXXX.112	74.3 [2.93]
8.RI50.055.XXXX.112	80.7 [3.18]

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

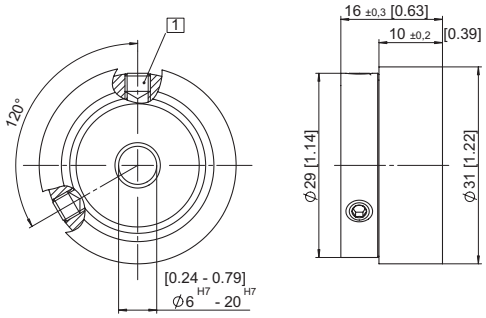
Dimensions

Dimensions in mm [inch]

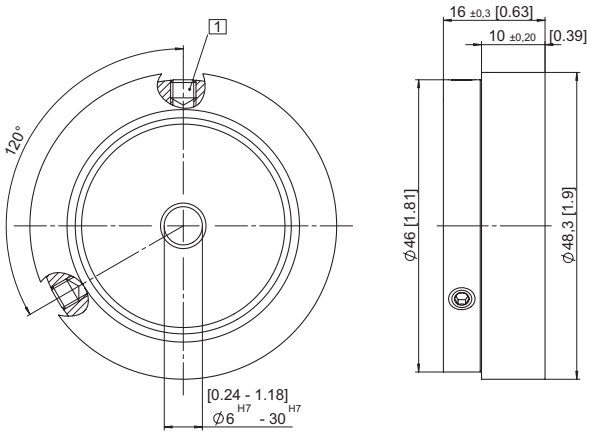
Sensor head Limes LI50



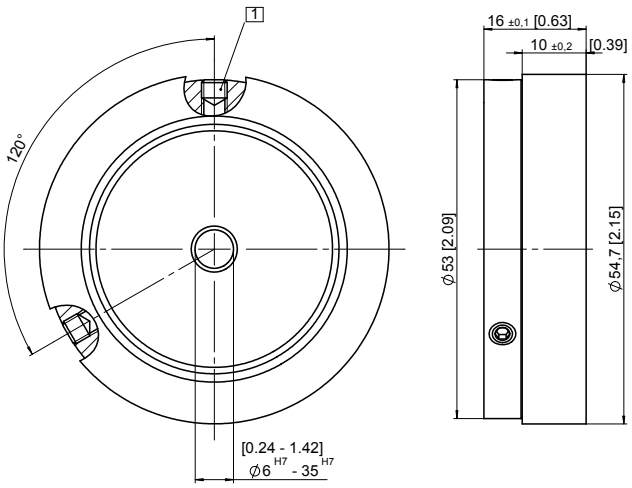
Magnetic ring, ø 31 [1.22], 8.RI50.031.XXXX.112



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

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