

Bearingless encoders

Incremental, standard zero pulse, magnetic	RLI50 (hollow shaft)	Push-pull / RS422
--------------------------------------------	----------------------	-------------------



Thanks to its installation depth of only 16 mm, the bearingless magnetic rotary encoder RLI50, 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 RLI20, a single zero pulse is also implemented here.

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.

This bearingless encoder can be mounted on shafts with a diameter up to max. 35 mm.



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.

Bearingless encoders

Order code RLI50

8.RLI50	.	X	1	X	X	.	XXXX	.	XXXX
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.RLI50.111A.2000.0080.0030 (for cable length 3 m)

d Pulses per revolution ¹⁾

1000, 1024, 2000, 2048, 3600

e Bore diameter

0060 = 6 mm [0.24"]	0158 = 5/8"
0080 = 8 mm [0.32"]	0254 = 1" ²⁾
0100 = 10 mm [0.39"]	
0120 = 12 mm [0.47"]	
0150 = 15 mm [0.59"]	
0200 = 20 mm [0.79"]	
0250 = 25 mm [0.98"] ²⁾	
0300 = 30 mm [1.18"] ²⁾	
0350 = 35 mm [1.34"] ³⁾	

¹⁾ Other pulse rates on request.

²⁾ Only possible for pulse rates 1024, 2048 and 3600.

³⁾ Only possible for pulse rate 3600.

Bearingless encoders

Incremental, standard zero pulse, magnetic	RLI50 (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 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
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				
Pulse rate [ppr] ¹⁾		1000	1024	2000	2048	3600
max. speed min ⁻¹		9000	9000	4000	4000	2500
without using zero pulse						
max. speed min ⁻¹		3000	2000	3000	2000	1700
using zero pulse						

Terminal assignment

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

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

1) With an input frequency of the evaluation unit of 250 kHz.
2) Shield is attached to connector housing.

Bearingless encoders

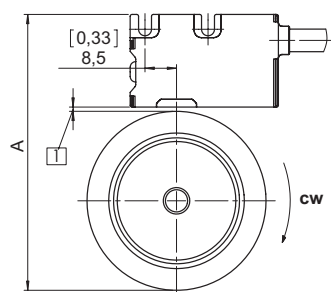
**Incremental, standard
zero pulse, magnetic**

RLI50 (hollow shaft)

Push-pull / RS422

Mounting orientation and permissible mounting tolerances

Distances



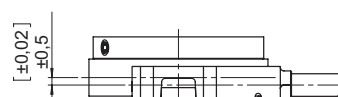
- 1 Distance sensor head / magnetic ring:
0.1 ... 1.5 [0.004 ... 0.06]
(1 [0.04] recommended)

Pulse rate	A for distance sensor head / magnetic ring = 1 [0.04]
1000, 2000	57.0 [2.24]
1024, 2048	74.3 [2.93]
3600	80.7 [3.18]

Torsion



Offset



Tilting

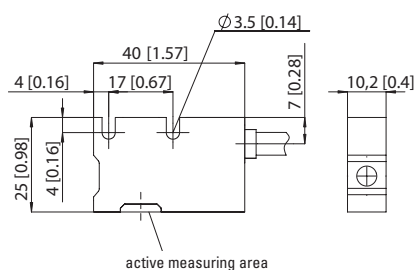


Warning: When mounting the sensor head, please ensure its correct orientation to the magnetic ring!

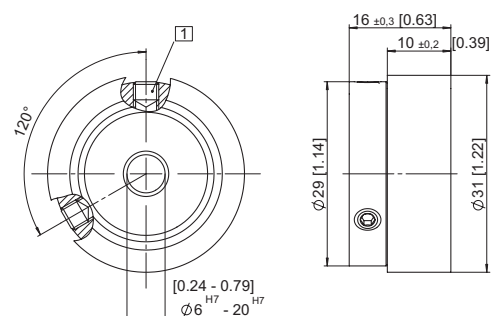
Dimensions

Dimensions in mm [inch]

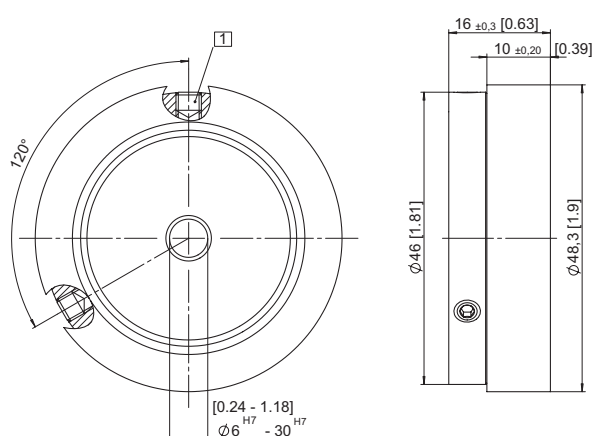
Sensor head



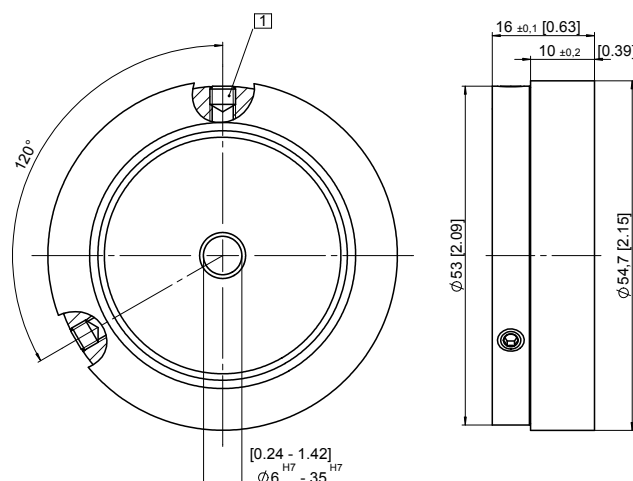
Magnetic ring for pulse rate 1000 or 2000



Magnetic ring for pulse rate 1024 or 2048



Magnetic ring for pulse rate 3600



- 1 M4 set screw