

# Bearingless encoders

<b>Incremental, large hollow shaft zero pulse, magnetic</b>	<b>RLI500 (hollow shaft)</b>	<b>Push-pull / RS422</b>
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Thanks to its installation depth of min. 10 mm, the bearingless magnetic rotary encoder RLI500, 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 RLI200, 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. 350 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

<b>Order code</b> RLI500	<b>8.RLI500</b>	<b>. XX 1 XX</b>	<b>. XXXXX</b>	<b>. 0700</b>
	Type	a b c d	e	f

- a** *Magnetic ring mounting method*
- 1 = Press fit <sup>1)</sup>
  - 2 = Hub screw
  - 3 = Screwed flange <sup>1)</sup>

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

- c** *Output circuit / Power supply*
- 1 = RS422 / 4.8 ... 26 V DC
  - 2 = Push-pull / 4.8 ... 30 V DC

- d** *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.RLI500.21112A.4096.0700.0030 (for cable length 3 m)

- e** *Pulses per revolution*
- 2048, 3200, 4096, 6400 (for hollow shaft ø 70 mm)  
(e.g.: 2048 pulses => 02048)

- f** *Hollow shaft diameter*
- 0700 = 70 mm [2.76"] <sup>2)</sup>

*Optional on request*

- other pulse rates
- other hollow shaft diameter (up to max. 350 mm)

#### Press fit



#### Hub screw



#### Screwed flange



1) On request.  
2) With magnetic ring mounting method 1 or 3 on request.

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Accessories / Display type 572	Order no.
<b>Position display, 6-digit</b>	with 4 fast switch outputs and serial interface <b>6.572.0116.D05</b>
	with 4 fast switch outputs and serial interface and scalable analog output <b>6.572.0116.D95</b>
<b>Position display, 8-digit</b>	with 4 fast switch outputs and serial interface <b>6.572.0118.D05</b>
	with 4 fast switch outputs and serial interface and scalable analog output <b>6.572.0118.D95</b>

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	
<b>Maximum speed</b>	12000 min <sup>-1</sup>
<b>Protection</b>	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
<b>Working temperature</b>	-20°C ... +80°C [-4°F ... +176°F]
<b>Shock resistance</b>	5000 m/s <sup>2</sup> , 1 ms
<b>Vibration resistance</b>	300 m/s <sup>2</sup> , 10 ... 2000 Hz
<b>Pole gap</b>	5 mm from pole to pole
<b>Housing (sensor head)</b>	aluminum
<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>Status LED</b>	green pulse index red error; speed too high or magnetic fields too weak
<b>CE compliant acc. to</b>	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU

Electrical characteristics				
Output circuit	RS422	Push-pull		
<b>Power supply</b>	4.8 ... 26 V DC	4.8 ... 30 V DC		
<b>Power consumption (no load)</b>	typ. 25 mA max. 60 mA	typ. 25 mA max. 60 mA		
<b>Permissible load/channel</b>	120 ohm	+/- 20 mA		
<b>Min. pulse edge interval</b>	1 µs	1 µs		
<b>Signal level</b>	HIGH min. 2.5 V LOW max. 0.5 V	min. +V - 2.0 V max. 0.5 V		
<b>Reference signal</b>	fixed			
<b>System accuracy</b>	typ. 0.3° with shaft tolerance g6			
<b>Pulse rate [ppr]<sup>1)</sup></b>	<b>2048</b>	<b>3200</b>	<b>4096</b>	<b>6400</b>
max. speed min <sup>-1</sup>	7300	4600	3600	2300

## 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	Ā	B	B̄	0	0̄	⊥
		Cable color:	WH	BN	GN	YE	GY	PK	BU	RD	shield <sup>2)</sup>

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

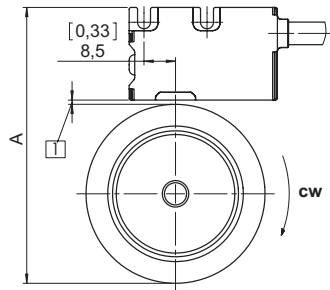
1) With an input frequency of the evaluation unit of 250 kHz.  
2) Shield is attached to connector housing.

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## Mounting orientation and permissible mounting tolerances

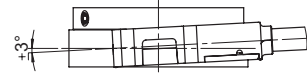
### Distances



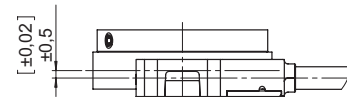
- 1 Distance sensor head / magnetic ring:  
0.1 ... 1.5 [0.004 ... 0.06]  
(1 [0.04] recommended)

Impulsions par tour	A for distance sensor head / magnetic ring = 1 mm [0.04]
2048, 3200, 4096, 6400	128.0 [5.04]

### Torsion



### Offset



### Tilting

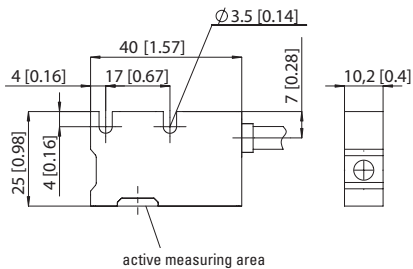


**Warning:** When mounting the sensor head, please ensure its correct orientation to the magnetic ring!

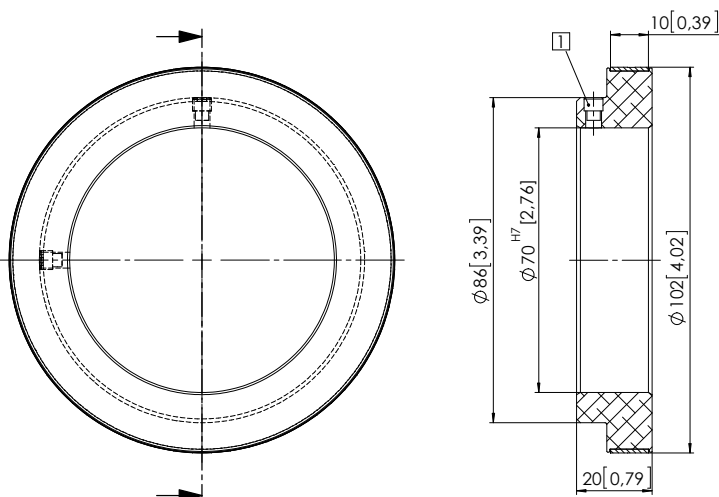
## Dimensions

Dimensions in mm [inch]

### Sensor head



### Magnetic ring (hub screw) pulse rate 2048, 3200, 4096, 6400



- 1 M5 set screw M4