

# Bearingless encoders

<b>Incremental, large hollow shaft magnetic</b>	<b>RLI200 (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 RLI200, 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.

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. 390 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

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

<b>Order code</b> RLI200	<b>8.RLI200</b> Type	<b>. XX 1 XX</b> a b c d	<b>. XXXXX</b> e	<b>. XXXX</b> f
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**a** *Magnetic ring mounting method*

- 1 = Press fit
- 2 = Hub screw <sup>1)</sup>
- 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 / Supply voltage*

- 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 <sup>2)</sup> (connection type A): 3, 5, 8, 10, 15, 20 m [9.84, 16.40, 26.25, 32.80, 49.21, 65.62']  
order code expansion .XXXX = length in dm  
ex.: 8.RLI200.1111A.07000.0760.0030 (for cable length 3 m)

**e** *Pulses per revolution*

- 700, 2240, 2800, 7000 (for hollow shaft ø 76 mm)
- 1600, 5120, 6400, 16000 (for hollow shaft ø 180 mm)
- (e.g.: 1600 pulses => 016000)

**f** *Hollow shaft diameter*

- 0760 = 76 mm [2.99"] <sup>3)</sup>
- 1800 = 180 mm [7.09"] <sup>3)</sup>

*Optional on request*  
- other pulse rates  
- other hollow shaft diameter (up to max. 390 mm)

#### Press fit



#### Hub screw



#### Screwed flange



1) On request.  
2) Cable lengths >10 m only possible with supply voltage >10 V.  
3) With magnetic ring mounting method 2 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>

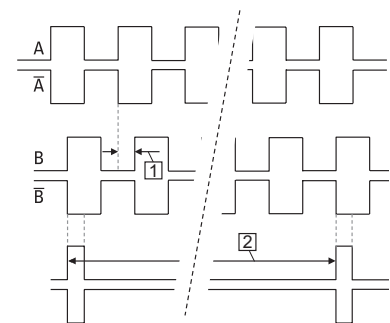
Further accessories can be found in the accessories section or in the accessories area of our website at: [www.kuebler.com/accessories](http://www.kuebler.com/accessories).  
Additional connectors can be found in the connection technology section or in the connection technology area of our website at: [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>	2 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

### Signal figures

- 1 Pulse edge interval: Pay attention to the instructions in the technical data
- 2 Periodic index signal every 2 mm [0.08"]; the logical assignment A, B and 0-signal can change



Electrical characteristics				
Output circuit	RS422	Push-pull		
<b>Supply voltage</b>	4.8 ... 26 VDC	4.8 ... 30 VDC		
<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>	index periodical <sup>1)</sup>			
<b>System accuracy</b>	typ. 0.3° with shaft tolerance g6			
<b>Pulse rate [ppr] <sup>2)</sup></b>	<b>700</b>	<b>2240</b>	<b>2800</b>	<b>7000</b>
max. speed min <sup>-1</sup>	12000	6600	5300	2100
	<b>1600</b>	<b>5120</b>	<b>6400</b>	<b>16000</b>
max. speed min <sup>-1</sup>	9300	2900	2300	900

1) At every pole change. The signal is generated by the sensor.  
2) With an input frequency of the evaluation unit of 250 kHz.

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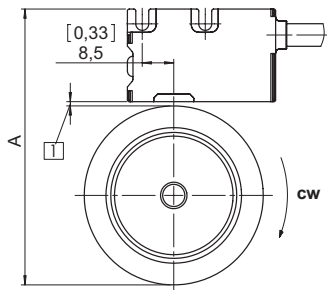
## Terminal assignment

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

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

## Mounting orientation and permissible mounting tolerances

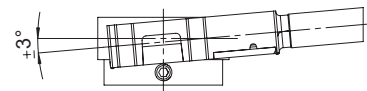
### Distances



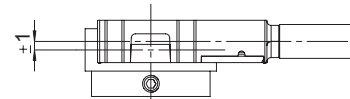
1 Distance sensor head / magnetic ring:  
0.1 ... 1.0 (0.4 [0.02] recommended)

Pulse rate	A for distance sensor head / magnetic ring = 0.4 mm [0.02]
700, 2240, 2800, 7000	112.5 [4.43]
1600, 5120, 6400, 16000	227.7 [8.96]

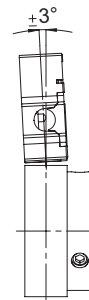
### Torsion



### Offset



### Tilting



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

1) Shield is attached to connector housing.

# Bearingless encoders

**Incremental, large hollow shaft magnetic**

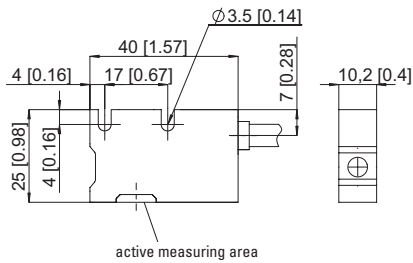
**RLI200 (hollow shaft)**

**Push-pull / RS422**

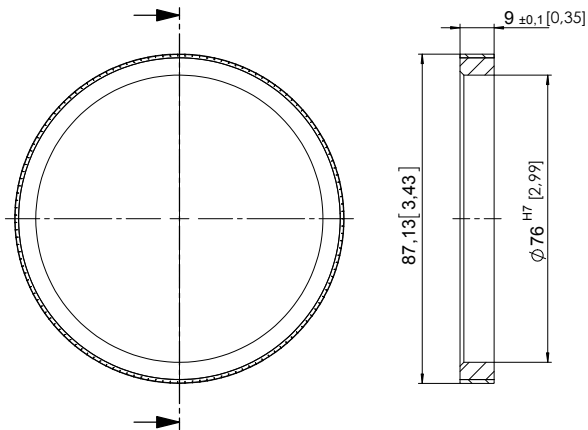
## Dimensions

Dimensions in mm [inch]

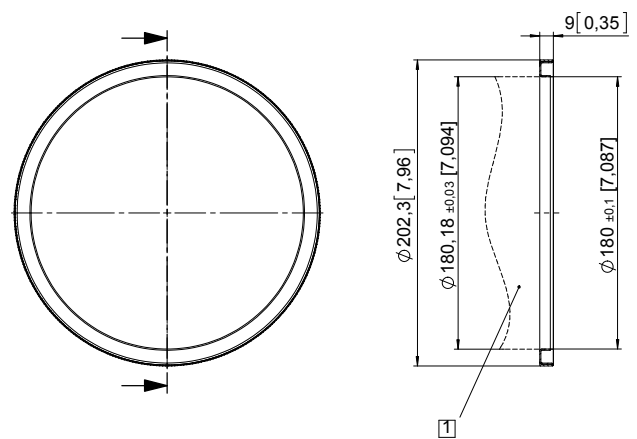
### Sensor head



### Magnetic ring (press fit) for pulse rate 700, 2240, 2800, 7000



### Magnetic ring (press fit) for pulse rate 1600, 5120, 6400, 16000



1 Customer shaft