

Bearingless encoders

Incremental, standard reference signal, magnetic	RLI50 (hollow shaft)	Push-pull / RS422
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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 reference signal 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.

Order code	8.RLI50	. X 1 X X .	XXXX .	XXXX
RLI50	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/ Supply voltage

- 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 ¹⁾ (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.RLI50.111A.2000.0080.0030 (for cable length 3 m)

d Pulses per revolution ²⁾

- 1000, 1024, 2000, 2048, 3600



e Bore diameter

- 0060 = 6 mm [0.24"] 0158 = 5/8"
- 0080 = 8 mm [0.32"] 0254 = 1" ³⁾
- 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"] ³⁾
- 0300 = 30 mm [1.18"] ³⁾
- 0350 = 35 mm [1.34"] ⁴⁾

1) Cable lengths >10 m only possible with supply voltage >10 V.
 2) Other pulse rates on request.
 3) Only possible for pulse rates 1024, 2048 and 3600.
 4) Only possible for pulse rate 3600.

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Accessories / Displays	Order no.
Codix 560, preset counter 6-digit  <ul style="list-style-type: none"> - Counter, tachometer, time counter and position display in one device - Scalable display - Readable via RS232/485 interface or configurable via MODBUS or CR/LF protocol 	6.560.010.XXX
571T touch, multifunction preset counters 8-digit  <ul style="list-style-type: none"> - Measuring function for RPM, speed, speed from elapsed time, machine cycle time, throughput time (reciprocal rotary speed), as well as numerous count functions such as position display - Fast counting input (250 kHz/HTL, 1 MHz/RS422) - 4 switching outputs as limit values (response time < 1 ms) - Scalable analog output (response time < 150 ms), resolution 16 bit - Serial interface RS232 or RS485 for reading in and out the data 	6.571T.01X.XXX

Further Kübler accessories can be found at: kuebler.com/accessories
 Further Kübler cables and connectors can be found at: 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

Electrical characteristics					
Output circuit	RS422	Push-pull			
Supply voltage	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 LOW max. 0.5 V	min. +V - 2.0 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 without using reference sig.	9000	9000	4000	4000	2500
max. speed min ⁻¹ using reference signal	3000	2000	3000	2000	1700

Approvals	
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

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	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
		Core color:	WH	BN	GN	YE	GY	PK	BU	RD	shield ²⁾

+V: Supply voltage encoder +V DC
 0 V: Supply voltage encoder ground GND (0 V)
 \perp : Plug connector housing (shield)

A, \bar{A} : Incremental output channel A
 B, \bar{B} : Incremental output channel B
 0, $\bar{0}$: Reference signal

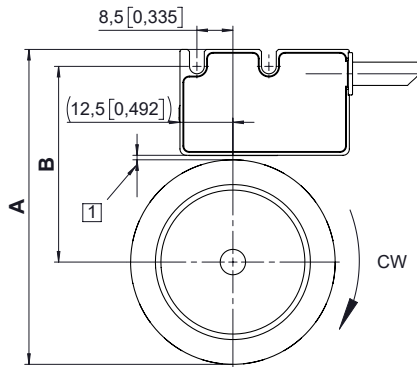
1) With an input frequency of the evaluation unit of 250 kHz.
 2) Shield is attached to connector housing.

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Mounting orientation and permissible mounting tolerances

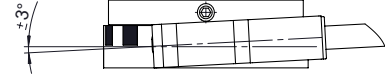
Distances



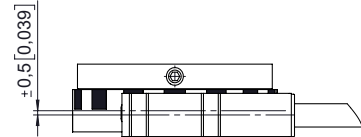
1 Distance sensor head / magnetic ring:
0.1 ... 1.5 [0.004 ... 0.06] (1 [0.04] recommended)

Pulse rate	A	B
	for distance sensor head / magnetic ring = 1 [0.04]	
1000, 2000	57.0 [2.24]	37.5 [1.48]
1024, 2048	74.3 [2.93]	46.15 [1.82]
3600	80.7 [3.18]	49.35 [1.94]

Torsion



Offset



Tilting

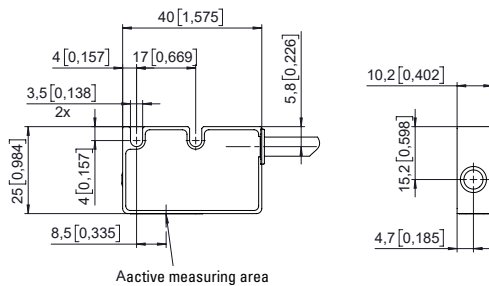


Warning: When mounting the sensor head, please ensure its correct orientation to the magnetic ring!

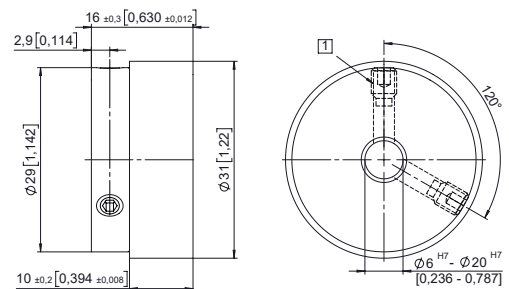
Dimensions

Dimensions in mm [inch]

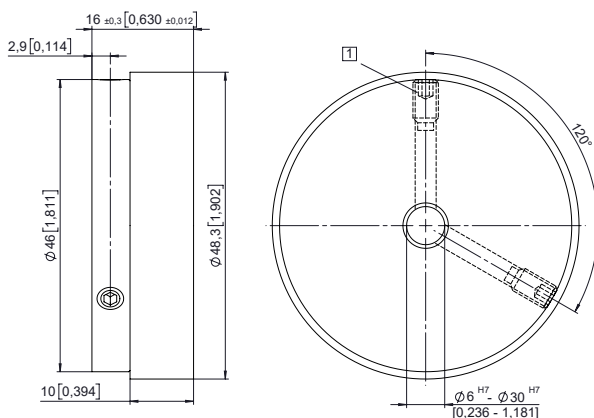
Sensor head



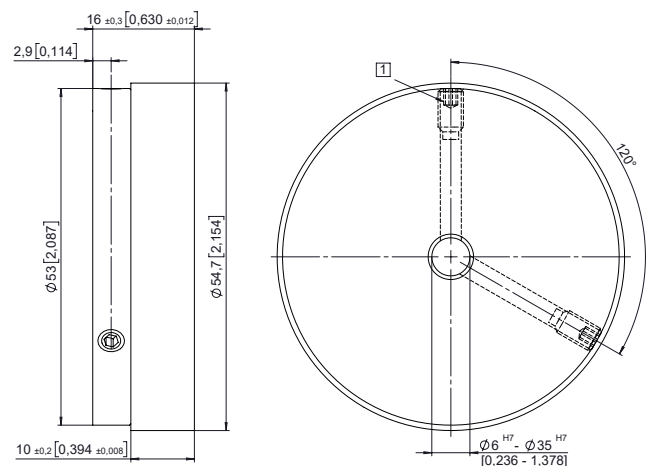
Magnetic ring for pulse rate 1000 or 2000



Magnetic ring for pulse rate 1024 or 2048



Magnetic ring for pulse rate 3600



1 M4 set screw