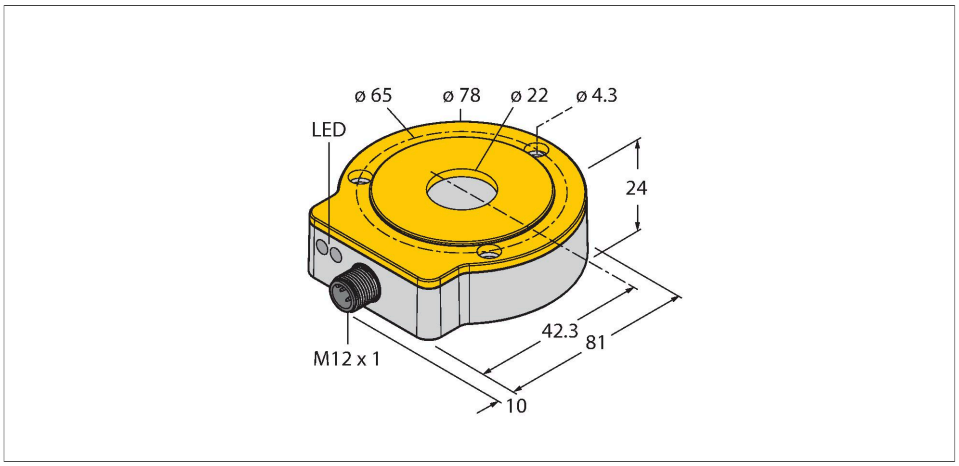
RI360P0-QR24M0-2000X2-H1181
Contactless Encoder – Incremental: 2000 ppr
Premium Line



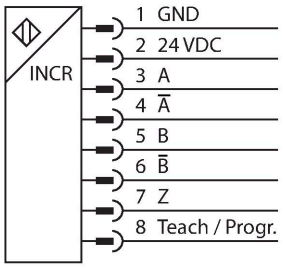
Technical data

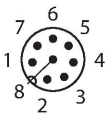
Type	RI360P0-QR24M0-2000X2-H1181
Ident. no.	1593118
Measuring principle	Inductive
Max. Rotational Speed	5000 rpm
	Determined with standardized construction, with a steel shaft Ø 20 mm, L = 50 mm and reducer Ø 20 mm
Starting torque shaft load (radial / axial)	not applicable, because of contactless measuring principle
Nominal distance	1.5 mm
Repeat accuracy	≤ 0.01 % of full scale
Linearity deviation	≤ 0.05 %f.s.
Temperature drift	≤ ± 0.003 % / K
Ambient temperature	-25…+85 °C
Operating voltage	10…30 VDC
Residual ripple	≤ 10 % U_{ss}
Isolation test voltage	≤ 0.5 kV
Short-circuit protection	yes / Cyclic
Wire breakage/Reverse polarity protection	yes / yes (voltage supply)
Output type	Incremental
Resolution, incremental	2000 ppr
Pulse frequency max.	200 kHz
Signal level high	min. U_B - 2 V
Signal level low	max. 2.0 V

Features

- Compact, rugged housing
- Many mounting possibilities
- Status displayed via LED
- Immune to electromagnetic interference
- Position of z-track can be set via Easy-Teach
- Burst function, absolute angular position output incrementally via Easy-Teach pulse
- 10…30 VDC
- Male M12 x 1, 8-pin
- Push-pull A, B, Z, A (inverse), B (inverse)

Wiring diagram





Functional principle

The measuring principle of inductive angle sensors is based on oscillation circuit coupling between the positioning element and the sensor, whereby an output signal is provided proportional to the angle of the positioning element. The rugged sensors are wear and maintenance-free, thanks to the contactless operating principle. They convince through their excellent repeatability, resolution and linearity within a broad temperature range. The innovative technology ensures a high immunity to electromagnetic DC and AC fields.

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Technical data

Output function	8-pin, Push-Pull/HTL
Sample rate	1000 Hz
Current consumption	< 100 mA
Design	QR24
Dimensions	81 x 78 x 24 mm
Flange type	Flange without mounting element
Shaft Type	Hollow shaft
Shaft diameter D [mm]	6 6.35 9.525 10 12 12.7 14 15.875 19.05 20
Housing material	Metal/plastic, ZnAlCu1/PBT-GF30-V0
Electrical connection	Connector, M12 × 1
Vibration resistance	55 Hz (1 mm)
Vibration resistance (EN 60068-2-6)	20 g; 10…3000 Hz; 50 cycles; 3 axes
Shock resistance (EN 60068-2-27)	100 g; 11 ms ½ sinus; each 3x; 3 axes
Continuous shock resistance (EN 60068-2-29)	40 g; 6 ms ½ sinus; each 4000 x; 3 axes
Protection class	IP68 / IP69K
MTTF	138 years acc. to SN 29500 (Ed. 99) 40 °C
Power-on indication	LED, Green
Measuring range display	LED, yellow, yellow flashing

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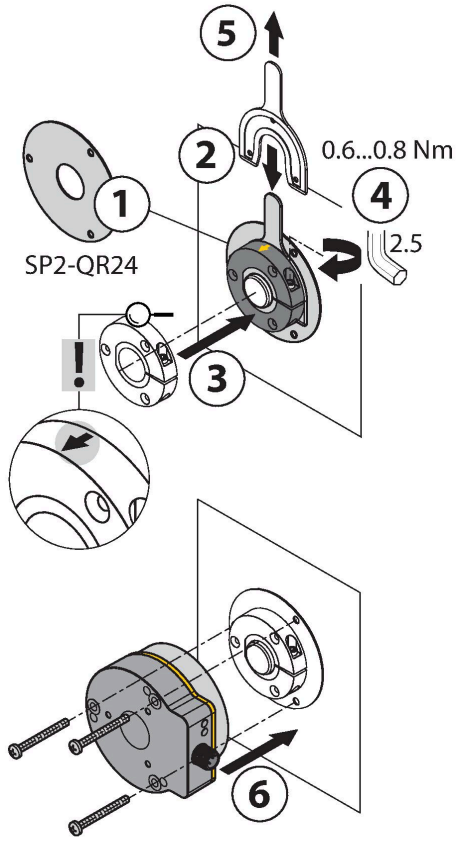
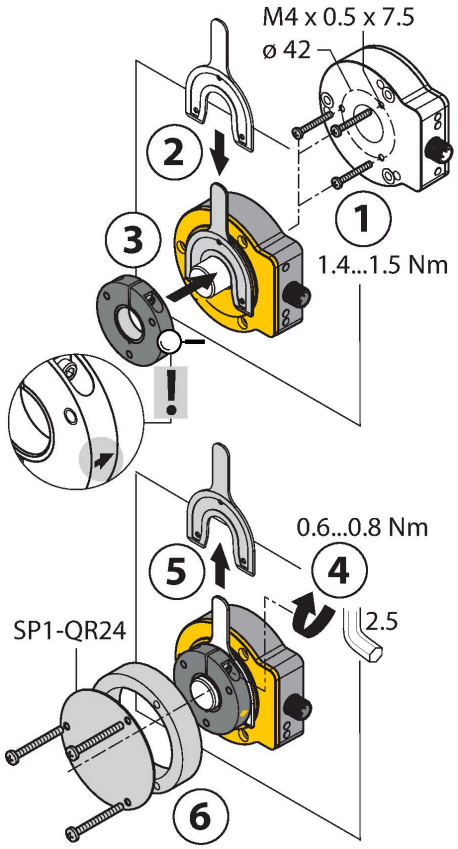
Mounting instructions

Mounting instructions/Description

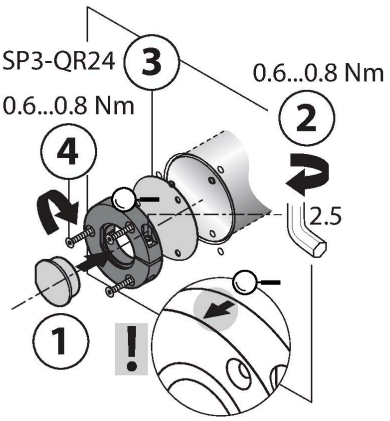
A



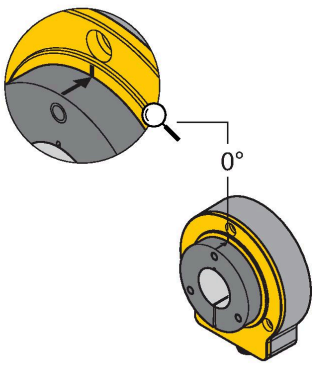
B



C



Default: 0°



Extensive range of mounting accessories for easy adaptation to many different shaft diameters. Based on the functional principle of RLC coupling, the sensor operates absolutely wear-free and is immune to magnetized metal splinters and other interference fields. Wrong installation is hardly possible.
The adjacent figure shows the two separate units, sensor and positioning element.
Mounting option A:
First, interconnect positioning element and rotatable shaft. Then place the encoder above the rotating part in such a way that you get a tight and protected unit.
Mounting option B:
Push the encoder on the back site of the shaft and fasten it to the machine. Then clamp the positioning element to the shaft with the bracket.
Mounting option C:
If the positioning element is to be screwed on a rotating machine part, use the RA0-QR24 plug which is included in the delivery. Then tie up the bracket. Screw on the encoder via the three bores.

The separately arranged sensor and positioning element inhibit that compensating currents or damaging mechanical loads are transmitted via the shaft to the sensor. In addition, the encoder remains tight and highly protected during its entire lifespan.
The accessories enclosed in the delivery help to mount encoder and positioning element at an optimal distance from each other. LEDs indicate the switching status.

Status display via LED
green steady:
Optimal sensor supply
yellow steady:
Positioning element has reached the end of the measuring range. This is indicated by a lower signal quality.
yellow flashing:
Positioning element is outside the measuring range.
off:
Positioning element is in the measuring range.

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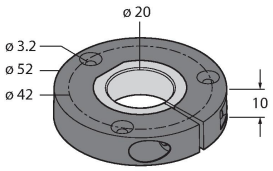
Individual Parameterization (Teaching with Positioning Element)

Jumper between teach input Pin 8	Gnd Pin 1	Ub Pin 2	LED
2 s	Z-track zero point teaching	One-time triggering of burst function	Status LED flashes then turns steady after 2 s
10 s	CCW rotation direction	CW rotation direction	After 10 s status LED flashes fast for 2 s
15 s	-	Factory setting (z-track, CW)	After 15 s power and status LED alternate

To avoid unintended teaching, keep pin 8 potential-free.

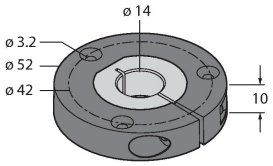
Accessories

P1-RI-QR24	1590921



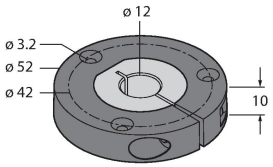
Positioning element, for Ø 20 mm shafts

P2-RI-QR24	1590922



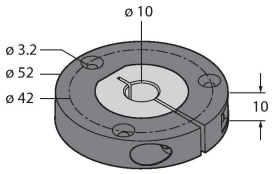
Positioning element, for Ø 14 mm shafts

P3-RI-QR24	1590923



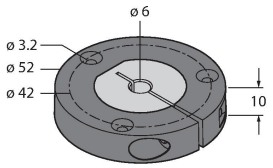
Positioning element, for Ø 12 mm shafts

P4-RI-QR24	1590924



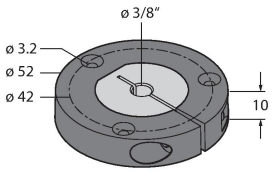
Positioning element, for Ø 10 mm shafts

P5-RI-QR24	1590925



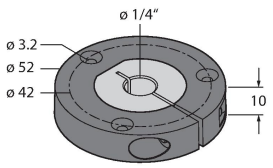
Positioning element, for Ø 6 mm shafts

P6-RI-QR24	1590926



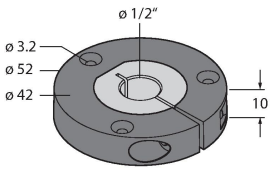
Positioning element, for Ø 3/8“ shafts

P7-RI-QR24	1590927



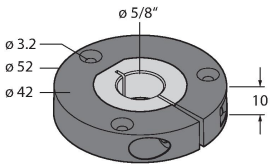
Positioning element, for Ø 1/4“ shafts

P9-RI-QR24	1593012



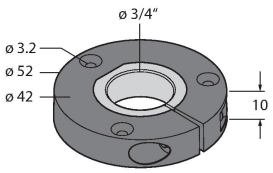
Positioning element for installation on Ø 1/2“ shafts

P10-RI-QR24	1593013



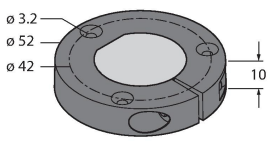
Positioning element for installation on Ø 5/8“ shafts

P11-RI-QR24	1593014



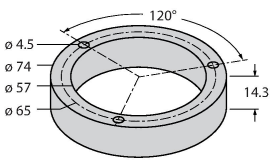
Positioning element for installation on Ø 3/4“ shafts

P8-RI-QR24	1590916



Positioning element with blanking plug for large shafts

M1-QR24	1590920



Aluminum protecting ring, for inductive encoders RI-QR24

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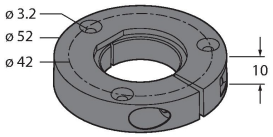
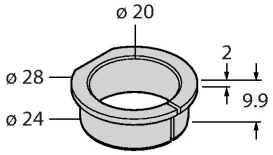
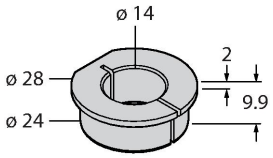
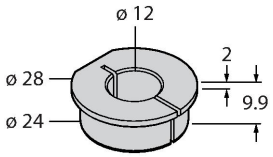
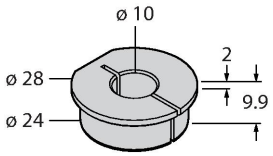
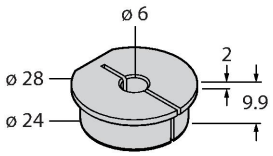
PE1-QR24	1590937
	Positioning element without adapter sleeve

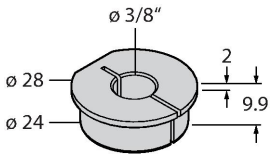
RA1-QR24	1590928
	Adapter sleeve, for Ø 20 mm shafts

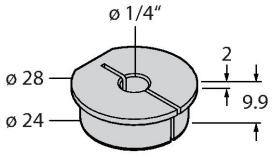
RA2-QR24	1590929
	Adapter sleeve, for Ø 14 mm shafts

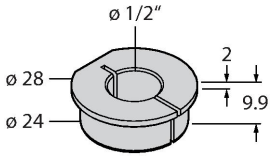
RA3-QR24	1590930
	Adapter sleeve, for Ø 12 mm shafts

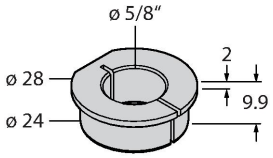
RA4-QR24	1590931
	Adapter sleeve, for Ø 10 mm shafts

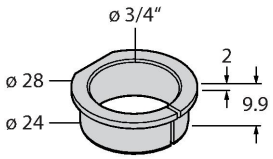
RA5-QR24	1590932
	Adapter sleeve, for Ø 6 mm shafts

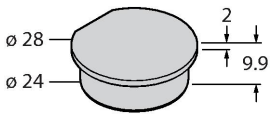
RA6-QR24	1590933
	Adapter sleeve, for Ø 3/8“ shafts

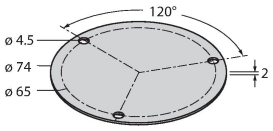
RA7-QR24	1590934
	Adapter sleeve, for Ø 1/4“ shafts

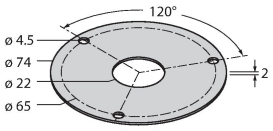
RA9-QR24	1590960
	Adapter sleeve, for Ø 1/2" shafts

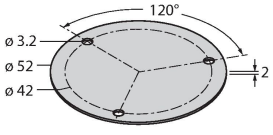
RA10-QR24	1590961
	Adapter sleeve, for Ø 5/8" shafts

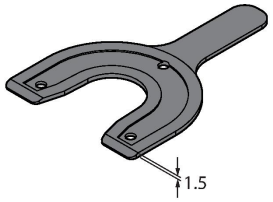
RA11-QR24	1590962
	Adapter sleeve, for Ø 3/4" shafts

RA8-QR24	1590959
	Plug for mounting option C

SP1-QR24	1590938
	Shield plate Ø 74 mm, aluminium

SP2-QR24	1590939
	Shield plate Ø 74 mm, aluminiuim, with borehole for shaft feedthrough

SP3-QR24	1590958
	Shield plate Ø 52 mm, aluminium

MT-QR24	1590935
	Mounting aid for optimal alignment of positioning element

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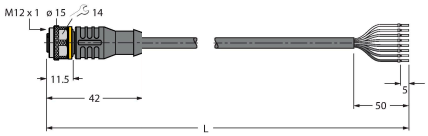
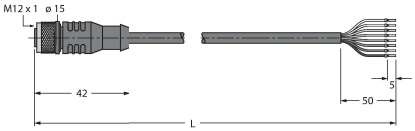
Wiring accessories

Dimension drawing	Type	Ident. no.	
	RKC8T-2/TXL	6625142	Connection cable, female M12, straight, 8-pin, cable length: 2 m, sheath material: PUR, black; cULus approval; other cable lengths and qualities available, see www.turck.com
	E-RKC 8T-264-2	U-04781	Connection cable, female M12, straight, 8-pin (twisted pairs),shielded, cable length: 2 m, sheath material: PVC, black; cULus approval; other cable lengths and qualities available, see www.turck.com

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