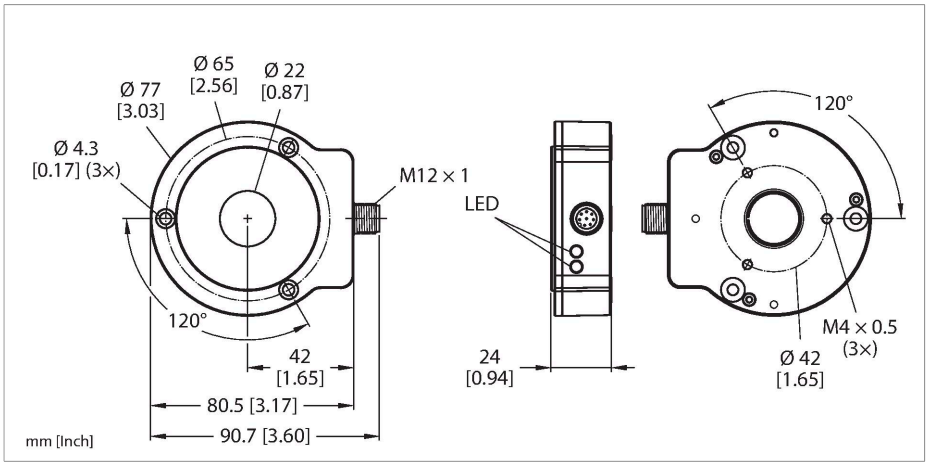
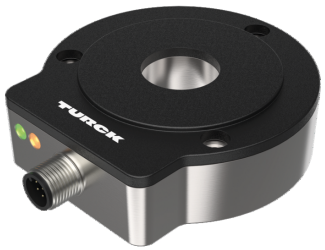
RI360P0-EQR24M0-INCRX2-H1181
Contactless Encoder with Stainless Steel Housing – Incremental: 1 … 5000 ppr
Premium Line





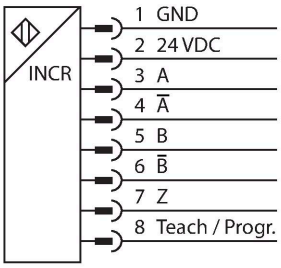
Technical data

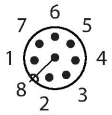
Type	RI360P0-EQR24M0-INCRX2-H1181
ID	1590912
Measuring principle	Inductive
General data	
Max. rotational speed	10,000 rpm
	Determined with standardized construction, with a steel shaft Ø 20 mm, L = 50 mm and reducer Ø 20 mm.
Starting torque shaft load (radial / axial)	not applicable, because of contactless 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
Output type	Incremental
Resolution incremental	1024 ppr
Electrical data	
Operating voltage U_B	10…30 VDC
Ripple U_{ss}	≤ 10 % U_{Bmax}
Isolation test voltage	0.5 kV
Short-circuit protection	yes/Cyclic
Wire break/reverse polarity protection	yes/yes (voltage supply)
Pulse frequency max.	200 kHz
Signal level high	min. U_B - 2 V
Signal level low	max. 2.0 V
Output function	8-pin, Push-Pull/HTL

Features

- Compact, rugged housing
- Active face, plastic PA12-GF30
- Housing, stainless steel V4A (1.4404)
- Status displayed via LED
- Immune to electromagnetic interference
- 1024 pulses per revolution (default)
- 360, 512, 1000, 1024, 2048, 2500, 3600, 4096, parametr. via Easy-Teach
- Free parametrization of the pulse number in the range from 1 to 5000 via PACTware™
- Position of z-track set via Easy-Teach
- Burst function, absolute angular position output incrementally per Easy-Teach pulse
- 10…30 VDC
- Male M12 x 1, 8-pin
- Push-pull A, B, Z, A (inverse), B (inverse)

Wiring diagram



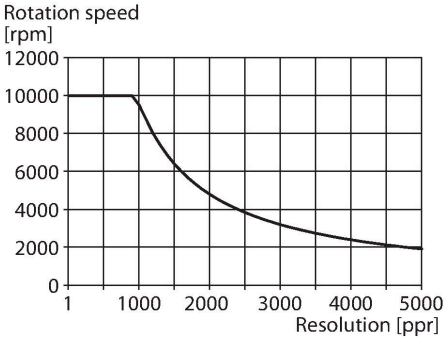


Technical data

Sample rate	1000 Hz
Current consumption	< 100 mA
Mechanical data	
Design	EQR24
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	Stainless-steel/Plastic, 1.4404 (AISI 316L)/PA12-GF30
Electrical connection	Connector, M12 × 1
Environmental conditions	
Ambient temperature	-25…+85 °C
	Acc. to UL approval to +70 °C
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 sine; 3 × each; 3 axes
Continuous shock resistance (EN 60068-2-29)	40 g; 6 ms ½ sine; 4000 × each; 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
Included in delivery	Adapter sleeve MT-QR24
UL certificate	E210608

Functional principle

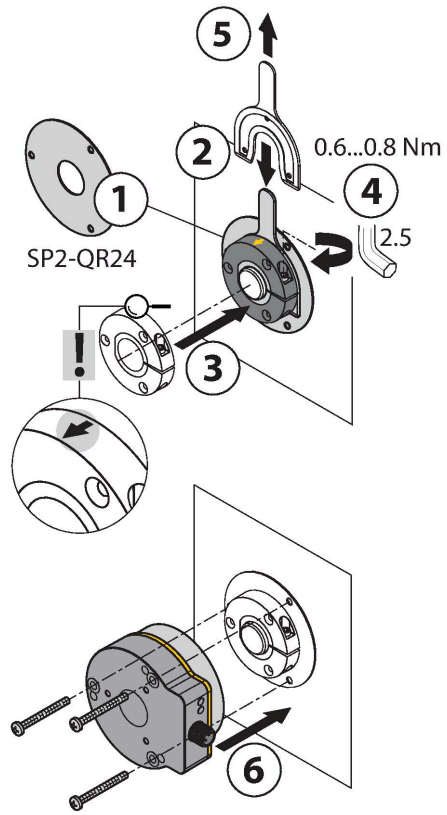
The measuring principle of inductive angle sensors is based on oscillation circuit coupling between the positioning element and the sensor, whereby an output signal is provided proportional to the angle of the positioning element. The rugged sensors are wear and maintenance-free, thanks to the contactless 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.



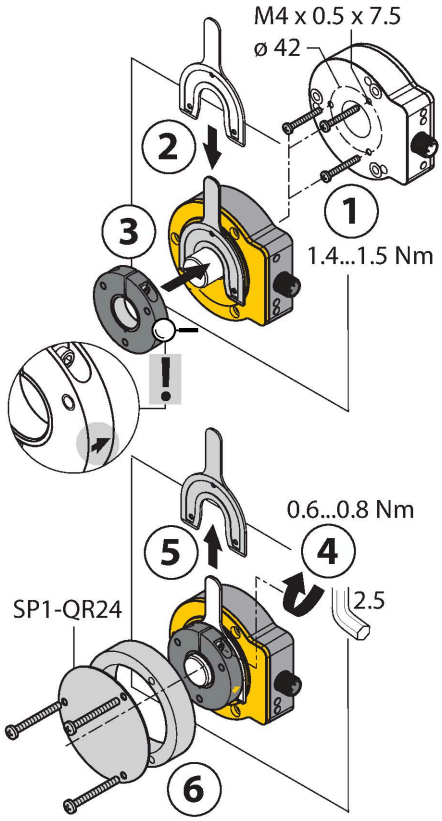
Mounting instructions

Mounting instructions/Description

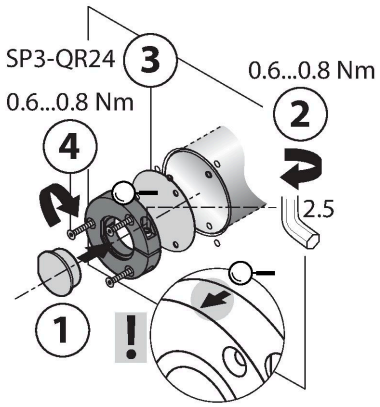
A



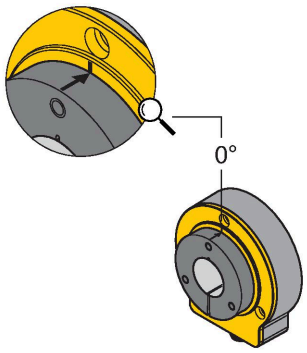
B



C



Default: 0°



The extensive range of mounting accessories enables easy adaptation to many different shaft diameters. Due to the measuring principle, which is based on the functional principle of an RLC coupling, the encoder is immune to magnetized ferrous chips and other interferences. As a result, there are few possible causes of error during mounting. The adjacent figures show the simple installation of the two separate units: the sensor element and the positioning element:
Mounting option A:
First, connect the positioning element to the rotatable shaft using the bracket. Then place the encoder with the aluminum ring above the rotating part in such a way that you get a closed and protected unit.
Mounting option B:
Slide the encoder backward onto the shaft and fasten it to the machine. Then fasten the positioning element to the shaft using the bracket.
Mounting option C:
If the positioning element is screwed onto a rotating machine part rather than being put on a shaft, you must first insert the dummy plug RA8-QR24. Then tighten the bracket. Next, mount the encoder via the three bores.

Due to the separate installation of positioning element and sensor, no electrical currents or harmful mechanical forces are transmitted to the sensor via the shaft. The encoder also offers a high degree of protection throughout its service life and stays permanently sealed. During commissioning, the accessories included in the delivery help to mount the encoder and the positioning element at an optimal distance from each other. In addition, LEDs indicate the status. Optionally, you can use the shield plates included in the accessories to increase the permitted distance between the positioning element and the sensor.

Status display via LED
Green:
Sensor is being supplied properly
Yellow:
Positioning element is within the measuring range, low signal quality (e.g. distance too great)
Yellow flashing:
Positioning element is outside the detection range
Off:
Positioning element is within the measuring range

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.

Preset Programming Mode (Teaching without Positioning Element)

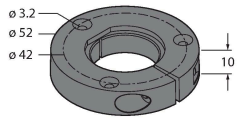
Jumper between teach input Pin 8	Gnd Pin 1	Ub Pin 2	LED
	2 s Resolution setting mode active for 10 s	2 s Resolution setting mode active for 10 s	Status LED steady, flashes after 2 s as long as selection mode is active
360 pulses/360°	Start value		1 x flashing
512 pulses/360°	Press once		2 x flashing
1000 pulses/360°	Press twice		3 x flashing
1024 pulses/360°	Press three times		4 x flashing
2048 pulses/360°	Press four times		5 x flashing
2500 pulses/360°		Start value	1 x flashing
3600 pulses/360°		Press once	2 x flashing
4096 pulses/360°		Press twice	3 x flashing
5000 pulses/360°		Press three times	4 x flashing

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

Accessories

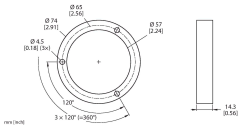
PE1-EQR24 1590966

Positioning element with stainless steel compression fitting, without adapter sleeve



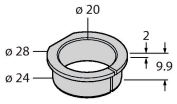
M5-QR24 1590965

Plastic protecting ring for encoders RI-EQR24



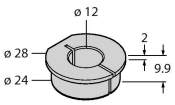
RA1-EQR24 1593019

Stainless steel adapter sleeve, for Ø 20 mm shafts

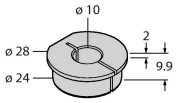


RA3-EQR24 1593020

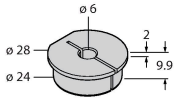
Stainless steel adapter sleeve, for Ø 12 mm shafts



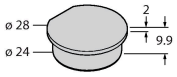
RA4-EQR24	1593023
	Stainless steel adapter sleeve, for Ø 10 mm shafts



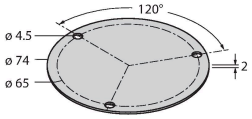
RA5-EQR24	100000375
	Stainless steel adapter sleeve, for Ø 6 mm shafts



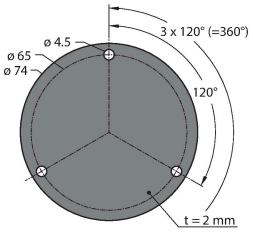
RA8-EQR24	100000289
	Stainless steel plug for mounting option C



SP1-EQR24	1590979
	Shield plate Ø 74 mm, stainless steel



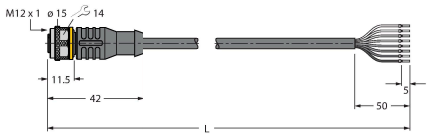
SP5-QR24	100003689
	Protective plate Ø 74 mm, plastic



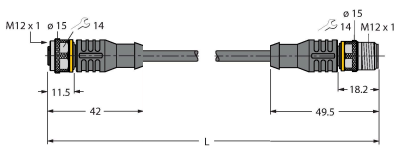
Accessories

Dimension drawing	Type	ID	
	RKCV8T-2/TFW	6934668	Connection cable, M12 female connector, straight, 8-pin, stainless steel coupling nut, cable length: 2 m, jacket material: PP-EPDM, white

	RKC8T-2/TXL	6625142	Connection cable, M12 female connector, straight, 8-pin, cable length: 2 m, jacket material: PUR, black; cULus approval

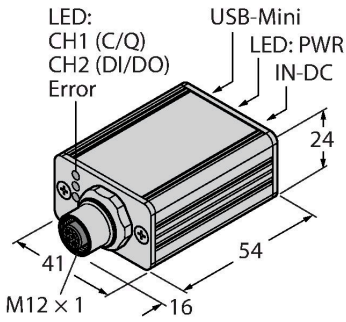


	RKC8.302T-1.5-RSC4T/TXL320	6625003	Adapter cable to connect sensor to USB-2-IOL-0002 programming unit; M12 female connector, straight, 8-pin to M12 male connector, straight, 3-pin; cable length: 1.5 m; jacket material: PUR, black; cULus approved; RoHS compliant; protection class IP67



Accessories

Dimension drawing	Type	ID	
	USB-2-IOL-0002	6825482	IO-Link Master with integrated USB port



	TX2-Q20L60	6967117	Teach adapter for inductive encoders with 8-pin male M12 x 1, for simple programming via Easy Teach