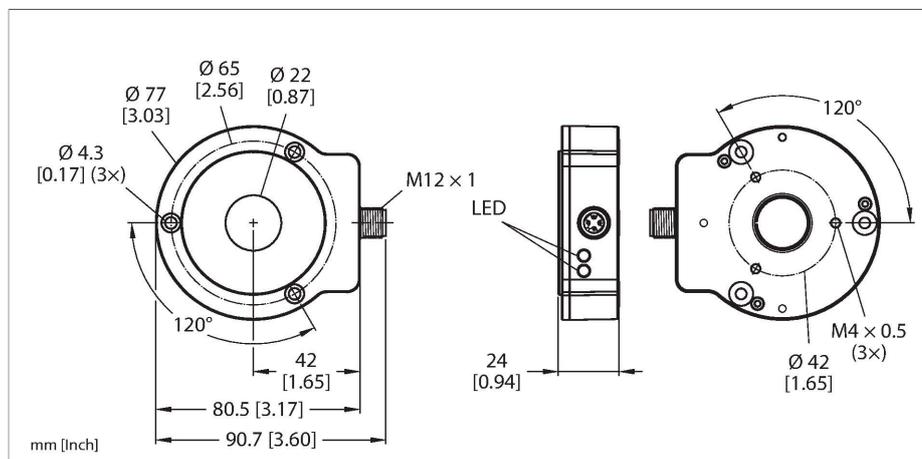


# RI360P0-QR24M0-IOLX2-H1141

## Contactless Encoder – IO-Link

### Premium Line



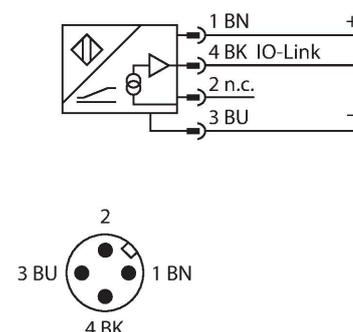
#### Technical data

Type	RI360P0-QR24M0-IOLX2-H1141
ID	1590975
Measuring principle	Inductive
<b>General data</b>	
Max. rotational speed	800 rpm
Starting torque shaft load (radial / axial)	Determined with standardized construction, with a steel shaft Ø 20 mm, L = 50 mm and reducer Ø 20 mm. not applicable, because of contactless measuring principle
Measuring range	0...360 °
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	Absolute semi-multiturn
Resolution singleturn	16 bit/65,536 units per revolution
Resolution multiturn	13 bit/8192 revolutions
Number of diagnostic bits	3 Bit
<b>Electrical data</b>	
Operating voltage $U_B$	15...30 VDC
Ripple $U_{ss}$	≤ 10 % $U_{Bmax}$
Isolation test voltage	0.5 kV
Wire break/reverse polarity protection	yes (voltage supply)
Communication protocol	IO-Link
Sample rate	1000 Hz
Current consumption	< 50 mA

#### Features

- Compact and robust housing
- Versatile mounting options
- Status displayed via LED
- Immune to electromagnetic interference
- 16 bits singleturn
- Process value in 32 bit IO-Link telegram
- 3 error bits
- 16 bits singleturn
- 13 bits multiturn
- 15...30 VDC
- M12 × 1 male connector, 4-pin

#### Wiring diagram



#### Functional principle

The measuring principle of inductive encoders 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. Turck refers to semi-multiturn because the multiturn process data is calculated internally from the number of single-turn zero passes. Because the

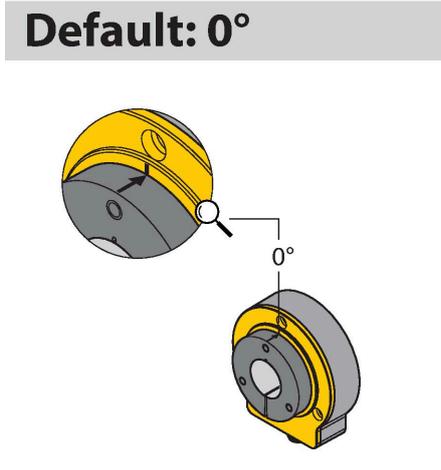
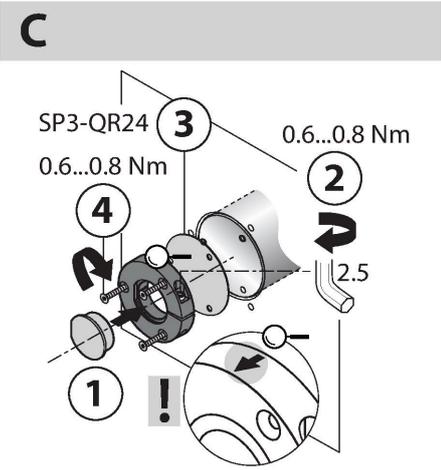
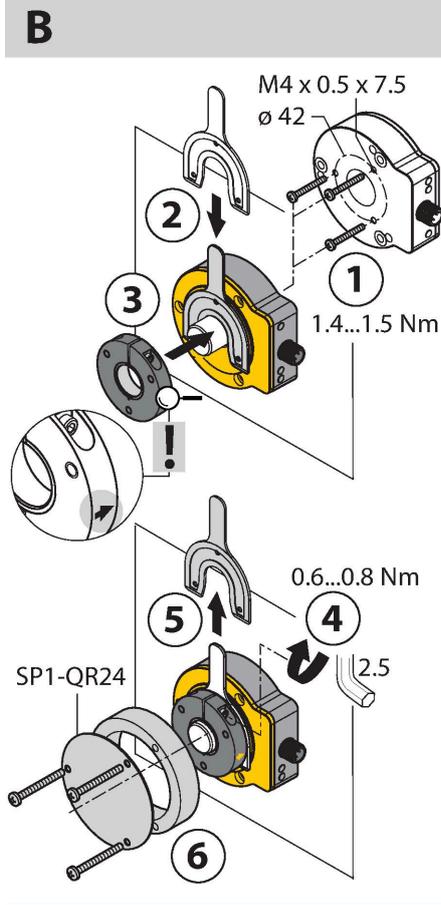
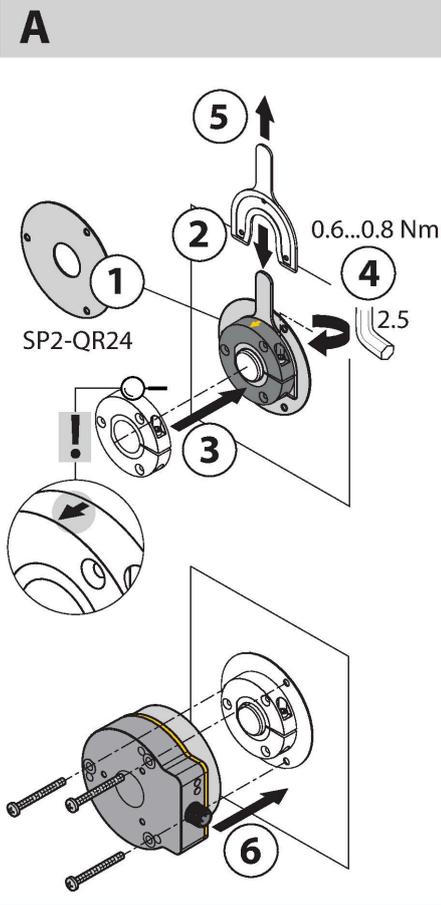
## Technical data

IO-Link	
IO-Link specification	V 1.1
Programming	FDT/DTM
Communication mode	COM 2 (38.4 kBaud)
Process data width	32 bit
Minimum cycle time	3 ms
Function pin 4	IO-Link
Included in the SIDI GSDML	Yes
Mechanical data	
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
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	MT-QR24 mounting aid
UL certificate	E210608

sensor does not detect any revolutions when not supplied with power, the plausibility of the multiturn process data is indicated by a diagnostic bit. The rugged sensors are maintenance- and wear-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 high immunity to electromagnetic DC and AC fields.

Mounting instructions

Mounting instructions/Description



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)

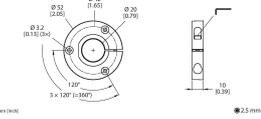
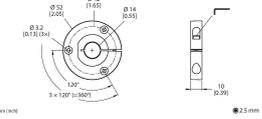
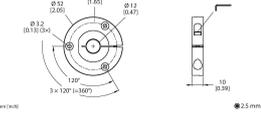
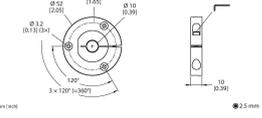
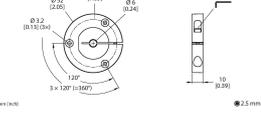
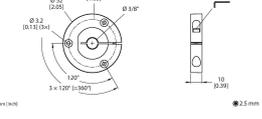
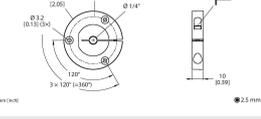
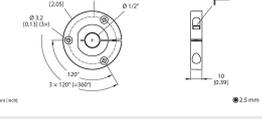
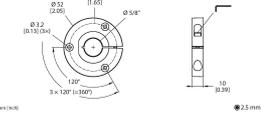
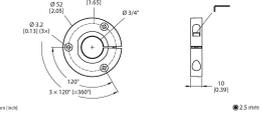
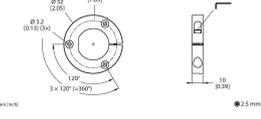
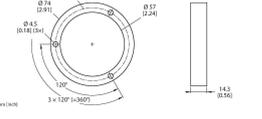
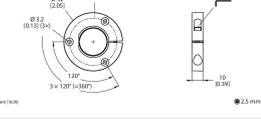
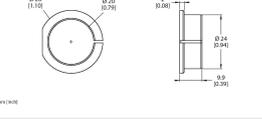
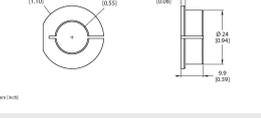
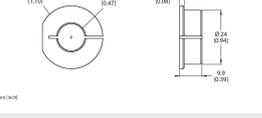
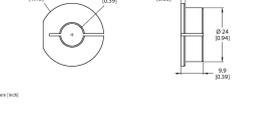
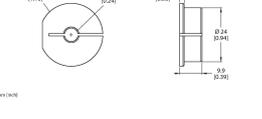
Yellow flashing:

Positioning element is outside the detection range

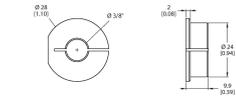
Off:

Positioning element is within the measuring range

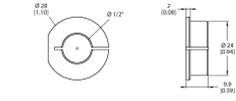
## Accessories

P1-RI-QR24	1590921	Positioning element, for $\varnothing$ 20 mm shafts	P2-RI-QR24	1590922	Positioning element, for $\varnothing$ 14 mm shafts
					
P3-RI-QR24	1590923	Positioning element, for $\varnothing$ 12 mm shafts	P4-RI-QR24	1590924	Positioning element, for $\varnothing$ 10 mm shafts
					
P5-RI-QR24	1590925	Positioning element, for $\varnothing$ 6 mm shafts	P6-RI-QR24	1590926	Positioning element, for $\varnothing$ 3/8" shafts
					
P7-RI-QR24	1590927	Positioning element, for $\varnothing$ 1/4" shafts	P9-RI-QR24	1593012	Positioning element for installation on $\varnothing$ 1/2" shafts
					
P10-RI-QR24	1593013	Positioning element for installation on $\varnothing$ 5/8" shafts	P11-RI-QR24	1593014	Positioning element for installation on $\varnothing$ 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
					
PE1-QR24	1590937	Positioning element without adapter sleeve	RA1-QR24	1590928	Adapter sleeve, for $\varnothing$ 20 mm shafts
					
RA2-QR24	1590929	Adapter sleeve, for $\varnothing$ 14 mm shafts	RA3-QR24	1590930	Adapter sleeve, for $\varnothing$ 12 mm shafts
					
RA4-QR24	1590931	Adapter sleeve, for $\varnothing$ 10 mm shafts	RA5-QR24	1590932	Adapter sleeve, for $\varnothing$ 6 mm shafts
					

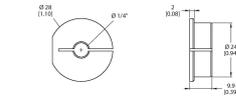
**RA6-QR24** 1590933 Adapter sleeve, for Ø 3/8" shafts



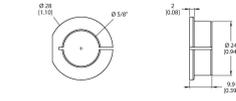
**RA9-QR24** 1590960 Adapter sleeve, for Ø 1/2" shafts



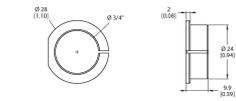
**RA7-QR24** 1590934 Adapter sleeve, for Ø 1/4" shafts



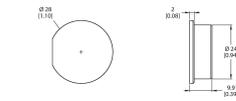
**RA10-QR24** 1590961 Adapter sleeve, for Ø 5/8" shafts



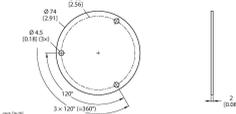
**RA11-QR24** 1590962 Adapter sleeve, for Ø 3/4" shafts



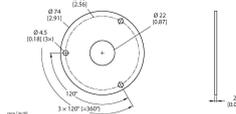
**RA8-QR24** 1590959 Plug for mounting option C



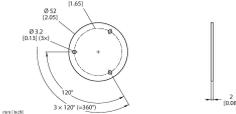
**SP1-QR24** 1590938 Shield plate Ø 74 mm, aluminium



**SP2-QR24** 1590939 Shield plate Ø 74 mm, aluminium, 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

