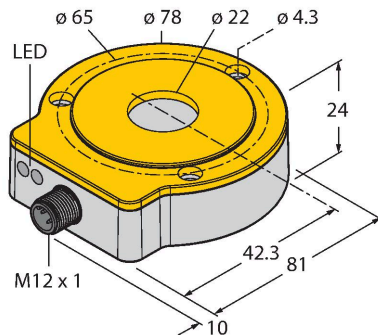


RI360P0-QR24M0-INCRX2-H1181

Contactless Encoder – Incremental: 1 ... 5000 ppr Premium Line



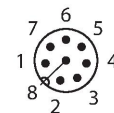
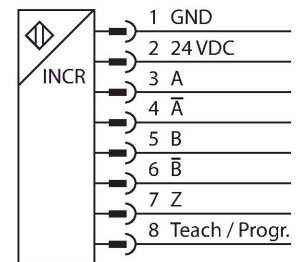
Features

- Compact, rugged housing
- Many mounting possibilities
- 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)

Technical data

| | |
|---|--|
| Type | RI360P0-QR24M0-INCRX2-H1181 |
| ID no. | 1590910 |
| Measuring principle | Inductive |
| Max. Rotational Speed | 10000 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 | 1024 ppr |
| Pulse frequency max. | 200 kHz |
| Signal level high | min. U _s - 2 V |
| Signal level low | max. 2.0 V |

Wiring diagram

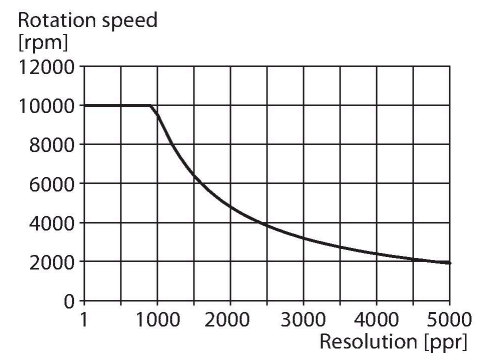


Functional principle

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.

Technical data

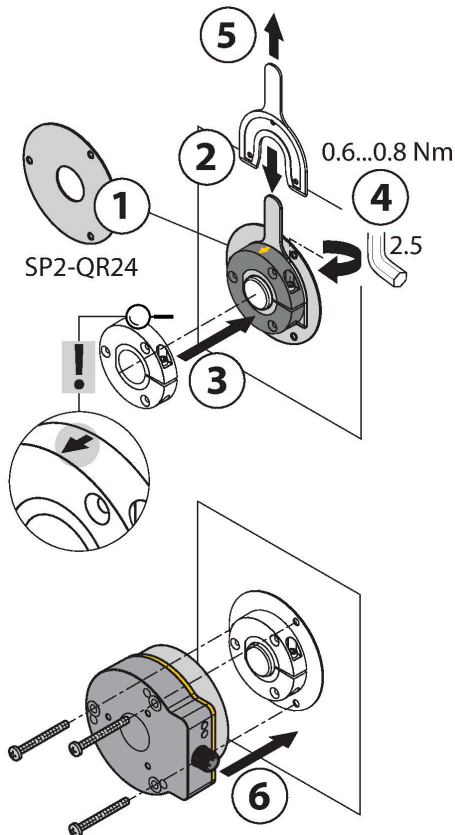
| | |
|---|---|
| Output function | 8-pin, Push-Pull/HTL |
| Sample rate | 1000 Hz |
| Current consumption | < 100 mA |
| Design | QR24 |
| Dimensions | 81 x 78 x 24 mm |
| Flange type | Flange without mounting element |
| Shaft Type | Hollow shaft |
| Shaft diameter D [mm] | 6 6.35 9.525 10 12 12.7 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 |



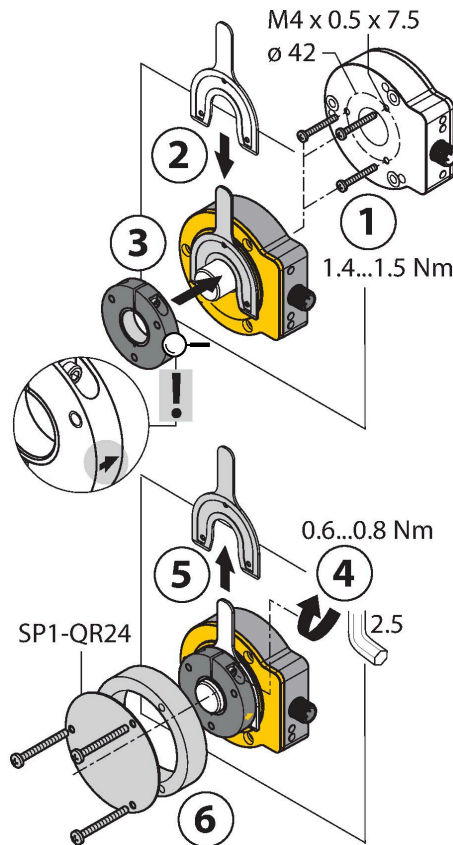
Mounting instructions

Mounting instructions/Description

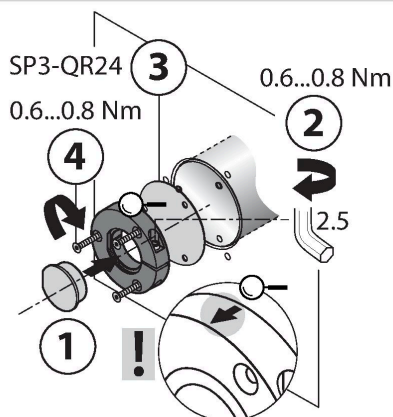
A



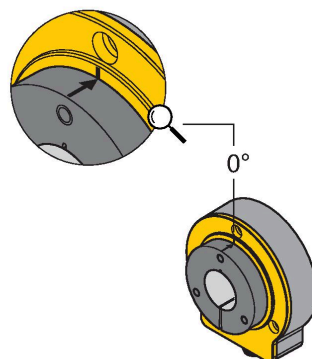
B



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 side 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.

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.

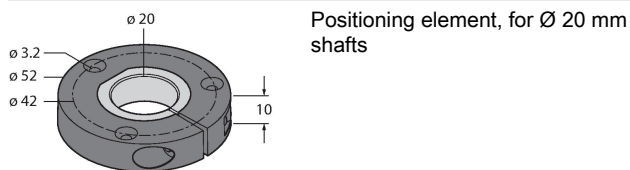
Preset Programming Mode (Teaching without Positioning Element)

| 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 |

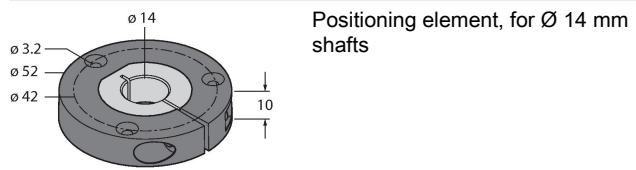
To avoid unintended teaching, keep pin 8 potential-free.

Accessories

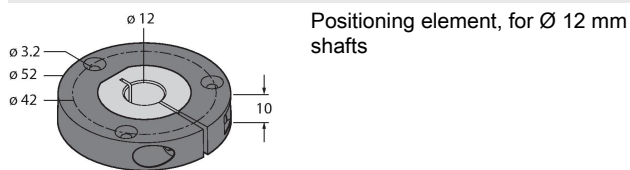
P1-RI-QR24 1590921



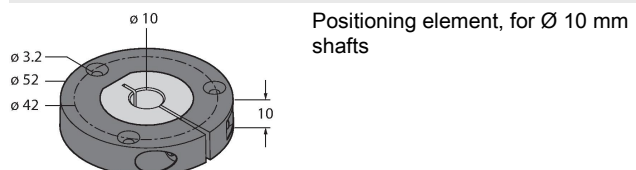
P2-RI-QR24 1590922



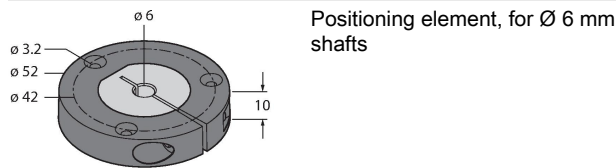
P3-RI-QR24 1590923



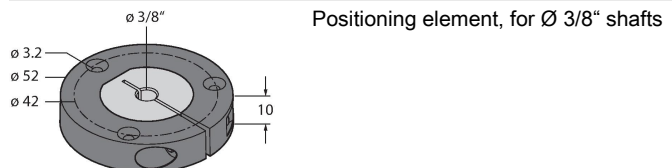
P4-RI-QR24 1590924



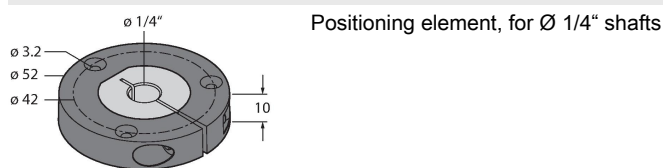
P5-RI-QR24 1590925



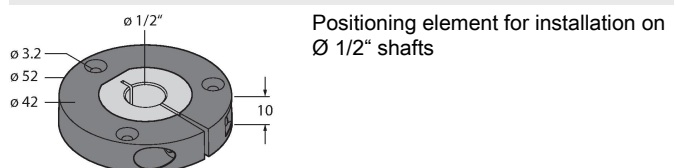
P6-RI-QR24 1590926



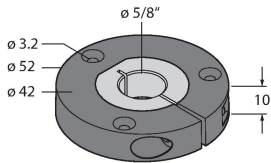
P7-RI-QR24 1590927



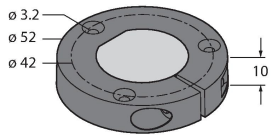
P9-RI-QR24 1593012



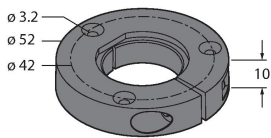
P10-RI-QR24 1593013
Positioning element for installation on Ø 5/8" shafts



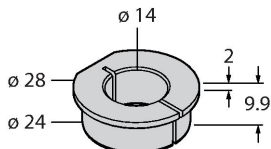
P8-RI-QR24 1590916
Positioning element with blanking plug for large shafts



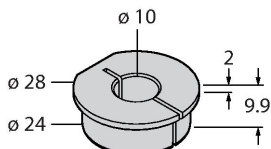
PE1-QR24 1590937
Positioning element without adapter sleeve



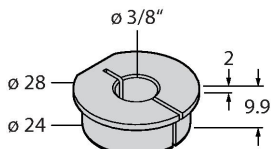
RA2-QR24 1590929
Adapter sleeve, for Ø 14 mm shafts



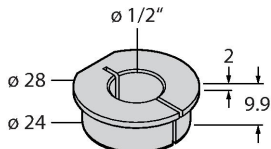
RA4-QR24 1590931
Adapter sleeve, for Ø 10 mm shafts



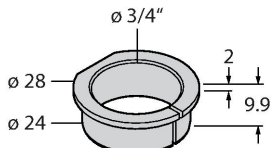
RA6-QR24 1590933
Adapter sleeve, for Ø 3/8" shafts



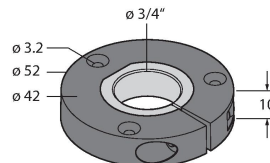
RA9-QR24 1590960
Adapter sleeve, for Ø 1/2" shafts



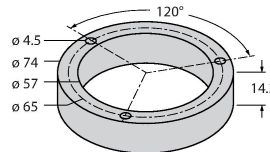
RA11-QR24 1590962
Adapter sleeve, for Ø 3/4" shafts



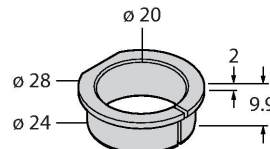
P11-RI-QR24 1593014
Positioning element for installation on Ø 3/4" shafts



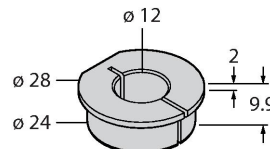
M1-QR24 1590920
Aluminum protecting ring, for inductive encoders RI-QR24



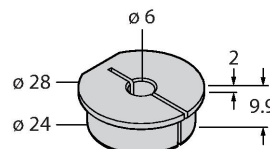
RA1-QR24 1590928
Adapter sleeve, for Ø 20 mm shafts



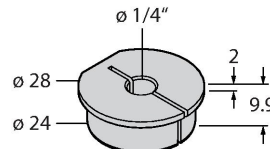
RA3-QR24 1590930
Adapter sleeve, for Ø 12 mm shafts



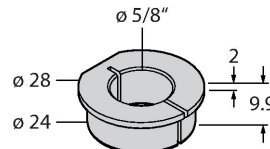
RA5-QR24 1590932
Adapter sleeve, for Ø 6 mm shafts



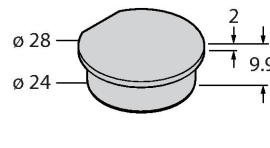
RA7-QR24 1590934
Adapter sleeve, for Ø 1/4" shafts



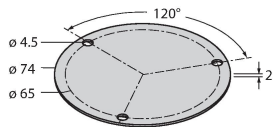
RA10-QR24 1590961
Adapter sleeve, for Ø 5/8" shafts



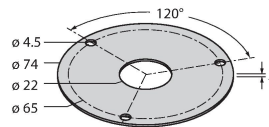
RA8-QR24 1590959
Plug for mounting option C



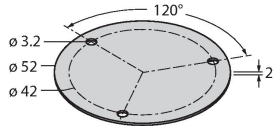
SP1-QR24 1590938
Shield plate Ø 74 mm, aluminium



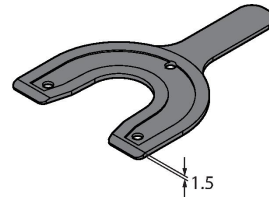
SP2-QR24 1590939
Shield plate Ø 74 mm, aluminium, with borehole for shaft feedthrough



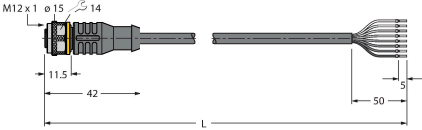
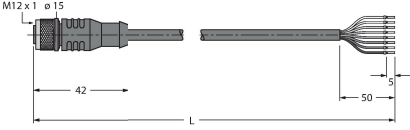
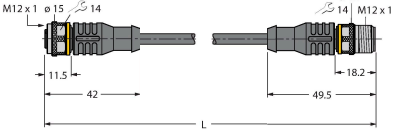
SP3-QR24 1590958
Shield plate Ø 52 mm, aluminium



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



Wiring accessories

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