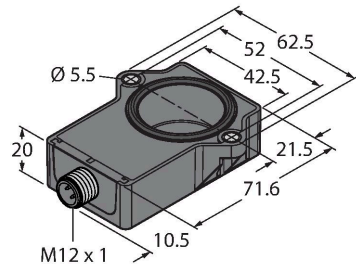


# RI60P1-QR20-LI2X2-H1141

## Miniature Encoder – With Analog Output

### Premium Line



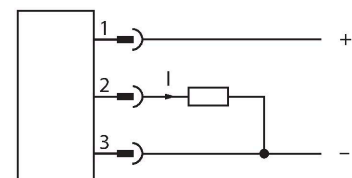
#### Technical data

Type	RI60P1-QR20-LI2X2-H1141
ID no.	100004590
Measuring principle	Inductive
Starting torque shaft load (radial / axial)	Not applicable because of contactless measuring principle
Resolution	0.09°
Measuring range	-30...30 °
Nominal distance	1 mm
Repeat accuracy	≤ 0.15 % of full scale
Linearity deviation	≤ 0.9 %f.s.
Temperature drift	≤ ± 0.02 % / K
Ambient temperature	-25...+70 °C
Storage temperature	-40...+125 °C
Operating voltage	15...30 VDC
Residual ripple	≤ 10 % U <sub>ss</sub>
Isolation test voltage	≤ 0.5 kV
Short-circuit protection	yes
Wire breakage/Reverse polarity protection	yes / Complete
Output type	Absolute singleturn
Output function	3-wire, Analog output
Current output	4...20 mA
Diagnostic	Positioning element not detected: Output signal 22 mA (typ.)
Load resistance, current output	≤ 0.4 kΩ

#### Features

- Rectangular, plastic
- Compact, rugged housing
- Many mounting possibilities
- High protection class IP68/IP69K
- Protection against salt spray
- Measuring range displayed via LED
- Immune to electromagnetic interference
- 0.09° resolution
- 3-wire, 15...30 VDC
- Analog output 4...20 mA
- Output 22 mA (typ.) where there is no RLC coupling
- M12 × 1 male connector, 4-pin

#### Wiring diagram



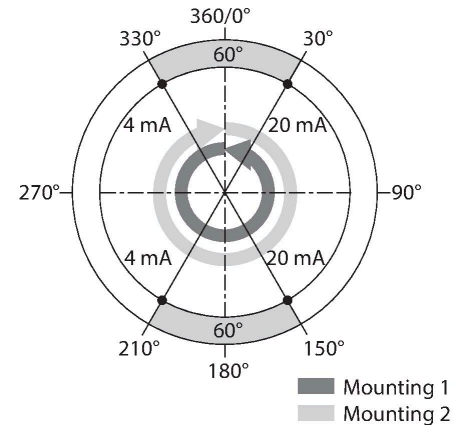
#### Functional principle

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

## Technical data

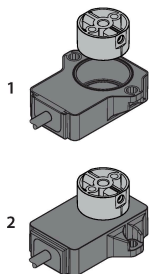
Sample rate	500 Hz
Current consumption	< 100 mA
<b>Design</b>	<b>Rectangular, QR20</b>
Dimensions	71.6 x 62.6 x 20 mm
Flange type	Flange without mounting element
Shaft Type	Blind hole shaft
Shaft diameter D [mm]	6 6.35
Housing material	Plastic, Ultem
Electrical connection	Connector, M12 × 1
Vibration 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 sine; 3 × each; 3 axes
Continuous shock resistance (EN 60068-2-29)	40 g; 6 ms ½ sinus; each 4000 x; 3 axes
Salt spray test (EN 60068-2-52)	Severity degree 5 (4 test cycles)
Protection class	IP68 IP69K
MTTF	348 years acc. to SN 29500 (Ed. 99) 40 °C
<b>Power-on indication</b>	<b>LED, Green</b>
Measuring range display	multifunction LED, green green flashing

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



There are two different mounting options. One option is to position the positioning element above the sensor housing. However, it can also be mounted so that the sensor housing completely encloses the positioning element.

#### LED function

Operating voltage

Green: Power on

Displayed measuring range

Green: Positioning element is in the detection range

Green flashing: Positioning element is within the measuring range, low signal intensity (e.g. distance too large)

Off: Positioning element is outside the detection range

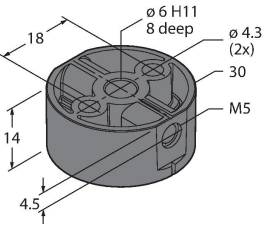
Inductive measuring principle provides more safety

Due to the measuring principle, which is based on the functional principle of an RLC coupling, the sensor operates absolutely wear-free and

is immune to magnetized ironware and other interferences. The amplitude of the signal can be changed by metal parts, which in turn affects the accuracy.  
Owing to the differential analysis, the output signal remains almost unchanged, even if the position of the positioning element deviates from the ideal axis of rotation. The distance between the sensor and the positioning element can be up to 5 mm, whereby the nominal distance is 1 mm.

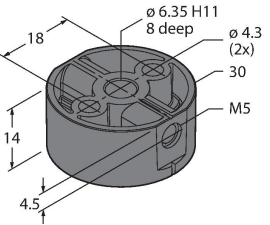
Accessories

P1-RI-QR201593041





Positioning element for encoder RI-QR20, for Ø 6 mm shafts

P2-RI-QR201593042



Positioning element for encoder RI-QR20, for Ø 6.35 mm shafts

Wiring accessories

Dimension drawing	Type	ID no.	
	RKC4.4T-2/TEL	6625013	Connection cable, female M12, straight, 4-pin, cable length: 2 m, sheath material: PVC, black; cULus approval; other cable lengths and qualities available, see <a href="http://www.turck.com">www.turck.com</a>
	RKS4.4T-2/TEL	6626321	Connection cable, M12 female connector, straight, 4-pin, shield on coupling nut/screw; cable length: 2 m, jacket material: PVC, black; cULus approval; other cable lengths and qualities available, see <a href="http://www.turck.com">www.turck.com</a>