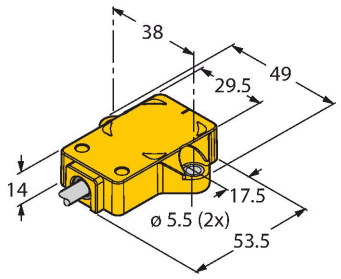
RI360P1-QR14-ELIU5X2
Inductive Angle Sensor – With Analog Output
Premium Line



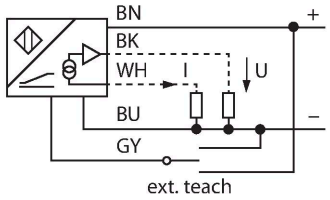
Technical data

Type	RI360P1-QR14-ELIU5X2
ID	1590853
Measuring principle	Inductive
General data	
Starting torque shaft load (radial / axial)	Not applicable because of contactless measuring principle
Resolution	0.09°
Measuring range	0…360 °
Nominal distance	1.5 mm
Repeat accuracy	≤ 0.025 % of full scale
Linearity deviation	≤ 0.3 % f.s.
Temperature drift	≤ ± 0.01 %/K
Output type	Absolute singleturn
Electrical data	
Operating voltage	15…30 VDC
Residual ripple	≤ 10 % U_{ss}
Isolation test voltage	≤ 0.5 kV
Short-circuit protection	yes
Wire breakage/Reverse polarity protection	yes / yes (voltage supply)
Output function	4-wire, Analog output
Voltage output	0…10 V
Current output	4…20 mA
Load resistance voltage output	≥ 4.7 kΩ
Load resistance current output	≤ 0.4 kΩ
Sample rate	800 Hz
Current consumption	< 50 mA

Features

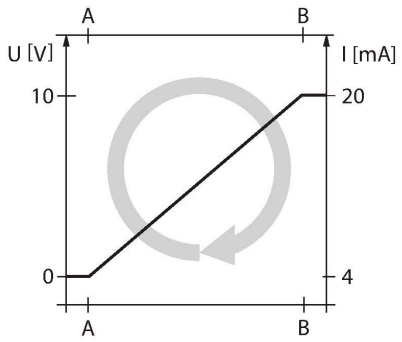
- Rectangular, plastic
- Many mounting possibilities
- P1-Ri-QR14 included in delivery
- Measuring range displayed via LED
- Immune to electromagnetic interference
- Resolution, 12-bit
- 4-wire, 15…30 VDC
- Analog output
- Programmable measuring range
- 0…10 V and 4…20 mA
- Cable connection

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.

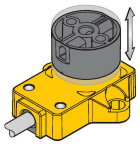


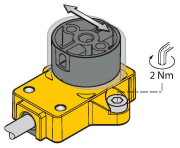
Technical data

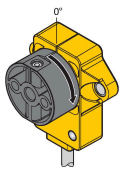
Mechanical data	
Design	Rectangular, QR14
Dimensions	53.5 x 49 x 14 mm
Flange type	Flange without mounting element
Shaft Type	Blind hole shaft
Shaft diameter D [mm]	6 6.35
Housing material	Plastic, PBT-GF30-V0
Electrical connection	Cable
Cable quality	Ø 5.2 mm, Black, LifYY, PVC, 2 m
Core cross-section	5 x 0.25 mm^2
Environmental conditions	
Ambient temperature	-25…+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
Salt spray test (EN 60068-2-52)	Severity degree 5 (4 test cycles)
Protection class	IP68 IP69K
MTTF	138 years acc. to SN 29500 (Ed. 99) 40 °C
Power-on indication	LED, Green
Measuring range display	multifunction LED, green green flashing
Included in delivery	positioning element P1-Ri-QR14; for technical details see data sheet

Mounting instructions

Mounting instructions/Description







Adapter pins provide more flexibility
Extensive range of mounting accessories for easy adaptation
to many different shaft diameters.
LED function
Operating voltage
Green: Voltage is present
Displayed measuring range
Green: Positioning element is within the detection range
Flashing green: Positioning element is within the
measuring range with reduced signal quality (e.g.
the distance is too great)
Off: Positioning element is outside the sensing range
Functional safety thanks to the inductive measuring principle
The measuring principle of RLC coupling

makes the sensor
absolutely wear-free and
immune to magnetized ferrous chips
and other interference fields.
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

Individual (teaching with positioning element)

Jumper between teach input Pin 5 (GY)	Gnd Pin 3 (BU)	Ub Pin 1 (BN)	LED
2 seconds	start value	end value	status LED flashes, after 2 s steady
10 seconds	CCW rotation, then return to last preset value	CW rotation, then return to last preset value	after 10 s status LED flashes fast for 2 s
15 seconds	-	default setting (360°, CW)	after 15 s power and status LED alternate

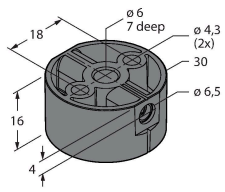
Preset – Mode (teaching without positioning element)

Jumper between teach input Pin 5 (GY)	Gnd Pin 3 (BU)	Ub Pin 1 (BN)	LED
2 seconds	activate preset mode	activate preset mode	status LED steady, flashes after 2 s
10 seconds	CCW rotation, then return to last preset value	CW rotation, then return to last preset value	after 10 s status LED flashes fast for 2 s
15 seconds	-	default setting (360°, CW)	after 15 s power and status LED alternate
Angular range	Gnd Pin 3 (BU)	Ub Pin 1 (BN)	status LED
30°	press once	-	1 x flashing
45°	press twice	-	2 x flashing
60°	press three times	-	3 x flashing
90°	-	press once	1 x flashing
180°	-	press twice	2 x flashing
270°	-	press three times	3 x flashing
360°	-	press four times	4 x flashing

Accessories

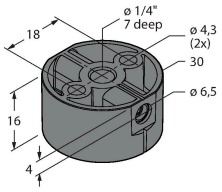
P1-RI-QR14 1590812

Positioning element for angle sensors RI-QR14, for Ø 6 mm shafts



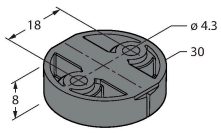
P2-RI-QR14 1590819

Positioning element for angle sensors RI-QR14, for Ø 6.35 mm shafts



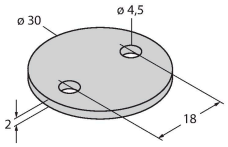
P3-RI-QR14	1590865

Positioning element for angle sensors RI-QR14, flat design, using shield plate SP1-QR14 is recommended



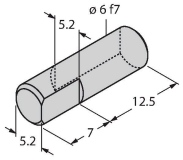
SP1-QR14	1590873

Shield plate Ø 30 mm, aluminium



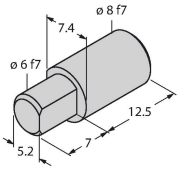
HSA-M6-QR14	6901051

Adapter for RI-QR14 specific positioning elements, hollow on solid shaft, Ø 6 mm



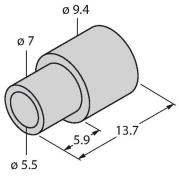
HSA-M8-QR14	6901052

Adapter for RI-QR14 specific positioning elements, hollow on solid shaft, Ø 8 mm



DS-RI-QR14	1590814

Spacer sleeves for rear mounting of RI-QR14, 2 pcs. per bag



Accessories

Dimension drawing	Type	ID	
	TX1-Q20L60	6967114	Teach adapter for inductive encoders, linear position, angle, ultrasonic and capacitive sensors