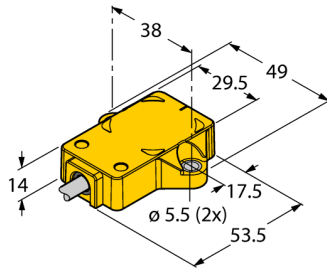


Inductive Angle Sensor With Analog Output RI360P1-QR14-ELIU5X2

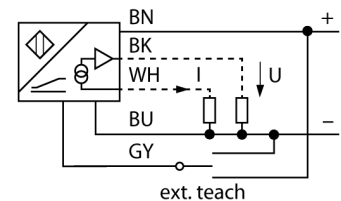
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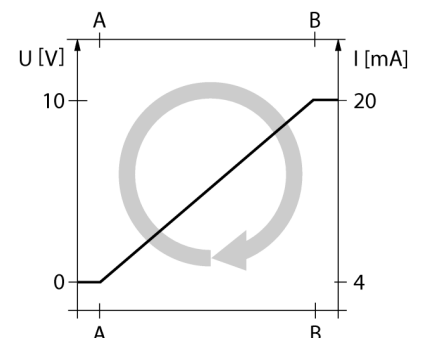
- Rectangular, plastic
- Many mounting possibilities
- P1-Ri-QR14 included in delivery
- Measuring range displayed via LED
- Immune to electromagnetic interference
- Resolution, 12-bit
- 4-wire, 15...30 VDC
- Analog output
- Programmable measuring range
- 0...10 V and 4...20 mA
- Cable connection

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.

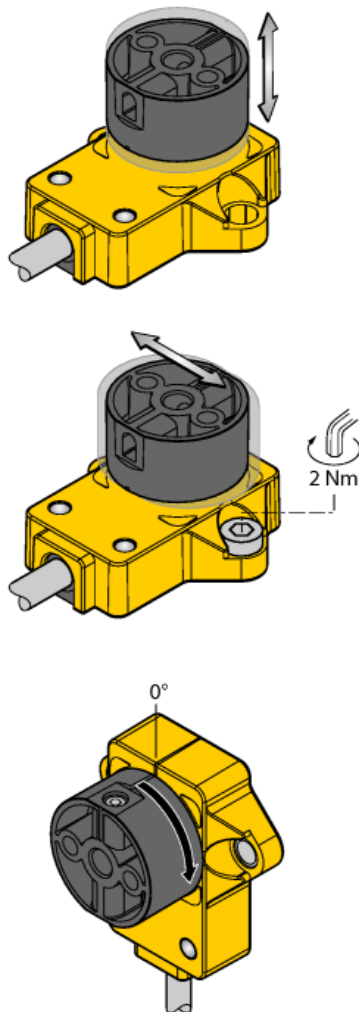


Type designation	RI360P1-QR14-ELIU5X2
Ident no.	1590853
Measuring principle	inductive
Starting torque shaft load (radial / axial)	Not applicable because of contactless measuring principle
Resolution	12 bit
Measuring range	0...360°
Nominal distance	1.5 mm
Repeat accuracy	≤ 0.025 % of full scale
Linearity deviation	≤ 0.3 % f.s.
Temperature drift	≤ ± 0.01 % / K
Ambient temperature	-25...+70 °C
Operating voltage	15...30 VDC
Residual ripple	≤ 10 % U _{in}
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
Output Type	absolute singleturn
Voltage output	0...10V
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
Design	Rectangular, QR14
Dimensions	53.5 x 49 x 14 mm
Housing material	Plastic, PBT-GF30-V0
Electrical connection	Cable
Cable quality	5.2 mm, Lif9YH-11YH, PUR, 2m Flame retardant acc. to VDE 0472, part 804B
Cable cross section	5 x 0.34 mm ²
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
Salt spray test (EN 60068-2-52)	severity degree 5 (4 test cycles)
Protection class	IP68/IP69K
Power-on indication	LED green
Measuring range display	multifunction LED, green
Included in delivery	positioning element P1-Ri-QR14; for technical details see data sheet

Inductive Angle Sensor With Analog Output RI360P1-QR14-ELIU5X2

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Adapter pins provide more flexibility

Extensive range of mounting accessories for easy adaptation to many different shaft diameters.

LED function

Operating voltage

Green: Power on

Measuring range

Green: Positioning element is in the measuring range

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

LED OFF: Positioning element is outside the detection range

Functional safety through inductive measuring principle

Based on the functional principle of RLC coupling, the sensor operates absolutely wear-free and is immune to magnetized metal splinters and other interferences. 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 1.5 mm.

Inductive Angle Sensor With Analog Output RI360P1-QR14-ELIU5X2

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Teaching instructions

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)

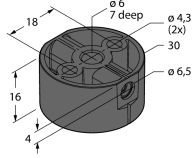
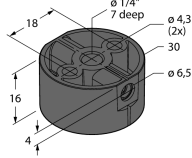
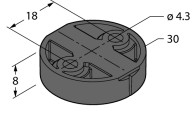
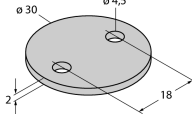
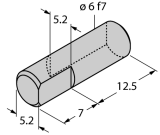
Jumper between teach input Pin 5 (GY)	Gnd Pin 3 (BU)	Ub Pin 1 (BN)	LED
2 seconds	activate preset mode	activate preset mode	status LED steady, flashes after 2 s
10 seconds	CCW rotation, then return to last preset value	CW rotation, then return to last preset value	after 10 s status LED flashes fast for 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

Inductive Angle Sensor With Analog Output RI360P1-QR14-ELIU5X2

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Accessories

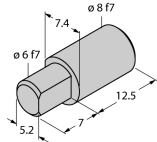
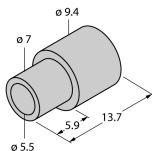
Type code	Ident no.	Description	
P1-RI-QR14	1590812	Positioning element for inductive angle sensors	
P2-RI-QR14	1590819	Positioning element for inductive angle sensors	
P3-RI-QR14	1590865	Positioning element for inductive angle sensors, flat design, we recommend using the shield plate SP1 QR14	
SP1-QR14	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	

Inductive Angle Sensor With Analog Output RI360P1-QR14-ELIU5X2

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Accessories

Type code	Ident no.	Description	
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	
TX1-Q20L60	6967114	Teach adapter for inductive encoders, linear position, angle, ultrasonic and capacitive sensors	