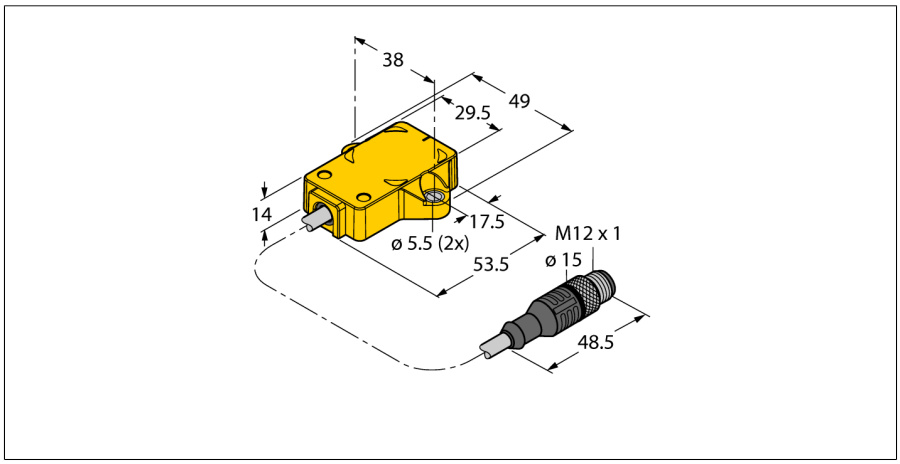
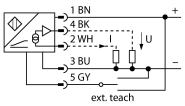
Inductive Angle Sensor
With Analog Output
RI360P1-QR14-ELIU5X2-0.3-RS5

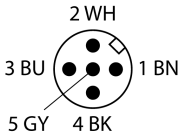


- **Rectangular, plastic**
- **Many mounting possibilities**
- **P1-Ri-QR14 included in delivery**
- **Measuring range displayed via LED**
- **Immune to electromagnetic interference**
- **Resolution, 12-bit**
- **15…30 VDC**
- **Analog output**
- **Programmable measuring range**
- **0…10 V and 4…20 mA**
- **Cable with male connector, M12 × 1**

Type designation	RI360P1-QR14-ELIU5X2-0.3-RS5
Ident no.	1590854
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_{ss}
Isolation test voltage	≤ 0.5 kV
Short-circuit protection	yes
Wire breakage/Reverse polarity protection	yes/ yes (voltage supply)
Output function	5-pin, 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
Shaft Type	Blind hole shaft
Housing material	Plastic, PBT-GF30-V0
Electrical connection	Cable with connector, M12 × 1
Cable quality	5.2 mm, Lif9YH-11YH, PUR, 0.3 Flame retardant acc. to VDE 0472, part 804B
Cable cross section	5 x 0.34 mm²
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
MTTF	138 years acc. to SN 29500 (Ed. 99) 40 °C
Packaging unit	1
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

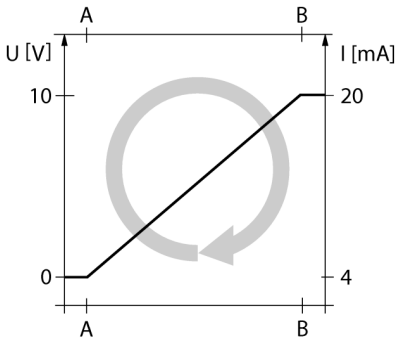
Wiring Diagram





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.



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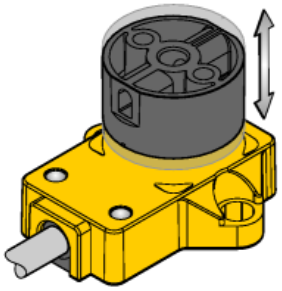

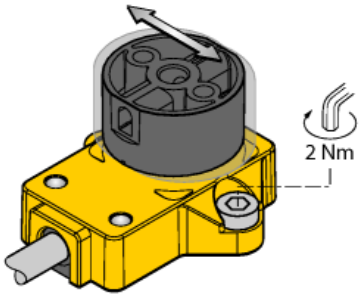

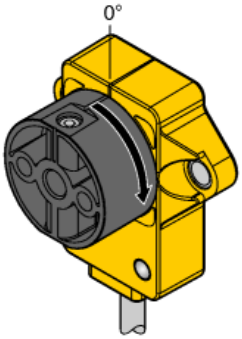

Adapter pins provide more flexibility
Extensive range of mounting accessories for easy adaptation to many different shaft diameters.

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 1.5mm.

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Teaching instructions

Variably adjustable (teaching with position sensor)

Bridge between teach input pin 5 (GY)	**Gnd Pin 3 (BU)**	**Ub Pin 1 (BN)**	**LED**
2 seconds	Initial value	End value	Power LED flashes then lights steadily after 2 s
10 seconds	CCW rotation, then return to last preset value	CW rotation, then return to last preset value	After 10 s power LED flashes quickly for 2 s
15 seconds	–	Factory setting (360°, CW)	Power and status LED alternate after 15 seconds

Preset – Mode (teach without position sensor)

Bridge between teach input pin 5 (GY)	**Gnd Pin 3 (BU)**	**Ub Pin 1 (BN)**	**LED**
2 seconds	Activate preset mode	Activate preset mode	Power 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 power LED flashes quickly for 2 s
15 seconds	–	Factory settings (360°, CW)	Power and status LED alternate after 15 seconds
Angular range	**Gnd Pin 3 (BU)**	**Ub Pin 1 (BN)**	**Power LED**
30°	Press x 1	–	Blinking x 1
45°	Press x 2	–	Blinking x 2
60°	Press x 3	–	Blinking x 3
90°	–	Press x 1	Blinking x 1
180°	–	Press x 2	Blinking x 2
270°	–	Press x 3	Blinking x 3
360°	–	Press x 4	Blinking x 4

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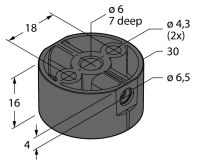
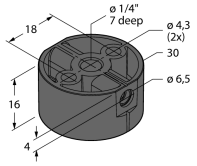
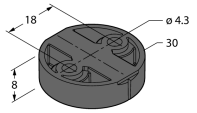
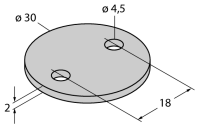
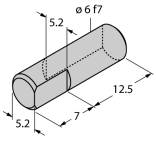
Accessories

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	

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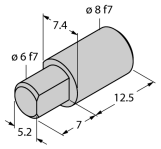
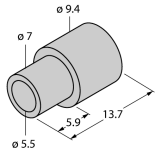
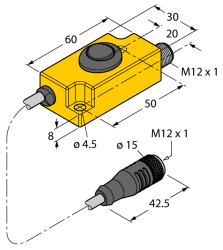
Accessories

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	

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