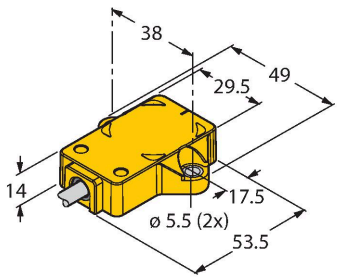
RI360P1-QR14-ELU4X2/S97
Inductive Angle Sensor – With Analog Output For Use in Vehicle Board Nets
Premium Line



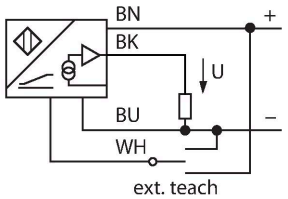
Technical data

Type	RI360P1-QR14-ELU4X2/S97
Ident. no.	1590855
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
Linearity deviation	≤ 0.3 %f.s.
Temperature drift	≤ ± 0.01 % / K
Ambient temperature	-40…+85 °C
Temperature changes (EN60068-2-14)	-40… +85 °C; 20 cycles
Operating voltage	8…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 type	Absolute singleturn
Output function	3-wire, Analog output
Voltage output	0.5…4.5 V
Load resistance voltage output	≥ 4.7 kΩ
Sample rate	800 Hz

Features

- Rectangular, plastic
- Many mounting possibilities
- P1-Ri-QR14 included in delivery
- For vehicle board nets, 12 V and 24 V
- Increased interference immunity 30V/m following the e1 type approval
- Immune to conducted interference acc. to DIN ISO 7637-2 (SAE J 113-11)
- Extended temperature range
- High protection class IP68/IP69K
- Protection against salt spray and rapid temperature change
- Measuring range displayed via LED
- Immune to electromagnetic interference
- Resolution, 12-bit
- 3-wire, 8…30 VDC
- Analog output
- Programmable measuring range
- 0.5…4.5 V
- Cable connection

Wiring diagram



Functional principle

Highest reliability even under the most extreme conditions - this is guaranteed by our sensors for mobile applications. Our inductive sensors for extremely hostile industrial environments not only meet, but even exceed the requirements of the protection classes IP68 and IP69K. Thanks to their excellent resistance to constant vibration and shock, they are the optimum choice for road construction and agricultural machinery.

RI360P1-QR14-ELU4X2/S97| 09/09/2020 17-05 | technical changes reserved

Technical data

Load-dump protection (DIN ISO 7637-2)	Severity degree IV/Level 4
Current consumption	< 50 mA
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 mm, Lif32Y32Y, TPE, 2 m
	Low temp. flexible and E-chain capable
Core cross-section	4 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
MTTF	222 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

12 V Bordnet						
Impulse	1	2	3a	3b	4	5
Severity level	IV	IV	IV	IV	IV	IV
Failure criterion	C	B	A	A	C	A

24 V Bordnet						
Impulse	1	2	3a	3b	4	5
Severity level	IV	IV	IV	IV	IV	IV
Failure criterion	C	B	A	A	A	A

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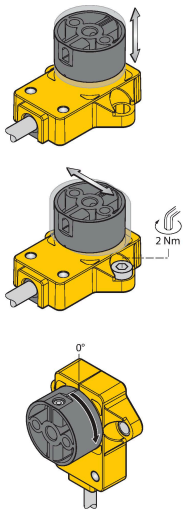
Mounting instructions

Mounting instructions/Description



Freely adjustable (teaching with positioning element)

Bridge between teach input Pin 5 (WH)	Gnd Pin 3 (BU)	Ub Pin 1 (BN)	LED
2 s	Start value	End value	Status LED flashes then turns steady after 2 s
10 s	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 s	-	Factory setting (360°, CW)	After 15 s power and status LED alternate

Preset – Mode (teaching without positioning element)

Bridge between teach input Pin 5 (WH)	Gnd Pin 3 (BU)	Ub Pin 1 (BN)	LED
2 s	Activate preset mode	Activate preset mode	Status LED steady, flashes after 2 s
10 s	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 s	-	Factory 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

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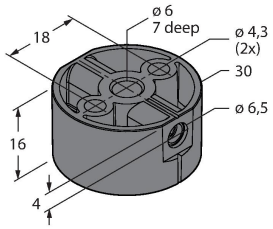
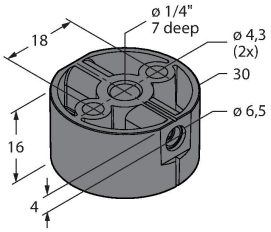
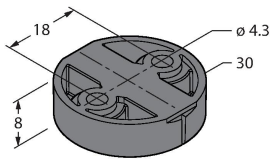
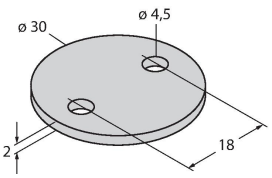
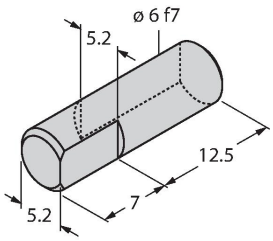
Accessories

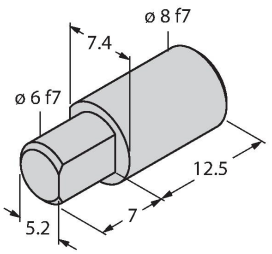
P1-RI-QR14	1590812
	Positioning element for angle sensors RI-QR14, for Ø 6 mm shafts

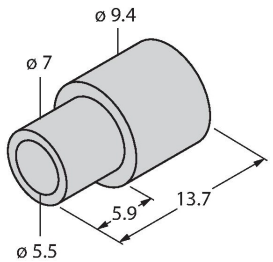
P2-RI-QR14	1590819
	Positioning element for angle sensors RI-QR14, for Ø 6.35 mm shafts

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

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