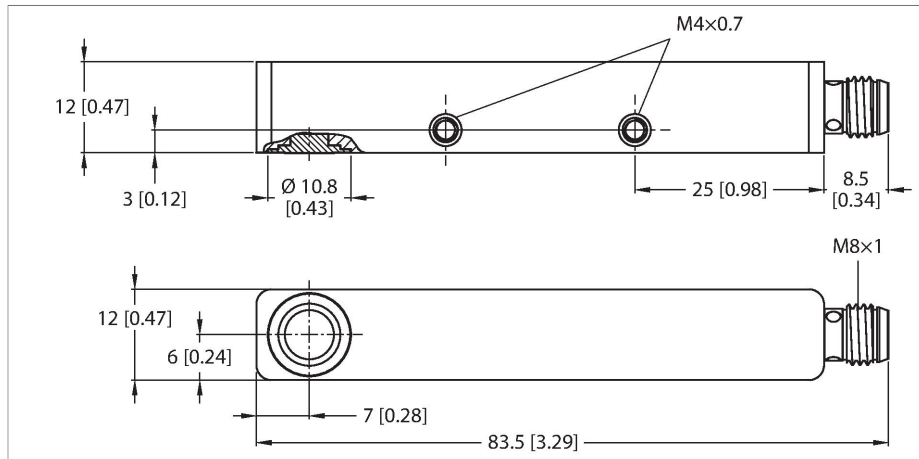


RU40L-Q12S-UP8X-V1141

Ultrasonic Sensor – Retroreflective Sensor



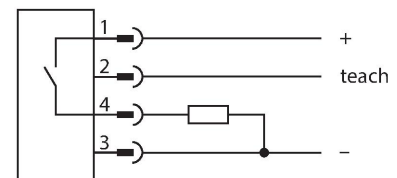
Technical data

Type	RU40L-Q12S-UP8X-V1141
ID	100005612
Ultrasonic data	
Function	Retroreflective
Range	40...400 mm
Resolution	1 mm
Minimum switching range	5 mm
Ultrasound frequency	300 kHz
Repeat accuracy	≤ 0.125 % of full scale
Temperature drift	± 1 % of full scale
Linearity error	≤ ± 0.8 %
Approach speed	≤ 3 m/s
Pass speed	≤ 1 m/s
Electrical data	
Operating voltage U_B	18...30 VDC
Residual ripple	10 % U_{ss}
No-load current	≤ 40 mA
Load resistance	≤ 1000 Ω
Residual current	≤ 0.1 mA
Response time typical	< 100 ms
Readiness delay	≤ 300 ms
Communication protocol	IO-Link
Output function	NO/NC, PNP

Features

- Smooth sonic transducer face
- Rectangular housing Q12S, potted
- Lateral light emission
- Connection via M8 × 1 male connector
- Teach range adjustable via connection cable or via IO-Link
- Blind zone: 4 cm
- Range: 40 cm
- Resolution: 1 mm
- Aperture angle of sonic cone: ±9 °
- 1 x switching output, PNP
- Teachable settings
- NO/NC programmable

Wiring diagram



Functional principle

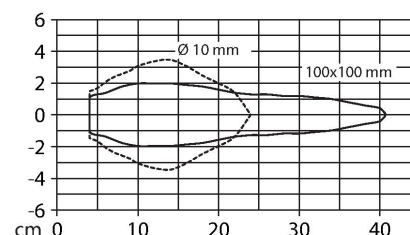
Ultrasonic sensors capture a multitude of objects contactlessly and wear-free with ultrasonic waves. It does not matter whether

Technical data

Output 1	Switching output
Switching frequency	$\leq 10 \text{ Hz}$
Hysteresis	$\leq 2 \text{ mm}$
Voltage drop at I_o	$\leq 2 \text{ V}$
Short-circuit protection	yes
Reverse polarity protection	yes
Setting option	Remote Teach
IO-Link	
IO-Link specification	V 1.1
IO-Link port type	Class A
Communication mode	COM 2 (38.4 kBaud)
Process data width	16 bit
Measured value information	15 bit
Switchpoint information	1 bit
Frame type	2.2
Minimum cycle time	2 ms
Function pin 4	IO-Link
Function Pin 2	DI
Maximum cable length	20 m
Profile support	Smart Sensor Profile
Included in the SIDI GSDML	Yes
Mechanical data	
Design	Rectangular, Q12
Radiation direction	side
Dimensions	82 x 12 x 12 mm
Housing material	Metal, AL, Anodized
Transducer material	Plastic, Epoxyd resin and PU foam
Electrical connection	Connector, M8 x 1, 4-wire
Ambient temperature	-25...+70 °C
Storage temperature	-25...+70 °C
Pressure resistance	0.5...5 bar
Protection class	IP67
Switching state	LED, Yellow
Tests/approvals	
MTTF	575 years acc. to SN 29500 (Ed. 99) 40 °C
Declaration of conformity EN ISO/IEC	EN 60947-5-2
Shock test	30 g, 11 ms/10...55 Hz, 1.0 mm shock/vibration according to EN 60947-5-2

the object is transparent or opaque, metallic or non-metallic, firm, liquid or powdery. Even environmental conditions such as spray, dust or rain hardly affect their function. The sonic cone diagram indicates the detection range of the sensor. In accordance with standard EN 60947-5-2, quadratic targets in a range of sizes (20 x 20 mm, 100 x 100 mm) and a round rod with a diameter of 27 mm are used. Important: The detection ranges for other targets may differ from those for standard targets due to the different reflection properties and geometries.

Sonic Cone

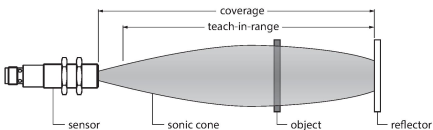


Technical data

Approvals	CE cULus
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Mounting instructions

Mounting instructions/Description



Setting the reflector position
The ultrasonic sensor features a switching output with a teachable switching range. The yellow LED indicates whether the sensor has detected the object.

A switching range is taught in. This must be within the detection range. In this operating mode, the taught reflector position is detected permanently without an object.

- Easy-Teach**
- Position a stationary reflector within the detection range
 - Bridge pin 2 with the Ub for 2...7 seconds
- After a successful teach-in, the yellow LED flashes at 3 Hz and the sensor runs automatically in normal mode.
- To invert the output function, bridge pin 2 with the Ub for 7...12 seconds

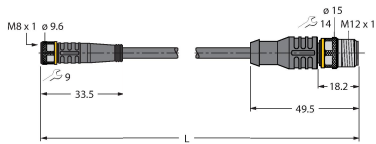
LED behavior
In normal operating mode, the LED signals the switching state of the sensor.

- Yellow: object between the sensor and reflector

Wiring accessories

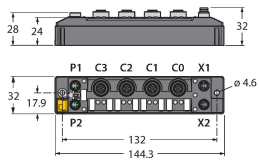
Dimension drawing	Type	ID	
	PKG4M-2/TEL	6625061	Connection cable, M8 female connector, straight, 4-pin, cable length: 2 m, jacket material: PVC, black; cULus approval
	PKW4M-2/TEL	6625067	Connection cable, M8 female connector, angled, 4-pin, cable length: 2 m, jacket material: PVC, black; cULus approval

Dimension drawing	Type	ID	
	PKG4M-2-RSC4.4T/TXL	6627063	Extension cable, M8 female connector, straight, 4-pin to M12 male connector, straight, 4-pin, cable length: 2 m, jacket material: PUR, black; cULus approval



Accessories

Dimension drawing	Type	ID	
	TBEN-S2-4IOL	6814024	Compact multiprotocol I/O module, 4 IO-Link Master 1.1 Class A, 4 universal PNP digital channels 0.5 A



USB-2-IOL-0002	6825482	IO-Link Master with integrated USB port
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