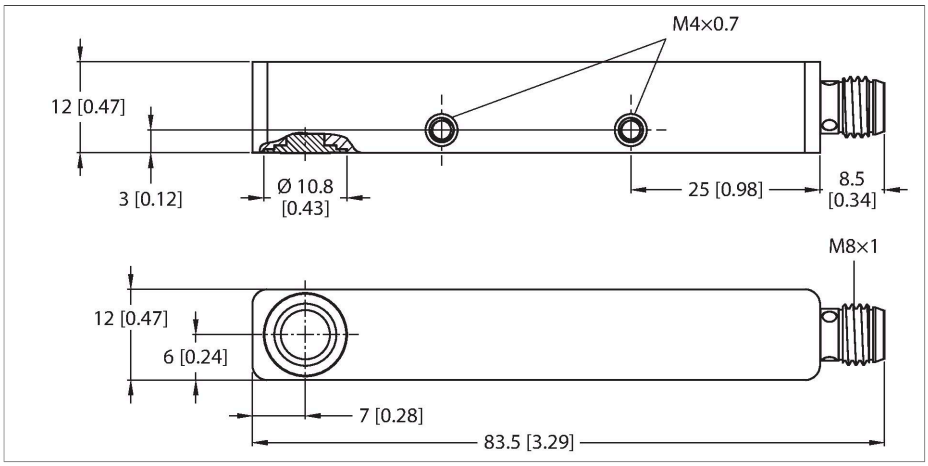
RU20L-Q12S-UP8X-V1141
Ultrasonic Sensor – Retroreflective Sensor



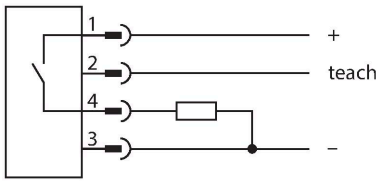
Technical data

Type	RU20L-Q12S-UP8X-V1141
ID	100005608
Ultrasonic data	
Function	Retroreflective Sensor
Range	20…200 mm
Resolution	1 mm
Minimum switching range	5 mm
Ultrasound frequency	300 kHz
Repeat accuracy	≤ 0.25 % of full scale
Temperature drift	± 1 % of full scale
Linearity error	≤ ± 0.8 %
Approach speed	≤ 3 m/s
Pass speed	≤ 0.6 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
Output 1	Switching output
Switching frequency	≤ 20 Hz
Hysteresis	≤ 2 mm
Voltage drop at I_e	≤ 2 V

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: 2 cm
- Range: 20 cm
- Resolution: 1 mm
- Aperture angle of sonic cone: ±9 °
- Switching output, PNP
- NO/NC programmable
- IO-Link

Wiring diagram



Functional principle

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

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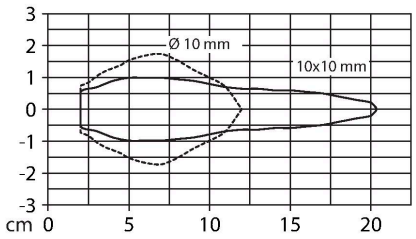
Technical data

Short-circuit protection	yes
Reverse polarity protection	yes
Setting option	Remote Teach IO-Link
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 × 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	578 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
Approvals	CE cULus

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 × 20 mm, 100 × 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



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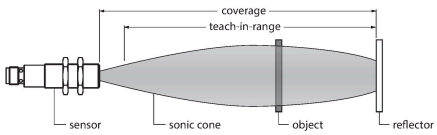
Mounting instructions

Mounting instructions/Description



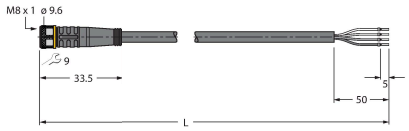
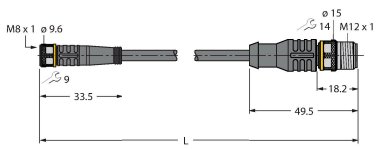
Setting the reflector position
The ultrasonic sensor features a switching output with a teachable switching range. The yellow LED indicates whether the sensor has detected the object.

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

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
	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

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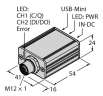	USB-2-IOL-0002	6825482	IO-Link Master with integrated USB port

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