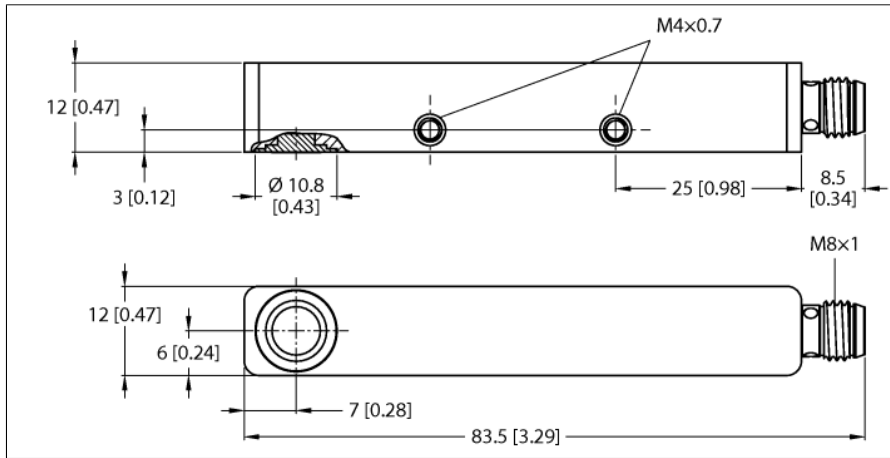


**Ultrasonic Sensor
Retroreflective Sensor
RU40L-Q12S-UP8X-V1141**



- 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

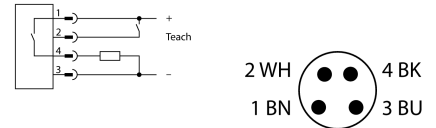
Type designation RU40L-Q12S-UP8X-V1141
Ident-No. 100005612

Function Ultrasonic retroreflective sensor
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

Operating voltage 18...30 VDC
Residual ripple 10 % U_s
No-load current I₀ ≤ 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 10 Hz
Hysteresis ≤ 2 mm
Voltage drop at I_L ≤ 2 V
Short-circuit protection yes
Reverse polarity protection yes

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 Profil
Included in the SIDI GSDML Yes

Wiring Diagram



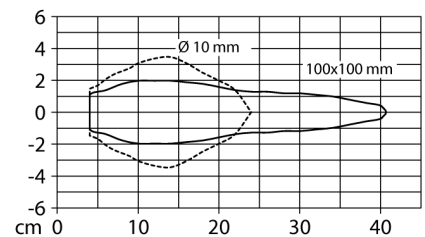
Functional principle

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.

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

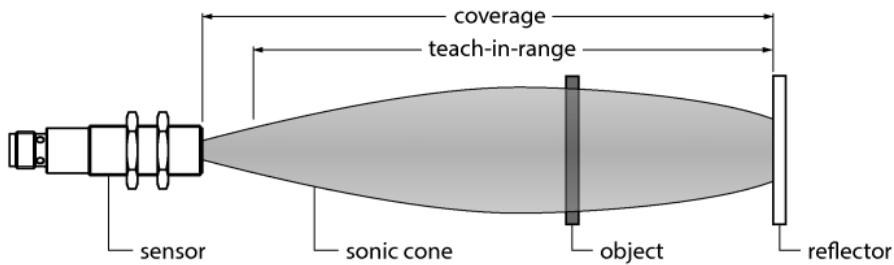


Ultrasonic Sensor Retroreflective Sensor RU40L-Q12S-UP8X-V1141

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
Protection class	IP67
Ambient temperature	-10...+70 °C
Storage temperature	-10...+70 °C
Declaration of conformity EN ISO/IEC	EN 60947-5-2
MTTF	281 years
MTTF note	acc. to SN 29500 (Ed. 99) 40 °C

Switching state	LED, Yellow
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**Ultrasonic Sensor
Retroreflective Sensor
RU40L-Q12S-UP8X-V1141**



Teaching 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

- Connect the teach adapter TX1-Q20L60 between the sensor and connection cable
 - Stationary reflector within the detection range
 - Press and hold button for at least 2 s against Gnd
- 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, press and hold the button against the Ub for 2...7s

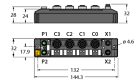
LED response

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

- Yellow: object between the sensor and reflector

**Ultrasonic Sensor
Retroreflective Sensor
RU40L-Q12S-UP8X-V1141**

Function accessories

Type code	Ident-No.	Description	Dimension drawing
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	