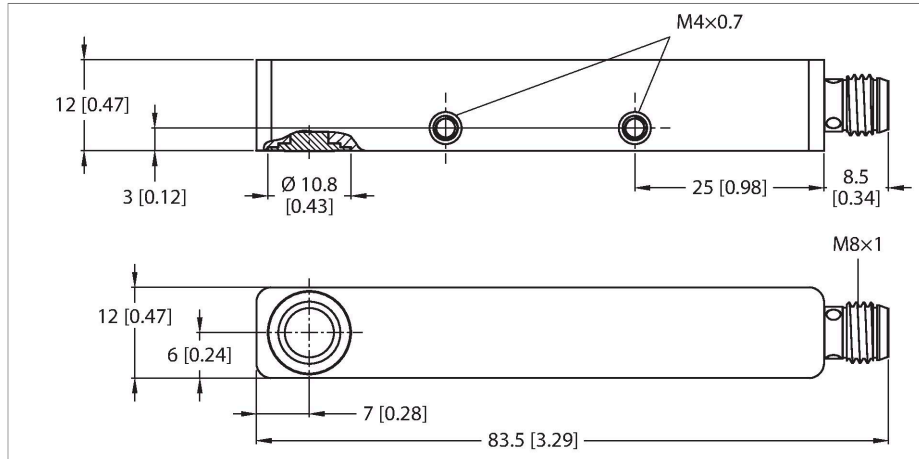


RU20L-Q12S-UP8X-V1141

Ultrasonic Sensor – Retroreflective Sensor



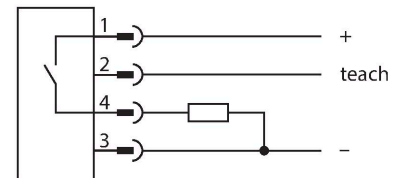
Technical data

| | |
|-------------------------|------------------------|
| Type | RU20L-Q12S-UP8X-V1141 |
| ID | 100005608 |
| Ultrasonic data | |
| Function | Retroreflective |
| 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 | 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: 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

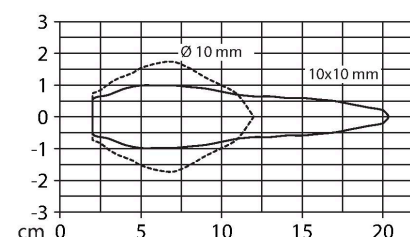
Ultrasonic sensors capture a multitude of objects contactlessly and wear-free with ultrasonic waves. It does not matter whether

Technical data

| | |
|--------------------------------------|---|
| Output 1 | Switching output |
| Switching frequency | ≤ 20 Hz |
| Hysteresis | ≤ 2 mm |
| Voltage drop at I _a | ≤ 2 V |
| 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 |

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 × 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

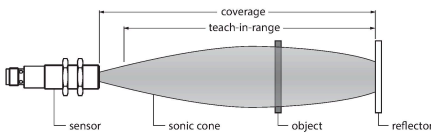


Technical data

| | |
|------------|---|
| Shock test | Shock/vibration according to EN 60947-5-230 g, 11 ms/10...55 Hz, 1.0 mm |
| Approvals | CE cULus |

Mounting instructions

Mounting instructions/Description



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

- Stationary reflector within the detection range
- Bridge pin 2 (BK) with the Ub for 2 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 against Ub for 2...7 seconds

LED response

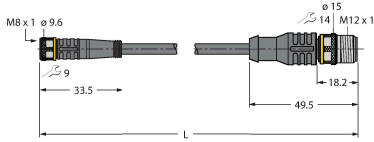
In normal operating mode, the LED signals the switching state of the sensor.

- Yellow: object between the sensor and reflector

Wiring accessories

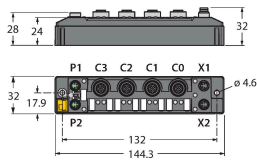
| Dimension drawing | Type | ID | |
|-------------------|-------------|---------|--|
| | PKG4M-2/TEL | 6625061 | Connection cable, M8 female connector, straight, 4-pin, cable length: 2 m, jacket material: PVC, black; cULus approval |
| | PKW4M-2/TEL | 6625067 | Connection cable, M8 female connector,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

