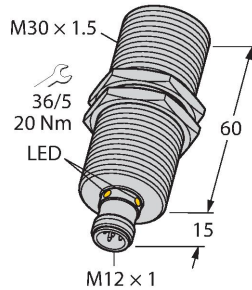


# RU300U-M30E-LI8X2-H1151

## Ultrasonic Sensor – Diffuse Mode Sensor



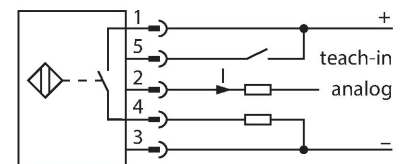
### Technical data

|                                      |                         |
|--------------------------------------|-------------------------|
| Type                                 | RU300U-M30E-LI8X2-H1151 |
| ID                                   | 1610099                 |
| <b>Ultrasonic data</b>               |                         |
| Function                             | Proximity               |
| Range                                | 300...3000 mm           |
| Resolution                           | 1 mm                    |
| Minimum measuring range              | 250 mm                  |
| Minimum switching range              | 250 mm                  |
| Ultrasound frequency                 | 120 kHz                 |
| Repeat accuracy                      | ≤ 0.15 % of full scale  |
| Temperature drift                    | ± 1.5 % of full scale   |
| Linearity error                      | ≤ ± 0.5 %               |
| Edge lengths of the nominal actuator | 100 mm                  |
| Approach speed                       | ≤ 11 m/s                |
| Pass speed                           | ≤ 4.2 m/s               |
| <b>Electrical data</b>               |                         |
| Operating voltage $U_B$              | 15...30 VDC             |
| Residual ripple                      | 10 % $U_{ss}$           |
| DC rated operating current $I_o$     | ≤ 150 mA                |
| No-load current                      | ≤ 50 mA                 |
| Load resistance                      | ≤ 1000 Ω                |
| Response time typical                | < 190 ms                |
| Readiness delay                      | ≤ 300 ms                |

### Features

- Smooth sonic transducer face
- Cylindrical housing M30, potted
- Connection via M12 × 1 male connector
- Measuring range adjustable via Easy-Teach
- Temperature compensation
- Blind zone: 30 cm
- Range: 300 cm
- Resolution: 1 mm
- Aperture angle of sonic cone: ±15 °
- Analog output, 4...20 mA, additional switching output, PNP

### 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 60947-5-7, 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.

## Technical data

|                                |                            |
|--------------------------------|----------------------------|
| Output function                | Analog output              |
| Output 1                       | Analog output              |
| Current output                 | 4...20 mA                  |
| Load resistance current output | $\leq 0.5 \text{ k}\Omega$ |
| Switching frequency            | $\leq 3.3 \text{ Hz}$      |
| Short-circuit protection       | yes/Cyclic                 |
| Reverse polarity protection    | yes                        |
| Wire breakage protection       | yes                        |
| Setting option                 | Remote Teach               |

### Mechanical data

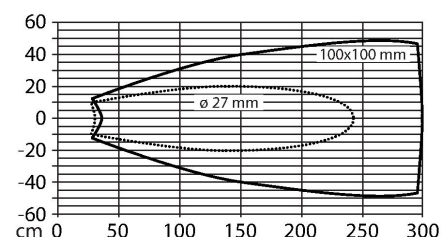
|                                       |                                       |
|---------------------------------------|---------------------------------------|
| Design                                | Threaded barrel, M30                  |
| Radiation direction                   | straight                              |
| Dimensions                            | $\varnothing 30 \times 75 \text{ mm}$ |
| Housing material                      | Metal, CuZn, Nickel Plated            |
| Max. tightening torque of housing nut | 75 Nm                                 |
| Transducer material                   | Plastic, Epoxyd resin and PU foam     |
| Electrical connection                 | Connector, M12 $\times$ 1, 5-wire     |
| Ambient temperature                   | -25...+70 °C                          |
| Storage temperature                   | -40...+80 °C                          |
| Pressure resistance                   | 0.5...5 bar                           |
| Protection class                      | IP67                                  |
| Switching state                       | LED, Yellow                           |
| Object detected                       | LED, Green                            |

### Tests/approvals

|                                      |                                                                        |
|--------------------------------------|------------------------------------------------------------------------|
| MTTF                                 | 191 years acc. to SN 29500 (Ed. 99) 40 °C                              |
| Declaration of conformity EN ISO/IEC | EN 60947-5-7                                                           |
| Vibration resistance                 | 20 g, 10...55 Hz, sine, 3 axes, 30 min/axis according to IEC 60068-2-6 |
| Shock test                           | 30 g, 11 ms, half sine, 3 axes according to IEC 60068-2-27             |
| Approvals                            | CE<br>cULus                                                            |

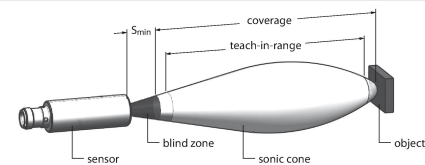
Important: The detection ranges for other targets may differ from those for standard targets due to the different reflection properties and geometries.

## Sonic Cone



Mounting instructions

Mounting instructions/Description



**Setting the limit values**  
The ultrasonic sensor has an analog output with teachable measuring range. Teaching is implemented via the teach adapter. The green and yellow LEDs indicate whether the sensor has detected the object.

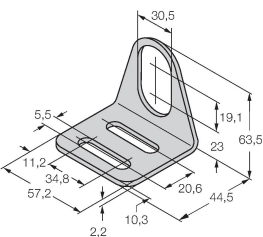
- Teach**  
Connect the TX1-Q20L60 teach adapter between the sensor and connection cable
- Position object for remote limit value
  - Press the button against Ub for 2 - 7 seconds
  - Position object for close limit value
  - Press the button against Ub for 8 - 11 seconds
- Optional: Inversion of analog output
- Press the button for 12 - 17 seconds

**LED response**  
Successful teaching is displayed with a fast flashing LED. Thereafter, the sensor automatically runs in normal operating mode. Unsuccessful teaching is indicated by the LED flashing alternately green and yellow. In normal operation, the two LEDs indicate the status of the sensor.

- Green: Object within the detection range, but not in the measuring range
- Yellow: Object is within the measuring range
- Off: Object outside the detection range or signal loss

Accessories

MW30 6945005



Mounting bracket for threaded barrel sensors; material: Stainless steel A2 1.4301 (AISI 304)

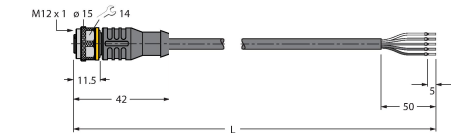
Wiring accessories

Dimension drawing Type ID

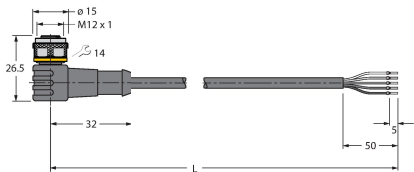
RKC4.5T-2/TEL

6625016

Connection cable, M12 female connector, straight, 5-pin, cable length: 2 m, jacket material: PVC, black; cULus approval



| Dimension drawing | Type          | ID      |                                                                                                                       |
|-------------------|---------------|---------|-----------------------------------------------------------------------------------------------------------------------|
|                   | WKC4.5T-2/TEL | 6625028 | Connection cable, M12 female connector, angled, 5-pin, cable length: 2 m, jacket material: PVC, black; cULus approval |



Accessories

| Dimension drawing | Type       | ID      |                                                                                                 |
|-------------------|------------|---------|-------------------------------------------------------------------------------------------------|
|                   | TX1-Q20L60 | 6967114 | Teach adapter for inductive encoders, linear position, angle, ultrasonic and capacitive sensors |

