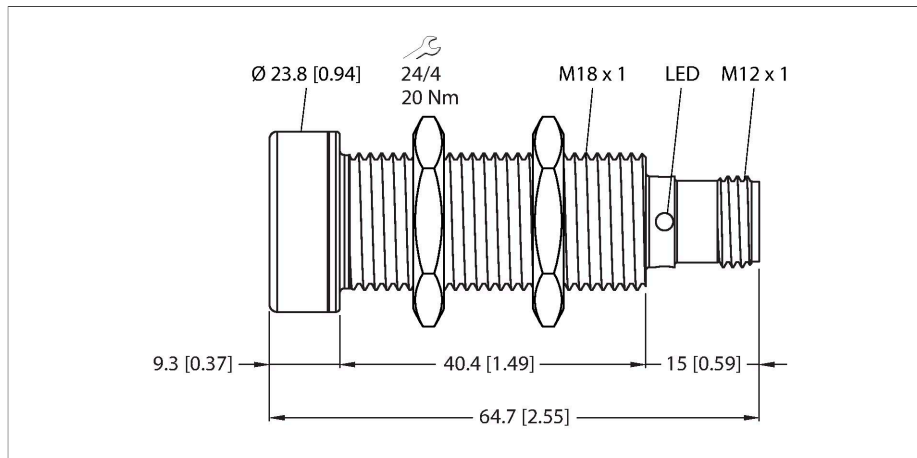


# RU100U-EMT18M-AP8X2-H1151

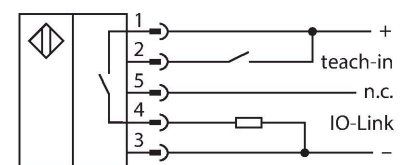
## Ultrasonic Sensor – Diffuse Mode Sensor



### Features

- Sonic transducer face with PTFE layer
- • Stainless steel front attachment
- Cylindrical housing M18, potted
- Connection via M12 × 1 male connector
- Temperature compensation
- Blind zone: 15 cm
- Range: 100 cm
- Resolution: 1 mm
- Aperture angle of sonic cone: ±16 °
- PNP switching output
- 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. 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.

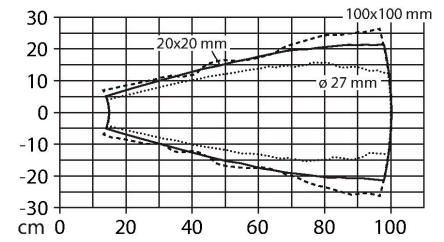
### Technical data

|                                      |                                  |
|--------------------------------------|----------------------------------|
| Type                                 | RU100U-EMT18M-AP8X2-H1151        |
| ID                                   | 100004304                        |
| <b>Ultrasonic data</b>               |                                  |
| Function                             | Proximity switch                 |
| Range                                | 150...1000 mm                    |
| Resolution                           | 1 mm                             |
| Minimum switching range              | 10 mm                            |
| Ultrasound frequency                 | 200 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                       | ≤ 8 m/s                          |
| Pass speed                           | ≤ 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                         |
| Residual current                     | ≤ 0.1 mA                         |
| Response time typical                | < 90 ms                          |
| Readiness delay                      | ≤ 300 ms                         |
| Communication protocol               | IO-Link                          |
| Output function                      | NO/NC, PNP                       |
| Output 1                             | Switching output or IO-Link mode |
| Switching frequency                  | ≤ 6.9 Hz                         |

## Technical data

|                                       |                                                                             |
|---------------------------------------|-----------------------------------------------------------------------------|
| Hysteresis                            | ≤ 5 mm                                                                      |
| Voltage drop at I <sub>o</sub>        | ≤ 2.5 V                                                                     |
| Short-circuit protection              | yes/Cyclic                                                                  |
| Reverse polarity protection           | yes                                                                         |
| Wire breakage protection              | yes                                                                         |
| Setting option                        | Remote Teach<br>IO-Link                                                     |
| <b>IO-Link</b>                        |                                                                             |
| 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                                                                         |
| <b>Mechanical data</b>                |                                                                             |
| Design                                | Threaded barrel, M18                                                        |
| Radiation direction                   | straight                                                                    |
| Dimensions                            | Ø 18 x 63 mm                                                                |
| Housing material                      | Stainless steel, 1.4404 (AISI 316L),<br>PTFE-coated                         |
| Max. tightening torque of housing nut | 20 Nm                                                                       |
| Transducer material                   | Plastic, Epoxy resin and PU foam with<br>PTFE coating                       |
| Electrical connection                 | Connector, M12 × 1, 5-wire                                                  |
| Ambient temperature                   | -5...+50 °C                                                                 |
| Storage temperature                   | -40...+50 °C                                                                |
| Pressure resistance                   | 0.5...5 bar                                                                 |
| Protection class                      | IP67                                                                        |
| Switching state                       | LED, Yellow                                                                 |
| Object detected                       | LED, Green                                                                  |
| <b>Tests/approvals</b>                |                                                                             |
| MTTF                                  | 202 years acc. to SN 29500 (Ed. 99) 40 °C                                   |
| Declaration of conformity EN ISO/IEC  | EN 60947-5-2                                                                |
| Vibration resistance                  | 20 g, 10...55 Hz, sine, 3 axes, 30 min/ax-<br>is according to IEC 60068-2-6 |

## Sonic Cone

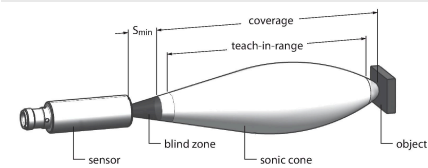


Technical data

|            |                                                            |
|------------|------------------------------------------------------------|
| Shock test | 30 g, 11 ms, half sine, 3 axes according to IEC 60068-2-27 |
| Approvals  | CE<br>cULus                                                |

Mounting instructions

Mounting instructions/Description



**Setting the switchpoint**  
The ultrasonic sensor features a switching output with a teachable switching point. The green and yellow LEDs indicate whether the sensor has detected the object.

One switching point is taught. This must be within the detection range. In this operating mode the background is suppressed.

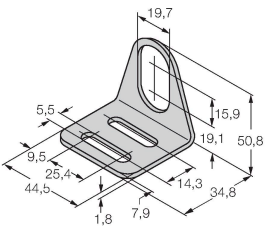
- Teach**
- Connect the teach adaptor between the sensor and connection cable
  - Position the object at the beginning of the protection area
  - Press the button for 2 - 7 sec against Ub
  - Place object at the end of the switching range
  - Press the button against Ub for 8 - 11 seconds

After a successful teach-in, the green LED flashes at 2Hz and the sensor runs automatically in normal mode.

- LED response**  
In standard operating mode, the two LEDs indicate the switching state of the sensor.
- Green: Object within the detection range but not in switching range
  - Yellow: Object is within the switching range
  - Off: Object is outside the detection range or signal loss

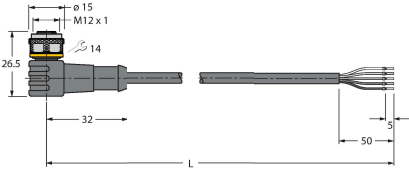
Accessories

|      |         |
|------|---------|
| MW18 | 6945004 |
|------|---------|

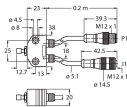


Mounting bracket for threaded barrel sensors; material: Stainless steel A2 1.4301 (AISI 304)

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 |
|  | 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       |                                                                                                        |
|-------------------------------------------------------------------------------------|----------------|----------|--------------------------------------------------------------------------------------------------------|
|   | 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                                                                |
|  | VB2-SP1        | A3501-29 | Teach adapter                                                                                          |