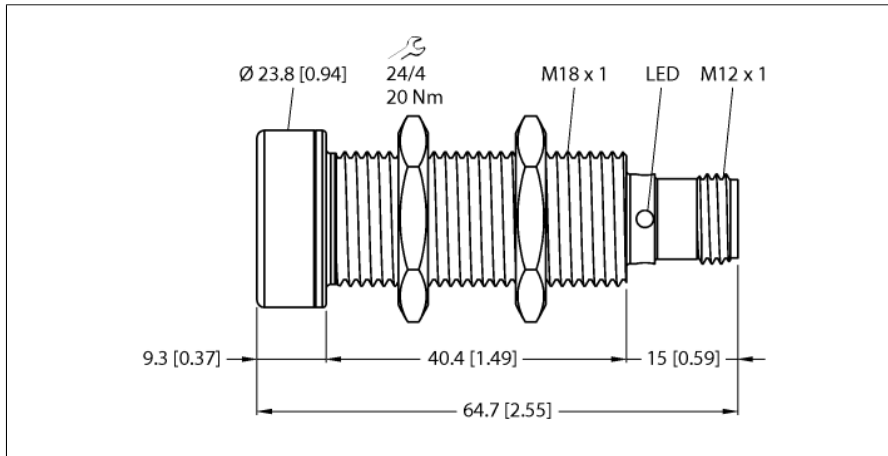


# Ultrasonic Sensor

## Diffuse Mode Sensor

### RU100U-EMT18M-AP8X2-H1151



- 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
- Sonic cone angle: 16°
- PNP switching output
- NO/NC programmable
- IO-Link

**Type designation** RU100U-EMT18M-AP8X2-H1151  
**Ident-No.** 100004304

**Function** Ultrasonic diffuse mode sensor

Range	150...1000 mm
Resolution	1 mm
minimum measuring range	100 mm
minimum switching range	5 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

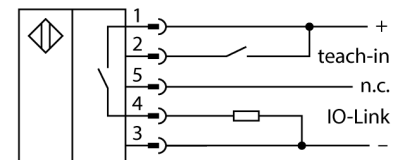
**Operating voltage** 15...30 VDC

Residual ripple	10 % $U_n$
DC rated operational current	≤ 150 mA
No-load current $I_0$	≤ 50 mA
Load resistance	≤ 1000 $\Omega$
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
Hysteresis	≤ 5 mm
Voltage drop at $I_L$	≤ 2.5 V
Short-circuit protection	yes/ Cyclic
Reverse polarity protection	yes
Wire breakage 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



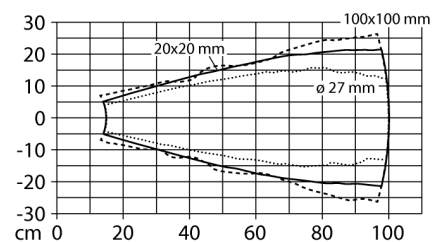
### Functional principle

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 Diffuse Mode Sensor RU100U-EMT18M-AP8X2-H1151

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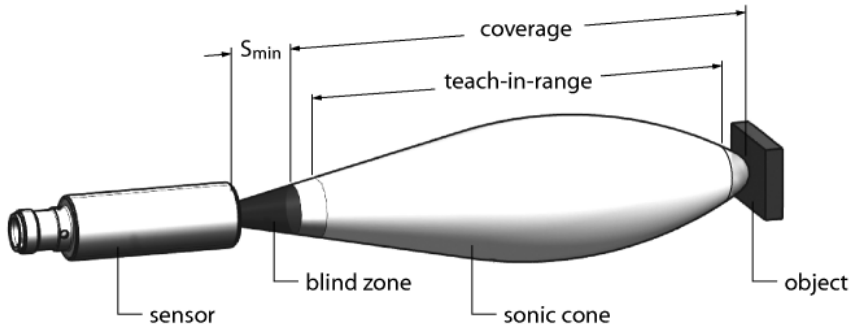
<b>Design</b>	Threaded barrel, M18
Radiation direction	straight
Dimensions	63 x Ø 18 mm
Housing material	Stainless steel, V4A 1.4404 (AISI 316L), PTFE-coated
Transducer material	Plastic, Epoxy resin and PU foam with PTFE coating
Electrical connection	Connector, M12 × 1, 5-wire
Protection class	IP67
Ambient temperature	-5...+50 °C
Storage temperature	-40...+50 °C
Declaration of conformity EN ISO/IEC	EN 60947-5-2
Vibration resistance	IEC 60068-2
MTTF	202 years
MTTF note	acc. to SN 29500 (Ed. 99) 40 °C

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<b>Switching state</b>	LED, Yellow
Object detected	LED, Green

**Ultrasonic Sensor  
Diffuse Mode Sensor  
RU100U-EMT18M-AP8X2-H1151**

**Mounting instructions/Description**



**Setting the switchpoint**

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

One switchpoint is taught. This must be within the sensing range. In this operating mode the background is suppressed.

**Teach**

- Connect the teach adapter TX1-Q20L60 between 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 for 8 - 11 sec against Ub

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

**LED response**

In standard operating mode both LEDs signal the switching state of the sensor.

- green: Object within detection range but not in switching range
- yellow: object is in the switching range
- off: Object outside the detection range or signal loss

