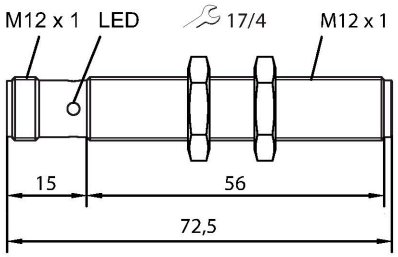
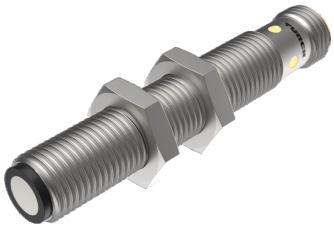
RU20U-M12-LU8X2-H1141
Ultrasonic Sensor – Diffuse Mode Sensor





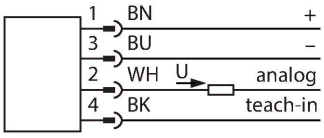
Technical data

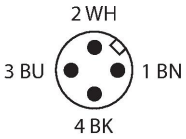
Type	RU20U-M12-LU8X2-H1141
ID	100000282
Ultrasonic data	
Function	Proximity switch
Range	25…200 mm
Resolution	0.5 mm
Minimum measuring range	30 mm
Ultrasound frequency	400 kHz
Repeat accuracy	≤ 0.15 % of full scale
Linearity error	≤ ± 0.5 %
Edge lengths of the nominal actuator	10 mm
Approach speed	≤ 3 m/s
Pass speed	≤ 1.1 m/s
Electrical data	
Operating voltage U_B	15…30 VDC
Residual ripple	10 % U_{ss}
No-load current	≤ 50 mA
Response time typical	< 50 ms
Readiness delay	≤ 300 ms
Output function	Analog output
Voltage output	0…10 V
Load resistance voltage output	≥ 1 kΩ
Short-circuit protection	yes
Reverse polarity protection	yes
Wire breakage protection	yes
Setting option	Remote Teach

Features

- Smooth sonic transducer face
- Cylindrical housing M12, potted
- Connection via M12 × 1 male connector
- Teach range adjustable via connection cable
- Blind zone: 2.5 cm
- Range: 20 cm
- Resolution: 0.5 mm
- Aperture angle of sonic cone: ±9 °
- Analog output 0…10 V

Wiring diagram





Functional principle

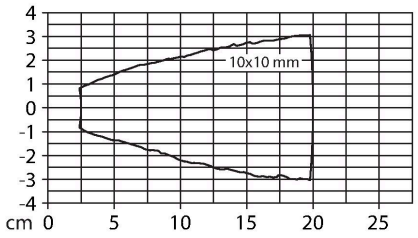
Ultrasonic sensors capture a multitude of objects contactlessly and wear-free with ultrasonic waves. It does not matter whether the object is transparent or opaque, metallic or non-metallic, firm, liquid or powdery. Even environmental conditions such as spray, dust or rain hardly affect their function.
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

Technical data

Mechanical data	
Design	Threaded barrel, M12
Radiation direction	straight
Dimensions	Ø 12 x 72.5 mm
Housing material	Metal, CuZn, Chrome-plated
Max. tightening torque of housing nut	20 Nm
Transducer material	Plastic, Epoxyd resin and PU foam
Electrical connection	Connector, M12 × 1, 4-wire
Ambient temperature	-10…+60 °C
Storage temperature	-40…+80 °C
Pressure resistance	0.5…5 bar
Protection class	IP67
Object detected	LED, Green
Tests/approvals	
MTTF	304 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 cULus

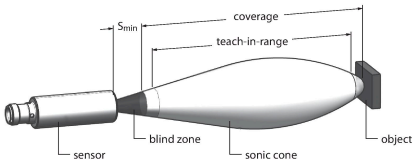
mm) and a round rod with a diameter of 27 mm are used.
Important: The detection ranges for other targets may differ from those for standard targets due to the different reflection properties and geometries.

Sonic Cone



Mounting instructions

Mounting instructions/Description



Setting the limit values
The ultrasonic sensor has an analog output with a teachable measuring range. The green and yellow LEDs indicate whether the sensor has detected the object.

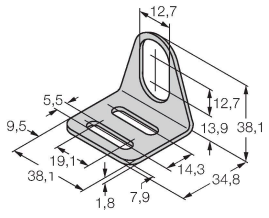
Teach
• Position object for remote limit value
• Short-circuit pin 4 (BK) against Ub for 2–7 seconds
• Position object for close limit value
• Short-circuit pin 4 (BK) against Ub for 8–11 seconds
Optional: Short-circuit pin 4 (BK) against Ub for 12–17 seconds to invert the analog output (no object required)
• Return to normal operating mode after 17 s or more.

LED response
Successful teach-in is displayed with a fast flashing LED. The sensor then automatically runs in normal operating mode. Unsuccessful teach-in 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 is outside the detection range or signal loss

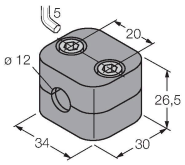
Accessories

MW12	6945003



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

BSS-12	6901321



Mounting clamp for smooth and threaded barrel sensors; material: Polypropylene

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