RU130U-M30E-2UP8X2T-H1151
Ultrasonic Sensor – Diffuse Mode Sensor
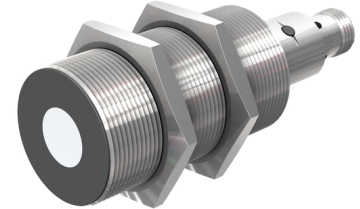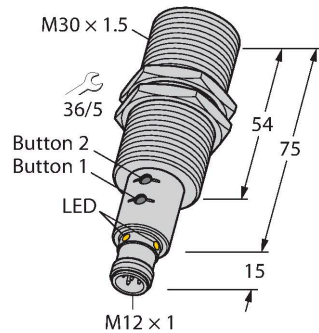

Technical data

Type	RU130U-M30E-2UP8X2T-H1151
ID	1610038
Ultrasonic data	
Function	Proximity switch
Range	150…1300 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	≤ 10 m/s
Pass speed	≤ 2 m/s
Electrical data	
Operating voltage U_B	15…30 VDC
Residual ripple	10 % U_{ss}
DC rated operating current I_e	≤ 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
Output function	NO/NC, PNP
Output 1	Switching output
Output 2	Switching output
Switching frequency	≤ 6.9 Hz

Features

- Smooth sonic transducer face
- Cylindrical housing M30, potted
- Connection via M12 x 1 male
- Measuring range adjustable via teach button/Easy-Teach
- Temperature compensation
- Blind zone: 15 cm
- Range: 130 cm
- Resolution: 1 mm
- Aperture angle of sonic cone: ±16 °
- 2 x switching outputs, PNP
- NO/NC programmable

Wiring diagram
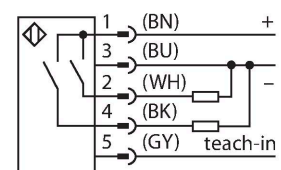
Functional principle

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

Hysteresis	≤ 10 mm
Voltage drop at I_e	≤ 2.5 V
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	Ø 30 x 89 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 × 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	246 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/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

Sonic Cone
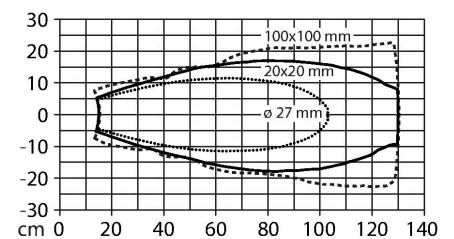
Mounting instructions

Mounting instructions/Description
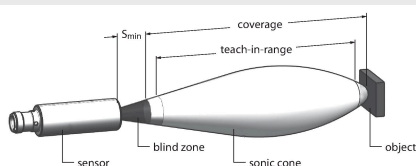
Setting the limit values
The ultrasonic sensor features two switching outputs with teachable switching ranges. The adjustments can either be made via the Easy-Teach adaptor or via the buttons (please note, only the RU…U-M…E-2UP8X2T-H1151 types have buttons). The green and yellow LEDs indicate whether the sensor has detected the object.

Various functions can be taught, such as single switchpoint, window mode or reflection mode to a fixed target. Further information is described in the operating instructions. How

Select Teach Out1	GND/T1 > 2 s	LED 1x slow 1 Hz Start teaching Out1			LED GN YE		
Select Teach Out2	GND/T1 > 8 s	LED 2x slow 1 Hz Start teaching Out2			flashes alternating		

GND/T1 > 2 s	LED 1x slow 1 Hz Switching point: measure and save	OK		5 Hz
		Fail		1.5 s
GND/T1 > 8 s	LED 2x slow 1 Hz Window function: measure and save SP1 Start choice window / hysteresis	Fail		5 Hz 1.5 s

GND/T1 > 2 s	LED 1x slow 2 Hz Window function: measure and save SP2	OK		5 Hz
		Fail		1.5 s
GND/T1 > 8 s	LED 1x fast 8 Hz Select: window / hysteresis	Window		5 Hz
		Hysteresis		1.5 s
		Fail		
UB / T2 > 2 s	LED 1x fast 8 Hz Cancel	Canceled		5 Hz 1.5 s
GND/T1 > 14 s	LED 3x slow 1 Hz Invert logic	NC		5 Hz
		NO		1.5 s
UB / T2 > 2 s	LED 1x fast 8 Hz Cancel	Canceled		5 Hz 1.5 s

Retro-reflective sensor	UB / T2 > 20 s	LED 1x slow 1 Hz Out2: inverted Out1	OK	5 Hz
			Fail	1.5 s
Start factory reset	GND/T1 > 14 s	LEDs slow 2 Hz Start factory reset		

GND/T1 > 2 s	LED 1x fast 8 Hz Reset OK	Reset		5 Hz 1.5 s
UB / T2 > 2 s	LED 1x fast 8 Hz Cancel	Canceled		5 Hz 1.5 s

to set the window mode by teaching two limits is described below. These two limits form the switching window and can be selected freely within the detection range.
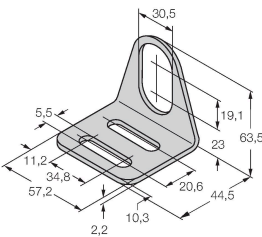
Easy-Teach
• Connect teach adaptor TX1-Q20L60 between the sensor and connection cable.
• Position the object for the first limit value.
• Press and hold the button against Gnd for 2 or 8 s to select output 1 or 2.
• Press and hold the button against Gnd for 8 s to teach the first limit value.
• Position the object for the second limit value.
• Press and hold the button against Gnd for 2 s.

Teach button (please note, only the RU…U-M…E-2UP8X2T-H1151 types have buttons).
• Position the object for the first limit value.
• Press and hold button 1 against Gnd for 2 or 8 s to select output 1 or 2.
• Press and hold button 1 for at least 8 seconds.
• Position the object for the second limit value.
• Press and hold button 1 for 2 seconds.

After a successful teach-in, the sensor automatically runs in normal operating mode. Unsuccessful teach-in is signaled by the LED flashing slowly at a frequency of 5 Hz.

LED response
Successful teach-in is indicated by a fast flashing green 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 operating mode, both LEDs signal the switching state of output 1.
• Green: Object within the detection range but not in switching range
• Yellow: Object within the switching range
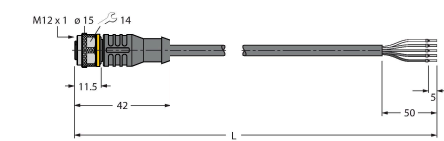• Off: Object outside the detection range

Accessories

MW30	6945005

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

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