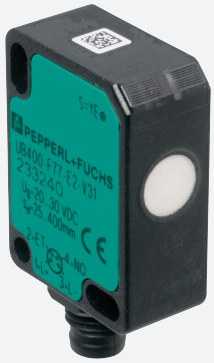


Reflex ultrasonic sensor

UBR250-F77-E0-V31

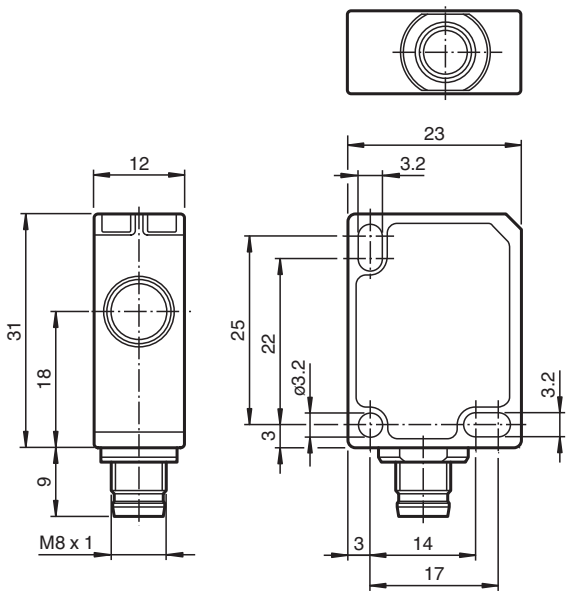
- Miniature design
- Program input
- Degree of protection IP67
- Switching status indicator, yellow LED

Reflex ultrasonic sensor

Function

The ultrasonic sensor works like a retroreflective sensor. It transmits ultrasonic packages in quick succession and responds to their reflection off a reference object at a defined distance.
The distance T to the reference object can be taught in. The sensor has a switching output. The output switches when the sensor either no longer receives the echo from its reflector or no longer receives it as the first echo.

Dimensions



Technical Data

General specifications		
Sensing range		0 ... 250 mm
Adjustment range		53 ... 250 mm
Standard target plate		20 mm x 20 mm
Transducer frequency		approx. 400 kHz

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Technical Data

Response delay		≤ 50 ms
Limit data		
Permissible cable length		max. 300 m
Indicators/operating means		
LED yellow		switching state and flashing: Teach-In
Electrical specifications		
Rated operating voltage	U_e	24 V DC
Operating voltage	U_B	20 ... 30 V DC , ripple 10 $\%_{SS}$; 12 ... 20 V DC sensitivity reduced to 90 %
No-load supply current	I_0	≤ 20 mA
Time delay before availability	t_v	≤ 150 ms
Input		
Input type		1 program input
Level		low level : 0 ... 0.7 V (Teach-In active) high level : U_B or open input (Teach-In inactive)
Input impedance		16 kΩ
Pulse length		≥ 3 s
Output		
Output type		1 switch output E0, NPN, NO
Rated operating current	I_e	200 mA , short-circuit/overload protected
Voltage drop	U_d	≤ 2 V
Switching frequency	f	10 Hz
Off-state current	I_r	≤ 0.01 mA
Temperature influence		0.17 %/K
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		-25 ... 70 °C (-13 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Shock resistance		30 g , 11 ms period
Vibration resistance		10 ... 55 Hz , Amplitude ± 1 mm
Mechanical specifications		
Connection type		M8 x 1 connector , 4-pin
Degree of protection		IP67
Material		
Housing		Polycarbonate
Transducer		epoxy resin/hollow glass sphere mixture; polyurethane foam
Installation position		any position
Mass		10 g
Tightening torque, fastening screws		max. 0.2 Nm
Factory settings		
Output		reflector distance 250 mm

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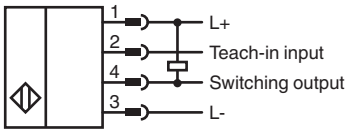
Connection



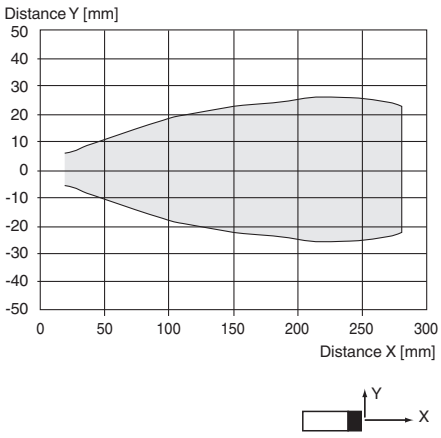
Connection Assignment

Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

Characteristic Curve

Characteristic response curve



Commissioning

Adjustement Possibilities
The sensor is equipped with a switching output and operates exclusively in retro-reflective mode. A fixed machine part (plate, conveyor belt....). a wall or the floor is used as a reference object (reflector) and taught-in via the teach-in input of the sensor.
The output of the sensor switches when the sensor either no longer receives the echo from its reflector or no longer receives it as the first echo:

- The first case occurs when there is a sufficiently large, angled or highly sound-absorbing object between the sensor and the reflector.
- The second case occurs when there is an object between the sensor and the reflector that reflects an echo to the sensor. In this case, the object may also be smaller than the reflector.

When teaching-in the reflector distance, the sensor automatically generates a switching window in the range of the taught-in reflector distance +/- 5%. The distance of the reference object (reflector) must not change during operation. Any modifications to the reference object distance require a new teach-in.

Further Documentation
For information on programming via teach-in input you may refer to the commissioning instruction.

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Accessories

	**OMH-ML7-01**	Mounting aid for ML7 and ML8 series, Mounting bracket
	**V31-GM-2M-PVC**	Female cordset single-ended M8 straight A-coded, 4-pin, PVC cable grey
	**V31-WM-2M-PVC**	Female cordset single-ended M8 angled A-coded, 4-pin, PVC cable grey
	**UB-PROG4-V31**	Programming unit for ultrasonic sensors with Teach-in input at pin 2

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