



## Reflex ultrasonic sensor UBR250-F77-E2-V31

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

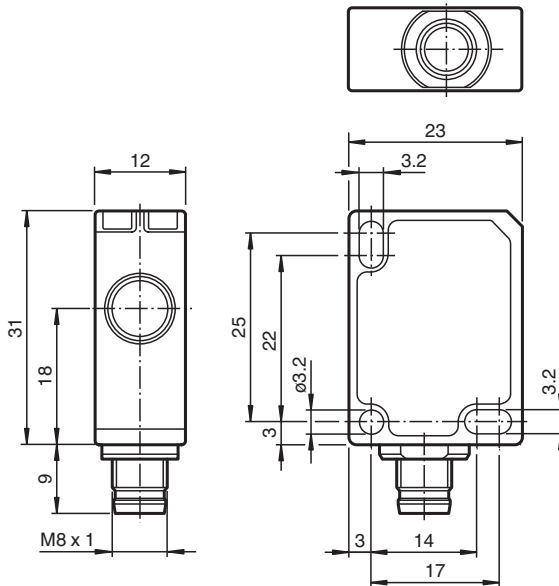
Reflex ultrasonic sensor



### 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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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group  
www.pepperl-fuchs.com

USA: +1 330 486 0001  
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111  
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091  
fa-info@sg.pepperl-fuchs.com

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## Technical Data

Response delay	≤ 50 ms	
<b>Limit data</b>		
Permissible cable length	max. 300 m	
<b>Indicators/operating means</b>		
LED yellow	switching state and flashing: Teach-In	
<b>Electrical specifications</b>		
Rated operating voltage	$U_e$	24 V DC
Operating voltage	$U_B$	20 ... 30 V DC , ripple 10 % <sub>SS</sub> ; 12 ... 20 V DC sensitivity reduced to 90 %
No-load supply current	$I_0$	≤ 20 mA
Time delay before availability	$t_v$	≤ 150 ms
<b>Input</b>		
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	
<b>Output</b>		
Output type	1 switch output PNP, 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	
<b>Compliance with standards and directives</b>		
Standard conformity		
Standards	EN IEC 60947-5-2:2020 IEC 60947-5-2:2019	
<b>Approvals and certificates</b>		
UL approval	cULus Listed, Class 2 Power Source	
CCC approval	CCC approval / marking not required for products rated ≤36 V	
<b>Ambient conditions</b>		
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	
<b>Mechanical specifications</b>		
Connection type	M8 x 1 connector , 4-pin	
Degree of protection	IP67	
<b>Material</b>		
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	
<b>Factory settings</b>		
Output	reflector distance 250 mm	

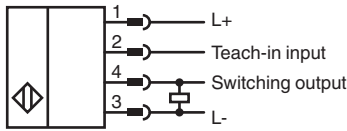
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## Connection



## Connection Assignment

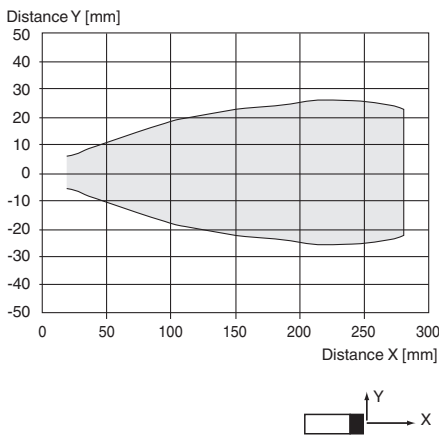


Wire colors in accordance with EN 60947-5-2

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

## Characteristic Curve

### Characteristic response curve



## Commissioning

### Adjustment 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**

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

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