

Ultrasonic sensor

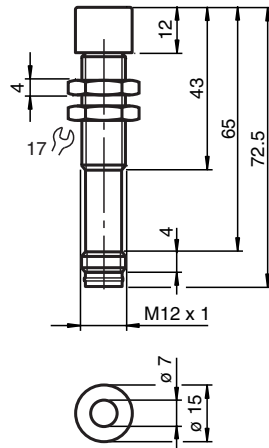
UBC250-12GM-E5-V1



- High chemical resistance through PTFE coated transducer surface
- Stainless Steel enclosure
- 1 switch output
- Temperature compensation
- Programmable output functions
- Program input



Dimensions



Technical Data

General specifications

Sensing range	30 ... 250 mm
Adjustment range	50 ... 250 mm
Dead band	0 ... 30 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 310 kHz
Response delay	approx. 50 ms

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC , ripple 10 % _{SS}
No-load supply current	I_0	≤ 30 mA

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

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PEPPERL+FUCHS

Technical Data

Input

Input type	1 program input lower evaluation limit A1: $-U_B \dots +1 \text{ V}$, upper evaluation limit A2: $+4 \text{ V} \dots +U_B$ input impedance: $> 4.7 \text{ k}\Omega$, pulse duration: $\geq 1 \text{ s}$	
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Output

Output type	1 switch output PNP Normally open/closed , programmable	
Rated operating current	I_e	100 mA , short-circuit/overload protected
Default setting	Switch point A1: 50 mm Switch point A2: 250 mm	
Voltage drop	U_d	$\leq 3 \text{ V}$
Repeat accuracy	$\leq 1 \text{ } \%$	
Switching frequency	f	$\leq 8 \text{ Hz}$
Range hysteresis	H	1 % of the set operating distance
Temperature influence	$\pm 1.5 \text{ } \%$ of full-scale value	

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 $\leq 36 \text{ V}$	

Ambient conditions

Ambient temperature	$-25 \dots 70 \text{ } ^\circ\text{C}$ ($-13 \dots 158 \text{ } ^\circ\text{F}$)	
Storage temperature	$-40 \dots 85 \text{ } ^\circ\text{C}$ ($-40 \dots 185 \text{ } ^\circ\text{F}$)	

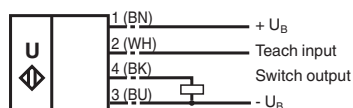
Mechanical specifications

Connection type	Connector plug M12 x 1 , 4-pin	
Housing diameter	12 mm	
Degree of protection	IP68 / IP69K	
Material		
Housing	Stainless steel 1.4404 / AISI 316L O-ring for cover seal: Viton	
Transducer	PTFE (diaphragm surface)	
Mass	35 g	

Connection

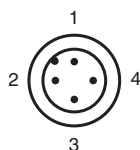
Standard symbol/Connections:

(version E5, pnp)



Core colours in accordance with EN 60947-5-2.

Connection Assignment



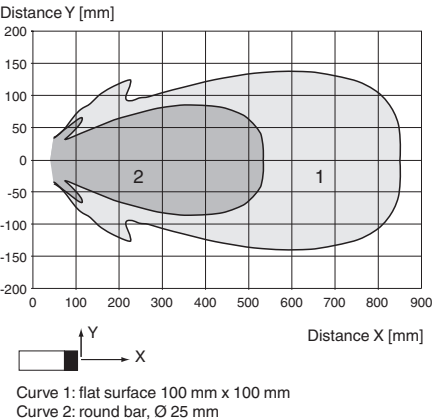
Connection Assignment

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






Programmable output modes

- 1. Window mode, normally open mode
 $A1 < A2$: [Diagram showing a pulse from A1 to A2]
- 2. Window mode, normally closed mode
 $A2 < A1$: [Diagram showing a pulse from A2 to A1]
- 3. One switch point, normally open mode
 $A1 \rightarrow \infty$: [Diagram showing a pulse from A2]
- 4. One switch point, normally closed mode
 $A2 \rightarrow \infty$: [Diagram showing a pulse from A1]
- 5. $A1 \rightarrow \infty, A2 \rightarrow \infty$: Object presence detection mode
Object detected: Switch output closed
No object detected: Switch output open

Accessories

	UB-PROG2	Programming unit
	BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
	BF 12	Mounting flange, 12 mm
	V1-G-2M-PVC	Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey

Accessories

	V1-W-2M-PUR	Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey
	UVW90-M12	Ultrasonic -deflector
	M12K-VE	Plastic nuts with centering ring for the vibration-free mounting of cylindrical sensors

Additional Information

Adjusting the switching points

The ultrasonic sensor features a switch output with two teachable switching points. These are set by applying the supply voltage $-U_B$ or $+U_B$ to the TEACH-IN input. The supply voltage must be applied to the TEACH-IN input for at least 1 s. Switching point A1 is taught with $-U_B$, A2 with $+U_B$.

Five different output functions can be set

1. Window mode, normally-open function
2. Window mode, normally-closed function
3. one switching point, normally-open function
4. one switching point, normally-closed function
5. Detection of object presence

TEACH-IN window mode, normally-open function

- Set target to near switching point
- TEACH-IN switching point A1 with $-U_B$
- Set target to far switching point
- TEACH-IN switching point A2 with $+U_B$

TEACH-IN window mode, normally-closed function

- Set target to near switching point
- TEACH-IN switching point A2 with $+U_B$
- Set target to far switching point
- TEACH-IN switching point A1 with $-U_B$

TEACH-IN switching point, normally-open function

- Set target to near switching point
- TEACH-IN switching point A2 with $+U_B$
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with $-U_B$

TEACH-IN switching point, normally-closed function

- Set target to near switching point
- TEACH-IN switching point A1 with $-U_B$
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A2 with $+U_B$

TEACH-IN detection of objects presence

- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with $-U_B$
- TEACH-IN switching point A2 with $+U_B$

Default setting of switching points

A1 = blind range, A2 = nominal distance

Additional Information

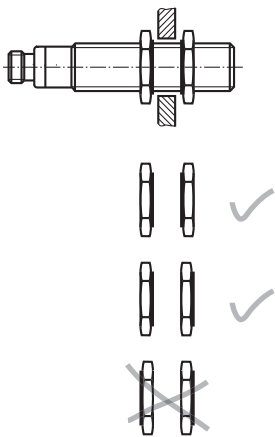
If the sensor is installed at places, where the environment temperature can fall below 0 °C, for the sensors fixation, one of the mounting flanges BF 12, BF 12-F or BF 5-30 must be used. In case of direct mounting of the sensor in a through hole, it has to be fixed at the middle of the housing thread.

Installation Conditions

Note

If the sensor is used in an environment with strong electromagnetic interference, we recommend non-conductive mounting. For this, use the accompanying plastic nuts or the BF12 or BF12-F mounting flange.

Please observe proper application when using the accompanying plastic nuts. The hole for the sensor must be ≥ 14 mm.



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