

Ultrasonic sensor

UBC250-12GM-I-V1

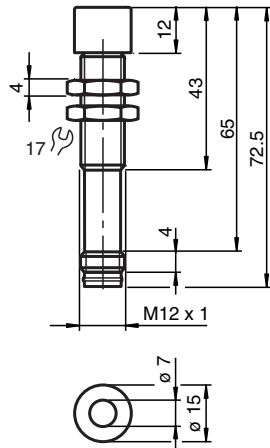


- High chemical resistance through PTFE coated transducer surface
- Stainless Steel enclosure
- Analog output 4 mA ... 20 mA
- Temperature compensation
- Measuring window adjustable
- Program input

Single head system



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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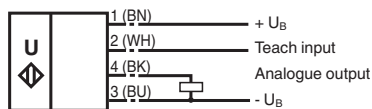
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Technical Data

| 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: $\geq 1 \text{ s}$ |
| Output | |
| Output type | 1 analog output 4 ... 20 mA |
| Resolution | 0.17 mm |
| Deviation of the characteristic curve | $\pm 1 \%$ of full-scale value |
| Repeat accuracy | $\pm 0.5 \%$ of full-scale value |
| Load impedance | 0 ... 300 Ω at $U_B > 10 \text{ V}$; 0 ... 500 Ω at $U_B > 15 \text{ V}$ |
| Temperature influence | $\pm 1.5 \%$ of full-scale value |
| Compliance with standards and directives | |
| Standard conformity | |
| Standards | EN IEC 60947-5-2:2020 IEC 60947-5-2:2019 EN 60947-5-7:2003 IEC 60947-5-7:2003 |
| 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 |
| Factory settings | |
| Output | evaluation limit A1: 50 mm evaluation limit A2: 250 mm output function: rising ramp |

Connection

Standard symbol/Connections: (version I)



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

Connection Assignment

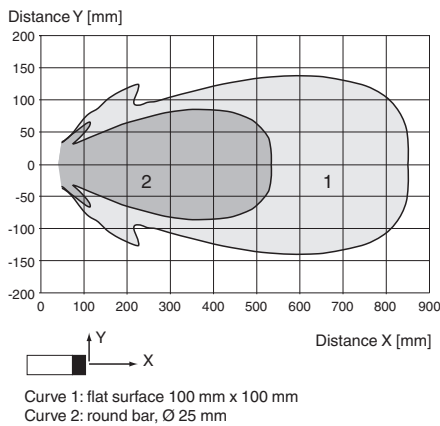


Wire colors in accordance with EN 60947-5-2

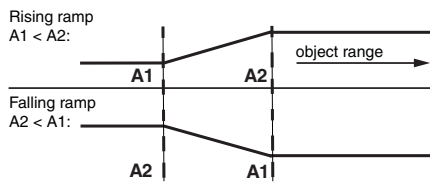
| | | |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue) |
| 4 | BK | (black) |

Characteristic Curve

Characteristic response curve



Programming the analog output mode








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Accessories

| | | |
|--|-----------------|---|
| | UB-PROG2 | Programming unit |
| | BF 5-30 | Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm |

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

Accessories

| | | |
|---|--------------------|---|
|  | BF 12 | Mounting flange, 12 mm |
|  | V1-G-2M-PVC | Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey |
|  | 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 |

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Teach-In

Adjusting the evaluation limits

The ultrasonic sensor features an analogue output with two teachable evaluation limits. 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. The evaluation limit A1 is taught with $-U_B$, A2 with $+U_B$.

Two different output functions can be set:

1. Analogue value increases with rising distance to object (rising ramp)
2. Analogue value falls with rising distance to object (falling ramp)

TEACH-IN rising ramp (A2 > A1)

- Position object at lower evaluation limit
- TEACH-IN lower limit A1 with $-U_B$
- Position object at upper evaluation limit
- TEACH-IN upper limit A2 with $+U_B$

TEACH-IN falling ramp (A1 > A2):

- Position object at lower evaluation limit
- TEACH-IN lower limit A2 with $+U_B$
- Position object at upper evaluation limit
- TEACH-IN upper limit A1 with $-U_B$

Installation Conditions

Installation conditions

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 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 mounting flange.

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

