



## Ultrasonic sensor, receiver

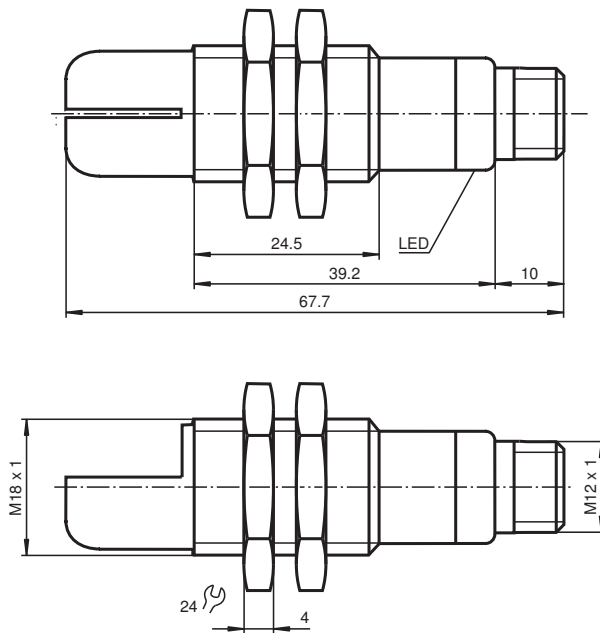
UBE500-18GM40A-E2-V1-Y220366

- Short design, 40 mm
- Function indicators visible from all directions
- Switch output
- Program input
- Stainless steel housing

Single head system



### Dimensions



### Technical Data

#### General specifications

|                       |                 |
|-----------------------|-----------------|
| Sensing range         | 100 ... 500 mm  |
| Standard target plate | 100 mm x 100 mm |
| Transducer frequency  | approx. 390 kHz |

#### Indicators/operating means

|            |                         |
|------------|-------------------------|
| LED green  | Power on                |
| LED yellow | switching state         |
| LED red    | error, object uncertain |

#### Electrical specifications

|                   |       |  |
|-------------------|-------|--|
| Operating voltage | $U_B$ | 10 ... 30 V DC , ripple 10 % <sub>SS</sub> |
|-------------------|-------|--|

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

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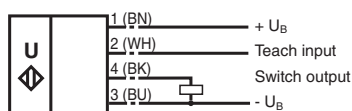
**PF** PEPPERL+FUCHS

## Technical Data

|   |          |  |
|---|----------|--|
| No-load supply current                          | $I_0$    | $\leq 20 \text{ mA}$   |
| <b>Input</b>                                    |          |  |
| Input type                                      |          | 1 program input<br>operating distance 1: $-U_B \dots +1 \text{ V}$ , operating distance 2: $+6 \text{ V} \dots +U_B$<br>input impedance: $> 4,7 \text{ k}\Omega$ program pulse: $\geq 1 \text{ s}$ |
| <b>Output</b>                                   |          |  |
| Output type                                     |          | PNP, NO  |
| Rated operating current                         | $I_e$    | 200 mA , short-circuit/overload protected  |
| Voltage drop                                    | $U_d$    | $\leq 3 \text{ V}$   |
| Switch-on delay                                 | $t_{on}$ | $< 5 \text{ ms}$   |
| Switching frequency                             | $f$      | $\leq 100 \text{ Hz}$  |
| <b>Compliance with standards and directives</b> |          |  |
| Standard conformity                             |          |  |
| Standards                                       |          | EN 60947-5-2:2007+A1:2012<br>IEC 60947-5-2:2007 + A1:2012  |
| <b>Approvals and certificates</b>               |          |  |
| UL approval                                     |          | cULus Listed, General Purpose  |
| CSA approval                                    |          | cCSAus Listed, General Purpose   |
| CCC approval                                    |          | CCC approval / marking not required for products rated $\leq 36 \text{ V}$   |
| <b>Ambient conditions</b>                       |          |  |
| Ambient temperature                             |          | $-25 \dots 70 \text{ }^\circ\text{C}$ ( $-13 \dots 158 \text{ }^\circ\text{F}$ )   |
| Storage temperature                             |          | $-40 \dots 85 \text{ }^\circ\text{C}$ ( $-40 \dots 185 \text{ }^\circ\text{F}$ )   |
| <b>Mechanical specifications</b>                |          |  |
| Connection type                                 |          | Connector M12 x 1 , 4-pin  |
| Degree of protection                            |          | IP67   |
| Material  |          |  |
| Housing   |          | stainless steel V4A  |
| Transducer                                      |          | epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT  |
| Mass  |          | 25 g   |

## Connection

**Standard symbol/Connections:**  
(Receiver, version E5, pnp)



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

## Connection Assignment

### Connector V1



## Accessories

|  |                 |                                  |
|--|-----------------|----------------------------------|
|  | <b>UB-PROG2</b> | Programming unit                 |
|  | <b>CPZ18B03</b> | Mounting Bracket with swivel nut |

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





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**Accessories**

|   |                    |   |
|---|--------------------|---|
|  | <b>OMH-04</b>      | Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm                           |
|  | <b>BF 18</b>       | Mounting flange, 18 mm  |
|  | <b>BF 18-F</b>     | Plastic mounting adapter, 18 mm   |
|  | <b>BF 5-30</b>     | Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm       |
|  | <b>V1-G-2M-PVC</b> | Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey                 |
|  | <b>V1-W-2M-PUR</b> | Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey                   |
|  | <b>UVW90-K18</b>   | Ultrasonic -deflector   |
|  | <b>M18K-VE</b>     | Plastic nuts with centering ring for the vibration-free mounting of cylindrical sensors |

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**Additional Information**

**Function**

A through-beam ultrasonic barrier always consists of a single emitter and a single receiver. The function of a through-beam ultrasonic barrier is based in the interruption of the sound transmission to the receiver by the object to be detected. The emitter sends an ultrasonic signal that is evaluated by the receiver. If the signal is interrupted or muted by the object to be detected, the receiver switches. No electrical connections are required between the emitter and receiver. The function of through-beam ultrasonic barriers is not dependent on the position of their installation. We recommend, however, to install the emitter below in the case of vertical installations to prevent the accumulation of dust particles.

**Startup and parameterising**

For easy alignment of emitter and receiver towards each other, the receiver is equipped with an alignment aid. To activate the alignment aid, the TEACH-Input of the receiver (pin 2) has to be connected to ground (-U<sub>B</sub>). The flashing frequency of the yellow LED indicates the strength of the received ultrasonic signal. The better the alignment, the stronger the signal.

| LED yellow, flashing frequency | Description   |
|--------------------------------|---------------|
| slowly (appr. 1.5 Hz)          | no signal     |
| medium (appr. 3 Hz)            | weak signal   |
| fast (appr. 9 Hz)              | strong signal |

Simultaneously the ultrasonic barrier evaluates the signal strength of the unobstructed signal path and generates the optimal switching threshold. When disconnecting the TEACH-input from -U<sub>B</sub>, this threshold is stored non-volatile in the receivers memory. In case of clear ultrasonic path (no object), all LEDs are off.

**TEACH-In of very small objects/obstacles**

Like shown in the curve "obstacle size", the ultrasonic barrier offers the possibility to detect very small objects at a distance of more than 300 mm.

- place the object to be detected in the desired distance inside the ultrasonic path
- connect TEACH-input of the receiver to +U<sub>B</sub> (yellow LED flashes slowly)
- disconnect TEACH-input

In case of successful TEACH-IN (object is detected reliable), the yellow LED is on and the taught detection threshold is stored non-volatile to the receivers memory.

In case of unsuccessful TEACH-IN (object too small or too porous for ultrasonic sound),the red LED flashes 5 times and the ultrasonic barrier continues normal operation with unmodified detection threshold value.

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