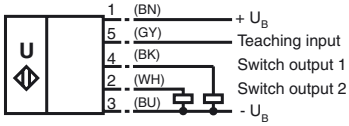
## Ultrasonic sensor
# UB500-18GM75-E6-V15

## Features

- 2 switch outputs
- 3 different output functions can be set
- TEACH-IN input
- Temperature compensation
- Very small unusable area

## Electrical connection

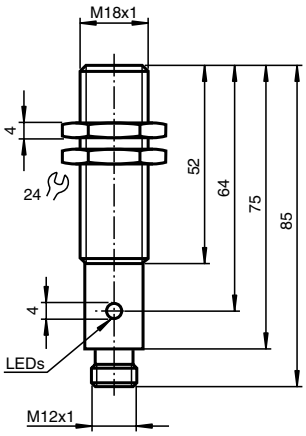
**Standard symbol/Connections:**
(version E6, pnp)

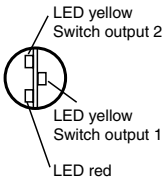



Core colours in accordance with EN 60947-5-2.

## Connector V15


## Dimensions




## Technical data

CE

| | |
|---|---|
| **General specifications** | |
| Sensing range | 30 ... 500 mm |
| Adjustment range | 50 ... 500 mm |
| Unusable area | 0 ... 30 mm |
| Standard target plate | 100 mm x 100 mm |
| Transducer frequency | approx. 380 kHz |
| Response delay | approx. 50 ms |
| **Indicators/operating means** | |
| LED yellow | indication of the switching state<br>flashing: TEACH-IN function object detected |
| LED red | "Error", object uncertain<br>in TEACH-IN function: No object detected |
| **Electrical specifications** | |
| Operating voltage | 10 ... 30 V DC , ripple 10 $\%_{SS}$ |
| No-load supply current $I_0$ | ≤ 50 mA |
| **Input** | |
| Input type | 1 TEACH-IN input,<br>operating range 1: -$U_B$ ... +1 V, operating range 2: +4 V ... +$U_B$<br>input impedance: > 4.7 kΩ; TEACH-IN pulse: ≥ 1 s |
| **Output** | |
| Output type | 2 switch outputs pnp, NO/NC, parameterisable |
| Repeat accuracy | ≤ 1 % |
| Rated operational current $I_e$ | 2 x 100 mA , short-circuit/overload protected |
| Voltage drop $U_d$ | ≤ 3 V |
| Switching frequency f | max. 10 Hz |
| Range hysteresis H | 1 % of the set operating distance |
| Temperature influence | ± 1,5 % of full-scale value |
| **Standard conformity** | |
| Standards | EN 60947-5-2 |
| **Ambient conditions** | |
| Ambient temperature | -25 ... 70 °C (248 ... 343 K) |
| Storage temperature | -40 ... 85 °C (233 ... 358 K) |
| **Mechanical specifications** | |
| Protection degree | IP65 |
| Connection | connector V15 (M12 x 1), 5 pin |
| Material | |
| Housing | brass, nickel-plated |
| Transducer | epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT |
| Mass | 60 g |

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## Notes

### Adjusting the switching points

The ultrasonic sensor features two switch outputs with one teachable switching point. The switching points 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. LEDs indicate whether the sensor has recognised the target during the TEACH-IN procedure. Switching point A1 is taught with $-U_B$, A2 with $+U_B$.

Three different output functions can be set:
1. normally-open function
2. normally-closed function
3. Detection of object presence

### TEACH-IN normally-open function

Switching point for switch output 1 < switching point for switch output 2
- Set target of desired switching point for switch output 1
- TEACH-IN switching point for switch output 1 with $-U_B$
- Set target of desired switching point for switch output 2
- TEACH-IN switching point for switch output 2 with $+U_B$

Comments: The order doesn't make any difference. If you want, you can set only one switching point.

### TEACH-IN normally-closed function

Switching point for switch output 2 < switching point for switch output 1
- Set target of desired switching point for switch output 1
- TEACH-IN switching point for switch output 1 with $-U_B$
- Set target of desired switching point for switch output 2
- TEACH-IN switching point for switch output 2 with $+U_B$

Comments: The order doesn't make any difference. If you want, you can set only one switching point. If both switching points are equal, the sensor works in close function.

### TEACH-IN detection of object presence

- Cover the sensor with the palm, or remove all objects from the detection range of the sensor
- TEACH-IN switching point for switch output 1 with $-U_B$
- TEACH-IN switching point for switch output 2 with $+U_B$

Comments
Only one switch output can be configured for detection of presence of objects. If the sensor detects an object within the maximum detection range, the switch output switches.

### Default setting of switching points

Switch output 1: unusable area
Switch output 2: nominal sensing range

### LED Displays

| Displays in dependence on operating mode | Red LED | LED 1 yellow | LED 2 yellow |
|---|---|---|---|
| **TEACH-IN switching point 1** | | | |
| Object detected | off | flashes | off |
| No object detected | flashes | off | off |
| Object uncertain (TEACH-IN invalid) | on | off | off |
| **TEACH-IN switching point 2:** | | | |
| Object detected | off | off | flashes |
| no object detected | flashes | off | off |
| Object uncertain (TEACH-IN invalid) | on | off | off |
| Normal operation | off | switch state 1 | switch state 2 |
| Fault | on | previous state | previous state |

### 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 BF18, BF18-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.

## Model number

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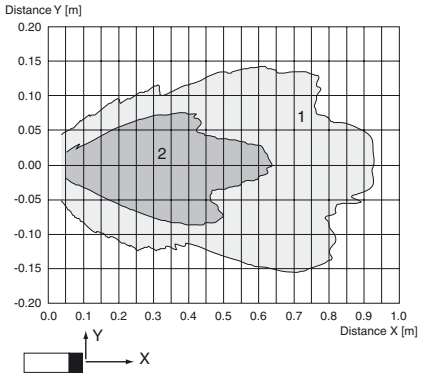
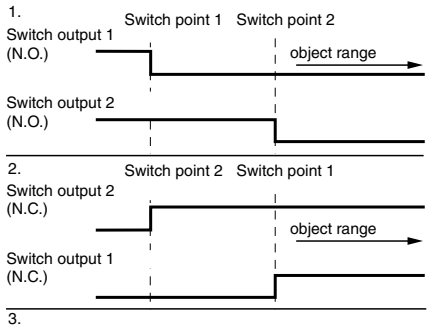
## Characteristic curves/additional information

### Characteristic response curve




Curve 1: flat surface 100 mm x 100 mm
Curve 2: round bar, Ø 25 mm

### Programmed switching output function




Switch point 1 -> ∞: Switch output 1, (N.C.) Detection of object presence
Switch point 2 -> ∞: Switch output 2, (N.O.) Detection of object presence
Switch point 1 a. 2 -> ∞: Both switch outputs, (N.O.) Detection of object presence

## Accessories

### Programming device

UB-PROG3

### Mounting aids/fixing flanges

OMH-04
BF 18
BF 18F
BF 5-30

### Sound deflector

UVW90-K18

### Cable sockets*)

V15-G-2M-PVC
V15-W-2M-PUR

*) For additional cable sockets see section „Accessories“.