

## Ultrasonic sensor UB500-18GM75-E7-V15

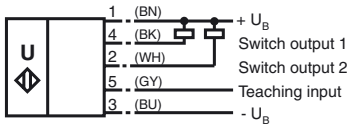


### Features

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

### Electrical connection

Standard symbol/Connections:  
(version E7, npn)

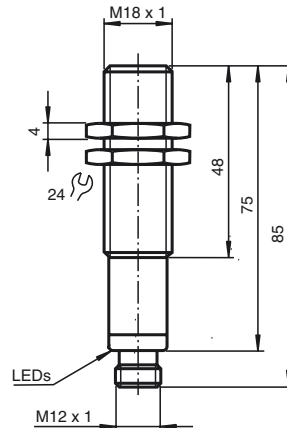


Core colours in accordance with EN 60947-5-2.

### Connector V15



## Dimensions



### Technical data



#### 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 flashing: TEACH-IN function object detected
LED red	"Error", object uncertain in TEACH-IN function: No object detected

#### Electrical specifications

Operating voltage	10 ... 30 V DC, ripple 10 % <sub>SS</sub>
No-load supply current I <sub>0</sub>	≤ 50 mA

#### Input

Input type	1 TEACH-IN input, operating range 1: -U <sub>B</sub> ... +1 V, operating range 2: +4 V ... +U <sub>B</sub> input impedance: > 4.7 kΩ; TEACH-IN pulse: ≥ 1 s
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#### Output

Output type	2 switch outputs npn, NO/NC, parameterisable
Repeat accuracy	≤ 1 %
Rated operational current I <sub>e</sub>	2 x 100 mA, short-circuit/overload protected
Voltage drop U <sub>d</sub>	≤ 3 V
Switching frequency f	max. 8 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
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#### 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

### 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
<b>TEACH-IN switching point 1</b>			
Object detected	off	flashes	off
No object detected	flashes	off	off
Object uncertain (TEACH-IN invalid)	on	off	off
<b>TEACH-IN switching point 2:</b>			
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

### Adjusting the sound cone characteristics:

The ultrasonic sensor enables two different shapes of the sound cone, a wide angle sound cone and a small angle sound cone.

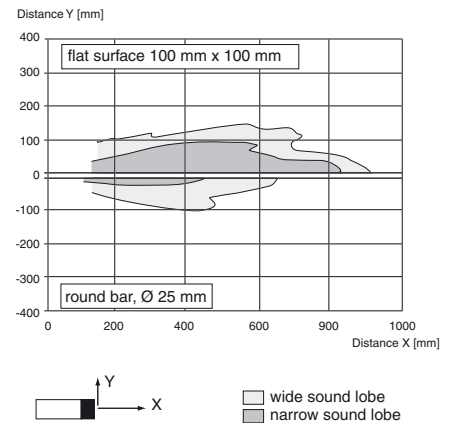
#### 1. Small angle sound cone

- switch off the power supply
- connect the Teach-input wire to  $-U_B$

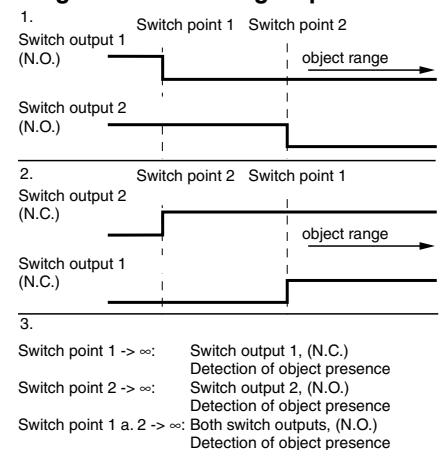
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### Characteristic curves/additional information

#### Characteristic response curve



#### Programmed switching output function



### Accessories

#### Programming device

UB-PROG3

#### Mounting aids/fixing flanges

OMH-04

BF 18

BF 18F

BF 5-30

#### Sound deflector

UVW90-K18

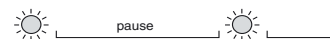
#### Cable sockets<sup>\*)</sup>

V15-G-2M-PVC

V15-W-2M-PUR

<sup>\*)</sup> For additional cable sockets see section „Accessories“.

- switch on the power supply
- the red LED flashes once with a pause before the next.
- yellow LED: permanently on: indicates the presence of an object or disturbing object within the sensing range
- disconnect the Teach-input wire from  $-U_B$  and the changing is saved



## 2. Wide angle sound cone

- switch off the power supply
- connect the Teach-input wire with  $+U_B$
- switch on the power supply
- the red LED double-flashes with a long pause before the next.
- yellow LED: permanently on: indicates an object or disturbing object within the sensing range
- disconnect the Teach-input wire from  $+U_B$  and the changing is saved



## 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 using the steel nuts, it has to be fixed at the middle of the housing thread. If a fixation at the front end of the threaded housing is required, plastic nuts with centering ring (accessories) must be used.