

**Model Number**

**UB500-18GM75-E23-V15**

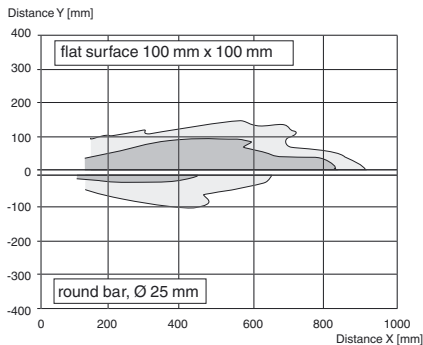
Single head system

**Features**

- 2 switch outputs
- Selectable sound lobe width
- Program input
- Temperature compensation
- Very small unusable area

**Diagrams**

**Characteristic response curve**



**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: program function object detected
LED red	"Error", object uncertain in program function: No object detected

**Electrical specifications**

Operating voltage $U_B$	10 ... 30 V DC , ripple 10 % <sub>SS</sub>
No-load supply current $I_0$	≤ 50 mA

**Input**

Input type	1 program input, operating range 1: $-U_B ... +1$ V, operating range 2: $+4$ V ... $+U_B$ input impedance: > 4.7 kΩ; program pulse: ≥ 1 s
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**Output**

Output type	2 switch outputs PNP, NO/NC
Rated operating current $I_e$	2 x 100 mA , short-circuit/overload protected
Voltage drop $U_d$	≤ 3 V
Repeat accuracy	≤ 1 %
Switching frequency f	max. 8 Hz
Range hysteresis H	1 % of the set operating distance
Temperature influence	± 1.5 % of full-scale value

**Ambient conditions**

Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)

**Mechanical specifications**

Connection type	Connector M12 x 1 , 5-pin
Degree of protection	IP67
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass	60 g

**Factory settings**

Output 1	Switching point: 50 mm output function: Switch point operation mode output behavior: NO contact
Output 2	Switching point: 500 mm output function: Switch point operation mode output behavior: NC contact
Beam width	wide

**Compliance with standards and directives**

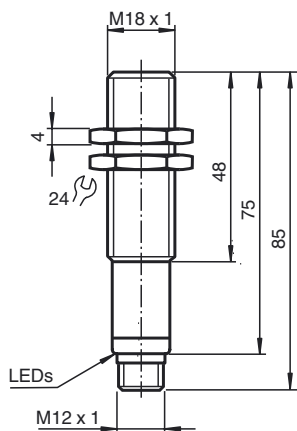
Standard conformity	
Standards	EN 60947-5-2:2007 IEC 60947-5-2:2007

**Approvals and certificates**

UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
CCC approval	CCC approval / marking not required for products rated ≤36 V

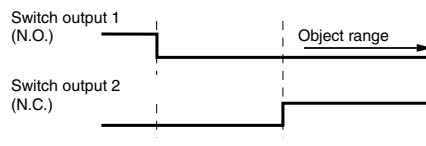
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**Dimensions**



**Additional Information**

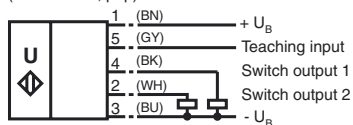
**Programmed switching output function**



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

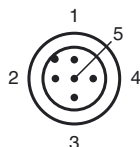
**Electrical Connection**

Standard symbol/Connections:  
 (version E23, pnp)



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

**Pinout**



Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)
5	GY	(gray)

**Accessories**

**UB-PROG3**

Programming unit

**OMH-04**

Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

**BF 18**

Mounting flange, 18 mm

**BF 18-F**

Mounting flange with dead stop, 18 mm

**BF 5-30**

Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm

**UVW90-K18**

Ultrasonic -deflector

**V15-G-2M-PVC**

Female cordset, M12, 5-pin, PVC cable

**V15-W-2M-PUR**

Female cordset, M12, 5-pin, PUR cable

**M18K-VE**

**Description of Sensor Functions**

**Programming procedure**

The sensor features two switch outputs with one programmable switch point, each. Programming the switch points is done by applying the supply voltage  $-U_B$  (switch output 1) or  $+U_B$  (switch output 2) 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 recognized the target during the programming procedure.

**Note:**

Switching points may only be specified directly after Power on. A time lock secures the adjusted switching points against unintended modification 5 minutes after Power on. To modify the switching points later, the user may specify the desired values only after a new Power On.

**Note:**

If a programming adapter UB-PROG3 is used for the programming procedure, button A1 is assigned to  $-U_B$  and button A2 is assigned to  $+U_B$ .

**Programming switch outputs**

**Switch point for switch output 1**

1. Place the target at the desired switch point position of switch output 1
2. Program the switch point by applying  $-U_B$  to the Teach-In input (corresponding yellow LED flashes)
3. Disconnect the Teach-In input from  $-U_B$  to save the switch point

**Switch point for switch output 2**

1. Place the target at the desired switch point position of switch output 2
2. Program the switch point by applying  $+U_B$  to the Teach-In input (corresponding yellow LED flashes)
3. Disconnect the Teach-In input from  $+U_B$  to save the switch point

**Programming detection of object presence**

1. Cover the sensor face with hand or remove all objects from sensing range
2. Apply  $-U_B$  to the Teach-In input (red LED flashes)
3. Disconnect the Teach-In input from  $-U_B$
4. Apply  $+U_B$  to the Teach-In input (red LED flashes)
5. Disconnect the Teach-In input from  $+U_B$

**Note:** 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.

**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-In input wire to  $-U_B$
- 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-In input wire from  $-U_B$  and the changing is saved



**2. Wide angle sound cone**

- switch off the power supply
- connect the Teach-In 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-In input wire from  $+U_B$  and the changing is saved



**Factory settings**

See technical data.

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**Display**

The sensor provides LEDs to indicate various conditions.

	Red LED	Yellow LED 1	Yellow LED 2
<b>During Normal operation</b>			
Proper operation	Off	Switching state output 1	Switching state output 2
Interference (e.g. compressed air)	On	remains in previous state	remains in previous state
<b>Programming of output 1</b>			
Object detected	Off	Flashes	Off
No object detected	Flashes	Off	Off
Object uncertain (programming invalid)	On	Off	Off
<b>Programming of output 2</b>			
Object detected	Off	Off	Flashes
No object detected	Flashes	Off	Off
Object uncertain (programming invalid)	On	Off	Off

**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.

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