



**Model Number**

**UB1000-18GM75A-E5-V15**

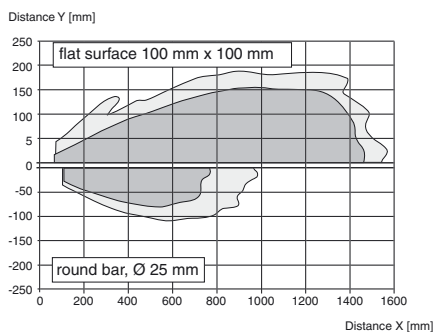
Single head system

**Features**

- **Switch output**
- **5 different output functions can be set**
- **Selectable sound lobe width**
- **Program input**
- **Synchronization options**
- **Deactivation option**
- **Temperature compensation**
- **Very small unusable area**

**Curves**

**Characteristic response curve**



**Technical data**

**General specifications**

Sensing range	70 ... 1000 mm
Adjustment range	90 ... 1000 mm
Unusable area	0 ... 70 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 255 kHz
Response delay	approx. 125 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 % $_{SS}$
No-load supply current $I_0$	≤ 50 mA

**Input/Output**

Synchronization	bi-directional 0 level: $-U_B \dots +1 V$ 1 level: $+4 V \dots +U_B$ input impedance: > 12 KOhm synchronization pulse: ≥ 100 μs, synchronization interpulse period: ≥ 2 ms
Synchronization frequency	
Common mode operation	≤ 40 Hz
Multiplex operation	≤ 40/n

**Input**

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

Output type	1 switch output E5, PNP NO/NC, programmable
Rated operational current $I_e$	200 mA , short-circuit/overload protected
Voltage drop $U_d$	≤ 3 V
Repeat accuracy	≤ 1 %
Switching frequency f	max. 3 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	Device connector M12 x 1 , 5-pin
Protection degree	IP65
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass	60 g

**Compliance with standards and directives**

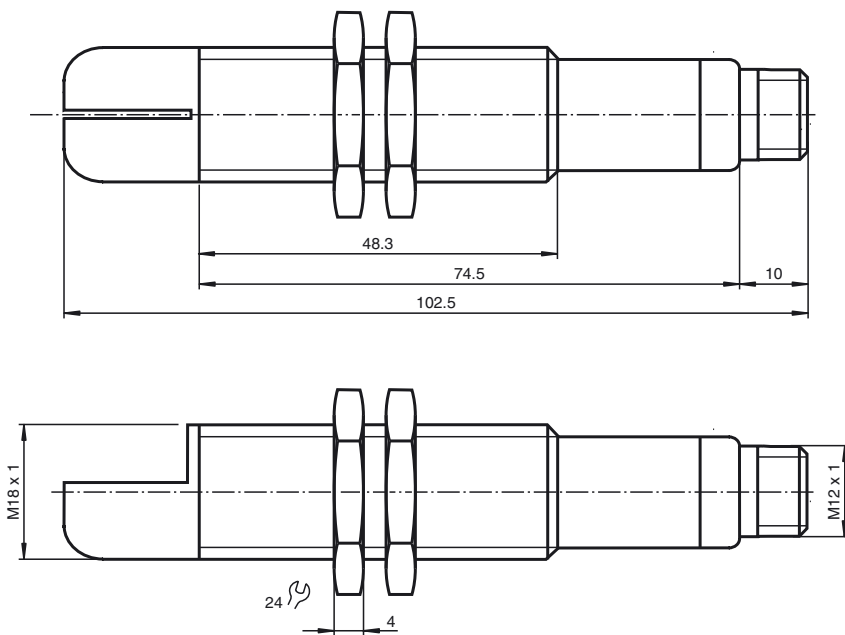
Standard conformity	
Standards	EN 60947-5-2:2007 IEC 60947-5-2:2007

**Approvals and certificates**

UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose

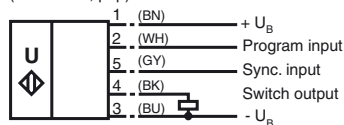
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**Dimensions**



**Electrical Connection**

Standard symbol/Connections:  
(version E5, pnp)



Wire colors in accordance with EN 60947-5-2.

**Pinout**

**Connector V15**



**Synchronisation**

The sensor features a synchronisation input for the suppression of mutual interference. If this input is not used, the sensor will operate using an internally generated clock rate. The synchronisation of multiple sensors can be realised as follows:

**External synchronisation**

The sensor can be synchronised by the external application of a square wave voltage. A synchronisation pulse at the synchronisation input starts a measuring cycle. The pulse must have a duration greater than 100 µs. The measuring cycle starts with the falling edge of a synchronisation pulse. A low level > 1 s or an open synchronisation input will result in the normal operation of the sensor. A high level at the synchronisation input disables the sensor.

**Two operating modes are available**

- Multiple sensors can be controlled by the same synchronisation signal. The sensors are synchronised.
- The synchronisation pulses are sent cyclically to individual sensors. The sensors operate in multiplex mode.

**Internal synchronisation**

The synchronisation connections of up to 5 sensors capable of internal synchronisation are connected to one another. When power is applied, these sensors will operate

**Additional Information**

**Programmable output modes**

- Window mode, normally open mode  
A1 < A2:
- Window mode, normally closed mode  
A2 < A1:
- One switch point, normally open mode  
A1 -> ∞:
- One switch point, normally closed mode  
A2 -> ∞:
- A1 -> ∞, A2 -> ∞: Object presence detection mode  
Object detected: Switch output closed  
No object detected: Switch output open

**Accessories**

**UB-PROG2**

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**

Cable socket, M12, 5-pin, PVC cable

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

Cable socket, M12, 5-pin, PUR cable

rate in multiplex mode. The response delay increases according to the number of sensors to be synchronised. Synchronisation cannot be performed during TEACH-IN and vice versa. The sensors must be operated in an unsynchronised manner to teach the switching point.

**Note:**

If the option for synchronisation is not used, the synchronisation input has to be connected to ground (0V) or the sensor has to be operated via a V1 cable connector (4-pin).

**Adjusting the switching points**

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

Five different output functions can be set

1. Window mode, normally-open function
2. Window mode, normally-closed function
3. One switch point, normally-open function
4. One switch point, normally-closed function
5. Detection of object presence



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.

**TEACH-IN window mode, normally-open function**

- Set target to near switching point
- TEACH-IN switching point A1 with  $-U_B$
- Set target to far switching point
- TEACH-IN switching point A2 with  $+U_B$

**TEACH-IN window mode, normally-closed function**

- Set target to near switching point
- TEACH-IN switching point A2 with  $+U_B$
- Set target to far switching point
- TEACH-IN switching point A1 with  $-U_B$

**TEACH-IN switching point, normally-open function**

- Set target to near switching point
- TEACH-IN switching point A2 with  $+U_B$
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with  $-U_B$

**TEACH-IN switching point, normally-closed function**

- Set target to near switching point
- TEACH-IN switching point A1 with  $-U_B$
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A2 with  $+U_B$

**TEACH-IN detection of object presence**

- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with  $-U_B$
- TEACH-IN switching point A2 with  $+U_B$

**Default setting of switching points**

- A1 = unusable area
- A2 = nominal sensing range

**LED Displays**

Displays in dependence on operating mode	Red LED	Yellow LED
<b>TEACH-IN switching point:</b>		
Object detected	off	flashes
No object detected	flashes	off
Object uncertain (TEACH-IN invalid)	on	off
Normal operation	off	switching state
Fault	on	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  $-U_B$
- 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**

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- switch off the power supply
- connect the Teach-input wire with +U<sub>B</sub>
- 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<sub>B</sub> and the changing is saved

