



## Model Number

**UB300-18GM60-E5-V1-M**

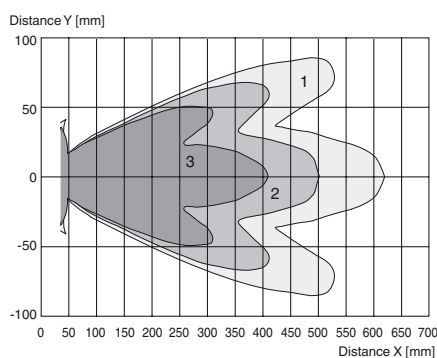
Single head system

## Features

- **Short version: 55 mm**
- **Function indicators visible from all directions**
- **Switch output**
- **5 different output functions can be set**
- **Program input**
- **Temperature compensation**
- **E1-Type approval**

## Diagrams

### Characteristic response curve



Curve 1: flat surface 100 mm x 100 mm  
Curve 2: flat surface 10 mm x 10 mm  
Curve 3: round bar, Ø 25 mm



## Technical data

### General specifications

Sensing range	35 ... 300 mm
Adjustment range	50 ... 300 mm
Dead band	0 ... 35 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 390 kHz
Response delay	approx. 50 ms

### Indicators/operating means

LED green	Power on
LED yellow	indication of the switching state flashing: program function object detected
LED red	solid red: Error red, flashing: program function, object not detected

### Electrical specifications

Operating voltage $U_B$	10 ... 30 V DC, ripple 10 % <sub>SS</sub>
No-load supply current $I_0$	≤ 20 mA

### Input

Input type	1 program input operating distance 1: $-U_B ... +1$ V, operating distance 2: $+6$ V ... $+U_B$ input impedance: > 4,7 kΩ program pulse: ≥ 1 s
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### Output

Output type	1 switching output E5, PNP NO/NC, programmable
Rated operating current $I_e$	200 mA, short-circuit/overload protected
Default setting	Switch point A1: 50 mm Switch point A2: 300 mm
Voltage drop $U_d$	≤ 3 V
Repeat accuracy	≤ 1 %
Switching frequency $f$	≤ 13 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, 4-pin
Degree of protection	IP67
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass	31 g

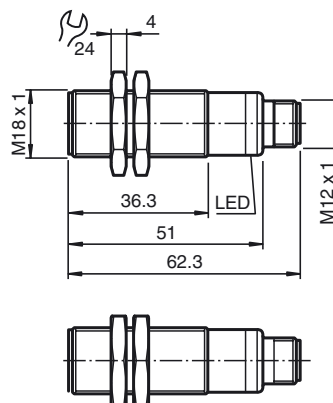
### Compliance with standards and directives

Standard conformity	
Standards	EN 60947-5-2:2007 + A1:2012 IEC 60947-5-2:2007 + A1:2012

### Approvals and certificates

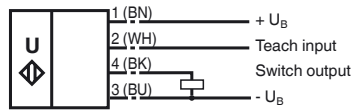
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
CCC approval	CCC approval / marking not required for products rated ≤36 V
UN/ECE Regulation No. 10 (E1)	Type-approval number: 10R-058090

## Dimensions



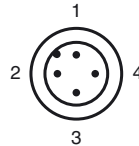
## Electrical Connection

Standard symbol/Connections:  
(version E5, 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)

## Accessories

### UB-PROG2

Programming unit

### OMH-04

Mounting aid for round steel  $\varnothing$  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

### V1-G-2M-PVC

Female cordset, M12, 4-pin, PVC cable

### V1-W-2M-PUR

Female cordset, M12, 4-pin, PUR cable

## 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 switching point, normally-open function
4. one switching point, normally-closed function
5. Detection of object presence

### 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

## Additional Information

### Programmable output modes

1. Window mode, normally open mode  
A1 < A2: object distance

2. Window mode, normally closed mode  
A2 < A1:

3. One switch point, normally open mode  
A1  $\rightarrow \infty$ :

4. One switch point, normally closed mode  
A2  $\rightarrow \infty$ :

5. A1  $\rightarrow \infty$ , A2  $\rightarrow \infty$ : Object presence detection mode  
Object detected: Switch output closed  
No object detected: Switch output open

- 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 objects 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  $+U_B$

#### 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

#### 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.