



**Model Number**

**UB300-18GM40-I-V1**

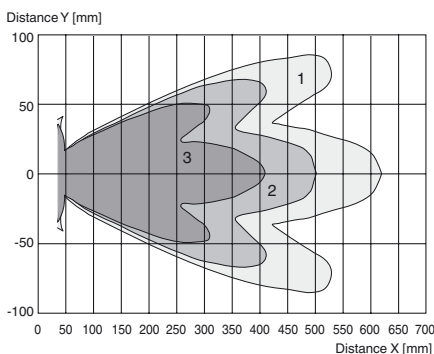
Single head system

**Features**

- Short design, 40 mm
- Function indicators visible from all directions
- Analog output 4 mA ... 20 mA
- Measuring window adjustable
- Program input
- Temperature compensation

**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   |
| Unusable area         | 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 | solid yellow: object in the evaluation range<br>yellow, flashing: program function, object detected |
| LED red    | solid red: Error<br>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<br>lower evaluation limit A1: $-U_B$ ... +1 V, upper evaluation limit A2: +4 V ... $+U_B$<br>input impedance: > 4.7 kΩ, pulse duration: ≥ 1 s |
|------------|---|

**Output**

|                                       |   |
|---------------------------------------|---|
| Output type                           | 1 analog output 4 ... 20 mA, short-circuit/overload protected |
| Default setting                       | evaluation limit A1: 50 mm evaluation limit A2: 300 mm        |
| Resolution                            | 0.4 mm at max. sensing range                                  |
| Deviation of the characteristic curve | ± 1 % of full-scale value                                     |
| Repeat accuracy                       | ± 0.5 % of full-scale value                                   |
| Load impedance                        | 0 ... 300 Ohm   |
| 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                 | 25 g  |

**Compliance with standards and directives**

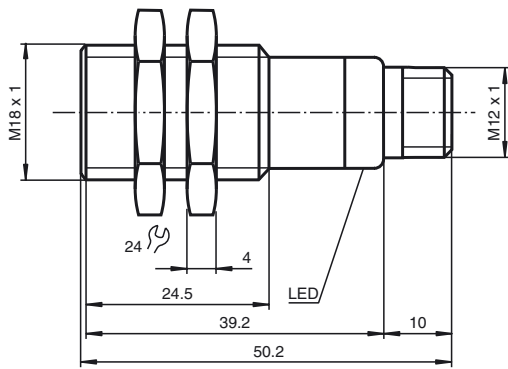
|                     |   |
|---------------------|---|
| Standard conformity |   |
| Standards           | EN 60947-5-7:2003<br>IEC 60947-5-7:2003 |

**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 |

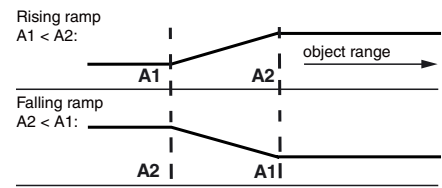
Release date: 2014-06-23 16:07 Date of issue: 2014-06-23 220360\_eng.xml

Dimensions



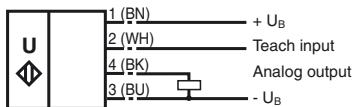
Additional Information

Programmed analogue output function



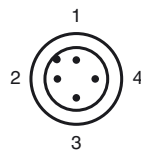
Electrical Connection

Standard symbol/Connections:  
(version I)



Core colors 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 evaluation limits**

The ultrasonic sensor features an analogue output with two teachable evaluation limits. 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. The lower evaluation limit A1 is taught with  $-U_B$ , A2 with  $+U_B$ .

Two different output functions can be set:

1. Analogue value increases with rising distance to object (rising ramp)
2. Analogue value falls with rising distance to object (falling ramp)

**TEACH-IN rising ramp (A2 > A1)**

- Position object at lower evaluation limit
- TEACH-IN lower limit A1 with  $-U_B$
- Position object at upper evaluation limit
- TEACH-IN upper limit A2 with  $+U_B$

**TEACH-IN falling ramp (A1 > A2):**

- Position object at lower evaluation limit
- TEACH-IN lower limit A2 with  $+U_B$
- Position object at upper evaluation limit
- TEACH-IN upper limit A1 with  $-U_B$

**Default setting**

A1: unusable area  
 A2: nominal sensing range  
 Mode of operation: rising ramp

**LED Displays**

| Displays in dependence on operating mode | Red LED | Yellow LED     |
|--|---------|----------------|
| <b>TEACH-IN evaluation limit</b>         |         |                |
| Object detected                          | off     | flashes        |
| No object detected                       | flashes | off            |
| Object uncertain (TEACH-IN invalid)      | on      | off            |
| Normal mode (evaluation range)           | off     | on             |
| 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.

Release date: 2014-06-23 16:07 Date of issue: 2014-06-23 220360\_eng.xml