



**Model Number**

**UB400-12GM-I-V1**

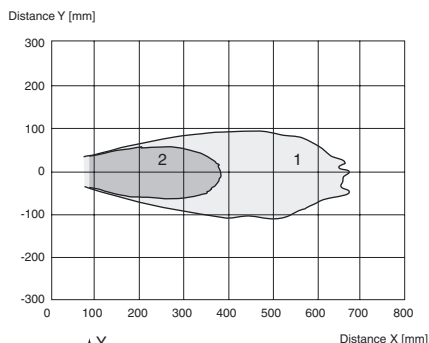
Single head system

**Features**

- 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: round bar, Ø 25 mm

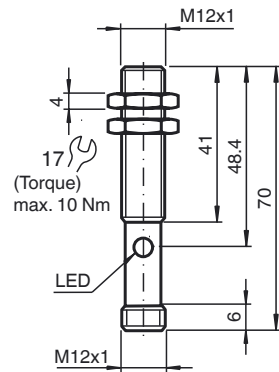
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**Technical data**

|   |   |
|---|---|
| <b>General specifications</b>                   |   |
| Sensing range                                   | 30 ... 400 mm   |
| Adjustment range                                | 50 ... 400 mm   |
| Unusable area                                   | 0 ... 30 mm   |
| Standard target plate                           | 100 mm x 100 mm   |
| Transducer frequency                            | approx. 310 kHz   |
| Response delay                                  | approx. 50 ms   |
| <b>Indicators/operating means</b>               |   |
| 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  |
| <b>Electrical specifications</b>                |   |
| Operating voltage $U_B$                         | 10 ... 30 V DC, ripple 10 % <sub>SS</sub>   |
| No-load supply current $I_0$                    | ≤ 30 mA   |
| <b>Input</b>                                    |   |
| Input type                                      | 1 program input<br>lower evaluation limit A1: $-U_B \dots +1$ V, upper evaluation limit A2: $+4$ V ... $+U_B$<br>input impedance: > 4.7 kΩ, pulse duration: ≥ 1 s |
| <b>Output</b>                                   |   |
| Output type                                     | 1 analog output 4 ... 20 mA   |
| Resolution                                      | 0.17 mm   |
| Deviation of the characteristic curve           | ± 1 % of full-scale value   |
| Repeat accuracy                                 | ± 0.5 % of full-scale value   |
| Load impedance                                  | 0 ... 300 Ω at $U_B > 10$ V;<br>0 ... 500 Ω at $U_B > 15$ V   |
| Temperature influence                           | ± 1.5 % of full-scale value   |
| <b>Ambient conditions</b>                       |   |
| Ambient temperature                             | -25 ... 70 °C (-13 ... 158 °F)  |
| Storage temperature                             | -40 ... 85 °C (-40 ... 185 °F)  |
| <b>Mechanical specifications</b>                |   |
| Connection type                                 | Connector M12 x 1, 4-pin  |
| Protection degree                               | IP67  |
| <b>Material</b>                                 |   |
| Housing   | brass, nickel-plated  |
| Transducer                                      | epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT   |
| Mass  | 25 g  |
| <b>Compliance with standards and directives</b> |   |
| <b>Standard conformity</b>                      |   |
| Standards                                       | EN 60947-5-7:2003<br>IEC 60947-5-7:2003<br>EN 60947-5-2:2007<br>IEC 60947-5-2:2007  |

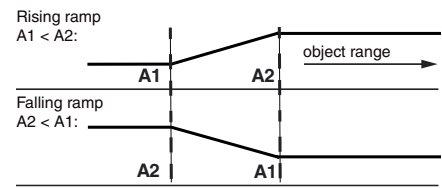
|                                   |  |
|-----------------------------------|--|
| <b>Approvals and certificates</b> |  |
| UL approval                       | cULus Listed, General Purpose                                |
| CSA approval                      | cCSAus Listed, General Purpose                               |
| CCC approval                      | CCC approval / marking not required for products rated ≤36 V |

**Dimensions**



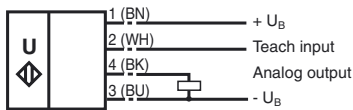
**Additional Information**

**Programmed analogue output function**



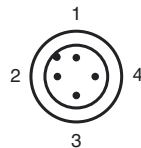
**Electrical Connection**

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) |

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**Accessories**

**UB-PROG2**

Programming unit

**BF 5-30**

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

**BF 12**

Mounting flange, 12 mm

**BF 12-F**

Mounting flange with dead stop, 12 mm

**V1-G-2M-PVC**

Female cordset, M12, 4-pin, PVC cable

**V1-W-2M-PUR**

Female cordset, M12, 4-pin, PUR cable

**UVW90-M12**

Ultrasonic -deflector

**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 BF 12, BF 12-F or BF 5-30 must be used. In case of direct mounting of the sensor in a through hole, it has to be fixed at the middle of the housing thread.

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