



Model Number

UB120-12GM-U-V1

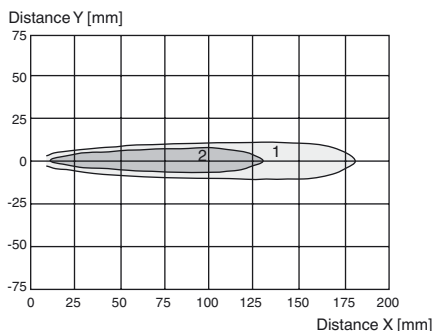
Single head system

Features

- Extremely narrow projection cone
- Analog output 0 ... 10 V
- Very small unusable area
- Measuring window adjustable
- Short response time

Diagrams

Characteristic response curve



Curve 1: flat surface 10 mm x 10 mm
Curve 2: round bar, Ø 8 mm

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Technical data

General specifications

| | |
|-----------------------|-----------------|
| Sensing range | 15 ... 120 mm |
| Adjustment range | 20 ... 120 mm |
| Dead band | 0 ... 15 mm |
| Standard target plate | 10 mm x 10 mm |
| Transducer frequency | approx. 850 kHz |
| Response delay | approx. 27 ms |

Indicators/operating means

| | |
|------------|---|
| LED yellow | solid yellow: object in the evaluation range yellow, flashing: program function, object detected |
| LED red | solid red: Error red, flashing: program function, object not detected |

Electrical specifications

| | |
|------------------------------|---|
| Operating voltage U_B | 15 ... 30 V DC, ripple 10 % _{SS} |
| No-load supply current I_0 | ≤ 30 mA |

Input

| | |
|------------|---|
| Input type | 1 program input lower evaluation limit A1: $-U_B ... +1$ V, upper evaluation limit A2: $+4$ V ... $+U_B$ input impedance: > 4.7 kΩ, pulse duration: ≥ 1 s |
|------------|---|

Output

| | |
|-------------|----------------------------|
| Output type | 1 analog output 0 ... 10 V |
| Resolution | 0.17 mm |

| | |
|---------------------------------------|-----------------------------|
| Deviation of the characteristic curve | ± 1 % of full-scale value |
| Repeat accuracy | ± 0.5 % of full-scale value |
| Load impedance | > 1 kΩ |
| 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 |

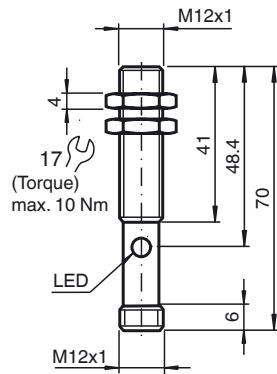
Compliance with standards and directives

| | |
|---------------------|--|
| Standard conformity | |
| Standards | EN 60947-5-2:2007+A1:2012 IEC 60947-5-2:2007 + A1:2012 EN 60947-5-7:2003 IEC 60947-5-7:2003 |

Approvals and certificates

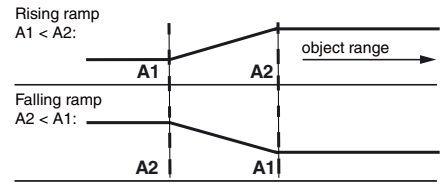
| | |
|--------------|--|
| UL approval | cULus Listed, Class 2 Power Source |
| CCC approval | CCC approval / marking not required for products rated ≤36 V |

Dimensions



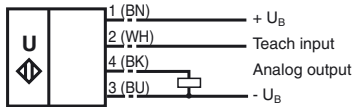
Additional Information

Programming the analog output mode



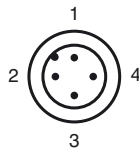
Electrical Connection

Standard symbol/Connections:
(version U)



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

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 |
|--|---------|----------------|
| TEACH-IN evaluation limit | | |
| 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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