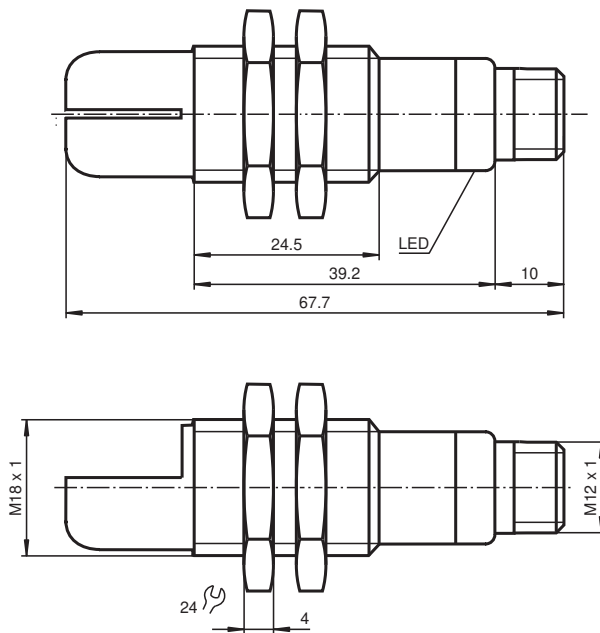## Ultrasonic sensor

# UB800-18GM40A-I-V1

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

Single head system

CE   cULus   UKCA

## Dimensions



24.5  
39.2  
10  
67.7  
LED

M18 x 1  
M12 x 1  
24  
4

## Technical Data

**General specifications**

| | |
|---|---|
| Sensing range | 50 ... 800 mm |
| Adjustment range | 70 ... 800 mm |
| Dead band | 0 ... 50 mm |
| Standard target plate | 100 mm x 100 mm |
| Transducer frequency | approx. 255 kHz |
| Response delay | approx. 100 ms |
| **Indicators/operating means** | |
| LED green | Power on |

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group
www.pepperl-fuchs.com
USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com
Germany: +49 621 776 1111
fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

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## Technical Data

| | | |
|---|---|---|
| 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 %$_{SS}$ |
| 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: 70 mm evaluation limit A2: 800 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 Ω at $U_B$ > 10 V;<br>0 ... 500 Ω at $U_B$ > 15 V |
| Temperature influence | | ± 1.5 % of full-scale value |
| **Compliance with standards and directives** | | |
| Standard conformity | | |
| Standards | | EN IEC 60947-5-2:2020<br>IEC 60947-5-2:2019<br>EN 60947-5-7:2003<br>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 |
| **Ambient conditions** | | |
| Ambient temperature | | -25 ... 70 °C (-13 ... 158 °F) |
| Storage temperature | | -40 ... 85 °C (-40 ... 185 °F) |
| **Mechanical specifications** | | |
| Connection type | | Connector plug M12 x 1 , 4-pin |
| Housing diameter | | 18 mm |
| Degree of protection | | IP67 |
| Material | | |
| Housing | | brass, nickel-plated |
| Transducer | | epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT |
| Mass | | 25 g |

## Connection

**Standard symbol/Connections:**
(version I)
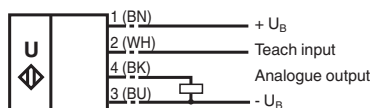


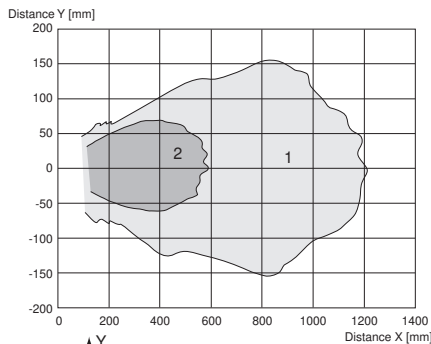Core colours in accordance with EN 60947-5-2.

## Connection Assignment



Wire colors in accordance with EN 60947-5-2

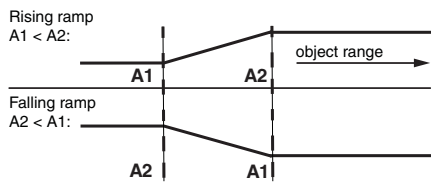| 1 | BN | (brown) |
|---|----|---------|
| 2 | WH | (white) |
| 3 | BU | (blue) |
| 4 | BK | (black) |

## Characteristic Curve

### Characteristic response curve



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

### Programmed analogue output function

Rising ramp
A1 < A2:

object range

A1      A2

Falling ramp
A2 < A1:

A2      A1

A1 -> ∞, A2 -> ∞: Detection of object presence

Object detected: 20 mA
No object detected: 4 mA

## Accessories

| | UB-PROG2 | Programming unit |
|---|----------|------------------|
| | OMH-04 | Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm |

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

| Pepperl+Fuchs Group | USA: +1 330 486 0001 | Germany: +49 621 776 1111 | Singapore: +65 6779 9091 |
|---------------------|----------------------|---------------------------|--------------------------|
| www.pepperl-fuchs.com | fa-info@us.pepperl-fuchs.com | fa-info@de.pepperl-fuchs.com | fa-info@sg.pepperl-fuchs.com |

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## Accessories

| | | |
|---|---|---|
| | **BF 18** | Mounting flange, 18 mm |
| | **BF 18-F** | Plastic mounting adapter, 18 mm |
| | **BF 5-30** | Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm |
| | **V1-G-2M-PVC** | Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey |
| | **V1-W-2M-PUR** | Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey |
| | **UVW90-K18** | Ultrasonic -deflector |
| | **M18K-VE** | Plastic nuts with centering ring for the vibration-free mounting of cylindrical sensors |

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## Programming

### Programming procedure

The sensor features a programmable analog output with two programmable evaluation boundaries. Programming the evaluation boundaries and the operating mode is done 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 recognized the target during the programming procedure.

**Note:**

Evaluation boundaries 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 evaluation boundaries later, the user may specify the desired values only after a new Power On.

**Note:**

If a programming adapter UB-PROG2 is used for the programming procedure, button A1 is assigned to $-U_B$ and button A2 is assigned to $+U_B$.

### Programming the analog output

**Rising ramp**

1. Place the target at the near end of the desired evaluation range
2. Program the evaluation boundary by applying $-U_B$ to the Teach-In input (yellow LED flashes)
3. Disconnect the Teach-In input from $-U_B$ to save the evaluation boundary
4. Place the target at the far end of the desired evaluation range
5. Program the evaluation boundary by applying $+U_B$ to the Teach-In input (yellow LED flashes)
6. Disconnect the Teach-In input from $+U_B$ to save the evaluation boundary

**Falling ramp**

1. Place the target at the far end of the desired evaluation range
2. Program the evaluation boundary by applying $-U_B$ to the Teach-In input (yellow LED flashes)
3. Disconnect the Teach-In input from $-U_B$ to save the evaluation boundary
4. Place the target at the near end of the desired evaluation range
5. Program the evaluation boundary by applying $+U_B$ to the Teach-In input (yellow LED flashes)
6. Disconnect the Teach-In input from $+U_B$ to save the evaluation boundary

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fa-info@us.pepperl-fuchs.com
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Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

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