



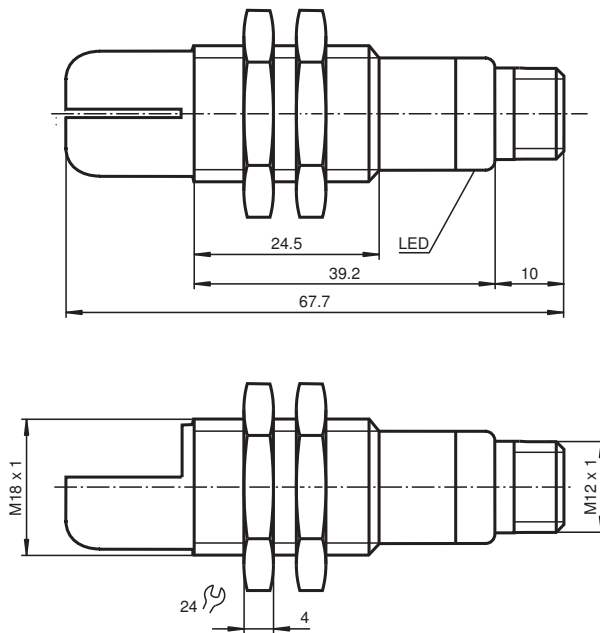
## Ultrasonic sensor UB800-18GM40A-I-V1

- 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



### Dimensions



### 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                                                                                            |
| LED yellow | solid yellow: object in the evaluation range<br>yellow, flashing: program function, object detected |

Release date: 2020-05-08 Date of issue: 2021-02-05 Filename: 205341\_eng.pdf

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

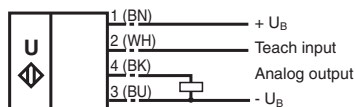
**PEPPERL+FUCHS**

## Technical Data

|                                                 |       |                                                                                                                                                                   |
|-------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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                          | $I_0$ | ≤ 20 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, 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                                                                                                                                       |
| <b>Compliance with standards and directives</b> |       |                                                                                                                                                                   |
| Standard conformity                             |       |                                                                                                                                                                   |
| Standards                                       |       | EN 60947-5-2:2007+A1:2012<br>IEC 60947-5-2:2007 + A1:2012<br>EN 60947-5-7:2003<br>IEC 60947-5-7:2003                                                              |
| <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                                                                                                      |
| <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                                                                                                                                          |
| Degree of protection                            |       | IP67                                                                                                                                                              |
| Material                                        |       |                                                                                                                                                                   |
| Housing                                         |       | brass, nickel-plated                                                                                                                                              |
| Transducer                                      |       | epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT                                                                                             |
| Mass                                            |       | 25 g                                                                                                                                                              |

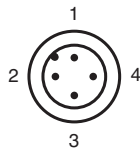
## Connection

Standard symbol/Connections:  
(version I)



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

Connection Assignment

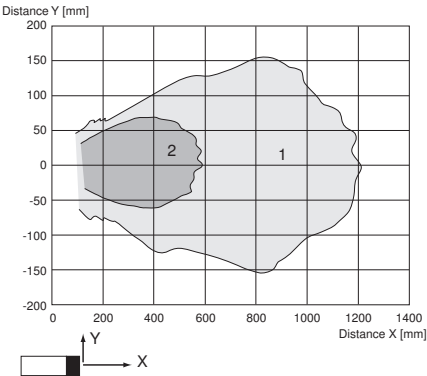


Wire colors in accordance with EN 60947-5-2

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

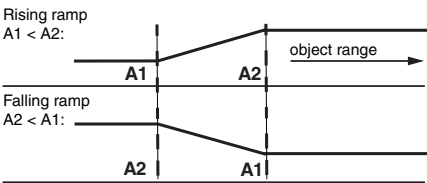
Characteristic Curve

Characteristic response curve



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

Programmed analogue output function



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

Object detected: 20 mA  
No object detected: 4 mA

Accessories

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

## Accessories

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

## Programming

### 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 |