

# Ultrasonic sensor

## UB800-18GM60A-E5-V1-M

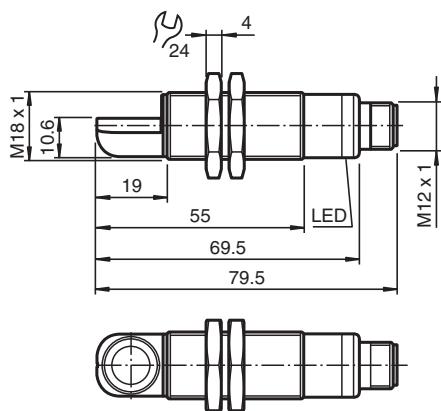


- Short version: 55 mm
- Function indicators visible from all directions
- Switching output
- 5 different output functions can be set
- Program input
- Temperature compensation
- E1-Type approval

Single head system



### Dimensions



### Technical Data

Release date: 2023-02-13 Date of issue: 2023-02-13 Filename: 2988383\_eng.pdf

#### 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	indication of the switching state flashing: program function object detected
LED red	solid red: Error 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	$I_0$	$\leq 20$ mA

#### Input

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

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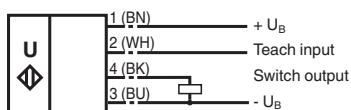
 PEPPERL+FUCHS

## Technical Data

Input type	1 program input operating distance 1: $-U_B \dots +1$ V, operating distance 2: $+6$ V $\dots +U_B$ input impedance: $> 4,7$ k $\Omega$ program pulse: $\geq 1$ s	
<b>Output</b>		
Output type	1 switching output E5, PNP NO/NC, programmable	
Rated operating current	$I_e$	200 mA, short-circuit/overload protected
Default setting		Switch point A1: 70 mm Switch point A2: 800 mm
Voltage drop	$U_d$	$\leq 3$ V
Repeat accuracy		$\leq 1$ %
Switching frequency	$f$	$\leq 4$ Hz
Range hysteresis	$H$	1 % of the set operating distance
Temperature influence		$\pm 1.5$ % of full-scale value
<b>Compliance with standards and directives</b>		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019
<b>Approvals and certificates</b>		
UL approval		cULus Listed, General Purpose
CCC approval		CCC approval / marking not required for products rated $\leq 36$ V
UN/ECE Regulation No. 10 (E1)		Type-approval number: 10R-058090
<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 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		32 g

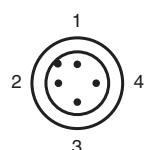
## Connection

**Standard symbol/Connections:**  
(version E5, pnp)



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

## Connection Assignment



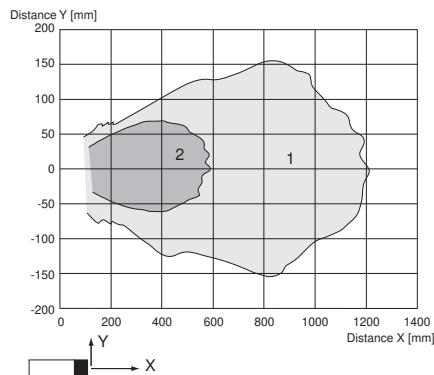
## Connection Assignment

Wire colors in accordance with EN 60947-5-2

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

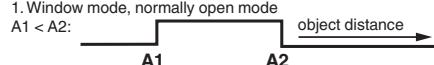
## Characteristic Curve

### Characteristic response curve

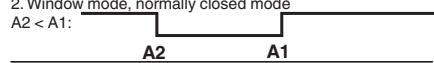


### Programmable output modes

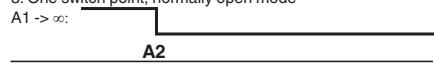
1. Window mode, normally open mode



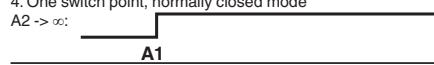
2. Window mode, normally closed mode



3. One switch point, normally open mode



4. One switch point, normally closed mode



5. A1 -> ∞, A2 -> ∞: Object presence detection mode

Object detected: Switch output closed

No object detected: Switch output open

## 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
	<b>BF 18</b>	Mounting flange, 18 mm
	<b>BF 18-F</b>	Plastic mounting adapter, 18 mm

## Accessories

	<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

## Teach-In

### Adjusting the switching points

The ultrasonic sensor features a switch output with two teachable switching points. 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. Switching point A1 is taught with  $-U_B$ , A2 with  $+U_B$ .

Five different output functions can be set

1. Window mode, normally-open function
2. Window mode, normally-closed function
3. one switching point, normally-open function
4. one switching point, normally-closed function
5. Detection of object presence

#### TEACH-IN window mode, normally-open function

- Set target to near switching point
- TEACH-IN switching point A1 with  $-U_B$
- Set target to far switching point
- TEACH-IN switching point A2 with  $+U_B$

#### TEACH-IN window mode, normally-closed function

- Set target to near switching point
- TEACH-IN switching point A2 with  $+U_B$
- Set target to far switching point
- TEACH-IN switching point A1 with  $-U_B$

#### TEACH-IN switching point, normally-open function

- Set target to near switching point
- TEACH-IN switching point A2 with  $+U_B$
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with  $-U_B$

#### TEACH-IN switching point, normally-closed function

- Set target to near switching point
- TEACH-IN switching point A1 with  $-U_B$
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A2 with  $+U_B$

#### TEACH-IN detection of objects presence

- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with  $-U_B$
- TEACH-IN switching point A2 with  $+U_B$

## LED Displays

Displays in dependence on operating mode	Red LED	Yellow LED
<b>TEACH-IN switching point:</b>		
Object detected	off	flashes
No object detected	flashes	off
Object uncertain (TEACH-IN invalid)	On	off
Normal operation	off	Switching state
Fault	on	Previous state