

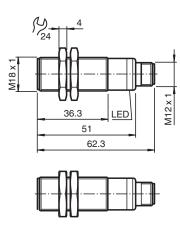
# Ultrasonic sensor UB800-18GM60-E5-V1-M

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

Single head system



## **Dimensions**



## **Technical Data**

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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 $\%_{\rm SS}$
No-load supply current	I <sub>0</sub>	≤ 20 mA
Input		

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



#### Ultrasonic sensor

Output type     1 switching output E5, PNP NO/NC, programmable       Rated operating current     I₀     200 mA, short-circuit/overload protected       Default setting     Switch point A1: 70 mm Switch point A2: 800 mm       Voltage drop     Ud     ≤3 V       Repeat accuracy     ≤1 %       Switching frequency     f     ≤4 Hz       Range hysteresis     H     1% of the set operating distance       Temperature influence     ± 1.5 % of full-scale value       Compliance with standards and directives     IEC 60947-5-2:2007 + A1:2012       Standard conformity     IE     IEC 60947-5-2:2007 + A1:2012       Approvals and certificates     CCC approval     CULus Listed, General Purpose       CCA approval     CCC approval / marking not required for products rated ≤36 V       UV/ECE Regulation No. 10 (E1)     Type-approval number: 10R-058090       Ambient conditions     -25 70 °C (-13 158 °F)       Storage temperature     -25 70 °C (-13 158 °F)       Storage temperature     -25 70 °C (-13 158 °F)       Storage temperature     -25 70 °C (-14 185 °F)       Storage temperature     -25 70 °C (-14 185 °F)       Degree of protection </th <th>Technical Data</th> <th></th> <th></th>	Technical Data		
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Aated operating current   I,   200 mA, short-circuit/overload protected     Default setting   Switch point A1: 70 mm Switch point A2: 800 mm     Voltage drop   U_d   ≤ 3 V     Repeat accuracy   ≤ 1 %     Switching frequency   f   ≤ 4 Hz     Range hysteresis   H   1 % of the set operating distance     Temperature influence   H   1 % of full-scale value     Compliance with standards and directives   ENE 60947-5-2:2007 + A1:2012     Standards   ENE 60947-5-2:2007 + A1:2012     Standards   ENE 60947-5-2:2007 + A1:2012     Approvals and certificates   ENE 60947-5-2:2007 + A1:2012     UL approval   CULus Listed, General Purpose     CCC approval   CULus Listed, General Purpose     CCC approval   CCC approval number: 10R-058090     UN/ECE Regulation No. 10 (E1)   Type-approval number: 10R-058090     Ambient temperature   -4085 °C (-40185 °F)     Abstrage temperature   -4085 °C (-40185 °F)     Storage temperature   Connector M12 x 1, 4-pin     Degree of protection   IP67     Degree of protection   IP67     Degree of protection   Pass, nickel-plated	Output		
Default setting   Switch point A1: 70 mm Switch point A2: 800 mm     Voltage drop   Ud   ≤ 3 V     Repeat accuracy   ≤ 1 %     Switching frequency   f   ≤ 4 Hz     Range hysteresis   H   1 % of the set operating distance     Temperature influence   ± 1.5 % of full-scale value     Compliance with standards and directives   Image: Standard conformity     Standard conformity   Image: Standards     Standards   Image: Standards     Vul approval   COSAus Listed, General Purpose     CSA approval   CCC approval marking not required for products rated ≤36 V     UV/ECE Regulation No. 10 (E1)   Type-approval number: 10R-058090     Ambient conditions   -25 70 °C (-13 158 °F)     Storage temperature   -40 85 °C (-40 185 °F)     Morage temperature   -40 85 °C (-40 185 °F)     Degree of protection   IP67     Material	Output type		1 switching output E5, PNP NO/NC, programmable
Voltage dropU_u $\leq 3$ VRepeat accuracy $\leq 1$ %Switching frequencyf $\leq 4$ HzRange hysteresisH1 % of the set operating distanceTemperature influence $\equiv 1.5$ % of full-scale valueCompliance with standards and directivesStandard conformityIStandardsEN 60947-5-2:2007 + A1:2012Approvals and certificatesUL approvalcULus Listed, General PurposeCSA approvalCCC approvalCC approvalCCC approval / marking not required for products rated $\leq 36$ VUN/EC Regulation No. 10 (E1)IAmbient temperature25 70 °C (-13 158 °F)Storage temperatureConnector M12 x 1 , 4-pinDegree of protectionIP67MaterialIP67Materialipax, nickel-platedTransduceripax, nickel-platedPhosingipax, nickel-plated	Rated operating current	le	200 mA , short-circuit/overload protected
Repeat accuracy $\leq 1 %$ Repeat accuracyf $\leq 4 Hz$ Range hysteresisH1 % of the set operating distanceTemperature influence $\pm 1.5 \%$ of full-scale valueCompliance with standards and directivesStandard conformityEStandardsEN 60947-5-2:2007 + A1:2012Approvals and certificatesEV 60947-5-2:2007 + A1:2012UL approvalcULus Listed, General PurposeCCA approvalCCC approvalCCC approvalCCC approval / marking not required for products rated $\leq 36 V$ UV/ECE Regulation No. 10 (E1)Type-approval number: 10R-058090Ambient temperature25 70 °C (-13 158 °F)Storage temperatureConnector M12 x 1 , 4-pinDegree of protectionIP67MaterialIP67MaterialFass, nickel-platedTransducerepoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Default setting		Switch point A1: 70 mm Switch point A2: 800 mm
Any enclosionFS 4 HzRange hysteresisH1 % of the set operating distanceTemperature influence± 1.5 % of full-scale valueCompliance with standards and directivesStandard conformityImage: Standard conformityStandard conformityImage: Standard conformityStandard conformityImage: Standard conformityStandardsEN 60947-5-2:2007 + A1:2012 IEC 60947-5-2:2007 + A1:2012Approvals and certificatesImage: Standard certificatesUL approvalcULus Listed, General PurposeCSA approvalcCS Aus Listed, General PurposeCCC approvalCC approval / marking not required for products rated ≤36 VUN/ECE Regulation No. 10 (E1)Type-approval number: 10R-058090Ambient conditionsType-approval number: 10R-058090Ambient temperature-40 85 °C (-40 185 °F)Storage temperature-40 85 °C (-40 185 °F)Storage temperatureIP67MaterialIP67MaterialIP67Materialipaxs, nickel-platedHousingipaxs, nickel-platedTransducerepoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Voltage drop	$U_d$	≤ 3 V
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Temperature influence   ± 1.5 % of full-scale value     Compliance with standards and directives     Standard conformity     Standards   EN 60947-5-2:2007 + A1:2012 IEC 60947-5-2:2007 + A1:2012     Approvals and certificates     UL approval   cULus Listed, General Purpose     CCA approval   cCC approval     CCC approval   CCC approval / marking not required for products rated ≤36 V     UN/ECE Regulation No. 10 (E1)   Type-approval number: 10R-058090     Ambient conditions   -25 70 °C (-13 158 °F)     Ambient temperature   -25 70 °C (-13 158 °F)     Storage temperature   -40 85 °C (-40 185 °F)     Mechanical specifications   IP67     Material   IP67     Material   Destas, nickel-plated     Housing   brass, nickel-plated     Prove resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Switching frequency	f	≤4 Hz
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Andard conformity     Image: Conference of protection       Standards     EN 60947-5-2:2007 + A1:2012 IEC 60947-5-2:2007 + A1:2012       Approvals and certificates     CULus Listed, General Purpose       UL approval     cULus Listed, General Purpose       CCA approval     cCC approval / marking not required for products rated ≤36 V       UN/ECE Regulation No. 10 (E1)     Type-approval number: 10R-058090       Ambient conditions     Type-approval number: 10R-058090       Ambient temperature     -25 70 °C (-13 158 °F)       Storage temperature     -25 70 °C (-13 158 °F)       Storage temperature     Connector M12 x 1 , 4-pin       Degree of protection     IP67       Material     Final for the protection       Housing     brass, nickel-plated       Transducer     epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Temperature influence		± 1.5 % of full-scale value
StandardsEN 60947-5-2:2007 + A1:2012 IEC 60947-5-2:2007 + A1:2012Approvals and certificatesUL approvalcULus Listed, General PurposeCSA approvalcCSAus Listed, General PurposeCCC approvalCCC approval / marking not required for products rated ≤36 VUN/ECE Regulation No. 10 (E1)Type-approval number: 10R-058090Ambient conditionsAmbient temperature-25 70 °C (-13 158 °F)Storage temperature-25 70 °C (-13 158 °F)Storage temperature-40 85 °C (-40 185 °F)Degree of protectionIP67MaterialIP67Housingbrass, nickel-platedTransducerepoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Compliance with standards and directives		
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Degree of protection IP67   Material IP67   Housing brass, nickel-plated   Transducer epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Mechanical specifications		
Material     Housing   brass, nickel-plated     Transducer   epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Connection type		Connector M12 x 1 , 4-pin
Housingbrass, nickel-platedTransducerepoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Degree of protection		IP67
Transducer epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Material		
	Housing		brass, nickel-plated
Mass 31 a	Transducer		epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
1 Y	Mass		31 g

## Connection

Standard symbol/Connections: (version E5, pnp)

U ↓ (<u>BK)</u> ↓ (<u>BK)</u> 3(<u>BU)</u> + U<sub>B</sub> Teach input Switch output - U<sub>B</sub>

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

## **Connection Assignment**



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

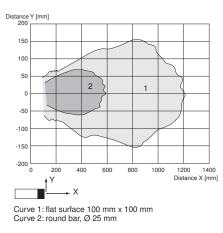
### Ultrasonic sensor

Wire colors in accordance with EN 60947-5-2

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

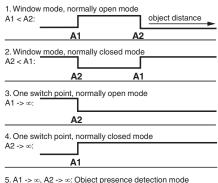
## **Characteristic Curve**

#### Characteristic response curve



### Programming

#### Programmable output modes



5. A1 ->∞, A2 ->∞: Object presence detection mode Object detected: Switch output closed No object detected: Switch output open

## Accessories

-1	UB-PROG2	Programming unit
6	OMH-04	Mounting aid for round steel ø 12 mm or sheet 1.5 mm 3 mm
	BF 18	Mounting flange, 18 mm
	BF 18-F	Plastic mounting adapter, 18 mm

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

## Ultrasonic sensor

Accessories					
	BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 30 mm			
Ž	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			

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

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## 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<sub>B</sub>
- Set target to far switching point
- TEACH-IN switching point A2 with +U<sub>B</sub>

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

- Set target to near switching point
- TEACH-IN switching point A2 with +U<sub>B</sub>
- Set target to far switching point
- TEACH-IN switching point A1 with -U<sub>B</sub>

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

- Set target to near switching point
- TEACH-IN switching point A2 with +U<sub>B</sub>
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with -U<sub>B</sub>

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

- Set target to near switching point
- TEACH-IN switching point A1 with -U<sub>B</sub>
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A2 with +U<sub>B</sub>

#### **TEACH-IN detection of objects presence**

- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with -U<sub>B</sub>
- TEACH-IN switching point A2 with +U<sub>B</sub>

#### **LED Displays**

Displays in dependence on operating mode	Red LED	Yellow LED
TEACH-IN switching point:		
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

## **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 BF18, BF18-F or BF 5-30 must be used.

In case of direct mounting of the sensor in a through hole using the steel nuts, it has to be fixed at the middle of the housing thread. If a fixation at the front end of the threaded housing is required, plastic nuts with centering ring (accessories) must be used.

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

