

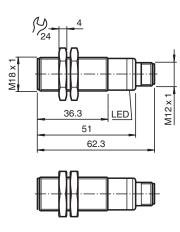
Ultrasonic sensor UB800-18GM60-E5-V1-M

- 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

reennical 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		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 ₀	≤ 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		
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>Input type</th> <th></th> <th>operating distance 1: $-U_B$ +1 V, operating distance 2: +6 V +U_B</th>	Input type		operating distance 1: $-U_B$ +1 V, operating distance 2: +6 V +U _B
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 ≤ 3 VRepeat accuracy ≤ 1 %Switching frequencyf ≤ 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 ≤ 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
Range hysteresis H 1 % of the set operating distance Temperature influence ± 1.5 % of full-scale value Compliance with standards and directives EN 60947-5-2:2007 + A1:2012 Standard conformity EN 60947-5-2:2007 + A1:2012 Standards CULus Listed, General Purpose Approvals and certificates cULus Listed, General Purpose UL approval cULus Listed, General Purpose CSA approval CCC approval / marking not required for products rated ≤36 V UN/ECE Regulation No. 10 (E1) Type-approval number: 10R-058090 Ambient temperature -2570 °C (-13 158 °F) Storage temperature -40 85 °C (-40 185 °F) Storage temperature -40 85 °C (-40 185 °F) Degree of protection IP67 Material Herian Housing brass, nickel-plated Prosey resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Repeat accuracy		≤1 %
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
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 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 -25 70 °C (-13 158 °F) Storage temperature -40 85 °C (-40 185 °F) Storage temperature Connector M12 x 1 , 4-pin Degree of protection IP67 Material Housing Housing brass, nickel-plated poxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Range hysteresis	Н	1 % of the set operating distance
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		
Approvals and certificates UL approval cULus Listed, General Purpose CSA approval cCSAus Listed, General Purpose 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) Storage temperature -40 85 °C (-40 185 °F) Storage temperature Connector M12 x 1 , 4-pin Degree of protection IP67 Material brass, nickel-plated Housing brass, nickel-plated proxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Standard conformity		
UL 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 conditions	Standards		
CSA approvalcCSAus Listed, General PurposeCCC approvalCCC approval / marking not required for products rated ≤36 VUN/ECE Regulation No. 10 (E1)Type-approval number: 10R-058090Ambient conditions-25 70 °C (-13 158 °F)Ambient temperature-25 70 °C (-13 158 °F)Storage temperature-40 85 °C (-40 185 °F)Mechanical specificationsConnector M12 x 1 , 4-pinDegree of protectionIP67MaterialHousingTransducerepoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Approvals and certificates		
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 -40 85 °C (-40 185 °F) Storage temperature -40 85 °C (-40 185 °F) Mechanical specifications Connector M12 x 1 , 4-pin Connection type Connector M12 x 1 , 4-pin Degree of protection IP67 Material brass, nickel-plated Fousing brass, nickel-plated	UL approval		cULus Listed, General Purpose
UN/ECE Regulation No. 10 (E1)Type-approval number: 10R-058090Ambient conditionsAmbient temperature-25 70 °C (-13 158 °F)Storage temperature-40 85 °C (-40 185 °F)Mechanical specificationsConnection typeConnector M12 x 1 , 4-pinDegree of protectionIP67MaterialHousingHousingbrass, nickel-platedTransducerepoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	CSA approval		cCSAus Listed, General Purpose
Ambient conditionsAmbient temperature-25 70 °C (-13 158 °F)Storage temperature-40 85 °C (-40 185 °F)Storage temperature-40 85 °C (-40 185 °F)Mechanical specificationsConnector M12 x 1 , 4-pinConnection typeConnector M12 x 1 , 4-pinDegree of protectionIP67MaterialHousingHousingbrass, nickel-platedTransducerepoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient temperature-25 70 °C (-13 158 °F)Storage temperature-40 85 °C (-40 185 °F)Mechanical specificationsConnector M12 x 1 , 4-pinConnection typeConnector M12 x 1 , 4-pinDegree of protectionIP67MaterialHousingTransducerbrass, nickel-platedTransducerepoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	UN/ECE Regulation No. 10 (E1)		Type-approval number: 10R-058090
Storage temperature -40 85 °C (-40 185 °F) Mechanical specifications -40 85 °C (-40 185 °F) Connection type Connector M12 x 1 , 4-pin Degree of protection IP67 Material IP67 Housing brass, nickel-plated Transducer epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Ambient conditions		
Mechanical specifications Connection type Connector M12 x 1, 4-pin Degree of protection IP67 Material IP67 Housing brass, nickel-plated Transducer epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Ambient temperature		-25 70 °C (-13 158 °F)
Connection type Connector M12 x 1, 4-pin Degree of protection IP67 Material IP67 Housing brass, nickel-plated Transducer epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT	Storage temperature		-40 85 °C (-40 185 °F)
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_B Teach input Switch output - U_B

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

Connection Assignment



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

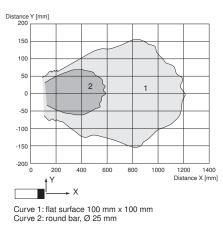
Ultrasonic sensor

Wire colors in accordance with EN 60947-5-2

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

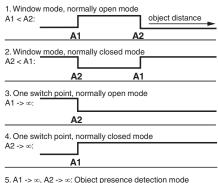
Characteristic Curve

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".

4

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
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

