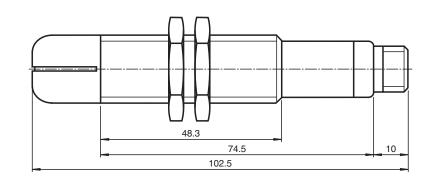
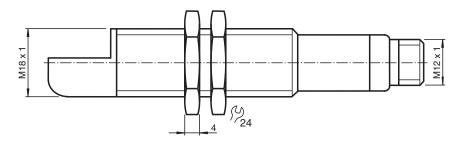


Single head system



Dimensions





Technical Data

Release date: 2023-02-15 Date of issue: 2023-02-15 Filename: 204541_eng.pdf

General specifications	
Sensing range	70 1000 mm
Adjustment range	90 1000 mm
Dead band	0 70 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 255 kHz
Response delay	approx. 125 ms
Indicators/operating means	
LED yellow	solid yellow: object in the evaluation range yellow, flashing: program function, object detected

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

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UB1000-18GM75A-I-V15

Ultrasonic sensor

Operating voltageUs1030 V DC, ripple 10 %ssNo-load supply currentIs $\leq 45 \text{ mA}$ Input/Outputbi-directional Direct-Dyc+1 V Input impedance: > 12 KOhm synchronization interpulse period: > 2 msSynchronizationIsevie - 4V+Us Input impedance: > 12 KOhm synchronization interpulse period: > 2 msSynchronization frequencymax. 40 HzMultiplex operationImput / n = number of sensors, n ≤ 5 Input1 program input lower evaluation limit A1:-Us+1 V, upper evaluation limit A2: +4 V+Us lower evaluation limit A1:-Us+1 V, upper evaluation limit A2: +4 V+Us mult impedance: > 12 KOhm source: > 12 KOhm source: > 12 Kohm lower evaluation limit A1:-Us+1 V, upper evaluation limit A2: +4 V+Us mult impedance: > 4.7 KQ, pulse duration: > 1 sOutputInput impedance: > 4.7 KQ, pulse duration: > 1 sOutput type1 analog output 4 20 mAResolution035 mmDeviation of the characteristic curve± 1 % of full-scale valueRepeat accuracy± 0.1 % of full-scale valueLoad impedance0300 OhmTemperature influence± 1.5 % of full-scale valueCompliance with standards and directives EX (C6 0947-5-2:2020) EX 60947-5-7:2003Standard conformityEN IEC 60947-5-2:2020 EX 60947-5-7:2003Approvalcultus Listed, Class 2 Power Source CC2 approval / marking not required for products rated ≤ 36 VAmbient conditions-2570 °C (-13158 °F)Ambient conditions-2570 °C (-13158 °F)Storage temperature-4085 °C (-40185 °F) <th>Technical Data</th> <th></th> <th></th>	Technical Data		
Operating voltageUa1030 V DC, ripple 10 % ₆₅₃ No-load supply currentIo $\leq 45 \text{ rA}$ InputVOutputIoIoSynchronizationDivertion (Unit, Unit, Un	LED red		
No-load supply current Ip ≤ 45 mÅ input/Output 	Electrical specifications		
Imput/Output Synchronization Deliveries of the second sec	Operating voltage	U_B	10 30 V DC , ripple 10 % _{SS}
Synchronization bi-directional Diversity of the product	No-load supply current	l ₀	≤ 45 mA
Olevel-Up+1V Synchronization frequency Common mode operation max. 40 Hz Multiplex operation ≤ 40 Hz / n, n = number of sensors, n ≤ 5 Input to operation Input trype 1 program input low revaluation limit A1: Up +1 V, upper evaluation limit A2: +4 V +Up program input low revaluation limit A1: Up +1 V, upper evaluation limit A2: +4 V +Up Output 1 program input low revaluation limit A1: Up +1 V, upper evaluation limit A2: +4 V +Up Output type 1 analog output 4 20 mA Output type 1 analog output 4 20 mA Resolution 0.35 mm Deviation of the characteristic curve ± 1 % of full-scale value Load impedance 0 300 Ohm Temperature influence	Input/Output		
Common mode operationmax. 40 HzMultiplex operation ≤ 40 Hz / n, n = number of sensors, n ≤ 5 InputInput sequence is a for a sensor in the sensor is a sensor is a sensor in the sensor is a sensor	Synchronization		0 level -U _B +1 V 1 level: +4 V+U _B input impedance: > 12 KOhm
Multiplex operation \leq 40 Hz / n, n = number of sensors, n \leq 5InputI program input lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation limit A1: .Ug +1 V, upper evaluation limit A2: +4 V +Ug lower evaluation evalu	Synchronization frequency		
Input type I program input impedance: > 4.7 kQ, pulse duration limit A1: Ug +1V, upper evaluation limit A2: +4 V +Ug. input impedance: > 4.7 kQ, pulse duration: > 1 s Output type I analog output 4 20 mA Resolution 0.35 mm Deviation of the characteristic curve ± 1 % of full-scale value Resolution 0 300 0hm Temperature influence 0 300 0hm Temperature influence 0 300 0hm Standards EN IEC 60947-5-2:200 IEC 609	Common mode operation		max. 40 Hz
Input type 1 program input lower evaluation limit A1: -U _B +1 V, upper evaluation limit A2: +4 V +U _B input impedance: > 4.7 K2, pulse duration: ≥ 1 s Output 1 analog output 4 20 mA Resolution 0.35 mm Deviation of the characteristic curve ± 1 % of full-scale value Repeat accuracy ± 0.1 % of full-scale value Load impedance 0 300 Ohm Temperature influence ± 1.5 % of full-scale value Compliance with standards and directives ± 1.5 % of full-scale value Standards ENIEC 60947-5-2:2020 IEC 60947-5-7:2003 Standards ENIEC 60947-5-7:2003 Approvals and certificates ENIEC 60947-5-7:2003 UL approval COC capproval / marking not required for products rated ≤36 V Approvals and certificates EVIEC 60947-5-7:2003 UL approval CULus Listed, Class 2 Power Source CCC approval COC capproval / marking not required for products rated ≤36 V Ambient temperature -40 85 °C (-40 185 °F) Mousing diameter 40 85 °C (-40 185 °F) Mousing diameter 60 Foractor plug M12 x 1 , 5-pin Housing diameter 18 mm De	Multiplex operation		\leq 40 Hz / n, n = number of sensors, n \leq 5
Iower Pevaluation limit A1: -Ug +1 V, upper evaluation limit A2: +4 V +Ug input impedance: > 4.7 kQ, pulse duration: ≥ 1 s Output type 1 analog output 4 20 mA Resolution 0.35 mm Deviation of the characteristic curve ± 1 % of full-scale value Repeat accuracy ± 0.1 % of full-scale value Load impedance 0300 Ohm Temperature influence ± 1.5 % of full-scale value Compliance with standards and directives EN IEC 60947-5-2:200 Standard conformity EN IEC 60947-5-2:200 Standards CC approval Approvals and certificates CULs Listed, Class 2 Power Source UL approval CC approval / marking not required for products rated ≤36 V Ambient conditions 40 85 °C (-40 185 °F) Ambient conditions 40 85 °C (-40 185 °F) Connection type Connector plug M12 x 1 , 5-pin Moting diameter 18 mm Degree of protection 19 foras, nickel-plated Material G Material G	Input		
Output type 1 analog output 4 20 mA Resolution 0.35 mm Deviation of the characteristic curve ± 1 % of full-scale value Repeat accuracy ± 0.1 % of full-scale value Load impedance 0 300 Ohm Temperature influence ± 1.5 % of full-scale value Compliance with standards and directives E Standards conformity E Standards EN IEC 60947-5-2:2000 IEC 60947-5-7:2003 IEC 60947-5-7:2003 IEC 60947-5-7:2003 Approvals and certificates EN IEC 60947-5-7:2003 IEC 60947-5-7:2003 IEC 60947-5-7:2003 UL approval CULs Listed, Class 2 Power Source CCC approval CULs Listed, Class 2 Power Source CCC approval CULs Listed, Class 2 Power Source CCC approval CCC approval/ marking not required for products rated ≤36 V Ambient conditions E Ambient temperature 40 85 °C (-40 185 °F) Mechanical specifications E Connector plug M12 x 1 ,5-pin Manalia Housing diameter IB mm Degree of protection IP67 Material Marasi, nickel-plated	Input type		lower evaluation limit A1: $-U_B \dots + 1 V$, upper evaluation limit A2: $+4 V \dots + U_B$
Resolution 0.35 mm Deviation of the characteristic curve ± 1 % of full-scale value Repeat accuracy ± 0.1 % of full-scale value Load impedance 0300 Ohm Temperature influence ± 1.5 % of full-scale value Compliance with standards and directives ± 1.5 % of full-scale value Standard conformity EN IEC 60947-5-2:2020 IEC 60947-5-2:2019 EC 60947-5-2:2019 EC 60947-5-2:2019 EC 60947-5-2:203 Approvals and certificates EN IEC 60947-5-2:2020 IEC 60947-5-7:2003 IEC 60047-5-7:200 IEC 60947-5-7:2003 IEC 60047-5-7:200 IEC 600	Output		
Beviation of the characteristic curve ±1 % of full-scale value Repeat accuracy ±0.1 % of full-scale value Load impedance 0 300 Ohm Temperature influence ±1.5 % of full-scale value Compliance with standards and directives Standard conformity Image: Standards Standards CULus Listed, Class 2 Power Source CCC approval CCC approval / marking not required for products rated ≤36 V Ambient conditions -40 85 °C (-13 158 °F) Starage temperature -40 85 °C (-40 185 °F) Moterial 18 mm	Output type		1 analog output 4 20 mA
Repeat accuracy ± 0.1 % of full-scale value Load impedance 0 300 Ohm Temperature influence ± 1.5 % of full-scale value Compliance with standards and directives Standard conformity EN IEC 60947-5-2:2020 IEC 60947-5-7:2003 IEC 60947-5-7:2003 IEC 60947-5-7:2003 Standards EN IEC 60947-5-7:2003 IEC 60947-5-7:2003 Approvals and certificates CULus Listed, Class 2 Power Source UL approval cULus Listed, Class 2 Power Source CCC approval cCC approval / marking not required for products rated ≤36 V Ambient conditions -40 85 °C (-40 185 °F) Storage temperature -40 85 °C (-40 185 °F) Molent lappeofications -40 85 °C (-40 185 °F) Mechanical specifications I8 mm Pagree of protection I8 mm Degree of protection IP67 Material Image: Storage temperature protection Material brass, nickel-plated Housing brass, nickel-plated	Resolution		0.35 mm
Impedance 0300 Ohm Temperature influence ± 1.5 % of full-scale value Compliance with standards and directives Impedance Standard conformity Impedance Standards EN IEC 60947-5-2:2020 IEC 60947-5-2:2003 IEC 60947-5-2:2003 IEC 60947-5-2:2003 IEC 60947-5-2:2003 IEC 60947-5-2:2003 Approvals and certificates CULus Listed, Class 2 Power Source CC approval cULus Listed, Class 2 Power Source CCC approval cCC capproval / marking not required for products rated ≤36 V Ambient conditions -25 70 °C (-13 158 °F) Storage temperature -20 85 °C (-40 185 °F) Storage temperature -20 85 °C (-40 185 °F) Mechanical specifications Imperature Connector plug M12 x 1 , 5-pin 18 mm Pegree of protection IP67 Material Imperature Housing brass, nickel-plated Housing brass, nickel-plated	Deviation of the characteristic curve		± 1 % of full-scale value
Temperature influence± 1.5 % of full-scale valueCompliance with standards and directives±Standard conformity[]Standards<	Repeat accuracy		± 0.1 % of full-scale value
Compliance with standards and directives Standard conformity Standards EN IEC 60947-5-2:2020 IEC 60947-5-2:2019 EN 60947-5-7:2003 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 -25 70 °C (-13 158 °F) Ambient temperature -25 70 °C (-40 185 °F) Storage temperature -40 85 °C (-40 185 °F) Mechanical specifications EN IEC fough 12 x 1 , 5-pin Pogree of protection IP67 Material IP67 Housing brass, nickel-plated Poxy resin/hollow glass sphere mixture; polyurethane foam	Load impedance		0 300 Ohm
Standard conformityImage: Constant of the constant o	Temperature influence		± 1.5 % of full-scale value
StandardsEN IEC 60947-5-2:2020 IEC 60947-5-7:2003 IEC 60947-5-7:2003Approvals and certificatesUL approvalcULus Listed, Class 2 Power SourceCCC approvalcCC approval / marking not required for products rated <36 V	Compliance with standards and directives		
IEC 60947-5-2:2019 EN 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 -25 70 °C (-13 158 °F) Ambient temperature -25 70 °C (-13 158 °F) Storage temperature -40 85 °C (-40 185 °F) Mechanical specifications -40 85 °C (-40 185 °F) Connection type Connector plug M12 x 1 , 5-pin Housing diameter 18 mm Degree of protection IP67 Material Housing brass, nickel-plated Pransducer epoxy resin/hollow glass sphere mixture; polyurethane foam	Standard conformity		
UL approvalcULus Listed, Class 2 Power SourceCCC approvalCCC approval / marking not required for products rated ≤36 VAmbient conditionsAmbient temperature-25 70 °C (-13 158 °F)Storage temperature-40 85 °C (-40 185 °F)Storage temperature-40 85 °C (-40 185 °F)Connection typeConnector plug M12 x 1, 5-pinHousing diameterI8 mmDegree of protectionIP67Materialbrass, nickel-platedHousingbrass, nickel-plated	Standards		IEC 60947-5-2:2019 EN 60947-5-7:2003
CCC approvalCCC approval / marking not required for products rated ≤36 VAmbient conditionsAmbient temperature-25 70 °C (-13 158 °F)Storage temperature-40 85 °C (-40 185 °F)Mechanical specificationsConnector plug M12 x 1 , 5-pinConnection typeConnector plug M12 x 1 , 5-pinHousing diameterIB mmDegree of protectionIP67MaterialDefaHousingbrass, nickel-platedFormationBrass, nickel-platedMaterialBrass, nickel-platedMaterialBra	Approvals and certificates		
Ambient conditionsAmbient temperature-25 70 °C (-13 158 °F)Storage temperature-40 85 °C (-40 185 °F)Mechanical specificationsConnector plug M12 x 1 , 5-pinConnection typeConnector plug M12 x 1 , 5-pinHousing diameter18 mmDegree of protectionIP67Materialbrass, nickel-platedHousingbrass, nickel-platedTransducerepoxy resin/hollow glass sphere mixture; polyurethane foam	UL approval		cULus Listed, Class 2 Power Source
Ambient temperature-25 70 °C (-13 158 °F)Storage temperature-40 85 °C (-40 185 °F)Mechanical specificationsConnection typeConnection typeConnector plug M12 x 1 , 5-pinHousing diameter18 mmDegree of protectionIP67MaterialIP67Housingbrass, nickel-platedHousingbrass, nickel-platedTransducerepoxy resin/hollow glass sphere mixture; polyurethane foam	CCC approval		CCC approval / marking not required for products rated ≤36 V
Storage temperature -40 85 °C (-40 185 °F) Mechanical specifications Connector plug M12 x 1 , 5-pin Connection type Connector plug M12 x 1 , 5-pin Housing diameter 18 mm Degree of protection IP67 Material Image: Specification structure structu	Ambient conditions		
Mechanical specifications Connection type Connector plug M12 x 1, 5-pin Housing diameter 18 mm Degree of protection IP67 Material Housing brass, nickel-plated Transducer epoxy resin/hollow glass sphere mixture; polyurethane foam	Ambient temperature		-25 70 °C (-13 158 °F)
Connection typeConnector plug M12 x 1, 5-pinHousing diameter18 mmDegree of protectionIP67MaterialHousingbrass, nickel-platedTransducerepoxy resin/hollow glass sphere mixture; polyurethane foam	Storage temperature		-40 85 °C (-40 185 °F)
Housing diameter 18 mm Degree of protection IP67 Material Housing brass, nickel-plated Transducer epoxy resin/hollow glass sphere mixture; polyurethane foam	Mechanical specifications		
Degree of protection IP67 Material Housing brass, nickel-plated Transducer epoxy resin/hollow glass sphere mixture; polyurethane foam	Connection type		Connector plug M12 x 1 , 5-pin
Material brass, nickel-plated Housing brass, nickel-plated Transducer epoxy resin/hollow glass sphere mixture; polyurethane foam	Housing diameter		18 mm
Housingbrass, nickel-platedTransducerepoxy resin/hollow glass sphere mixture; polyurethane foam	Degree of protection		IP67
Transducer epoxy resin/hollow glass sphere mixture; polyurethane foam	Material		
	Housing		brass, nickel-plated
Mass 60 g	Transducer		epoxy resin/hollow glass sphere mixture; polyurethane foam
	Mass		60 g

Connection

Standard symbol/Connections:

1	(versio	on I)	1	(BN)	
			2	(WH)	 + U_B Teaching input
	U		5	(GY)	- Sync.
			4	(BK)	Analog output
	*		3	<u>(BU)</u>	
					- U _R

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

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

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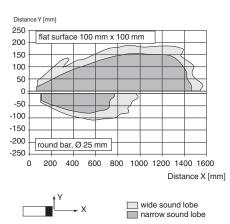
Connection Assignment

Connector V15

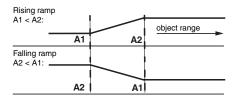


Characteristic Curve

Characteristic response curve



Programming the analog output mode



Accessories

Accessories				
0,1	UB-PROG2	Programming unit		
S	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		
CO CO CO CO	BF 5-30	Universal mounting bracket for cylindrical sensors with a diameter of 5 30 mm		
C	UVW90-K18	Ultrasonic -deflector		

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

Ultrasonic sensor

Accessories				
000	M18K-VE	Plastic nuts with centering ring for the vibration-free mounting of cylindrical sensors		
ø /	V15-G-2M-PVC	Female cordset single-ended M12 straight A-coded, 5-pin, PVC cable grey		
« //	V15-W-2M-PVC	Female cordset single-ended M12 angled A-coded, 5-pin, PVC cable grey		

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

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Additional Information

Synchronisation

The sensor features a synchronisation input for the suppression of mutual interference. If this input is not used, the sensor will operate using an internally generated clock rate. The synchronisation of multiple sensors can be realised as follows:

External synchronisation

The sensor can be synchronised by the external application of a square wave voltage. A synchronisation pulse at the synchronisation input starts a measuring cycle. The pulse must have a duration greater than 100 μ s. The measuring cycle starts with the falling edge of a synchronisation pulse. A low level > 1 s or an open synchronisation input will result in the normal operation of the sensor. A high level at the synchronisation input disables the sensor. Two operating modes are available:

Multiple sensors can be controlled by the same synchronisation signal. The sensors are synchronised.
 The synchronisation pulses are sent cyclically to individual sensors. The sensors operate in multiplex mode

Internal synchronisation

The synchronisation connections of up to 5 sensors capable of internal synchronisation are connected to one another. When power is applied, these sensors will operate in multiplex mode.

The response delay increases according to the number of sensors to be synchronised. Synchronisation cannot be performed during TEACH-IN and vice versa. The sensors must be operated in an unsynchronised manner to teach the evaluation limits.

Note:

If the option for synchronisation is not used, the synchronisation input has to be connected to ground (0V) or the sensor has to be operated via a V1 cable connector (4-pin).

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)
- Evaluation limits may only be specified within the first 5 minutes after Power on. To modify the evaluation limits later,
- the user may specify the desired values only after a new Power On.

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
TEACH-IN evaluation limit		
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

Adjusting the sound cone characteristics:

The ultrasonic sensor enables two different shapes of the sound cone, a wide angle sound cone and a small angle sound cone.

1. Small angle sound cone

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



Ultrasonic sensor

UB1000-18GM75A-I-V15

pause

J:X: [

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- switch off the power supply
- connect the Teach-In input wire to $\mbox{-}U_{\mbox{B}}$
- switch on the power supply
- the red LED flashes once with a pause before the next.
- yellow LED: permanently on: indicates the presence of an object or disturbing object within the sensing range
- disconnect the Teach-In input wire from -U_B and the changing is saved

2. Wide angle sound cone

- switch off the power supply
- connect the Teach-In input wire with +UB
- switch on the power supply
- the red LED double-flashes with a long pause before the next.
- yellow LED: permanently on: indicates an object or disturbing object within the sensing range
- disconnect the Teach-In input wire from +U_B and the changing is saved

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

