Technical data

General specifications

Sensing range	35 ... 300 mm
Adjustment range	50 ... 300 mm
Dead band	0 ... 35 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 390 kHz
Response delay	approx. 50 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 %$_{SS}$
No-load supply current I_0	≤ 20 mA

Input

Input type	1 program input operating distance 1: $-U_B$ ... +1 V, operating distance 2: +6 V ... +U_B input impedance: > 4,7 kΩ program pulse: ≥ 1 s

Output

Output type	1 switching output E4, NPN, NO/NC, programmable
Rated operating current I_e	200 mA , short-circuit/overload protected
Default setting	Switch point A1: 50 mm Switch point A2: 300 mm
Voltage drop U_d	≤ 3 V
Repeat accuracy	≤ 1 %
Switching frequency f	≤ 13 Hz
Range hysteresis H	1 % of the set operating distance
Temperature influence	± 1.5 % of full-scale value

Ambient conditions

Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)

Mechanical specifications

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

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

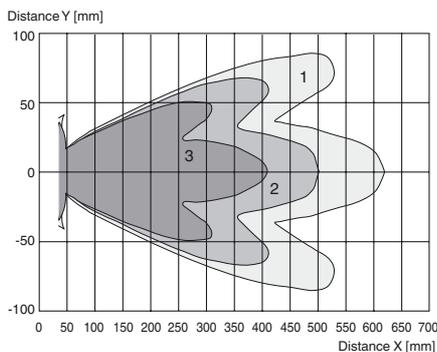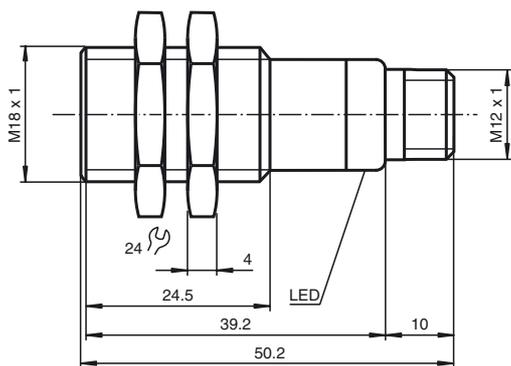|	
EAC conformity	TR CU 020/2011
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
CCC approval	CCC approval / marking not required for products rated ≤36 V

Model Number

UB300-18GM40-E4-V1

Single head system

Features

- **Short design, 40 mm**
- **Function indicators visible from all directions**
- **Switch output**
- **5 different output functions can be set**
- **Program input**
- **Temperature compensation**

Diagrams

Characteristic response curve

Curve 1: flat surface 100 mm x 100 mm
Curve 2: flat surface 10 mm x 10 mm
Curve 3: round bar, Ø 25 mm

Release date: 2016-08-01 13:41   Date of issue: 2016-08-01   220356_eng.xml

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

Pepperl+Fuchs Group	USA: +1 330 486 0001	Germany: +49 621 776 4411	Singapore: +65 6779 9091
www.pepperl-fuchs.com	fa-info@us.pepperl-fuchs.com	fa-info@de.pepperl-fuchs.com	fa-info@sg.pepperl-fuchs.com

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Dimensions

M18 x 1

M12 x 1

24

4

24.5

39.2

10

50.2

LED

Additional Information

Programmable output modes

1. Window mode, normally open mode
A1 < A2:

A1   A2   object distance

2. Window mode, normally closed mode
A2 < A1:

A2   A1

3. One switch point, normally open mode
A1 -> ∞:

A2

4. One switch point, normally closed mode
A2 -> ∞:

A1

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

Electrical Connection

Standard symbol/Connections:
(version E4, npn)

U

1 (BN)   + U_B
2 (WH)   Teach input
4 (BK)   Switch output
3 (BU)   - U_B
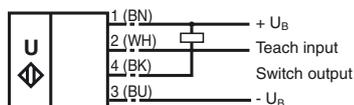
Core colours in accordance with EN 60947-5-2.

Pinout

Connector V1

2
3   1
4

Accessories

UB-PROG2
Programming unit

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
Mounting flange with dead stop, 18 mm

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

V1-G-2M-PVC
Female cordset, M12, 4-pin, PVC cable

V1-W-2M-PUR
Female cordset, M12, 4-pin, PUR cable

Adjusting the switching points

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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.

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| www.pepperl-fuchs.com | fa-info@us.pepperl-fuchs.com | fa-info@de.pepperl-fuchs.com | fa-info@sg.pepperl-fuchs.com |

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