



Model Number

UB300-18GM40-E5-V1

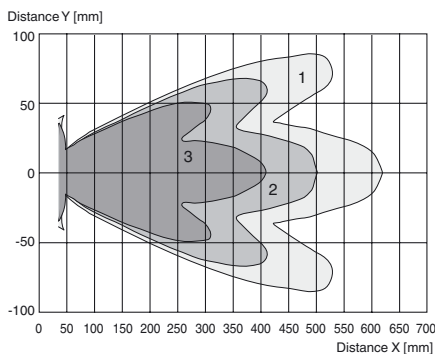
Single head system

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



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 E5, PNP 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

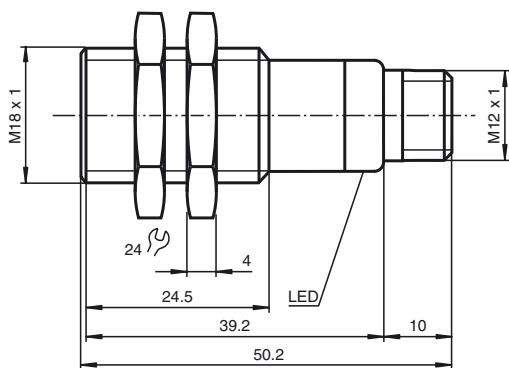
| | |
|---------------------|-------------------------------------------------------------|
| Standard conformity | |
| Standards | EN 60947-5-2:2007 + A1:2012 IEC 60947-5-2:2007 + A1:2012 |

Approvals and certificates

| | |
|--------------|--------------------------------------------------------------|
| UL approval | cULus Listed, General Purpose |
| CSA approval | cCSAus Listed, General Purpose |
| CCC approval | CCC approval / marking not required for products rated ≤36 V |

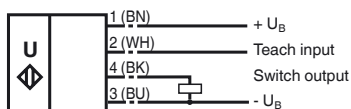
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Dimensions



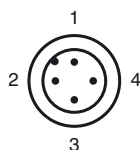
Electrical Connection

Standard symbol/Connections:
(version E5, pnp)



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

Pinout



Wire colors in accordance with EN 60947-5-2

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

Additional Information

Programmable output modes

1. Window mode, normally open mode
A1 < A2: object distance
2. Window mode, normally closed mode
A2 < A1:
3. One switch point, normally open mode
A1 -> ∞:
4. One switch point, normally closed mode
A2 -> ∞:
5. A1 -> ∞, A2 -> ∞: Object presence detection mode
Object detected: Switch output closed
No object detected: Switch output open

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

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

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