



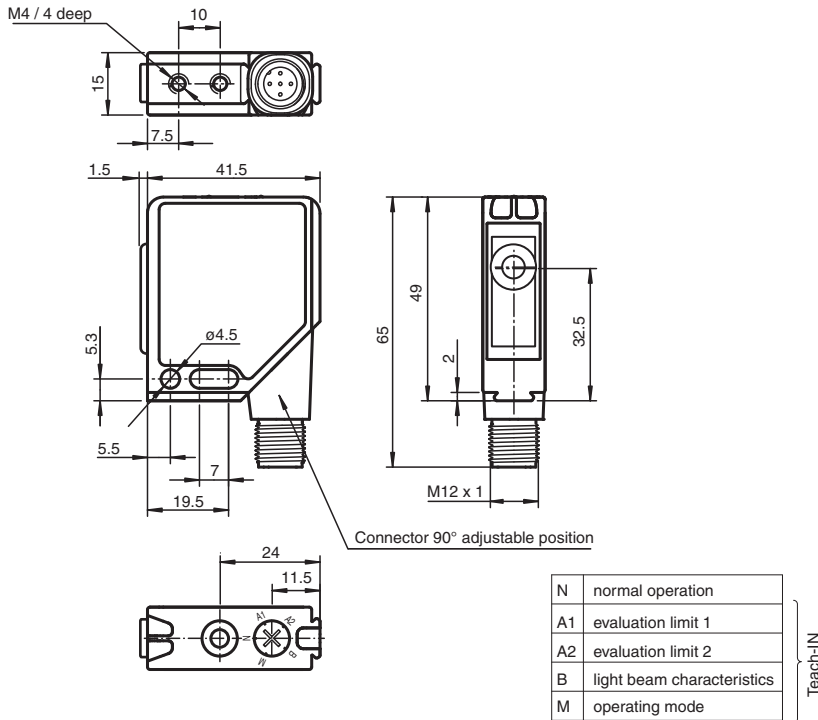
Ultrasonic sensor UB250-F12-EP-V15

- Evaluation limits can be taught-in
- Selectable sound lobe width
- Synchronization options
- Very small unusable area
- Temperature compensation

Single head system



Dimensions



Technical Data

General specifications

| | |
|-----------------------|-----------------|
| Sensing range | 20 ... 250 mm |
| Adjustment range | 25 ... 250 mm |
| Dead band | 0 ... 20 mm |
| Standard target plate | 100 mm x 100 mm |
| Transducer frequency | approx. 400 kHz |
| Response delay | approx. 20 ms |

Indicators/operating means

| | |
|------------|---|
| LED green | Operating display |
| LED yellow | Evaluation range indicator, Ready for programming |

Release date: 2020-05-23 Date of issue: 2021-02-05 Filename: 202070_eng.pdf

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

Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

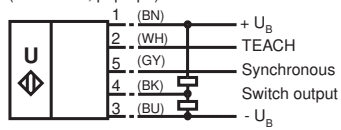
PF PEPPERL+FUCHS

Technical Data

| | | |
|---|-------|--|
| LED red | | Ready for programming, Fault |
| Electrical specifications | | |
| Operating voltage | U_B | 10 ... 30 V DC |
| No-load supply current | I_0 | ≤ 30 mA |
| Input/Output | | |
| Synchronization | | 1 synchronous connection, bi-directional 0-level: $-U_B \dots +1$ V 1-level: $+4$ V $\dots +U_B$ input impedance: > 12 kΩ synchronization pulse: ≥ 100 μs, synchronization interpulse period: ≥ 2 ms |
| Synchronization frequency | | |
| Common mode operation | | max. 200 Hz |
| Multiplex operation | | ≤ 200/n Hz, n = number of sensors |
| Input | | |
| Input type | | 1 program input Switching distance 1: $-U_B \dots +1$ V, Switching distance 2: $+3$ V $\dots +U_B$ Input impedance: > 10 kΩ |
| Pulse length | | ≥ 1 s |
| Output | | |
| Output type | | Push-pull output, short-circuit protected, reverse polarity protected |
| Rated operating current | I_e | 200 mA , short-circuit/overload protected |
| Default setting | | near switch point: 25 mm far switch point: 250 mm wide sound lobe output function: Window mode output behavior: NO contact |
| Voltage drop | U_d | ≤ 3 V |
| Repeat accuracy | | ≤ 1 % |
| Switching frequency | f | 20 Hz |
| Range hysteresis | H | 1 % of the set operating distance |
| 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 |
| CSA approval | | cCSAus Listed, General Purpose |
| Ambient conditions | | |
| Ambient temperature | | -15 ... 70 °C (5 ... 158 °F) |
| Storage temperature | | -40 ... 85 °C (-40 ... 185 °F) |
| Mechanical specifications | | |
| Connection type | | Connector M12 x 1 , 5-pin |
| Degree of protection | | IP54 |
| Material | | |
| Housing | | Frame: nickel plated, die cast zinc, Laterals: glass-fiber reinforced plastic PC |
| Transducer | | epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT |
| Mass | | 60 g |

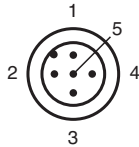
Connection

Standard symbol/Connections:
(version EP, pnp/npn)



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

Connection Assignment

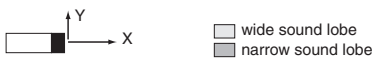
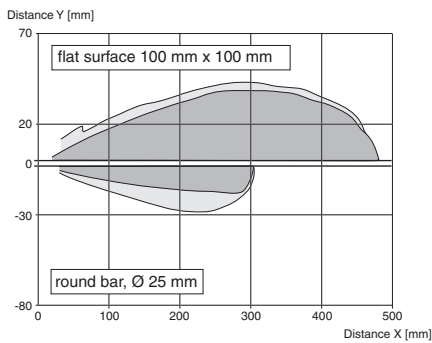


Wire colors in accordance with EN 60947-5-2

| | | |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue) |
| 4 | BK | (black) |
| 5 | GY | (gray) |

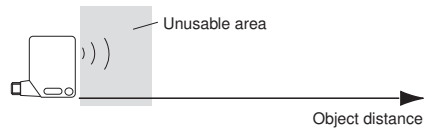
Characteristic Curve

Characteristic response curve

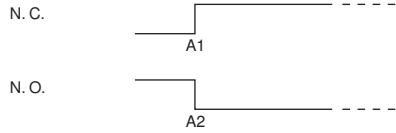


Release date: 2020-05-23 Date of issue: 2021-02-05 Filename: 202070_eng.pdf

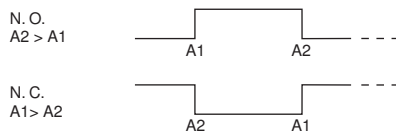
Programmable operation modes



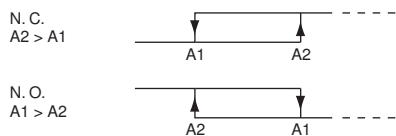
1. Switching point mode



2. Window mode



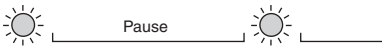



3. Hysteresis mode



Accessories

| | | |
|--|----------------------|---|
| | OMH-K01 | dove tail mounting clamp |
| | OMH-K02 | dove tail mounting clamp |
| | OMH-K03 | dove tail mounting clamp |
| | OMH-01 | Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm |
| | OMH-06 | Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm |
| | OMH-MLV12-HWG | Mounting bracket for series MLV12 sensors |
| | OMH-MLV12-HWK | Mounting bracket for series MLV12 sensors |
| | V15-G-2M-PVC | Female cordset single-ended M12 straight A-coded, 5-pin, PVC cable grey |

Release date: 2020-05-23 Date of issue: 2021-02-05 Filename: 202070_eng.pdf

| Characteristic | Flashing sequence of the green LED | T-Button |
|----------------|---|---|
| Narrow beam |  |  |
| Medium beam |  | |
| Broad beam |  | |

- Return the selector switch to position N when the desired beam breadth is indicated.

Note: Acceptance of the ultrasonic beam breadth into the permanent memory of the sensor does not take place until the selector switch is set to N. If this acceptance does not take place within the 5 minute time window, the sensor continues its operation with an unchanged ultrasonic beam breadth and the red and yellow LEDs flash.

Synchronisation

A synchronisation connection is provided for the suppression of mutual interference. If this is unused, or connected to 0V, then the sensor operates with an internally generated clock-pulse rate. The synchronisation of a number of sensors can be achieved by the following means.

External synchronisation:

The sensor can be synchronised by the external application of a square-wave voltage. A synchronisation pulse at the synchronisation input leads to the execution of a measuring cycle. The pulse width must be greater than 1.2 ms. The measuring cycle starts with the falling ramp. A low level > 1 s or an open synchronisation input leads to the normal operation of the sensor. A high level at the synchronisation input deactivates the sensor.

Two operating modes are possible.

- A number of sensors are triggered by the same synchronisation signal. The sensors operate in common mode.
- The synchronisation pulses are fed cyclically to one sensor at a time. The sensors operate in multiplex mode.

Self-synchronisation:

The synchronisation connections of up to 5 sensors are connected together to provide the option of self-synchronisation. When the operating voltage is switched on these sensors operate in multiplex mode. The switch-in delay increases depending on the number of sensors to be synchronised. Synchronisation cannot take place during teach-in and vice-versa. The sensors must be operated unsynchronised for the teaching-in of the switch points.

Note:

If the synchronisation option is not used, then the synchronisation input is connected to earth (0V) or the sensor is operated with a V1 connection cable (4-pole).

Release date: 2020-05-23 Date of issue: 2021-02-05 Filename: 202070_eng.pdf