

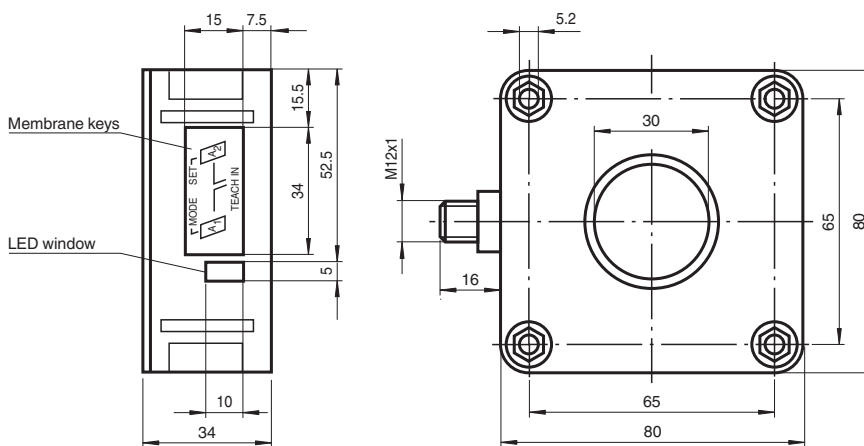
Ultrasonic sensor UB4000-F42-I-V15

- Analog output 4 mA ... 20 mA
- Extremely small unusable area
- TEACH-IN
- Interference suppression (adjustable divergence of sound cone in close range)
- Temperature compensation
- Synchronization options
- Mode of operation adjustable

Single head system



Dimensions



Technical Data

General specifications

| | |
|-----------------------|-----------------|
| Sensing range | 200 ... 4000 mm |
| Adjustment range | 240 ... 4000 mm |
| Dead band | 0 ... 200 mm |
| Standard target plate | 100 mm x 100 mm |
| Transducer frequency | approx. 85 kHz |
| Response delay | approx. 325 ms |

Indicators/operating means

| | |
|------------|---|
| LED green | solid green: Power on |
| LED yellow | solid: object in evaluation range flashing: program function |
| LED red | normal operation: "fault" program function: no object detected |

Electrical specifications

| | | |
|------------------------|-------|---|
| Operating voltage | U_B | 10 ... 30 V DC, ripple 10 % _{SS} |
| No-load supply current | I_0 | ≤ 60 mA |

Input/Output

Release date: 2025-06-03 Date of issue: 2025-06-03 Filename: 134003_eng.pdf

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

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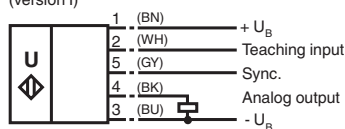
PEPPERL+FUCHS

Technical Data

| | | |
|--|--|---|
| Synchronization | | bi-directional 0 level: -U _B ...+1 V 1 level: +4 V...+U _B input impedance: > 12 KOhm synchronization pulse: ≥ 100 μs, synchronization interpulse period: ≥ 2 ms |
| Synchronization frequency | | |
| Common mode operation | | max. 13 Hz |
| Multiplex operation | | ≤ 13/n Hz, n = number of sensors |
| Output | | |
| Output type | | 1 analog output 4 ... 20 mA |
| Default setting | | evaluation limit A1: 240 mm , evaluation limit A2: 4000 mm , wide sound lobe |
| Resolution | | 0.7 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 % 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 | | |
| Ambient temperature | | -25 ... 70 °C (-13 ... 158 °F) |
| Storage temperature | | -40 ... 85 °C (-40 ... 185 °F) |
| Mechanical specifications | | |
| Connection type | | Connector plug M12 x 1 , 5-pin |
| Degree of protection | | IP54 |
| Material | | |
| Housing | | ABS |
| Transducer | | epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT |
| Mass | | 150 g |
| Dimensions | | |
| Height | | 80 mm |
| Width | | 80 mm |
| Length | | 34 mm |

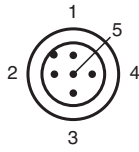
Connection Assignment

Standard symbol/Connections: (version I)



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

Connection Assignment

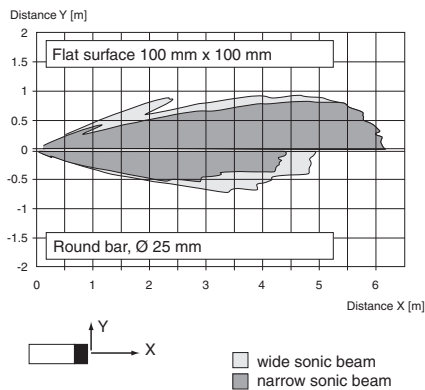


Wire colors in accordance with EN 60947-5-2

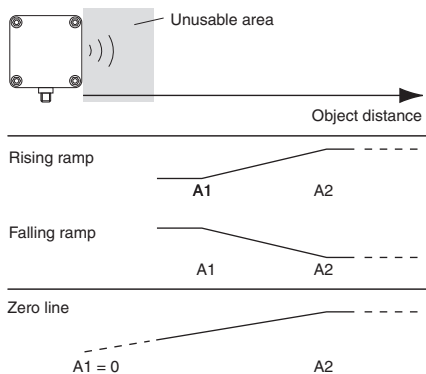
| | | |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue) |
| 4 | BK | (black) |
| 5 | GY | (gray) |

Characteristic Curve

Characteristic response curve



Analogue output programming



Synchronisation

The sensor provides a synchronisation port to suppress mutual influencing. If this port has not been connected, the sensor works at an internally generated cycle rate. Several sensors may be synchronised via the following options.

External synchronisation:

The sensor may be synchronised via the external application of a square wave voltage. A synchronisation pulse on the synchronisation input initiates a measuring cycle. The pulse width must be greater than 100 µs. The measuring cycle is started with the falling edge. A low level > 1 s or an open synchronisation input initiate the transition to normal sensor mode. A high level on the synchronisation input deactivates the sensor.

Two modes are possible:

- Several sensors are controlled via the same synchronisation signal. The sensors work in common mode.
- The synchronisation pulses are forwarded at cyclic intervals to respectively one single sensor. The sensors work in multiplex mode.

Self-synchronisation:

The synchronisation ports of up to 5 sensors suitable for self-synchronisation are connected to each other. These sensors work in multiplex mode after Power on. The On delay increases depending on the number of sensors to be synchronised. While the learn mode is active, no synchronisation is possible (and vice-versa). To specify the switching points, the sensors must be operated in non-synchronised mode.

Note:

If the synchronisation option is not used, the synchronisation input must be connected to ground (0V) or the sensor must be operated with a (4-pole) V1 connecting cable.