



Ultrasonic direct detection sensor UB250-F77-F-V31

- Miniature design
- Frequency output
- Program input
- Degree of protection IP67
- Switching status indicator, yellow LED

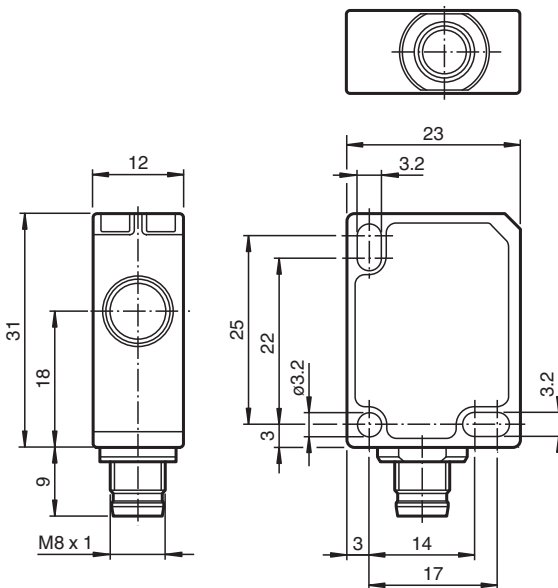
Ultrasonic direct detection sensor



Function

The ultrasonic sensor transmits ultrasonic packages in quick succession and responds to their reflection off the detected object. It has a frequency output that delivers a square wave signal. The frequency of this signal changes linearly with the distance of the object. Two frequency ranges are available.

Dimensions



Technical Data

General specifications

| | |
|-----------------------|-----------------|
| Sensing range | 35 ... 250 mm |
| Dead band | 0 ... 35 mm |
| Standard target plate | 20 mm x 20 mm |
| Transducer frequency | approx. 400 kHz |
| Response delay | ≤ 50 ms |

Release date: 2023-02-16 Date of issue: 2023-02-16 Filename: 233260_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

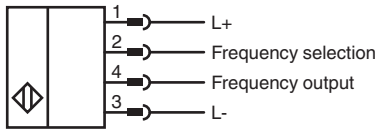
Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

pf PEPPERL+FUCHS

Technical Data

| | | |
|---|-------|---|
| Limit data | | |
| Permissible cable length | | max. 300 m |
| Indicators/operating means | | |
| LED yellow | | object inside the scanning range |
| Electrical specifications | | |
| Rated operating voltage | U_e | 24 V DC |
| Operating voltage | U_B | 20 ... 30 V DC , ripple 10 % _{SS} ; 12 ... 20 V DC sensitivity reduced to 90 % |
| No-load supply current | I_0 | ≤ 20 mA |
| Time delay before availability | t_v | ≤ 150 ms |
| Input | | |
| Input type | | 1 program input |
| Level | | low level : 0 ... 0.7 V (Teach-In active) high level : U_B or open input (Teach-In inactive) |
| Input impedance | | 16 kΩ |
| Pulse length | | ≥ 3 s |
| Output | | |
| Output type | | Frequency output , PNP |
| Rated operating current | I_e | 100 mA , short-circuit/overload protected |
| Voltage drop | U_d | ≤ 2 V |
| Resolution | | Standard: 2 Hz / mm , low: 1 Hz / mm |
| Repeat accuracy | | ± 2.5 % |
| Off-state current | I_r | ≤ 0.01 mA |
| Output frequency | | Standard: 70 ... 500 Hz , low (adjustable): 35 ... 250 Hz |
| Temperature influence | | 0.17 %/K |
| Compliance with standards and directives | | |
| Standard conformity | | |
| Standards | | EN IEC 60947-5-2:2020 IEC 60947-5-2:2019 |
| 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) |
| Shock resistance | | 30 g , 11 ms period |
| Vibration resistance | | 10 ... 55 Hz , Amplitude ± 1 mm |
| Mechanical specifications | | |
| Connection type | | M8 x 1 connector , 4-pin |
| Degree of protection | | IP67 |
| Material | | |
| Housing | | Polycarbonate |
| Transducer | | epoxy resin/hollow glass sphere mixture; polyurethane foam |
| Installation position | | any position |
| Mass | | 10 g |
| Tightening torque, fastening screws | | max. 0.2 Nm |

Connection



Connection Assignment

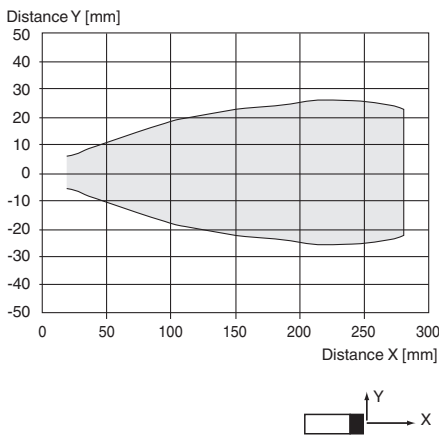


Wire colors in accordance with EN 60947-5-2

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

Characteristic Curve

Characteristic response curve



Commissioning

Adjustment Possibilities

The sensor is equipped with an analog frequency output. The frequency delivered at the analog output (square wave signal) changes linearly with the object distance. It is possible to select between two frequency ranges via the frequency selection input of the sensor. Switching the potential at the frequency selection input during operation does not change the output frequency range.

Further Documentation




For information on programming the frequency selection input you may refer to the commissioning instruction.

Accessories

| | | |
|--|---------------------|--|
| | UB-PROG4-V31 | Programming unit for ultrasonic sensors with Teach-in input at pin 2 |
|--|---------------------|--|

Release date: 2023-02-16 Date of issue: 2023-02-16 Filename: 233260_eng.pdf

Accessories

| | | |
|---|----------------------|--|
|  | OMH-ML7-01 | Mounting aid for ML7 and ML8 series, Mounting bracket |
|  | V31-GM-2M-PVC | Female cordset single-ended M8 straight A-coded, 4-pin, PVC cable grey |
|  | V31-WM-2M-PVC | Female cordset single-ended M8 angled A-coded, 4-pin, PVC cable grey |

Release date: 2023-02-16 Date of issue: 2023-02-16 Filename: 233260_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