

## Model Number

**UB250-F77-F-V31**

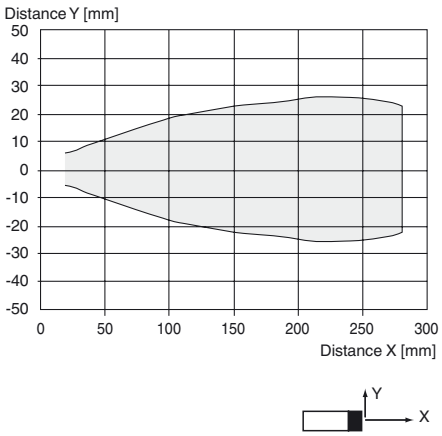
Ultrasonic direct detection sensor

## Features

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

## Diagrams

### Characteristic response curve




## Technical data

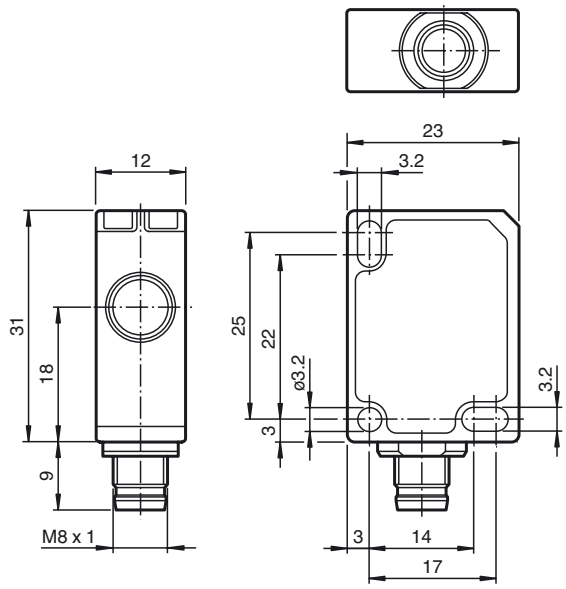
| | |
|---|---|
| **General specifications** | |
| Sensing range | 35 ... 250 mm |
| Dead band | 0 ... 35 mm |
| Standard target plate | 20 mm x 20 mm |
| Transducer frequency | approx. 400 kHz |
| Response delay | ≤ 50 ms |
| **Nominal ratings** | |
| Time delay before availability $t_v$ | ≤ 150 ms |
| **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 |
| **Input** | |
| Input type | 1 program input |
| Level | low level : 0 ... 0.7 V (Teach-In active)<br>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 |
| Resolution | Standard 2 Hz / mm |
| Repeat accuracy | ± 2.5 % |
| Off-state current $I_r$ | ≤ 0.01 mA |
| Output frequency | frequency : 70 ... 500 Hz ( 35 ... 250 Hz ) , adjustable |
| Temperature influence | + 0.17 %/K |
| **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 |
| **Compliance with standards and directives** | |
| Standard conformity | |
| Standards | EN 60947-5-2:2007+A1:2012<br>IEC 60947-5-2:2007 + A1:2012 |
| **Approvals and certificates** | |
| UL approval | cULus Listed, General Purpose |
| CCC approval | CCC approval / marking not required for products rated ≤36 V |

### Safety Note

The use of this device in applications, where the safety of persons depends from the devices function, is not allowed!

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## Dimensions




### Description of 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.

### Description of the Frequency Selection

Proceed as follows to select the frequency range:

**Standard frequency 70 ... 500 Hz**

1. Connect terminal ET to $+U_B$ or leave it open.
2. Switch on the operating voltage.
3. The sensor will be ready for operation after 3 seconds.

**Low frequency 35 ... 250 Hz**

1. Connect terminal (ET) to $-U_B$.
2. Switch on the operating voltage.
3. The sensor will be ready for operation after 3 seconds.

| ET | unusable area | Sensing range 35 ... 250 mm | > 250 mm or no object |
|---|---|---|---|
| Open or $+U_B$ | Undefined | 70 ... 500 Hz | 500 Hz |
| $-U_B$ | Undefined | 35 ... 250 Hz | 250 Hz |

**Note:**

Switching the potential on ET during operation will not change the frequency range.

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