

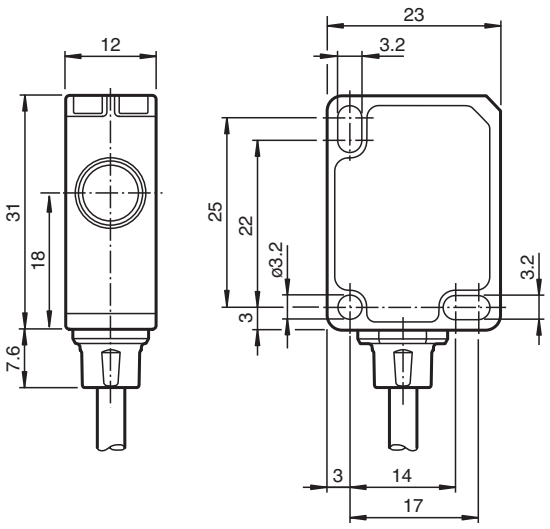
# Ultrasonic direct detection sensor

## UB250-F77-E2-2M

- Miniature design
- Program input
- Degree of protection IP67
- Switching status indicator, yellow LED
- Cable connection

Ultrasonic direct detection sensor

## Dimensions




## Technical Data

| | | |
|---|---|---|
| **General specifications** | | |
| Sensing range | | 20 ... 250 mm |
| Adjustment range | | 45 ... 250 mm |
| Dead band | | 0 ... 20 mm |
| Standard target plate | | 20 mm x 20 mm |
| Transducer frequency | | approx. 400 kHz |
| Response delay | | ≤ 50 ms |
| **Limit data** | | |
| Permissible cable length | | max. 300 m |
| **Indicators/operating means** | | |
| LED yellow | | switching state and flashing: Teach-In |
| **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 |

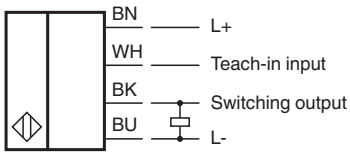
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## Technical Data

| | | |
|---|---|---|
| **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 | | 1 switch output PNP, NO |
| Rated operating current | $I_e$ | 200 mA , short-circuit/overload protected |
| Voltage drop | $U_d$ | ≤ 2 V |
| Repeat accuracy | | ± 1 mm |
| Switching frequency | f | 10 Hz |
| Range hysteresis | H | typ. 2.5 mm |
| Off-state current | $I_r$ | ≤ 0.01 mA |
| Temperature influence | | 0.17 %/K |
| **Compliance with standards and directives** | | |
| Standard conformity | | |
| Standards | | EN IEC 60947-5-2:2020<br>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 | | cable |
| Degree of protection | | IP67 |
| Material | | |
| Housing | | Polycarbonate |
| Transducer | | epoxy resin/hollow glass sphere mixture; polyurethane foam |
| Cable | | |
| Connection assembly | | flexible leads , Fine-stranded copper |
| Wire end ferrules | | no |
| Cable diameter | | 3.9 mm ± 0.1 mm |
| Bending radius | | > 10 x cable diameter |
| Material | | PUR |
| Color | | black |
| Number of cores | | 4 |
| Core cross section | | 0.19 $mm^2$ |
| Length | L | 2 m |
| Installation position | | any position |
| Mass | | 51 g |
| Tightening torque, fastening screws | | max. 0.2 Nm |
| Dimensions | | |
| Height | | 31 mm |
| Width | | 12 mm |
| Length | | 23 mm |
| **Factory settings** | | |
| Output | | Switching point: 250 mm |

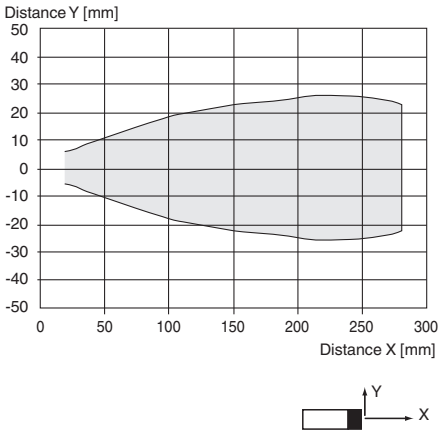
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## Connection

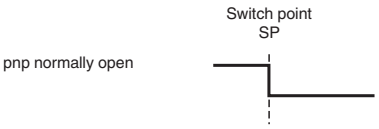



## Characteristic Curve

### Characteristic response curve




### Switch point mode




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## Additional Information

### Adjustment possibilities

The sensor is equipped with a switching output with 1 adjustable switch point. The switch point is adjusted using the teach-in input of the sensor.

### Further Documentation

For information on programming via teach-in input you may refer to the commissioning instruction.

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