# Retroreflective sensor for glass detection

## ML100-55-G/102/115

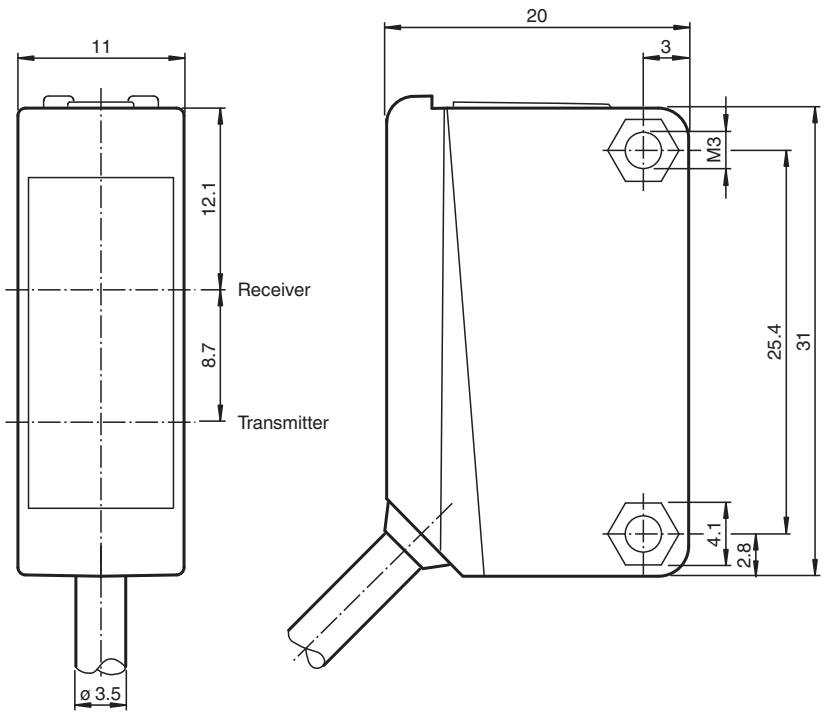
- Miniature design
- Detects transparent materials
- Teach-in switch for setting the contrast detection levels
- Automatic adjustment in case of soiling in contrast detection mode
- Very bright, highly visible light spot
- Full metal thread mounting

Retroreflective sensor for glass detection, plastic housing, detection range: 2.5 m, red light, teach-in, light/dark on, NPN output, fixed cable

## Function

The optical sensors of this series are suitable for both standard and demanding applications.
The series features a miniature housing design, two M3 metal-threaded mounting holes and a highly visible LED status indicator.
Each device is equipped with a sensitivity adjuster and a light-on/dark-on changeover switch for increased flexibility.
A wide variety of versions are available in both infrared light and red light with PowerBeam for easy alignment.
Special versions with BlueBeam are suitable for challenging applications like those in the solar and battery industries.

## Dimensions




## Technical Data

| General specifications | |
|---|---|
| Effective detection range | 0 ... 2.5 m |
| Reflector distance | 0.05 ... 2.5 m |
| Threshold detection range | 2.5 m |

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## Technical Data

| | | |
|---|---|---|
| Reference target | | H50 reflector |
| Light source | | LED |
| Light type | | modulated visible red light |
| Polarization filter | | yes |
| Diameter of the light spot | | approx. 180 mm at a distance of 2.5 m |
| Opening angle | | approx. 4 ° |
| Optical face | | frontal |
| Ambient light limit | | EN 60947-5-2:2007+A1:2012 |
| **Functional safety related parameters** | | |
| $MTTF_d$ | | 860 a |
| Mission Time ($T_M$) | | 20 a |
| Diagnostic Coverage (DC) | | 0 % |
| **Indicators/operating means** | | |
| Operation indicator | | LED green: power on Teach-In : LED yellow/green; equiphase flashing; 2,5 Hz Teach Error:LED green/yellow non equiphase flashing; 8.0 Hz |
| Function indicator | | LED yellow: lights up when receiving the light beam OFF when light beam is interrupted |
| Control elements | | Teach-In rotary switch |
| Control elements | | Light-on/dark-on changeover switch preset to light-on |
| Contrast detection levels | | 18 % - clear glass bottles<br>40 % - colored glass or opaque materials<br>adjustable due to Teach-In switch |
| **Electrical specifications** | | |
| Operating voltage | $U_B$ | 10 ... 30 V DC |
| Ripple | | max. 10 % |
| No-load supply current | $I_0$ | < 20 mA |
| **Output** | | |
| Switching type | | The switching type of the sensor is adjustable. The default setting is: light-on |
| Signal output | | 1 NPN output, short-circuit protected, reverse polarity protected, open collector |
| Switching voltage | | max. 30 V DC |
| Switching current | | max. 100 mA , resistive load |
| Voltage drop | $U_d$ | ≤ 1.5 V DC |
| Switching frequency | f | 1000 Hz |
| Response time | | 0.5 ms |
| **Conformity** | | |
| Product standard | | EN 60947-5-2 |
| **Approvals and certificates** | | |
| UL approval | | cULus Listed, Class 2 Power Source or listed Power Supply with a limited voltage output with (maybe integrated) fuse (max. 3.3 A according UL248), Type 1 enclosure |
| CCC approval | | CCC approval / marking not required for products rated ≤36 V |
| **Ambient conditions** | | |
| Ambient temperature | | -30 ... 60 °C (-22 ... 140 °F) |
| Storage temperature | | -40 ... 70 °C (-40 ... 158 °F) |
| **Mechanical specifications** | | |
| Degree of protection | | IP67 |
| Connection | | 2 m fixed cable |
| Material | | |
| Housing | | PC (Polycarbonate) |
| Optical face | | PMMA |
| Mass | | approx. 50 g |
| Tightening torque, fastening screws | | 0.6 Nm |
| Dimensions | | |
| Height | | 31 mm |
| Width | | 11 mm |

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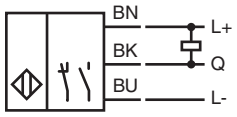
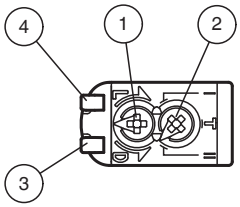
## Technical Data

| | | |
|---|---|---|
| Depth | | 20 mm |
| Cable length | | 2 m |

## Connection



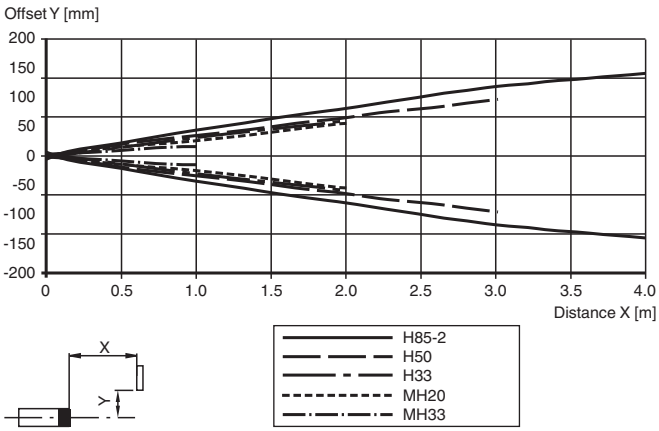

## Assembly



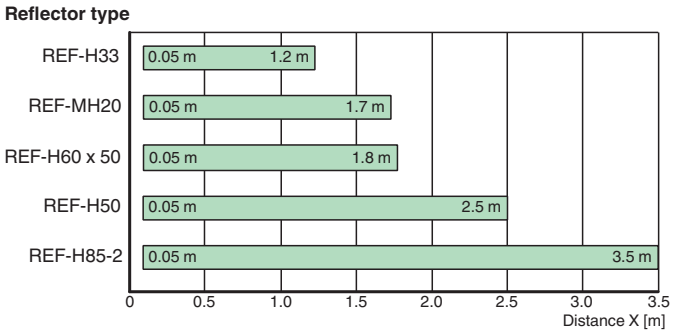

| | | |
|---|---|---|
| 1 | Light/dark changeover switch | |
| 2 | Teach-in and mode selection potentiometer<br>T Teach-in mode<br>I 18% contrast mode<br>II 40% contrast mode | |
| 3 | Signal indicator | yellow |
| 4 | Operating indicator | green |

## Characteristic Curve

### Characteristic response curve




### Reflector-dependent effective operating distances, typical

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