



## Retroreflective sensor for glass detection

ML100-55-G-8523/103



- 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

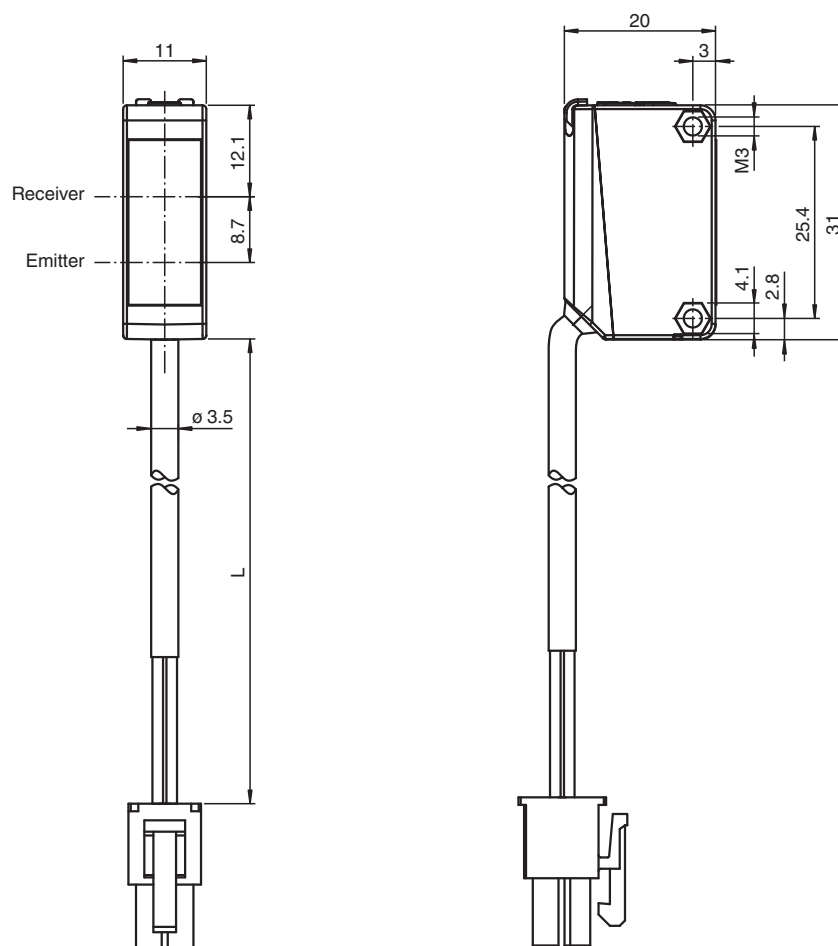
Retroreflective sensor for glass detection, plastic housing, detection range: 2.5 m, red light, teach-in, light/dark on, PNP output, cable with 4-pin Molex connector



### Function

The ML100 series is characterized by its miniature housing with integral, all-metal threaded bushings. All versions are equipped with a visible red transmitter LED. This greatly simplifies installation and commissioning. The switching states are easily visible from all directions thanks to the highly visible LEDs.

### Dimensions



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

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## Technical Data

### General specifications

|                            |                                       |
|----------------------------|---------------------------------------|
| Effective detection range  | 0 ... 2.5 m                           |
| Reflector distance         | 0.05 ... 2.5 m                        |
| Threshold detection range  | 2.5 m                                 |
| 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 |
| Angle of divergence        | approx. 4 °                           |
| Optical face               | frontal                               |
| Ambient light limit        | EN 60947-5-2                          |

### Functional safety related parameters

|                                |       |
|--------------------------------|-------|
| MTTF <sub>d</sub>              | 860 a |
| Mission Time (T <sub>M</sub> ) | 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 <sub>B</sub> | 10 ... 30 V DC |
| Ripple                 |                | max. 10 %      |
| No-load supply current | I <sub>0</sub> | < 20 mA        |

### Output

|                     |                                                                                  |                                                                                   |
|---------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Switching type      | The switching type of the sensor is adjustable. The default setting is: light on |                                                                                   |
| Signal output       |                                                                                  | 1 PNP 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 <sub>d</sub>                                                                   | ≤ 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

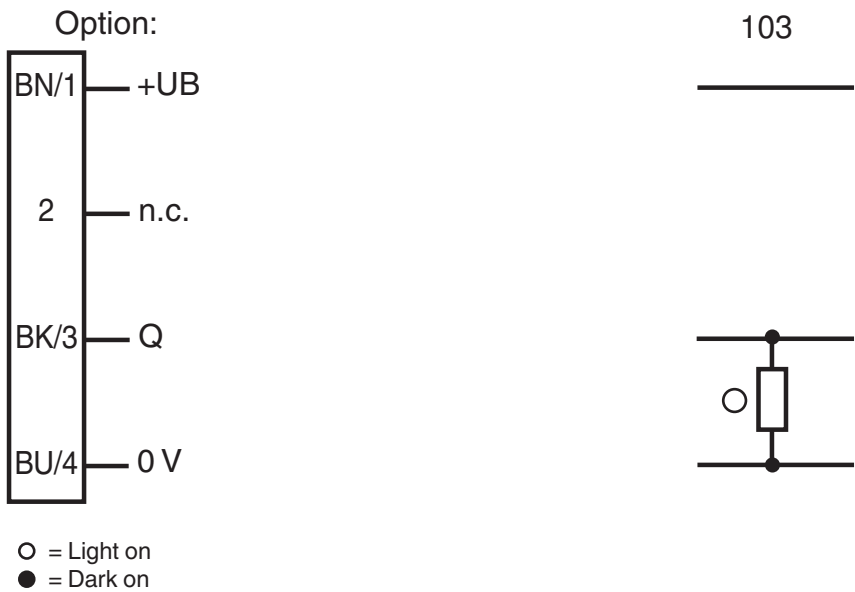
|                      |                                  |
|----------------------|----------------------------------|
| Housing width        | 11 mm                            |
| Housing height       | 31 mm                            |
| Housing depth        | 20 mm                            |
| Degree of protection | IP67                             |
| Connection           | cable with 4-pin Molex connector |
| Material             |                                  |

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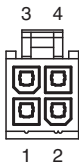
Technical Data

|                                     |                    |        |
|-------------------------------------|--------------------|--------|
| Housing                             | PC (Polycarbonate) |        |
| Optical face                        |                    | PMMA   |
| Cable                               |                    |        |
| Length                              | L                  | 150 mm |
| Mass                                | approx. 10 g       |        |
| Tightening torque, fastening screws | 0.6 Nm             |        |

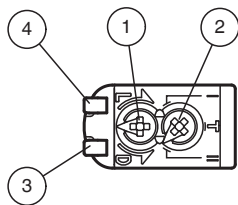
Connection Assignment



Connection



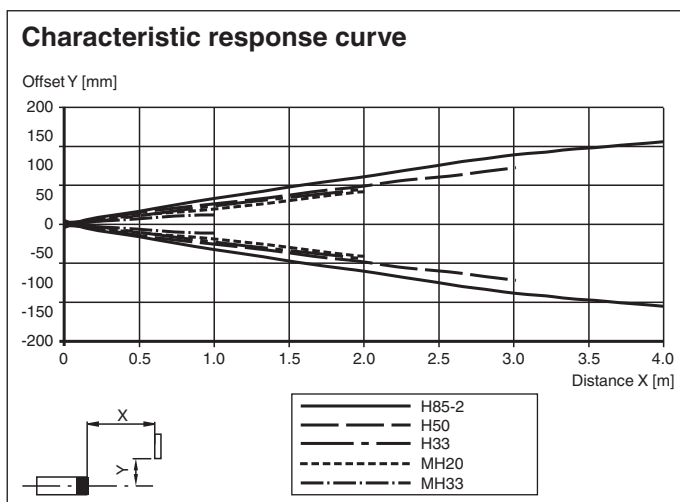
Assembly



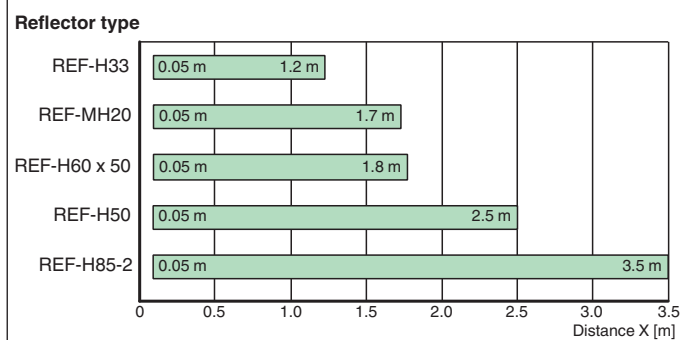
|   |                                           |        |
|---|-------------------------------------------|--------|
| 1 | Light/dark changeover switch              |        |
| 2 | Teach-in and mode selection potentiometer |        |
|   | T Teach-in mode                           |        |
|   |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

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## Characteristic Curve



## Reflector-dependent effective operating distances, typical



## Accessories

|                                                                                     |                     |                                                                           |
|-------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------|
|  | <b>OMH-ML100-09</b> | Mounting aid for round steel $\varnothing$ 12 mm or sheet 1.5 mm ... 3 mm |
|  | <b>OMH-ML100-01</b> | Mounting aid for ML100 series, mounting bracket                           |
|  | <b>OMH-ML100-03</b> | Mounting aid for round steel $\varnothing$ 12 mm or sheet 1.5 mm ... 3 mm |
|  | <b>OMH-ML100-04</b> | Mounting aid for ML100 series, mounting bracket                           |
|  | <b>REF-H85-2</b>    | Reflector, rectangular 84.5 mm x 84.5 mm, mounting holes                  |
|  | <b>REF-C110-2</b>   | Reflector, round $\varnothing$ 84 mm, central mounting hole               |
|  | <b>REF-H33</b>      | Reflector with screw fixing                                               |
|  | <b>OFR-70-2</b>     | Reflective tape 70 mm x 70 mm                                             |