**Model Number**

ML100-55/95/103
Retroreflective sensor with 4-pin, M8 x 1 connector

**Features**

- Miniature design
- Easy to use
- Very bright, highly visible light spot
- Full metal thread mounting
- Clearly visible LEDs for Power ON, switching state and weak signal indication
- Not sensitive to ambient light

**Product information**

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**

**Electrical connection**

<table>
<thead>
<tr>
<th>Option:</th>
<th>103</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+UB</td>
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<td>2</td>
<td>n.c.</td>
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<tr>
<td>3</td>
<td>0 V</td>
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<td>4</td>
<td>Q</td>
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</tbody>
</table>

**Pinout**

Wire colors in accordance with EN 60947-5-2

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

**Indicators/operating means**

1. Light-Dark-switching
2. Sensitivity adjuster
3. Signal display: yellow
4. Operating display: green
Retroreflective sensor with polarization filter

ML100-55/95/103

Technical data

General specifications
- Effective detection range: 0 ... 5 m
- Reflector distance: 0.01 ... 5 m
- Threshold detection range: 7 m
- Reference target: H50 reflector
- Light source: LED
- Light type: modulated visible red light
- Polarization filter: yes
- Diameter of the light spot: approx. 500 mm at a distance of 7 m
- Angle of divergence: approx. 4 °
- Optical face: frontal

Functional safety related parameters
- MTTFₐ: 860 a
- Mission Time (Tₐ): 20 a
- Diagnostic Coverage (DC): 0 %

Indicators/operating means
- Operation indicator: LED green: power on
- Function indicator: LED yellow: lights up when receiving the light beam; flashes when falling short of the stability control; OFF when light beam is interrupted
- Control elements: sensitivity adjustment
- Control elements: Light-on/dark-on changeover switch

Electrical specifications
- Operating voltage: Uᵢ 10 ... 30 V DC
- Ripple: max. 10 %
- No-load supply current: I₀ < 20 mA
- 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: Uₜ ≤ 1.5 V DC
- Switching frequency: f 1000 Hz
- Response time: 0.5 ms

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: connector M8 x 1, 4-pin
- Material:
  - Housing: PC (Polycarbonate)
  - Optical face: PMMA
- Mass: approx. 10 g
- Tightening torque, fastening screws: 0.6 Nm

Compliance with standards and directives
- Standard conformity: UL 60947-5-2

Approvals and certificates
- Electromagnetic Compatibility: TR CU 020/2011
- 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 I enclosure
- CCC approval: CCC approval / marking not required for products rated ≤36 V

Accessories
- OMH-F10-ML100: Mounting aid for ML100 series
- OMH-ML100-01: Mounting aid for ML100 series, Mounting bracket
- OMH-ML100-03: Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
- OMH-ML100-04: Mounting aid for ML100 series, Mounting bracket
- OMH-ML100-05: Mounting aid for ML100 series, Mounting bracket
- OMH-10: Mounting aid
- REF-H85-2: Reflector, rectangular 84.5 mm x 84.5 mm, mounting holes
- REF-C110-2: Reflector, round ø 84 mm, central mounting hole
- REF-H60-2: Reflector with mounting holes
- REF-H50: Reflector, rectangular 51 mm x 61 mm, mounting holes, fixing strap
- REF-H33: Reflector with screw fixing
- OFR-70-2: Reflective tape 70 mm x 70 mm
- REF-MH23-2: Reflective tape 70 mm x 70 mm
- REF-C110-2: Reflector, round ø 84 mm, central mounting hole
- V31-WM-2M-PUR: Female cordset, M8, 4-pin, PUR cable
- V31-GM-2M-PUR: Female cordset, M8, 4-pin, PUR cable
- OMH-ML100-S1: Mounting bracket
- OMH-ML100-08: Mounting aid for ML100 series, Snap-in mount

Other suitable accessories can be found at www.pepperl-fuchs.com
Retroreflective sensor with polarization filter

### Characteristic response curve

<table>
<thead>
<tr>
<th>Offset Y [mm]</th>
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<tbody>
<tr>
<td>-200</td>
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<tr>
<td>-150</td>
</tr>
<tr>
<td>-100</td>
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<tr>
<td>-50</td>
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<td>0</td>
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<tr>
<td>50</td>
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<tr>
<td>100</td>
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<tr>
<td>150</td>
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<tr>
<td>200</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Distance X [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>10</td>
</tr>
</tbody>
</table>

- H85-2 offset
- C110-2 offset
- H60-2 offset
- H50 offset
- OFR70-2 offset

### Relative received light strength (typical)

<table>
<thead>
<tr>
<th>Reflective type</th>
<th>Stability control &gt; 1.5</th>
<th>Stability control &lt; 1.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>H85-2</td>
<td></td>
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<tr>
<td>C110-2</td>
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<td>H60-2</td>
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<td>H50</td>
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<td>H33</td>
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<tr>
<td>OFR70-2</td>
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</tr>
</tbody>
</table>

- H85-2
- C110-2
- H60-2
- H50
- H33
- OFR70-2

- Certainly received light strength (typical)

<table>
<thead>
<tr>
<th>Reflective type</th>
<th>Distance X [m]</th>
<th>Relative received light strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>H85-2</td>
<td>10 m</td>
<td>100.0</td>
</tr>
<tr>
<td>C110-2</td>
<td>8 m</td>
<td>10.0</td>
</tr>
<tr>
<td>H60-2</td>
<td>7 m</td>
<td>1.0</td>
</tr>
<tr>
<td>H50</td>
<td>6 m</td>
<td>0.0</td>
</tr>
<tr>
<td>H33</td>
<td>5 m</td>
<td>0.0</td>
</tr>
<tr>
<td>OFR70-2</td>
<td>4 m</td>
<td>0.0</td>
</tr>
</tbody>
</table>

- Stability control > 1.5
- Stability control < 1.5