Retroreflective sensor with polarization filter

**Model Number**

RL28-55-Z/49/76a/82b/116

Retroreflective sensor with terminal compartment

**Features**

- Ultra bright LEDs for power on, weak signal indication and switching state
- Programmable time function GAN, GAB, IAB and GAN-IAB as double function
- Test input
- Not sensitive to ambient light, even with switched energy saving lamps
- Waterproof, degree of protection IP67
- Protection class II

**Dimensions**

**Electrical connection**

Option: /49/76a

- GY = Q1
- GY = Q2
- GY = Alarm
- GY = I/O
- BU = 0 V
- BU = Test
- OG = +UB

○ = Light on
● = Dark on

Refer to “General Notes Relating to Pepperl+Fuchs Product Information”.

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### Technical data

**General specifications**

- **Effective detection range**: 0 ... 17 m
- **Reflector distance**: 0.05 ... 17 m
- **Threshold detection range**: 21 m
- **Reference target**: H85-2 reflector
- **Light source**: LED
- **Light type**: modulated visible red light ,  660 nm
- **Polarization filter**: yes
- **Diameter of the light spot**: approx. 290 mm at a distance of 17 m
- **Angle of divergence**: emitter 1.2°, receiver 2°
- **Ambient light limit**: 80000 Lux

**Effective detection range**

- MTTFd: 690 a
- **Mission Time (T_M)**: 20 a
- **Diagnostic Coverage (DC)**: 90 %

**Indicators/operating means**

- **Operation indicator**: LED green
- **Function indicator**: 2 LEDs yellow, light up when light beam is free, flash when falling short of the stability control, off when light beam is interrupted
- **Control elements**: sensitivity adjustment (Adjustment to < 25% of the effective operating range), Light-on/dark-on changeover switch

**Electrical specifications**

- **Operating voltage**: U_B: 10 ... 30 V DC
- **Ripple**: 10 %
- **No-load supply current**: I_0: ≤ 40 mA
- **Test input emitter deactivation at +U_B**

**Output**

- **Pre-fault indication output**: 1 PNP, inactive when falling short of the stability control for 10; s immediately inactive if 4 light beam interruptions take place
- **Switching type**: light/dark on, switchable (selectable, light/dark switching is only activated if the receiver has 'dark on' selected.)
- **Signal output**: 1 NPN, 1 PNP synchronized-switching, short-circuit protected, reverse polarity protected, open collectors
- **Switching voltage**: max. 30 V DC
- **Switching current**: max. 200 mA
- **Switching frequency**: f: 1000 Hz
- **Response time**: 0.5 ms
- **Timer function**: ON delay (GAN), OFF delay (GAB), one shot (IAB), ON delay-one shot (GAN-IAB), ON delay-OFF delay (GAN-GAB), programmable
- **Adjustment interval**: 0.02 s ... 1 s

**Conformity**

- **Product standard**: EN 60947-5-2

**Ambient conditions**

- **Ambient temperature**: -40 ... 60 °C (-40 ... 140 °F)
- **Storage temperature**: -40 ... 75 °C (-40 ... 167 °F)

**Mechanical specifications**

- **Housing width**: 25.8 mm
- **Housing height**: 88 mm
- **Housing depth**: 65.5 mm
- **Degree of protection**: IP67
- **Connection**: terminal compartment with 8 spring-loaded terminals for wire cross section 0.5 ... 1.5 mm², insulation stripping 7.5 ... 8.5 mm, M16 x 1.5 cable gland

**Material**

- **Housing**: Plastic ABS
- **Optical face**: plastic
- **Mass**: approx. 112 g

**Approvals and certificates**

- **Protection class**: II, rated voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1
- **Caution!**: The protection class 2 is only valid when the terminal compartment is closed.
- **UL approval**: E87056 , cULus Listed , class 2 power supply , type rating 1

### Accessories

- **OMH-05**: Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
- **OMH-07**: Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm
- **OMH-21**: Mounting bracket
- **OMH-22**: Mounting bracket
- **OMH-MLV11-K**: dove tail mounting clamp
- **OMH-RLK29**: Mounting bracket
- **OMH-RLK29-HW**: Mounting bracket for rear wall mounting
- **OMH-RL28-C**: Weld slag cover model

Other suitable accessories can be found at www.pepperl-fuchs.com
### Curves/Diagrams

![Characteristic response curve](image)

<table>
<thead>
<tr>
<th>Offset Y [mm]</th>
<th>Distance X [m]</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>60</td>
<td>15</td>
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<tr>
<td>80</td>
<td>20</td>
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<td>100</td>
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<td>120</td>
<td>30</td>
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<td>140</td>
<td>35</td>
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<td>160</td>
<td>40</td>
</tr>
<tr>
<td>180</td>
<td>45</td>
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</tbody>
</table>

**Relative received light strength**

<table>
<thead>
<tr>
<th>Reflective type</th>
<th>H85-2</th>
<th>C110-2</th>
<th>H60</th>
<th>H160</th>
<th>OFR-100/100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance X [m]</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Relative received light strength</td>
<td>100</td>
<td>75</td>
<td>60</td>
<td>50</td>
<td>30</td>
</tr>
</tbody>
</table>

**Timer functions**

<table>
<thead>
<tr>
<th>Timer function</th>
<th>Switching type</th>
<th>Receiver exposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>Light</td>
<td>Receiver dark</td>
</tr>
<tr>
<td>ON delay</td>
<td>Light</td>
<td>Receiver dark</td>
</tr>
<tr>
<td>OFF delay</td>
<td>Light</td>
<td>Receiver dark</td>
</tr>
<tr>
<td>one shot</td>
<td>Dark</td>
<td>Receiver dark</td>
</tr>
</tbody>
</table>

Time $t_{ON}$, $t_{OFF}$ and $t_{OS}$ are adjustable from 0.02 to 1 seconds.

The Light-/Dark-Switch (Left, outer switch) is shown in the "Dark ON" position.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Z</td>
<td>OFF delay timer</td>
<td>Adjustable time interval (0.02 s - 1 s)</td>
</tr>
<tr>
<td></td>
<td>one shot timer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ON delay timer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ON delay timer / OFF delay timer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ON delay timer / one shot timer</td>
<td></td>
</tr>
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</table>