



**Model Number**

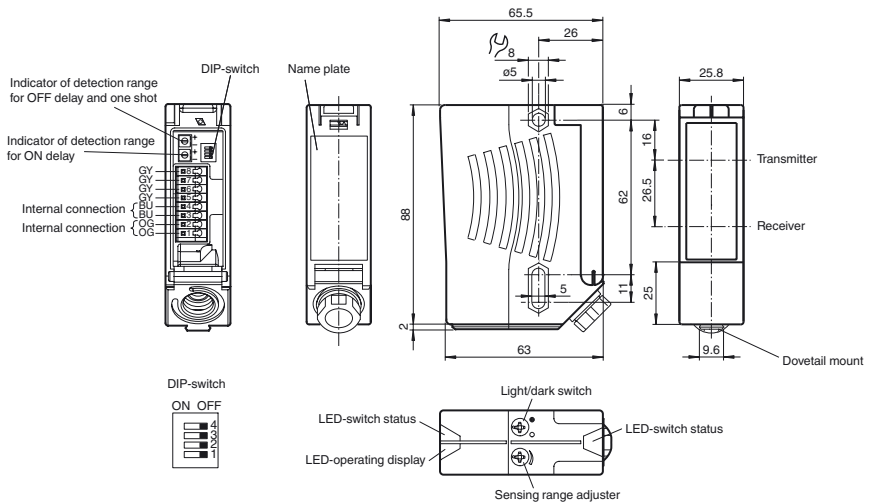
**RL28-8-H-2000-IR-Z/49/116**

Background suppression sensor  
with terminal compartment

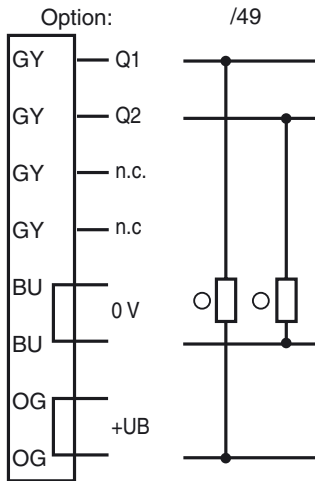
**Features**

- Ultra bright LEDs for power on and switching state
- Minimal black-white difference through the infrared transmission LED
- Programmable time function GAN, GAB, IAB and GAN-IAB as double function
- Not sensitive to ambient light, even with energy saving lamps
- Waterproof, degree of protection IP67
- Protection class II

**Dimensions**



**Electrical connection**



○ = Light on  
● = Dark on

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

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**Technical data****General specifications**

|                                   |   |
|-----------------------------------|---|
| Detection range                   | 20 ... 2000 mm  |
| Detection range min.              | 20 ... 200 mm   |
| Detection range max.              | 20 ... 2000 mm  |
| Background suppression            | max. + 10 % of the upper limit of the detection range |
| Light source                      | IREd  |
| Light type                        | modulated infrared light , 880 nm                     |
| Black/White difference (6 %/90 %) | < 40 %  |
| Diameter of the light spot        | approx. 70 mm at a distance of 2000 mm                |
| Angle of divergence               | transmitter 2°<br>receiver 2°                         |
| Ambient light limit               | 50000 Lux   |

**Functional safety related parameters**

|                                |       |
|--------------------------------|-------|
| MTTF <sub>d</sub>              | 720 a |
| Mission Time (T <sub>M</sub> ) | 20 a  |
| Diagnostic Coverage (DC)       | 0 %   |

**Indicators/operating means**

|                     |   |
|---------------------|---|
| Operation indicator | LED green   |
| Function indicator  | 2 LEDs yellow<br>ON: object inside the scanning range<br>OFF: object outside the scanning range |
| Control elements    | Sensing range adjuster , Light-on/dark-on changeover switch                                     |

**Electrical specifications**

|                        |                |                |
|------------------------|----------------|----------------|
| Operating voltage      | U <sub>B</sub> | 10 ... 30 V DC |
| Ripple                 |                | 10 %           |
| No-load supply current | I <sub>0</sub> | ≤ 40 mA        |

**Output**

|                     |   |        |
|---------------------|---|--------|
| 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   | 250 Hz |
| Response time       |   | 2 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 mm <sup>2</sup> , insulation stripping 7.5 ... 8.5 mm, M16 x 1.5 cable gland |
| Material             |   |
| Housing              | Plastic ABS   |
| Optical face         | Plastic pane  |
| Mass                 | 112 g   |

**Approvals and certificates**

|                  |  |
|------------------|--|
| Protection class | II, rated voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1<br>Caution!<br>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**

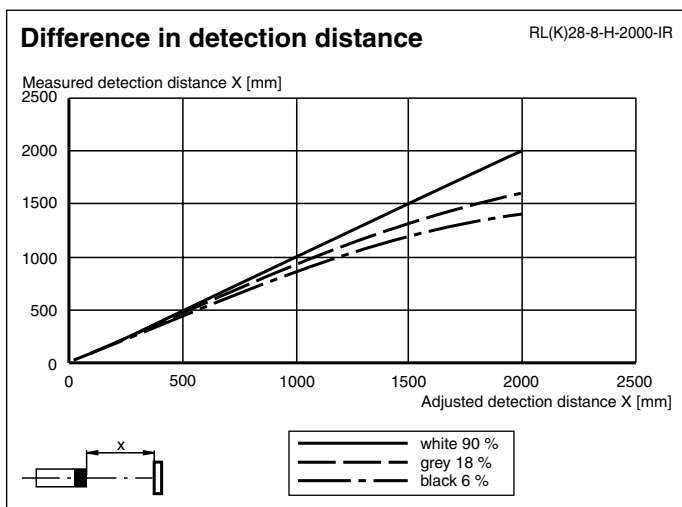
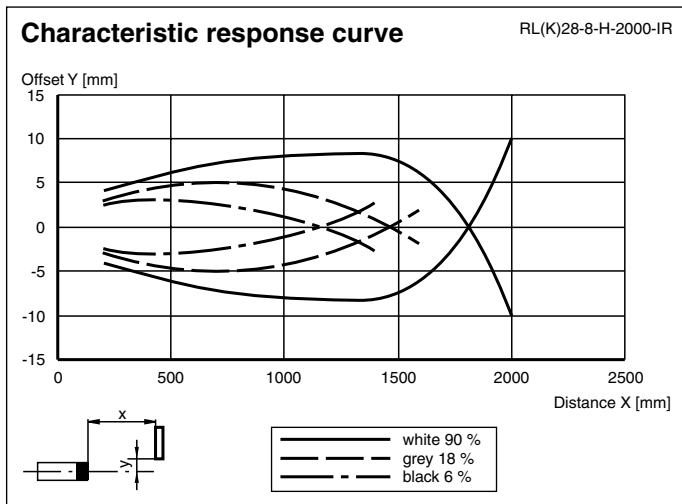
Mounting bracket for rear wall mounting

**OMH-RL28-C**

Weld slag cover model

Other suitable accessories can be found at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)

Curves/Diagrams



Timer functions

| Timer function | Switching type | Receiver exposed | Receiver dark |
|----------------|----------------|------------------|---------------|
| ON  Without    | Light          | ON               | OFF           |
| ON  ON delay   | Light          | ON               | OFF           |
| ON  OFF delay  | Light          | ON               | OFF           |
| ON  one shot   | Light          | ON               | OFF           |
|                | Dark           | OFF              | ON            |
|                | Dark           | OFF              | ON            |
|                | Dark           | OFF              | ON            |
|                | Dark           | OFF              | ON            |

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.

| Type | Description                      | Notes                                   |
|------|----------------------------------|---|
| -Z   | OFF delay timer                  | Adjustable time interval (0.02 s - 1 s) |
|      | one shot timer                   |   |
|      | ON delay timer                   |   |
|      | ON delay timer / OFF delay timer |   |
|      | ON delay timer / one shot timer  |   |

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## Additional information

### Intended use:

The transmitter and receiver are located in the same housing for direct detection sensors with background masking. Marking of objects outside the detection range is achieved by arranging the angle between the transmitter and receiver (2 receiver elements).

Objects are detected independently of their surface structures, brightness and colour, as well as the brightness of the background.

### Mounting instructions:

The sensors can be fastened directly with fixing screws or with a support bracket (not included with delivery).

The surface underneath must be flat to prevent the housing from moving when it is tightened into position. We recommend securing the nut and screw in place with spring washers to prevent the sensor from going out of adjustment.

### Adjustment:

After the operating voltage is applied, the LED is lit green.

Align the sensor to the background. If the yellow LED is lit, the detection range should be reduced with the detection range adjuster until the yellow LED goes out.

### Object direction:

Place the object to be detected at the desired maximum detection range and align the light spot to it. If the object is detected, the yellow LED lights up.

If it does not light up, the detection range must be adjusted on the potentiometer until it lights up when an object is detected.

### Cleaning:

We recommend cleaning the optical surface and checking the screwed connection and other connections at regular intervals.



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