



**Model Number**

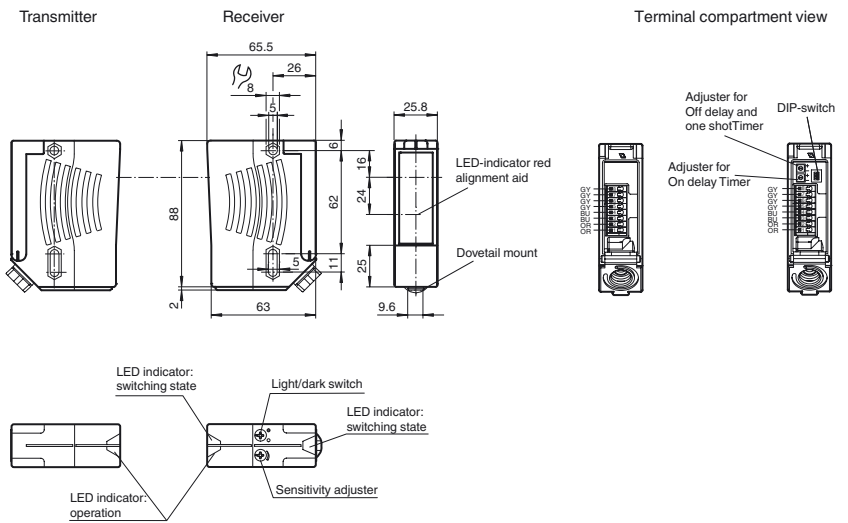
**LD28/LV28-Z-F2/49/76a/82b/116**

Thru-beam sensor  
with terminal compartment

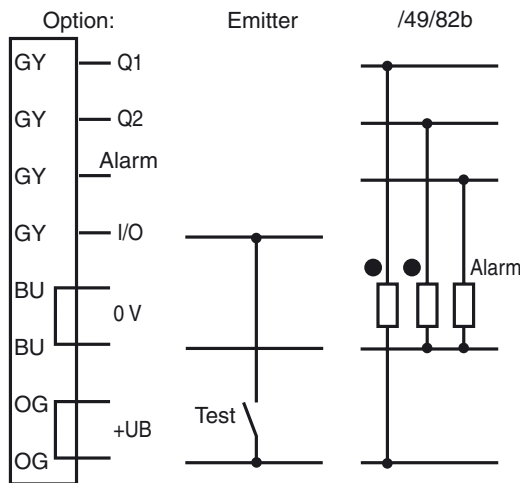
**Features**

- Ultra bright LEDs for power on, pre fault indication and switching state
- Highly visible LED as alignment aid in receiver optics
- Emitter deactivation
- Various transmitter frequencies
- Programmable time function GAN, GAB, IAB and GAN-IAB as double function
- Not sensitive to ambient light, even with switched energy saving lamps
- Waterproof, protection degree IP67
- Protection class II

**Dimensions**



**Electrical connection**



○ = Light on  
● = Dark on

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**Technical data****System components**

|          |                      |
|----------|----------------------|
| Emitter  | LD28-F2/76a/116      |
| Receiver | LV28-Z-F2/49/82b/116 |

**General specifications**

|                            |   |
|----------------------------|---|
| Effective detection range  | 0 ... 30 m  |
| Threshold detection range  | 40 m  |
| Light source               | LED   |
| Light type                 | modulated visible red light , 660 nm  |
| Alignment aid              | LED red (in receiver lens)<br>illuminated constantly; beam is interrupted,<br>flashes: reaching switching point,<br>off: sufficient stability control |
| Transmitter frequency      | F2 = 30 kHz   |
| Diameter of the light spot | approx. 0.6 m at 30 m   |
| Angle of divergence        | Emitter 1.2°,<br>Receiver 5°  |
| Ambient light limit        | 50000 Lux   |

**Functional safety related parameters**

|                                |       |
|--------------------------------|-------|
| MTTF <sub>d</sub>              | 620 a |
| Mission Time (T <sub>M</sub> ) | 20 a  |
| Diagnostic Coverage (DC)       | 90 %  |

**Indicators/operating means**

|                   |   |
|-------------------|---|
| Operating display | LED green   |
| Function display  | LED yellow:<br>1. LED lit constantly: signal > 2 x switching point (function reserve)<br>2. LED flashes: signal between 1 x switching point and 2 x switching point<br>3. LED off: signal < switching point |
| Controls          | sensitivity adjustment (Adjustment to < 25% of the effective operating range) , Light/Dark switch   |

**Electrical specifications**

|                        |                |                                       |
|------------------------|----------------|---------------------------------------|
| Operating voltage      | U <sub>B</sub> | 10 ... 30 V DC                        |
| Ripple                 |                | 10 %                                  |
| No-load supply current | I <sub>0</sub> | Emitter: ≤ 50 mA<br>Receiver: ≤ 35 mA |

**Input**

|            |   |
|------------|---|
| Test input | emitter deactivation at +U <sub>B</sub> (I <sub>max.</sub> < 3 mA at 30 V DC) |
|------------|---|

**Output**

|                                    |   |         |
|------------------------------------|---|---------|
| Output of the pre-fault indication | 1 PNP transistor, short-circuit protected, protected from reverse polarity, open collector, U <sub>max</sub> = 30 V DC, I <sub>max</sub> = 0.2 A<br>The output becomes inactive if the signal level has fallen below the function reserve for approx. 10 s (yellow and red LEDs flash).<br>If the light beam is interrupted four times during this period, the output immediately becomes inactive. |         |
| 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   |         |

**Ambient conditions**

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

**Mechanical specifications**

|                   |  |
|-------------------|--|
| Protection degree | 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              | 200 g (emitter and receiver)   |

**Compliance with standards and directives**

|                     |                   |
|---------------------|-------------------|
| Standard conformity |                   |
| Product standard    | EN 60947-5-2:2007 |

**Approvals and certificates****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-RLK29**

Mounting bracket

**OMH-MLV11-K**

dove tail mounting clamp

**OMH-RLK29-HW**

Mounting bracket for rear wall mounting

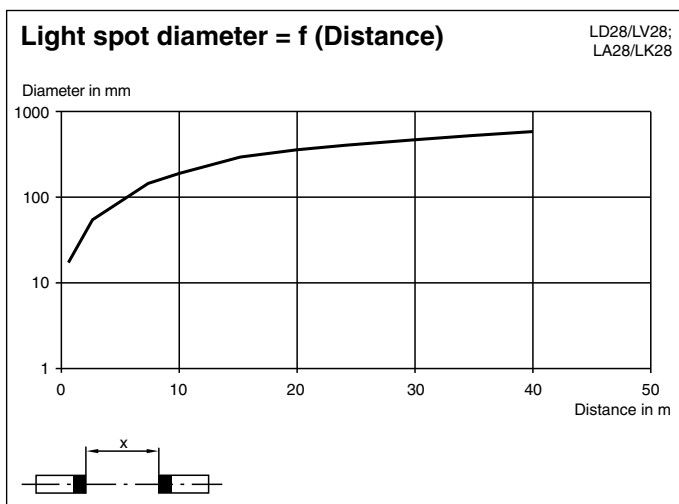
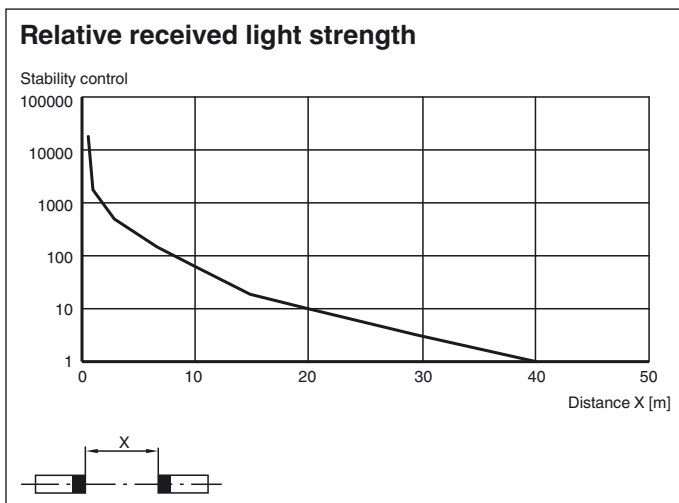
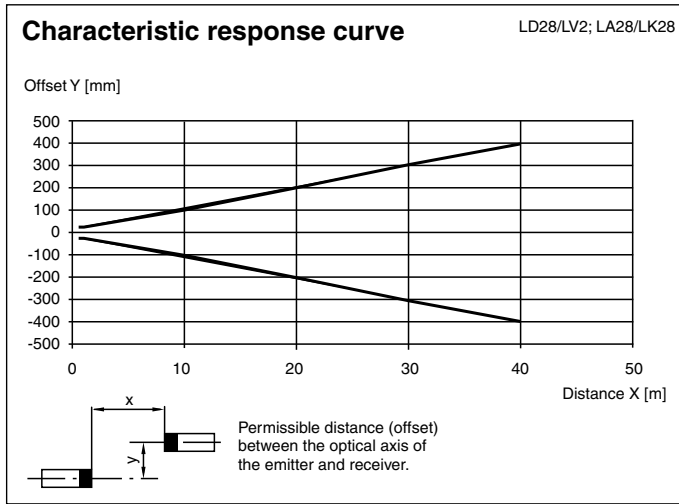
**OMH-RL28-C**

Protective cover

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

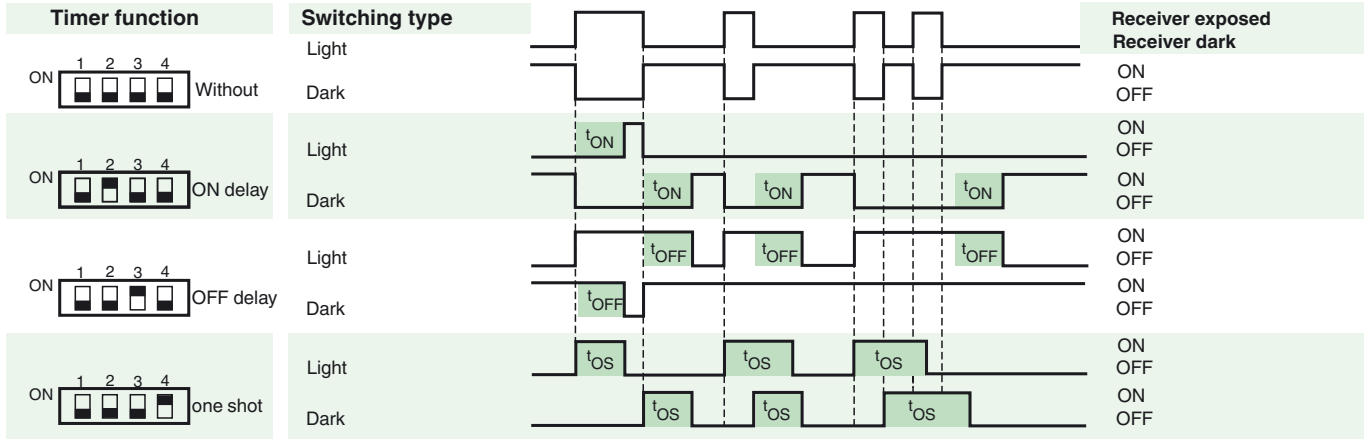
|                  |   |
|------------------|---|
| Protection class | II, rated voltage $\leq 250$ V AC with pollution degree 1-2 according to IEC 60664-1<br>Caution!<br>The protection class 2 is only valid when the terminal compartment is closed. |
| UL approval      | cULus   |
| CCC approval     | Products with a maximum operating voltage of $\leq 36$ V do not bear a CCC marking because they do not require approval.  |

**Curves/Diagrams**



**Timer functions**

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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 - 10 s) |
|      | one shot timer                   |  |
|      | ON delay timer                   |  |
|      | ON delay timer / OFF delay timer |  |
|      | ON delay timer / one shot timer  |  |