



# Thru-beam sensor

LD28/LV28-F1-3974/47/82b/112

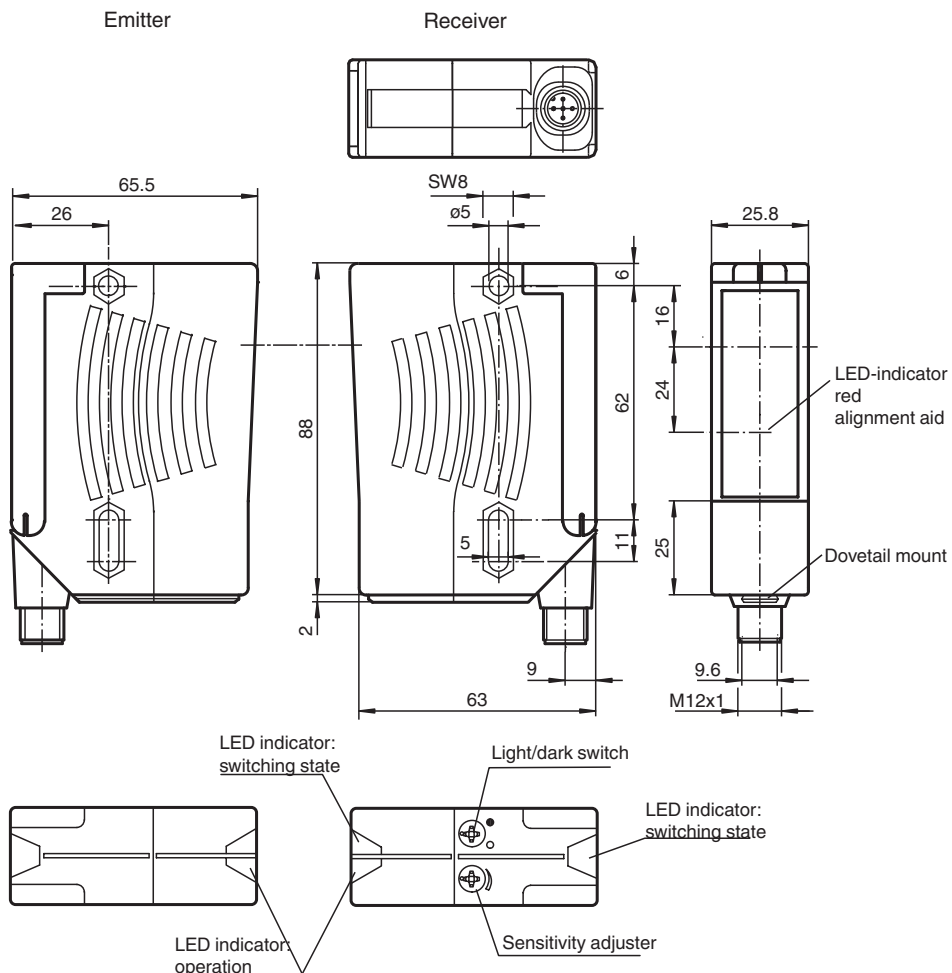


- Ultra bright LEDs for power on, weak signal indication and switching state
- Highly visible LED as alignment aid in receiver optics
- Emitter deactivation
- Not sensitive to ambient light, even with switched energy saving lamps
- Extra vibration proof version
- Waterproof, degree of protection IP67

Universal thru-beam sensor, large housing design, 30 m detection range, red light, 25 kHz transmission frequency, light/dark on, DC version, 2 PNP outputs, test input, pre-fault output, M12 plug



## Dimensions



## Technical Data

### System components

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

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## Technical Data

|   |                |   |
|---|----------------|---|
| Emitter                                     |                | LD28-F1-3974/76a/112  |
| Receiver                                    |                | LV28-F1-3974/47/82b/112   |
| <b>General specifications</b>               |                |   |
| 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                       |                | F1 = 25 kHz   |
| Diameter of the light spot                  |                | approx. 0.6 m at 30 m   |
| Opening angle                               |                | Emitter 1.2° ,<br>Receiver 5°   |
| Ambient light limit                         |                | 50000 Lux   |
| <b>Functional safety related parameters</b> |                |   |
| MTTF <sub>d</sub>                           |                | 620 a   |
| Mission Time (T <sub>M</sub> )              |                | 20 a  |
| Diagnostic Coverage (DC)                    |                | 90 %  |
| <b>Indicators/operating means</b>           |                |   |
| Operation indicator                         |                | LED green   |
| Function indicator                          |                | 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   |
| Control elements                            |                | sensitivity adjustment (Adjustment to < 25% of the effective operating range) , Light-on/dark-on changeover switch  |
| <b>Electrical specifications</b>            |                |   |
| 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   |
| <b>Input</b>                                |                |   |
| Test input                                  |                | emitter deactivation at +U <sub>B</sub> (I <sub>max</sub> < 3 mA at 30 V DC)  |
| <b>Output</b>                               |                |   |
| Stability alarm output                      |                | 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  |
| Signal output                               |                | 2 PNP, complementary, 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  |
| <b>Conformity</b>                           |                |   |
| Product standard                            |                | EN 60947-5-2  |
| <b>Approvals and certificates</b>           |                |   |
| UL approval                                 |                | cULus   |
| CCC approval                                |                | CCC approval / marking not required for products rated ≤36 V  |
| <b>Ambient conditions</b>                   |                |   |
| Ambient temperature                         |                | -40 ... 60 °C (-40 ... 140 °F)  |
| Storage temperature                         |                | -40 ... 75 °C (-40 ... 167 °F)  |
| <b>Mechanical specifications</b>            |                |   |
| Housing width                               |                | 25.8 mm   |

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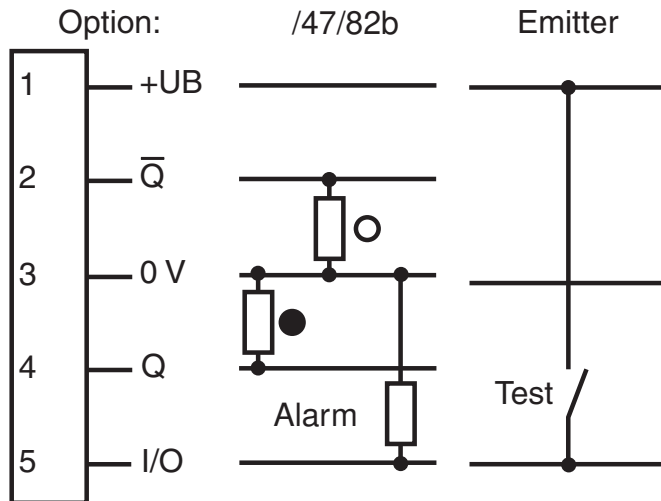
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## Technical Data

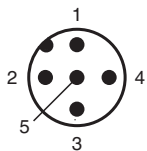
|                      |  |
|----------------------|--|
| Housing height       | 88 mm                                      |
| Housing depth        | 65.5 mm                                    |
| Degree of protection | IP67                                       |
| Connection           | Metal connector, M12, 5-pin, 90° rotatable |
| Material             |  |
| Housing              | Plastic ABS                                |
| Optical face         | Plastic pane                               |
| Mass                 | 140 g (emitter and receiver)               |

## Connection Assignment



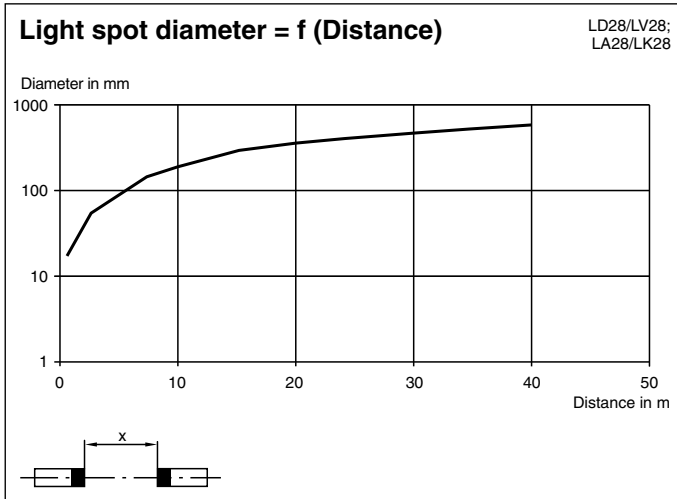
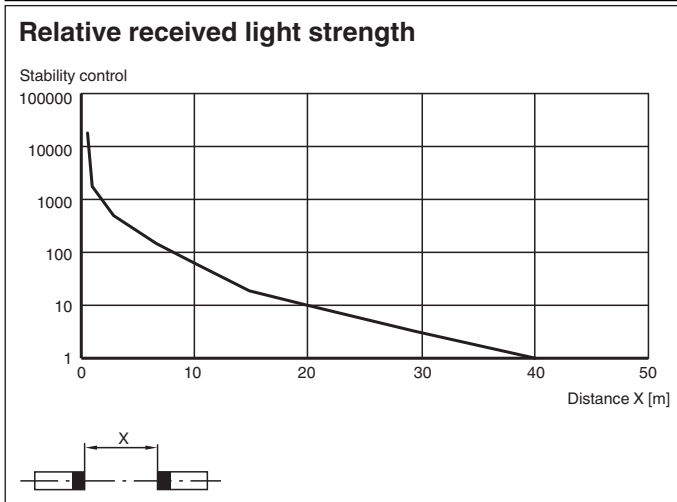
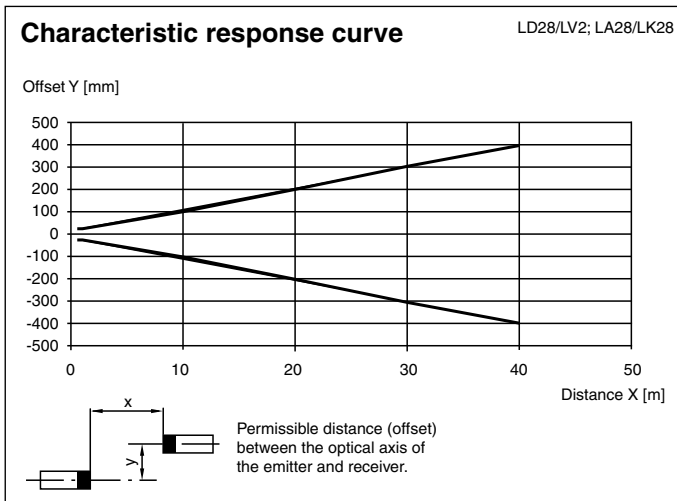
○ = Light on  
● = Dark on

## Connection Assignment






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## Characteristic Curve





## Accessories

|   |               |   |
|---|---------------|---|
|  | <b>OMH-05</b> | Mounting aid for round steel $\varnothing$ 12 mm or sheet 1.5 mm ... 3 mm |
|  | <b>OMH-21</b> | Mounting bracket: mounting aid for sensors in the RL* series              |
|  | <b>OMH-22</b> | Mounting aid for RL* series   |

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**Accessories**

|   |                     |   |
|---|---------------------|---|
|  | <b>OMH-RLK29-HW</b> | Mounting bracket for rear wall mounting |
|  | <b>OMH-RL28-C</b>   | Weld slag cover model                   |

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