## Dimensions

| Operating principle | color |
|---|---|
| Retroreflective sensor with polarisation filter | green |
| Retroreflective sensor | blue |
| Diffusive mode sensor | white |
| Thru-beam sensor | grey |
| Diffusive mode sensor with background suppression | red |

LED yellow    LED green

24
8
34.35

Color coding for operating principle (see table)

M12 x 1
18

3    2
4    1

7.15
5    ø 4.5    5
6
62    50    36
2
10.25
6
5    ø 14
25
35
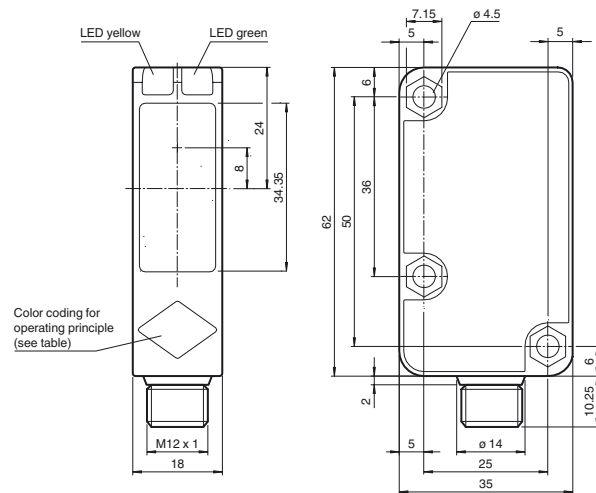
## Model Number

**LD31/LV31/73c/76a/136**
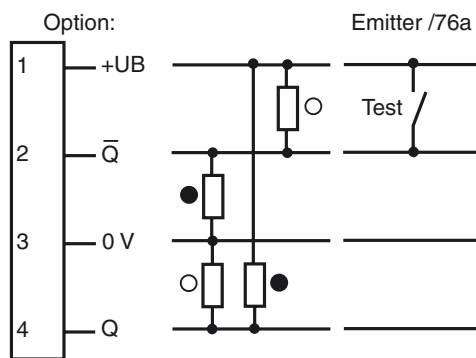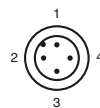
Thru-beam sensor
with 4-pin, M12 x 1 connector

## Features

- Highly visible LED
- Powerful push-pull output
- Compact and stable housing
- Protection class II

## Electrical connection

Option:    Emitter /76a

1 — +UB
2 — Q̄    Test
3 — 0 V
4 — Q

○ = Light on
● = Dark on

## Pinout

Wire colors in accordance with EN 60947-5-2

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

1
2    4
3

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

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## Technical data

| | | |
|---|---|---|
| **System components** | | |
| Emitter | | LD31/73c/76a |
| Receiver | | LV31/73c/136 |
| **General specifications** | | |
| Effective detection range | | 0 ... 30 m |
| Threshold detection range | | 43 m |
| Light source | | LED |
| Light type | | modulated visible red light , 630 nm |
| Alignment aid | | LED yellow: |
| | | 1. LED illuminates: Sufficient light signal received, emitter and receiver alignment is correct |
| | | 2. LED flashes: Reaching switching point |
| | | 3. LED off: Light beam is interrupted or the alignment is out |
| Diameter of the light spot | | approx. 800 mm at a distance of 30 m |
| Angle of divergence | | Emitter: 1.5 ° , Receiver: 1.5 ° |
| Ambient light limit | | 50000 Lux ; according EN 60947-5-2 |
| **Functional safety related parameters** | | |
| $MTTF_d$ | | 750 a |
| Mission Time ($T_M$) | | 20 a |
| Diagnostic Coverage (DC) | | 90 % |
| **Indicators/operating means** | | |
| Operation indicator | | LED green: power on |
| Function indicator | | LED yellow: |
| | | 1. LED lit constantly: signal > 2 x switching point (function reserve) |
| | | 2. LED flashes: signal between 1 x switching point and 2 x switching point |
| | | 3. LED off: signal < switching point |
| **Electrical specifications** | | |
| Operating voltage | $U_B$ | 10 ... 30 V DC |
| Ripple | | 10 % |
| No-load supply current | $I_0$ | Emitter: ≤ 18 mA |
| | | Receiver: ≤ 18 mA |
| **Input** | | |
| Test input | | emitter deactivation at $+U_B$ |
| **Output** | | |
| Switching type | | dark on |
| Signal output | | 2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected |
| Switching voltage | | max. 30 V DC |
| Switching current | | max. 100 mA |
| Voltage drop | $U_d$ | ≤ 1.5 V |
| Switching frequency | f | ≤ 250 Hz |
| Response time | | ≤ 2 ms |
| **Conformity** | | |
| Product standard | | EN 60947-5-2 |
| **Ambient conditions** | | |
| Ambient temperature | | -30 ... 55 °C (-22 ... 131 °F) |
| Storage temperature | | -40 ... 70 °C (-40 ... 158 °F) |
| **Mechanical specifications** | | |
| Housing width | | 18 mm |
| Housing height | | 62 mm |
| Housing depth | | 35 mm |
| Degree of protection | | IP67 |
| Connection | | 4-pin, M12 x 1 connector |
| Material | | |
| Housing | | Polycarbonate |
| Optical face | | PMMA |
| Mass | | Emitter: 24 g |
| | | Receiver: 24 g |
| **Approvals and certificates** | | |
| EAC conformity | | TR CU 020/2011 |
| Protection class | | II , rated voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1 Output circuit basis insulation of input circuit according to EN 50178, rated insulation voltage 240 V AC |
| UL approval | | cULus Listed, Class 2 Power Source, Type 1 enclosure |
| CCC approval | | CCC approval / marking not required for products rated ≤36 V |

## Accessories

**OMH-RL31-01**
Mounting bracket

**OMH-RL31-02**
Mounting bracket narrow

**OMH-RL31-03**
Mounting bracket narrow

**OMH-RL31-04**
Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

**OMH-RL31-05**
Mounting bracket for mounting on flat surfaces with 2 M4 screws

**OMH-RL31-06**
Stainless steel mounting bracket with adjustable half clamp on the side

**V1-G-2M-PUR**
Female cordset, M12, 4-pin, PUR cable

**V1-W-2M-PUR**
Female cordset, M12, 4-pin, PUR cable

Additional accessories can be found in the Internet.

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## Curves/Diagrams

### Characteristic response curve

Offset Y [mm]



### Relative received light strength

Stability control