**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

**Dimensions**

**Electrical connection**

Option: +UB

```
Option: +UB
1  +UB
2  Q
3  0 V
4  Q
```

**Wire colors in accordance with EN 60947-5-2**

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

**Pinout**

```
1  2  3  4
1  2  3  4
```

**Operating principle**
- Retroreflective sensor with polarization near green
- Retroreflective sensor blue
- Diffusive sensor green
- Diffusive sensor with background suppression red
- Thru-beam sensor grey
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

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Functional safety related parameters
MTTFd: 750 a
Mission Time (Tm): 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: UO: 10 ... 30 V DC
- Ripple: 10 %
- No-load supply current:
  - Emitter: ≤ 18 mA
  - Receiver: ≤ 18 mA

Input
- Test input: emitter deactivation at +UO

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: UO: ≤ 1.5 V
- Switching frequency: f: ≤ 250 Hz
- Response time: ≤ 2 ms

Ambient conditions
- Ambient temperature: -30 ... 55 °C (-22 ... 131 °F)
- Storage temperature: -40 ... 70 °C (-40 ... 158 °F)

Mechanical specifications
- Degree of protection: IP67
- Connection: 4-pin, M12 x 1 connector
- Housing: Polycarbonate
- Optical face: PMMA
- Mass:
  - Emitter: 24 g
  - Receiver: 24 g

Compliance with standards and directives
- Standard conformity:
  - IEC 60947-5-2:2007

Approvals and certificates
- EAC conformity: TR CU 020/2011
- Protection class:
  - 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

Additional accessories can be found in the Internet.

References:
- “General Notes Relating to Pepperl+Fuchs Product Information”
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Curves/Diagrams

**Characteristic response curve**

- Offset Y [mm]
- Distance X [m]

**Relative received light strength**

- Stability control
- Distance X [m]