## Model Number

**OBT50-R2-E2-0,2M-V31-L**

Laser triangulation sensor with background suppression
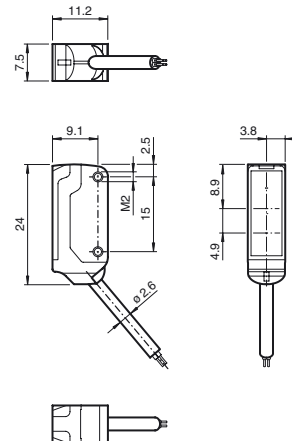
with fixed cable and 4-pin, M8 connector

## Features

- Ultra-small housing design
- DuraBeam Laser Sensors - durable and employable like an LED
- 45° cable outlet for maximum mounting freedom under extremely tight space constraints
- Improvement in machine availability with abrasion-resistant, antistatic glass front
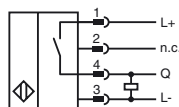- Precision object detection, almost irrespective of the color

## Product information

The R2 series nano sensor has been developed for a broad range of applications. It offers excellent durability and is exceptionally easy to install. The housing is compact and, with its 45° cable outlet, can be installed in the smallest spaces. New functional principles and functionality open up a range of new options. The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor. The abrasion-resistant lens allows long operating times close to the moving object.
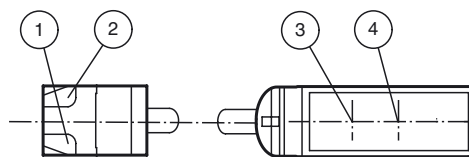
## Dimensions



## Electrical connection



## Pinout

Wire colors in accordance with EN 60947-5-2

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

## Indicators/operating means



| 1 | Operating display | green |
| 2 | Signal display | yellow |
| 3 | Emitter | |
| 4 | Receiver | |

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

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## Technical data

### General specifications

| | |
|---|---|
| Detection range | 7 ... 50 mm |
| Reference target | standard white, 100 mm x 100 mm |
| Light source | laser diode |
| Light type | modulated visible red light , 680 nm |
| Laser nominal ratings | |
| Note | LASER LIGHT , DO NOT STARE INTO BEAM |
| Laser class | 1 |
| Wave length | 680 nm |
| Beam divergence | > 5 mrad |
| Pulse length | approx. 3 µs |
| Repetition rate | approx. 16.6 kHz |
| max. pulse energy | 9.5 nJ |
| Black/White difference (6 %/90 %) | < 10 % at 50 mm |
| Diameter of the light spot | approx. 1.5 mm at a distance of 50 mm |
| Angle of divergence | approx. 2 ° |
| Optical face | frontal |
| Ambient light limit | EN 60947-5-2 : 30000 Lux |

### Functional safety related parameters

| | |
|---|---|
| $MTTF_d$ | 800 a |
| Mission Time ($T_M$) | 20 a |
| Diagnostic Coverage (DC) | 0 % |

### Indicators/operating means

| | |
|---|---|
| Operation indicator | LED green, statically lit Power on , short-circuit : LED green flashing (approx. 4 Hz) |
| Function indicator | LED yellow ON: lights when object is detected |

### Electrical specifications

| | | |
|---|---|---|
| Operating voltage | $U_B$ | 12 ... 24 V |
| No-load supply current | $I_0$ | < 10 mA |
| Protection class | | III |

### Output

| | | |
|---|---|---|
| Switching type | | NO contact |
| Signal output | | 1 PNP output, short-circuit protected, reverse polarity protected, open collector |
| Switching voltage | | max. 30 V DC |
| Switching current | | max. 50 mA , resistive load |
| Voltage drop | $U_d$ | ≤ 1.5 V DC |
| Switching frequency | f | approx. 2 kHz |
| Response time | | 250 µs |

### Directive conformity

| | |
|---|---|
| Electromagnetic compatibility | |
| Directive 2014/30/EU | EN 60947-5-2:2007 EN 60947-5-2/A1:2012 |

### Standard conformity

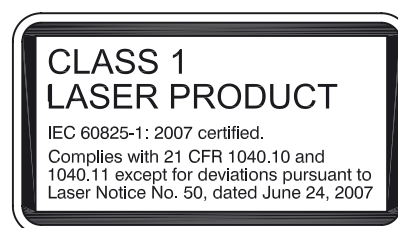| | |
|---|---|
| Standards | EN 60947-5-2:2007 EN 60947-5-2/A1:2012 EN 60825-1:2007 UL 60947-5-2: 2014 |

### Ambient conditions

| | |
|---|---|
| Ambient temperature | -20 ... 60 °C (-4 ... 140 °F) |
| Storage temperature | -30 ... 70 °C (-22 ... 158 °F) |

### Mechanical specifications

| | |
|---|---|
| Degree of protection | IP67 |
| Connection | 200 mm fixed cable with 4-pin, M8x1 connector |
| Material | |
| Housing | PC/ABS and TPU |
| Optical face | glass |
| Cable | PUR |
| Installation | Fixing screws , 2 x M2 allen head screws included with delivery |
| Mass | approx. 10 g |
| Cable length | 200 mm |

### Approvals and certificates

| | |
|---|---|
| UL approval | E87056 , cULus Recognized, Class 2 Power Source |
| CCC approval | CCC approval / marking not required for products rated ≤36 V |
| FDA approval | IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 |

## Laserlabel



CLASS 1
LASER
PRODUCT

CLASS 1
LASER PRODUCT
IEC 60825-1: 2007 certified.
Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

CLASS 1
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## Accessories

**V31-WM-2M-PUR**
Female cordset, M8, 4-pin, PUR cable

**MH-R2-01**
Mounting aid for R2 series, Mounting bracket

**MH-R2-02**
Mounting aid for R2 series, Mounting bracket

**MH-R2-03**
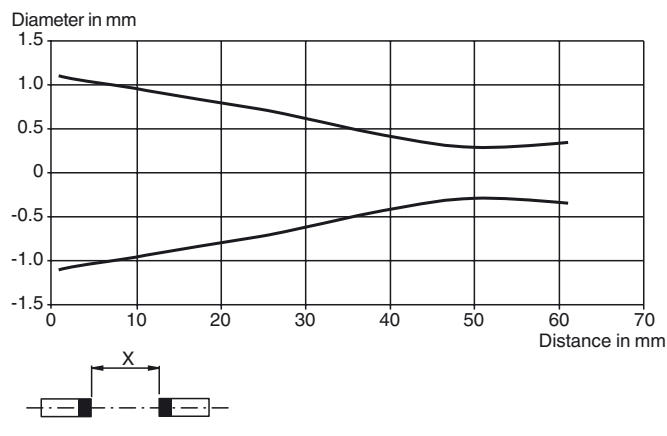Mounting aid for R2 series, Mounting bracket

**MH-R2-04**
Mounting aid for R2 series, Mounting bracket

Other suitable accessories can be found at www.pepperl-fuchs.com

Release date: 2017-03-02 14:25   Date of issue: 2017-03-02   282029_eng.xml

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## Curves/Diagrams

### Light spot diameter

Diameter in mm



Distance in mm

### Detection ranges

Object colour



Distance X [mm]

## Laser notice laser class 1

- The irradiation can lead to irritation especially in a dark environment. Do not point at people!
- Maintenance and repairs should only be carried out by authorized service personnel!
- Attach the device so that the warning is clearly visible and readable.
- The warning accompanies the device and should be attached in immediate proximity to the device.
- Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

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