



## Laser triangulation sensor with background suppression

### OBT30-R3-E2-L

- 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

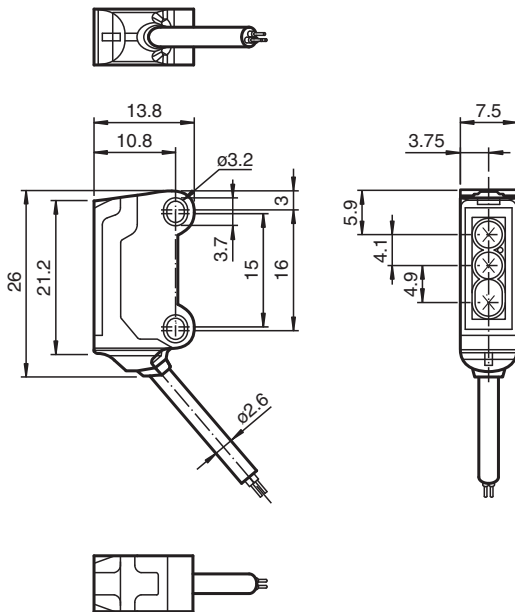


Laser triangulation sensor with background suppression, ultra-small design with M3 mounting, 30 mm sensing range, PNP output, 2 m fixed cable



The R3 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.

## Dimensions



## Technical Data

### General specifications

|                       |                                      |
|-----------------------|--------------------------------------|
| Detection range       | 7 ... 30 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                         |

## Technical Data

|                                             |                |                                                                                                                                      |
|---------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Repetition rate                             |                | approx. 16.6 kHz                                                                                                                     |
| max. pulse energy                           |                | 9.5 nJ                                                                                                                               |
| Black-white difference (6 %/90 %)           |                | < 5 % at 30 mm                                                                                                                       |
| Diameter of the light spot                  |                | < 1 mm at a distance of 30 mm                                                                                                        |
| Opening angle                               |                | approx. 2 °                                                                                                                          |
| Optical face                                |                | frontal                                                                                                                              |
| Ambient light limit                         |                | EN 60947-5-2 : 30000 Lux                                                                                                             |
| <b>Functional safety related parameters</b> |                |                                                                                                                                      |
| MTTF <sub>d</sub>                           |                | 800 a                                                                                                                                |
| Mission Time (T <sub>M</sub> )              |                | 20 a                                                                                                                                 |
| Diagnostic Coverage (DC)                    |                | 0 %                                                                                                                                  |
| <b>Indicators/operating means</b>           |                |                                                                                                                                      |
| Operation indicator                         |                | LED green, statically lit Power on , short-circuit : LED green flashing (approx. 4 Hz)                                               |
| Function indicator                          |                | LED yellow: lights when object is detected                                                                                           |
| <b>Electrical specifications</b>            |                |                                                                                                                                      |
| Operating voltage                           | U <sub>B</sub> | 12 ... 24 V                                                                                                                          |
| No-load supply current                      | I <sub>0</sub> | < 10 mA                                                                                                                              |
| Protection class                            |                | III                                                                                                                                  |
| <b>Output</b>                               |                |                                                                                                                                      |
| 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 <sub>d</sub> | ≤ 1.5 V DC                                                                                                                           |
| Switching frequency                         | f              | approx. 2 kHz                                                                                                                        |
| Response time                               |                | 250 μs                                                                                                                               |
| <b>Conformity</b>                           |                |                                                                                                                                      |
| Product standard                            |                | EN 60947-5-2                                                                                                                         |
| Laser safety                                |                | EN 60825-1:2007                                                                                                                      |
| <b>Approvals and certificates</b>           |                |                                                                                                                                      |
| EAC conformity                              |                | TR CU 020/2011                                                                                                                       |
| 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 |
| <b>Ambient conditions</b>                   |                |                                                                                                                                      |
| Ambient temperature                         |                | -20 ... 60 °C (-4 ... 140 °F)                                                                                                        |
| Storage temperature                         |                | -30 ... 70 °C (-22 ... 158 °F)                                                                                                       |
| <b>Mechanical specifications</b>            |                |                                                                                                                                      |
| Housing width                               |                | 7.5 mm                                                                                                                               |
| Housing height                              |                | 26 mm                                                                                                                                |
| Housing depth                               |                | 13.8 mm                                                                                                                              |
| Degree of protection                        |                | IP67                                                                                                                                 |
| Connection                                  |                | 2 m fixed cable                                                                                                                      |
| Material                                    |                |                                                                                                                                      |
| Housing                                     |                | PC/ABS and TPU                                                                                                                       |
| Optical face                                |                | glass                                                                                                                                |
| Cable                                       |                | PUR                                                                                                                                  |
| Mass                                        |                | approx. 20 g                                                                                                                         |
| Cable length                                |                | 2 m                                                                                                                                  |

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

Pepperl+Fuchs Group  
www.pepperl-fuchs.com

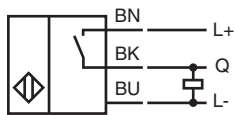
USA: +1 330 486 0001  
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111  
fa-info@de.pepperl-fuchs.com

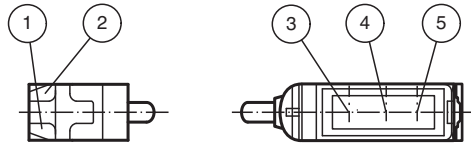
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fa-info@sg.pepperl-fuchs.com

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## Connection



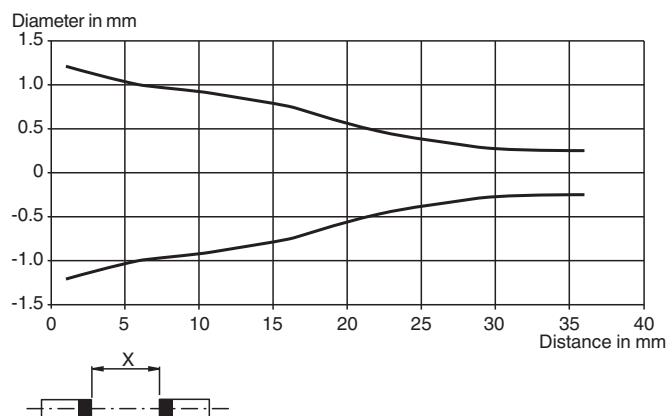
## Assembly



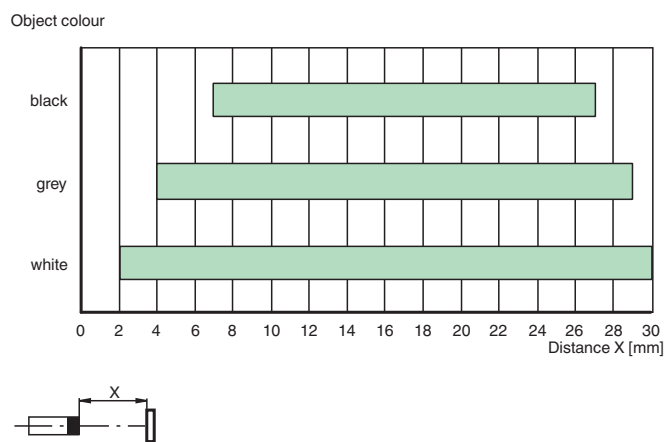
|   |                   |        |
|---|-------------------|--------|
| 1 | Operating display | green  |
| 2 | Signal display    | yellow |
| 3 | Emitter           |        |
| 4 | Receiver 1        |        |
| 5 | Receiver 2        |        |

## Characteristic Curve

### Light spot diameter



### Detection ranges



Safety Information



Accessories

|  |          |                                                               |
|--|----------|---------------------------------------------------------------|
|  | MH-R3-01 | Mounting aid for sensors from the R3 series, mounting bracket |
|  | MH-R3-02 | Mounting aid for sensors from the R3 series, mounting bracket |
|  | MH-R3-03 | Mounting aid for sensors from the R3 series, mounting bracket |
|  | MH-R3-04 | Mounting aid for sensors from the R3 series, mounting bracket |

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