



## Triangulation sensor (BGS)

### OBT80-R3-E2-0,2M-V3-P-L



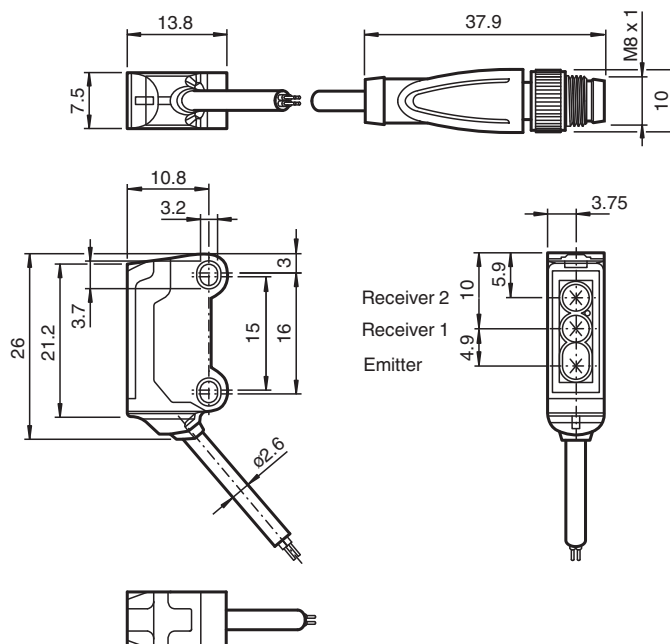
- High-performance miniature photoelectric sensors
- DuraBeam Laser Sensors - durable and employable like an LED
- 45° cable outlet for maximum mounting freedom under extremely tight space constraints
- Precision object detection, almost irrespective of the color

Laser triangulation sensor with background suppression, ultra-small design with M3 mounting, 80 mm sensing range, light on, PNP output, 200 mm fixed cable with plug M8, 3-pin



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       | 20 ... 80 mm                         |
| Reference target      | standard black, 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 |

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

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## Technical Data

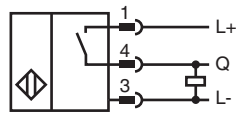
|                                             |                                                                                                                                      |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 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 %)           | < 15 % at 80 mm                                                                                                                      |
| Diameter of the light spot                  | approx. 2 mm at a distance of 80 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 / light-on                                                                                                                |
| Signal output                               | 1 PNP output, short-circuit protected, reverse polarity protected, open collector                                                    |
| Switching voltage                           | max. 30 V DC                                                                                                                         |
| Switching current                           | max. 50 mA                                                                                                                           |
| 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                                  | 200 mm fixed cable with 3-pin, M8 x 1 connector                                                                                      |
| Material                                    |                                                                                                                                      |
| Housing                                     | PC/ABS and TPU                                                                                                                       |
| Optical face                                | PC                                                                                                                                   |
| Cable                                       | PUR                                                                                                                                  |
| Mass                                        | approx. 10 g                                                                                                                         |

Release date: 2022-06-03 Date of issue: 2022-06-03 Filename: 70141934\_eng.pdf

Technical Data

|              |        |
|--------------|--------|
| Cable length | 200 mm |
|--------------|--------|

Connection



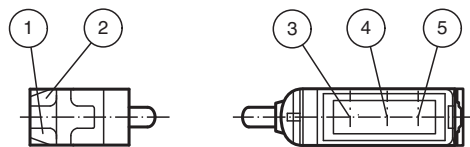
Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

Assembly

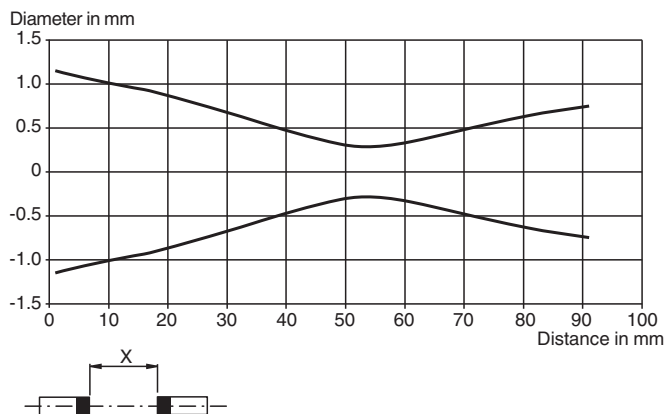


|   |                   |        |
|---|-------------------|--------|
| 1 | Operating display | green  |
| 2 | Signal display    | yellow |
| 3 | Emitter           |        |
| 4 | Receiver 1        |        |
| 5 | Receiver 2        |        |

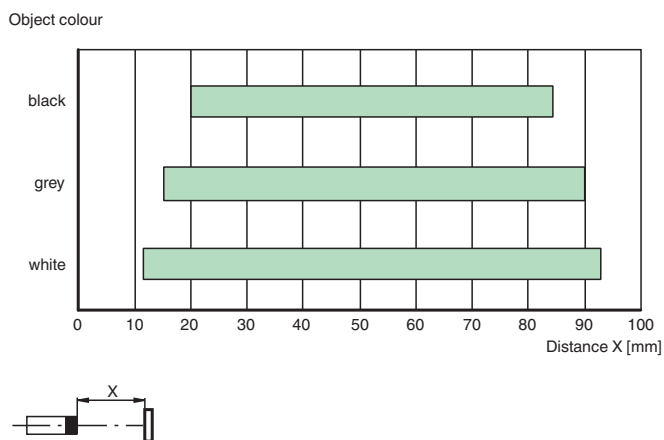
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Characteristic Curve

Light spot diameter



Detection ranges



Safety Information



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## Accessories

|                                                                                   |                     |                                                                      |
|-----------------------------------------------------------------------------------|---------------------|----------------------------------------------------------------------|
|  | <b>V3-WM-2M-PUR</b> | Female cordset single-ended M8 angled A-coded, 3-pin, PUR cable grey |
|  | <b>MH-R3-01</b>     | Mounting aid for sensors from the R3 series, mounting bracket        |
|  | <b>MH-R3-02</b>     | Mounting aid for sensors from the R3 series, mounting bracket        |
|  | <b>MH-R3-03</b>     | Mounting aid for sensors from the R3 series, mounting bracket        |
|  | <b>MH-R3-04</b>     | Mounting aid for sensors from the R3 series, mounting bracket        |