



## Triangulation sensor (BGS) OBT600-R201-2EP-IO-0,3M-V31-L



- Medium design with versatile mounting options
- DuraBeam Laser Sensors - durable and employable like an LED
- Extended temperature range  
-40 °C ... 60 °C
- High degree of protection IP69K
- IO-Link interface for service and process data

Laser diffuse mode sensor with adjustable background suppression



### Function

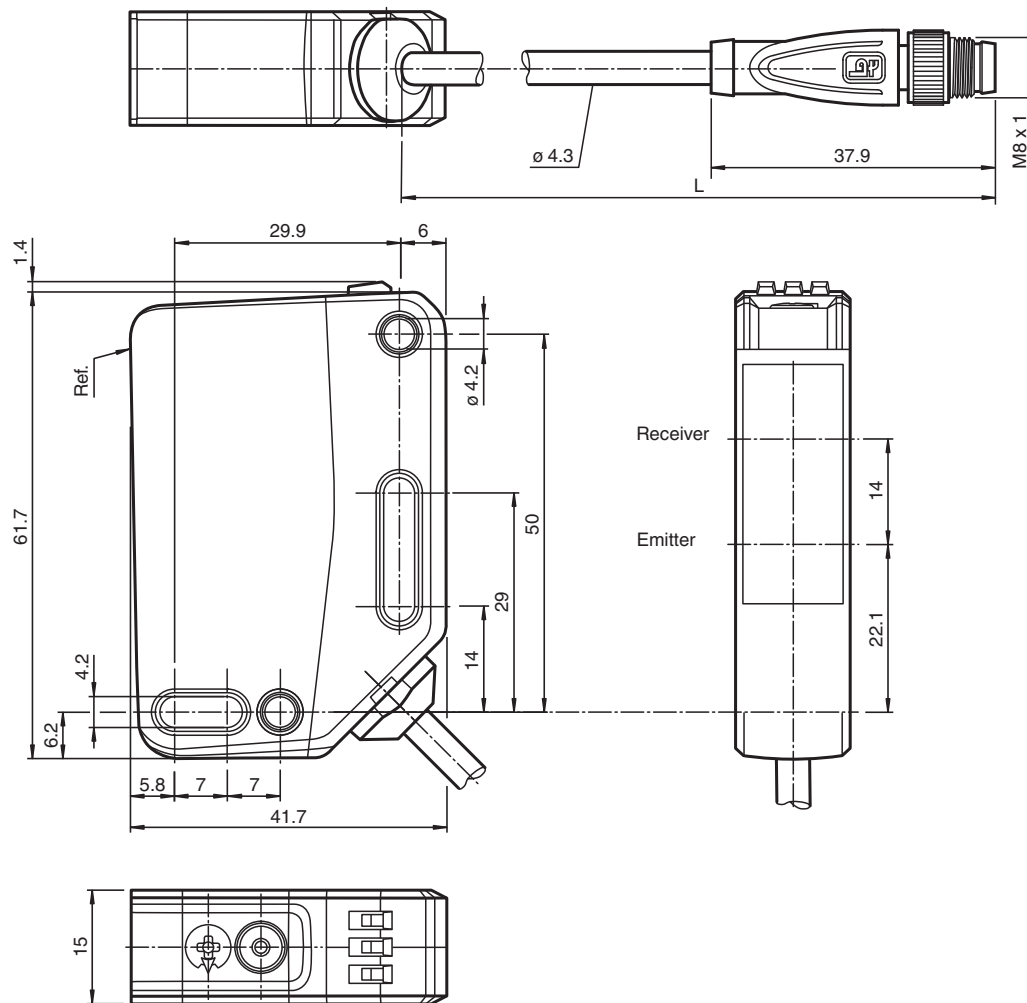
The optical sensors in the series are the first devices to offer an end-to-end solution in a medium-sized standard design – from the thru-beam sensor through to the measuring distance sensor. As a result of this design, the sensors are able to perform practically all standard automation tasks.

The entire series enables sensors to communicate via IO-Link.

The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

Multi Pixel Technology (MPT) ensures that the standard sensors are flexible and can be adapted to the application environment.

## Dimensions



## Technical Data

### General specifications

|                                   |                                                          |
|-----------------------------------|----------------------------------------------------------|
| Detection range                   | 40 ... 600 mm                                            |
| Detection range min.              | 40 ... 90 mm                                             |
| Detection range max.              | 40 ... 600 mm                                            |
| Adjustment range                  | 90 ... 600 mm                                            |
| Reference target                  | standard white, 100 mm x 100 mm                          |
| Light source                      | laser diode                                              |
| Light type                        | modulated visible red light                              |
| Laser nominal ratings             |                                                          |
| Note                              | LASER LIGHT , DO NOT STARE INTO BEAM                     |
| Laser class                       | 1                                                        |
| Wave length                       | 680 nm                                                   |
| Beam divergence                   | > 5 mrad, d63 < 2,8 mm in the range of 350 mm ... 800 mm |
| Pulse length                      | 3 µs                                                     |
| Repetition rate                   | approx. 13 kHz                                           |
| max. pulse energy                 | 10.4 nJ                                                  |
| Black-white difference (6 %/90 %) | < 5 % at 300 mm                                          |
| Diameter of the light spot        | approx. 2.5 mm at a distance of 600 mm                   |
| Opening angle                     | approx. 0.3 °                                            |
| Ambient light limit               | EN 60947-5-2 : 70000 Lux                                 |

### Functional safety related parameters

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

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## Technical Data

|                                   |                |                                                                                                                                                                                                                                       |
|-----------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MTTF <sub>d</sub>                 |                | 560 a                                                                                                                                                                                                                                 |
| Mission Time (T <sub>M</sub> )    |                | 20 a                                                                                                                                                                                                                                  |
| Diagnostic Coverage (DC)          |                | 0 %                                                                                                                                                                                                                                   |
| <b>Indicators/operating means</b> |                |                                                                                                                                                                                                                                       |
| Operation indicator               |                | LED green:<br>constantly on - power on<br>flashing (4Hz) - short circuit<br>flashing with short break (1 Hz) - IO-Link mode                                                                                                           |
| Function indicator                |                | LED yellow:<br>constantly on - object detected<br>constantly off - object not detected                                                                                                                                                |
| Control elements                  |                | Light-on/dark-on changeover switch                                                                                                                                                                                                    |
| Control elements                  |                | Sensing range adjuster                                                                                                                                                                                                                |
| <b>Electrical specifications</b>  |                |                                                                                                                                                                                                                                       |
| Operating voltage                 | U <sub>B</sub> | 10 ... 30 V DC                                                                                                                                                                                                                        |
| Ripple                            |                | max. 10 %                                                                                                                                                                                                                             |
| No-load supply current            | I <sub>0</sub> | < 15 mA at 24 V supply voltage                                                                                                                                                                                                        |
| Protection class                  |                | III                                                                                                                                                                                                                                   |
| <b>Interface</b>                  |                |                                                                                                                                                                                                                                       |
| Interface type                    |                | IO-Link ( via C/Q = pin 4 )                                                                                                                                                                                                           |
| IO-Link revision                  |                | 1.1                                                                                                                                                                                                                                   |
| Device profile                    |                | Identification and diagnosis<br>Smart Sensor type 2.4                                                                                                                                                                                 |
| Device ID                         |                | 0x111613 (1119763)                                                                                                                                                                                                                    |
| Transfer rate                     |                | COM2 (38.4 kBit/s)                                                                                                                                                                                                                    |
| Min. cycle time                   |                | 2.3 ms                                                                                                                                                                                                                                |
| Process data width                |                | Process data input 1 Bit<br>Process data output 2 Bit                                                                                                                                                                                 |
| SIO mode support                  |                | yes                                                                                                                                                                                                                                   |
| Compatible master port type       |                | A                                                                                                                                                                                                                                     |
| <b>Output</b>                     |                |                                                                                                                                                                                                                                       |
| Switching type                    |                | The switching type of the sensor is adjustable. The default setting is:<br>C/Q - Pin4: NPN normally open / light-on, PNP normally closed / dark-on, IO-Link<br>/Q - Pin2: NPN normally closed / dark-on, PNP normally open / light-on |
| Signal output                     |                | 2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected, overvoltage protected                                                                                                                              |
| Switching voltage                 |                | max. 30 V DC                                                                                                                                                                                                                          |
| Switching current                 |                | max. 100 mA , resistive load                                                                                                                                                                                                          |
| Usage category                    |                | DC-12 and DC-13                                                                                                                                                                                                                       |
| Voltage drop                      | U <sub>d</sub> | ≤ 1.5 V DC                                                                                                                                                                                                                            |
| Switching frequency               | f              | 1650 Hz                                                                                                                                                                                                                               |
| Response time                     |                | 300 μs                                                                                                                                                                                                                                |
| <b>Conformity</b>                 |                |                                                                                                                                                                                                                                       |
| Communication interface           |                | IEC 61131-9                                                                                                                                                                                                                           |
| Product standard                  |                | EN 60947-5-2                                                                                                                                                                                                                          |
| Laser safety                      |                | EN 60825-1:2014                                                                                                                                                                                                                       |
| <b>Approvals and certificates</b> |                |                                                                                                                                                                                                                                       |
| UL approval                       |                | E87056 , cULus Listed , class 2 power supply , type rating 1                                                                                                                                                                          |
| CCC approval                      |                | CCC approval / marking not required for products rated ≤36 V                                                                                                                                                                          |
| FDA approval                      |                | IEC 60825-1:2014 Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3 as described in Laser Notice 56, dated May 8, 2019.                                                                           |
| <b>Ambient conditions</b>         |                |                                                                                                                                                                                                                                       |
| Ambient temperature               |                | -40 ... 60 °C (-40 ... 140 °F) , cable, fixed installation<br>-20 ... 60 °C (-4 ... 140 °F) , movable cable not appropriate for conveyor chains                                                                                       |
| Storage temperature               |                | -40 ... 70 °C (-40 ... 158 °F)                                                                                                                                                                                                        |
| <b>Mechanical specifications</b>  |                |                                                                                                                                                                                                                                       |
| Degree of protection              |                | IP67 / IP69 / IP69K                                                                                                                                                                                                                   |

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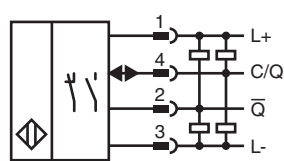
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Technical Data

|              |                                                      |
|--------------|------------------------------------------------------|
| Connection   | fixed cable 300 mm with M8 x 1 male connector; 4-pin |
| Material     |                                                      |
| Housing      | PC (Polycarbonate)                                   |
| Optical face | PMMA                                                 |
| Mass         | approx. 52 g                                         |
| Dimensions   |                                                      |
| Height       | 61.7 mm                                              |
| Width        | 15 mm                                                |
| Depth        | 41.7 mm                                              |
| Cable length | 0.3 m                                                |

Connection Assignment



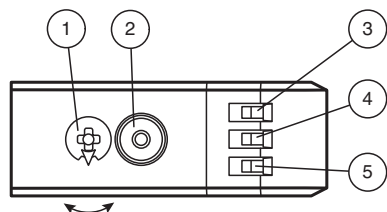
Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

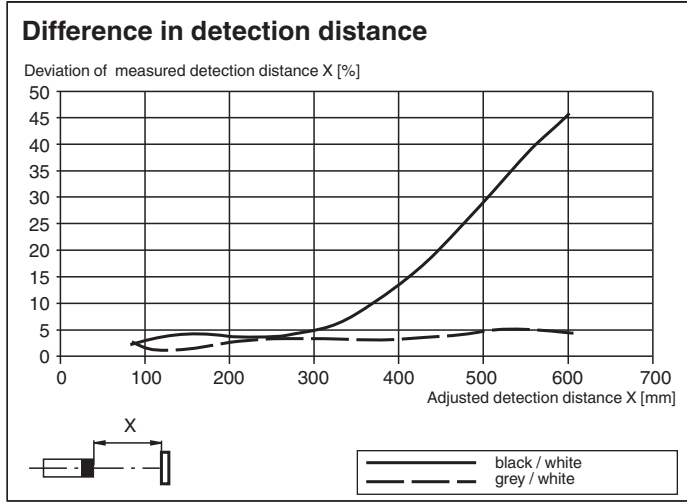
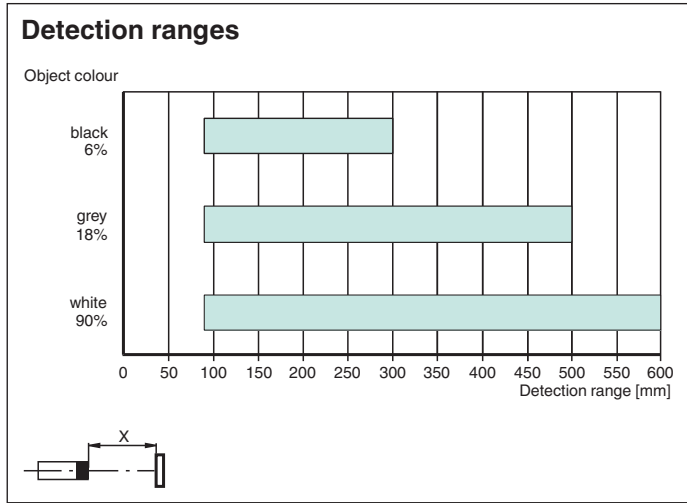
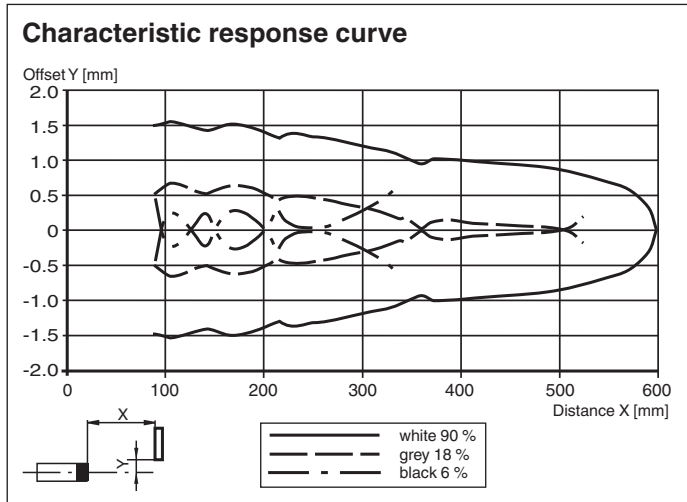
Assembly



|   |                                      |    |
|---|--------------------------------------|----|
| 1 | Sensitivity adjustment               |    |
| 2 | Light-on / dark-on changeover switch |    |
| 3 | Operating indicator / dark on        | GN |
| 4 | Signal indicator                     | YE |
| 5 | Operating indicator / light on       | GN |

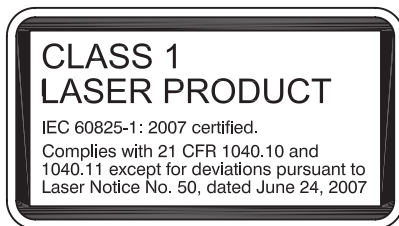
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Characteristic Curve



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## Safety Information



## Configuration

To unlock the adjustment functions, rotate the sensing range/sensitivity adjuster by more than 180°.

### **Sensing Range/Sensitivity**

To increase the sensing range/sensitivity, rotate the sensing range/sensitivity adjuster clockwise.

To reduce the sensing range/sensitivity, rotate the sensing range/sensitivity adjuster counter-clockwise.

As soon as the end of the adjustment range is reached, the signal indicator flashes at 8 Hz.

### **Configuring Light On/Dark On**

Press the light-on/dark-on changeover switch for more than 1 second (but less than 4 seconds). "Light on/dark on" mode changes and the relevant operating indicator lights up.

If you press the light-on/dark-on changeover switch for longer than 4 seconds, the "light on/dark on" mode will switch back to the original setting. The current status is activated when the light-on/dark-on changeover switch is released.

### **Restoring Factory Settings**

Press the light-on/dark-on changeover switch for more than 10 seconds (but less than 30 seconds) until all LEDs go out. When the light-on/dark-on changeover switch is released, the signal indicator lights up. After 5 seconds, the sensor resumes operation with the factory settings.

The adjustment functions are locked after 5 minutes of inactivity. To unlock the adjustment functions, rotate the sensing range/sensitivity adjuster again by more than 180°.