# Triangulation sensor (BGS)
# OBT300-R201-EP-IO-0,3M-V3

- Medium design with versatile mounting options
- Best background suppressor in its class
- Precision object detection, almost irrespective of the color
- Extended temperature range
  -40 °C ... 60 °C
- High degree of protection IP69K
- IO-Link interface for service and process data

Triangulation sensor with background suppression
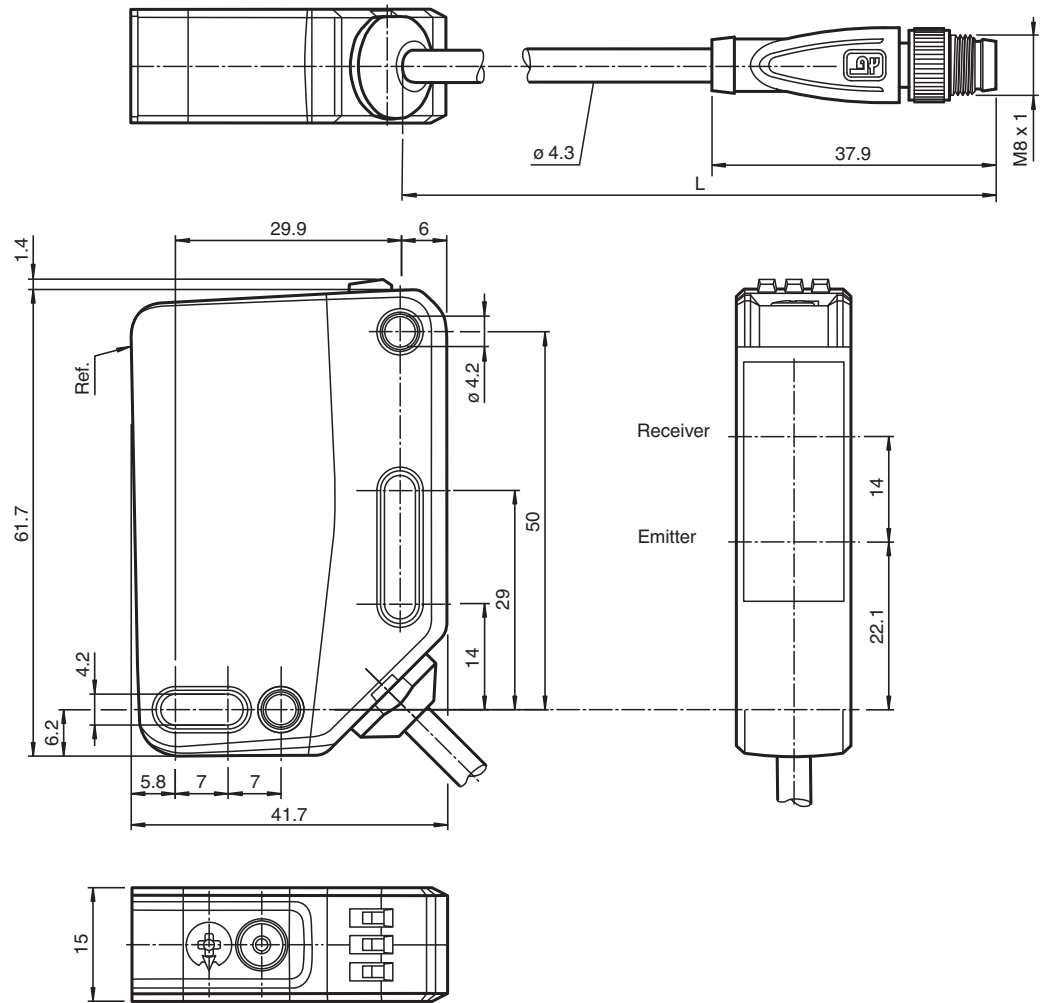
CE ᶜ(UL)ᵘˢ LISTED  UKCA  ◆ IO-Link

## 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.

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

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## Dimensions



## Technical Data

**General specifications**

| | |
|---|---|
| Detection range | 30 ... 300 mm |
| Detection range min. | 30 ... 80 mm |
| Detection range max. | 30 ... 300 mm |
| Adjustment range | 80 ... 300 mm |
| Reference target | standard white, 100 mm x 100 mm |
| Light source | LED |
| Light type | modulated visible red light |
| LED risk group labelling | exempt group |
| Black-white difference (6 %/90 %) | < 5 % at 300 mm |
| Diameter of the light spot | approx. 8 mm x 8 mm at a distance of 300 mm |
| Opening angle | approx. 1.5 ° |
| Ambient light limit | EN 60947-5-2 : 70000 Lux |

**Functional safety related parameters**

| | |
|---|---|
| $MTTF_d$ | 600 a |
| Mission Time ($T_M$) | 20 a |
| Diagnostic Coverage (DC) | 0 % |

**Indicators/operating means**

| | |
|---|---|
| Operation indicator | LED green:<br>constantly on - power on<br>flashing (4Hz) - short circuit<br>flashing with short break (1 Hz) - IO-Link mode |

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## Technical Data

| | | |
|---|---|---|
| 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 |
| **Electrical specifications** | | |
| Operating voltage | $U_B$ | 10 ... 30 V DC |
| Ripple | | max. 10  % |
| No-load supply current | $I_0$ | < 26 mA at 24 V supply voltage |
| Protection class | | III |
| **Interface** | | |
| 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 | | 0x111612 (1119762) |
| 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 |
| **Output** | | |
| 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 |
| Signal output | | 1 push-pull (4 in 1) output, 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 | $U_d$ | ≤ 1.5 V DC |
| Switching frequency | f | 500 Hz |
| Response time | | 1 ms |
| **Conformity** | | |
| Communication interface | | IEC 61131-9 |
| Product standard | | EN 60947-5-2 |
| **Approvals and certificates** | | |
| UL approval | | E87056 , cULus Listed , class 2 power supply , type rating 1 |
| CCC approval | | CCC approval / marking not required for products rated ≤36 V |
| **Ambient conditions** | | |
| Ambient temperature | | -40 ... 60 °C (-40 ... 140 °F) , fixed cable<br>-20 ... 60 °C (-4 ... 140 °F) , movable cable not appropriate for conveyor chains |
| Storage temperature | | -40 ... 70 °C (-40 ... 158 °F) |
| **Mechanical specifications** | | |
| Housing width | | 15 mm |
| Housing height | | 61.7 mm |
| Housing depth | | 41.7 mm |
| Degree of protection | | IP67 / IP69 / IP69K |
| Connection | | 300 mm fixed cable with M8 x 1, 3-pin connector |
| Material | | |
| Housing | | PC (Polycarbonate) |
| Optical face | | PMMA |
| Mass | | approx. 52 g |
| Cable length | | 0.3 m |

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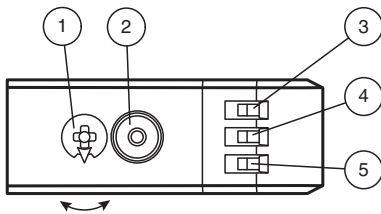fa-info@sg.pepperl-fuchs.com

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## Connection

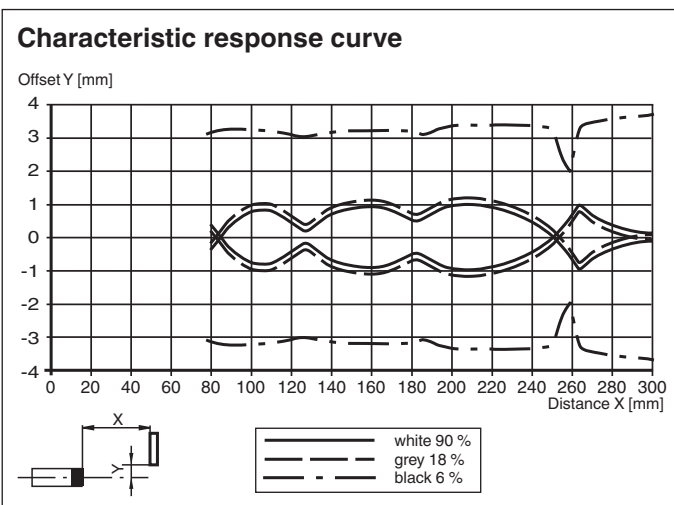## Connection Assignment

Wire colors in accordance with EN 60947-5-2

| 1 | BN | (brown) |
| 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 |

## Characteristic Curve

**Characteristic response curve**

Offset Y [mm]

white 90 %
grey 18 %
black 6 %

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

## Characteristic Curve

### Detection ranges

Object colour



| | |
|---|---|
| white 90% | |
| grey 18% | |
| black 6% | |

Detection range [mm]

X

### Difference in detection distance

Deviation of measured detection distance X [%]



Adjusted detection distance X [mm]

X

— black / white
– – grey / white
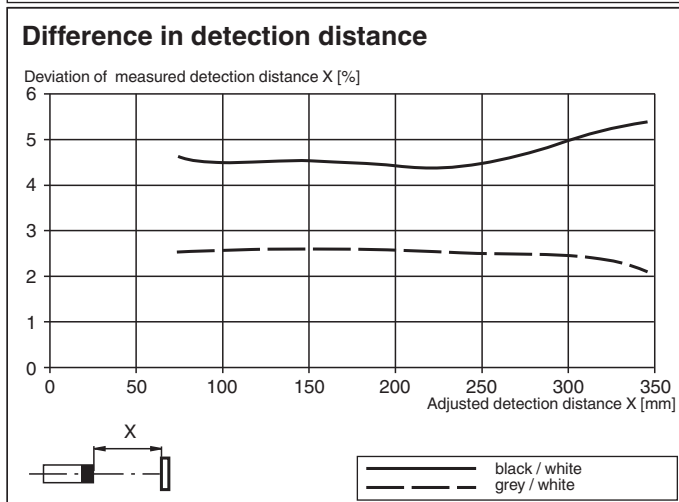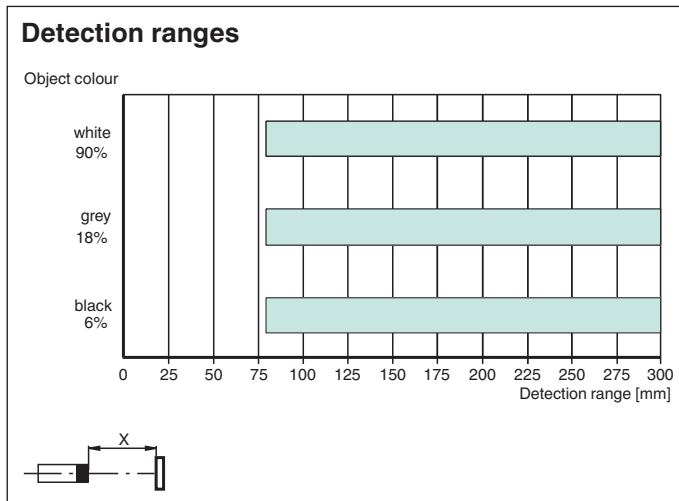
## Accessories

| | | |
|---|---|---|
| | **OMH-RL31-02** | Mounting bracket narrow |
| | **OMH-RL31-03** | Mounting bracket narrow |
| | **OMH-RL31-04** | Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm |
| | **OMH-RL31-07** | Mounting bracket including adjustment |
| | **OMH-RL31-08** | Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm |
| | **OMH-R20x-Quick-Mount** | Quick mounting accessory |
| | **ICE2-8IOL-G65L-V1D** | EtherNet/IP IO-Link master with 8 inputs/outputs |
| | **ICE3-8IOL-G65L-V1D** | PROFINET IO IO-Link master with 8 inputs/outputs |

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## Accessories

| | | |
|---|---|---|
| | **ICE2-8IOL-K45S-RJ45** | EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, screw terminal |
| | **ICE3-8IOL-K45P-RJ45** | PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, push-in terminals |
| | **ICE3-8IOL-K45S-RJ45** | PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, screw terminal |
| | **IO-Link-Master02-USB** | IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection |
| | **ICE1-8IOL-G30L-V1D** | Ethernet IO-Link module with 8 inputs/outputs |
| | **ICE1-8IOL-G60L-V1D** | Ethernet IO-Link module with 8 inputs/outputs |
| | **ICE2-8IOL-K45P-RJ45** | EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, push-in connectors |
| | **V3-GM-2M-PUR** | Female cordset single-ended M8 straight A-coded, 3-pin, PUR cable grey |
| | **V3-WM-2M-PUR** | Female cordset single-ended M8 angled A-coded, 3-pin, PUR cable grey |

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## 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°.

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