



## Triangulation sensor (BGE) OBT300-R200-2EP-IO-V1-1T



- Medium design with versatile mounting options
- Secure and gapless detection, even near the surface through background evaluation
- 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 evaluation



### Function

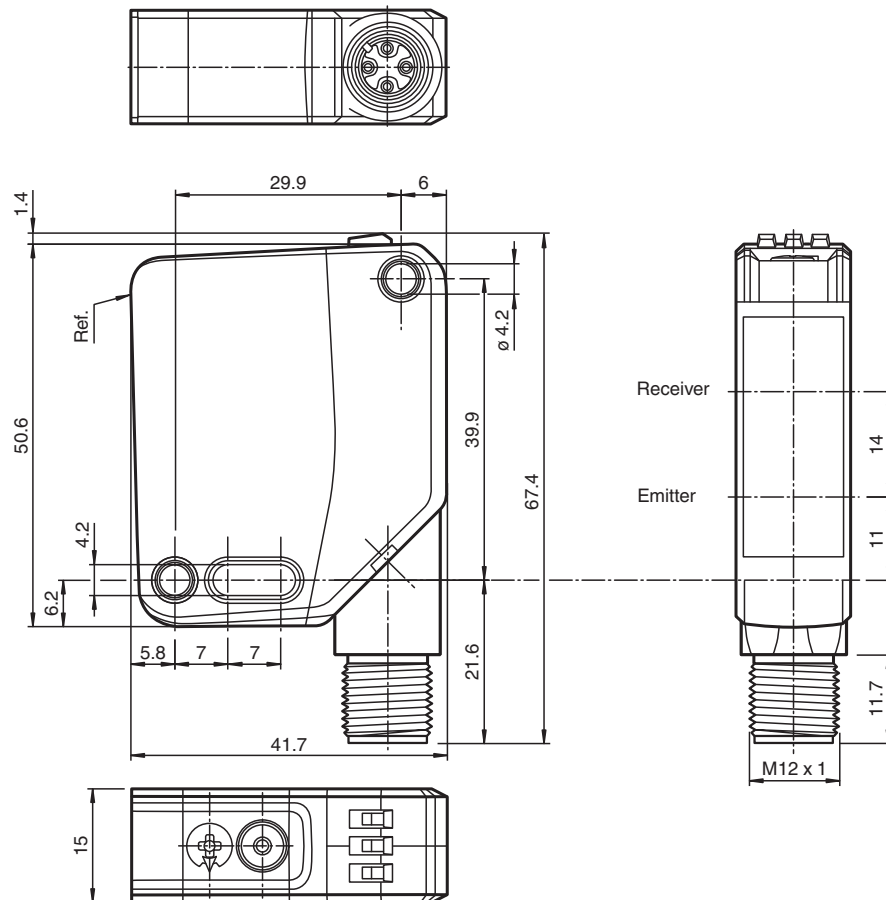
The optical sensors in the series are the first devices to offer an end-to-end solution in a medium-sized standard design – from the thru-beam sensor through to the measuring distance sensor. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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                      |                | 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 <sub>d</sub>                    |                | 600 a   |
| Mission Time (T <sub>M</sub> )       |                | 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   |
| Function indicator                   |                | LED yellow:<br>constantly on - background detected (object not detected)<br>constantly off - object detected  |
| Control elements                     |                | Light-on/dark-on changeover switch  |
| Control elements                     |                | Sensing range adjuster  |
| Electrical specifications            |                |   |
| Operating voltage                    | U <sub>B</sub> | 10 ... 30 V DC  |
| Ripple                               |                | max. 10 %   |
| No-load supply current               | I <sub>0</sub> | < 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                            |                | 0x111702 (1120002)  |
| 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 / dark-on, PNP normally closed / light-on, IO-Link<br>/Q - Pin2: NPN normally closed / light-on, PNP normally open / dark-on |
| Signal output                        |                | 2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected,<br>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              | 500 Hz  |
| Response time                        |                | 1 ms  |
| Conformity                           |                |   |

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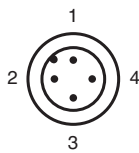
## Technical Data

|                                   |  |
|-----------------------------------|--|
| Communication interface           | IEC 61131-9  |
| Product standard                  | EN 60947-5-2   |
| <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 |
| <b>Ambient conditions</b>         |  |
| Ambient temperature               | -40 ... 60 °C (-40 ... 140 °F)                               |
| Storage temperature               | -40 ... 70 °C (-40 ... 158 °F)                               |
| <b>Mechanical specifications</b>  |  |
| Housing width                     | 15 mm  |
| Housing height                    | 50.6 mm  |
| Housing depth                     | 41.7 mm  |
| Degree of protection              | IP67 / IP69 / IP69K  |
| Connection                        | 4-pin, M12 x 1 connector, 90° rotatable                      |
| <b>Material</b>                   |  |
| Housing                           | PC (Polycarbonate)   |
| Optical face                      | PMMA   |
| Mass                              | approx. 37 g   |

## Connection



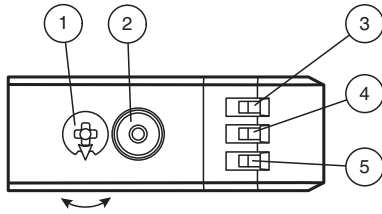
## Connection Assignment



Wire colors in accordance with EN 60947-5-2

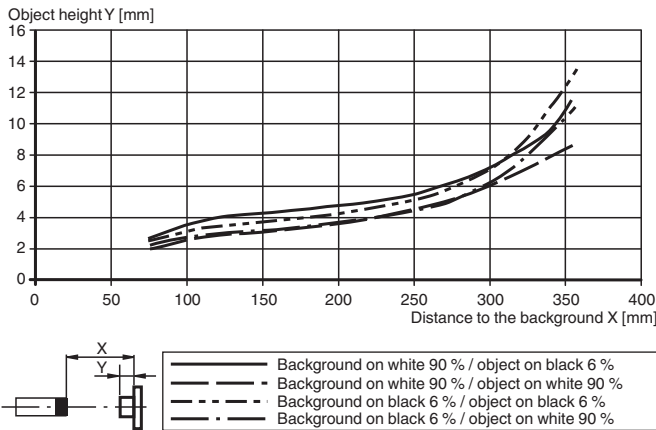
|   |    |         |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue)  |
| 4 | BK | (black) |

**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 |

**Minimum object height (typical)**







**Accessories**

|  |                             |   |
|--|-----------------------------|---|
|  | <b>V1-G-2M-PUR</b>          | Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable grey       |
|  | <b>V1-W-2M-PUR</b>          | Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey         |
|  | <b>OMH-MLV12-HWG</b>        | Mounting bracket for series MLV12 sensors                                     |
|  | <b>OMH-R200-01</b>          | Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm                 |
|  | <b>OMH-MLV12-HWK</b>        | Mounting bracket for series MLV12 sensors                                     |
|  | <b>OMH-R20x-Quick-Mount</b> | Quick mounting accessory  |
|  | <b>ICE2-8IOL-G65L-V1D</b>   | EtherNet/IP IO-Link master with 8 inputs/outputs                              |
|  | <b>ICE3-8IOL-G65L-V1D</b>   | PROFINET IO IO-Link master with 8 inputs/outputs                              |
|  | <b>ICE2-8IOL-K45S-RJ45</b>  | EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, screw terminal    |
|  | <b>ICE3-8IOL-K45P-RJ45</b>  | PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, push-in terminals |
|  | <b>ICE3-8IOL-K45S-RJ45</b>  | PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, screw terminal    |

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## Accessories

|   |                             |  |
|---|-----------------------------|--|
|  | <b>IO-Link-Master02-USB</b> | IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection |
|  | <b>ICE1-8IOL-G30L-V1D</b>   | Ethernet IO-Link module with 8 inputs/outputs  |
|  | <b>ICE1-8IOL-G60L-V1D</b>   | Ethernet IO-Link module with 8 inputs/outputs  |
|  | <b>ICE2-8IOL-K45P-RJ45</b>  | EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, push-in connectors                               |

## 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°.