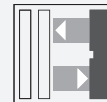




## Triangulation sensor (BGE) OBT600-R200-2EP-IO-1T-L



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



### Function

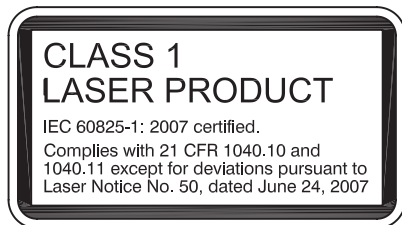
The optical sensors in the series are the first devices to offer an end-to-end solution in a medium-sized standard design – from the thru-beam sensor through to the measuring distance sensor. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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

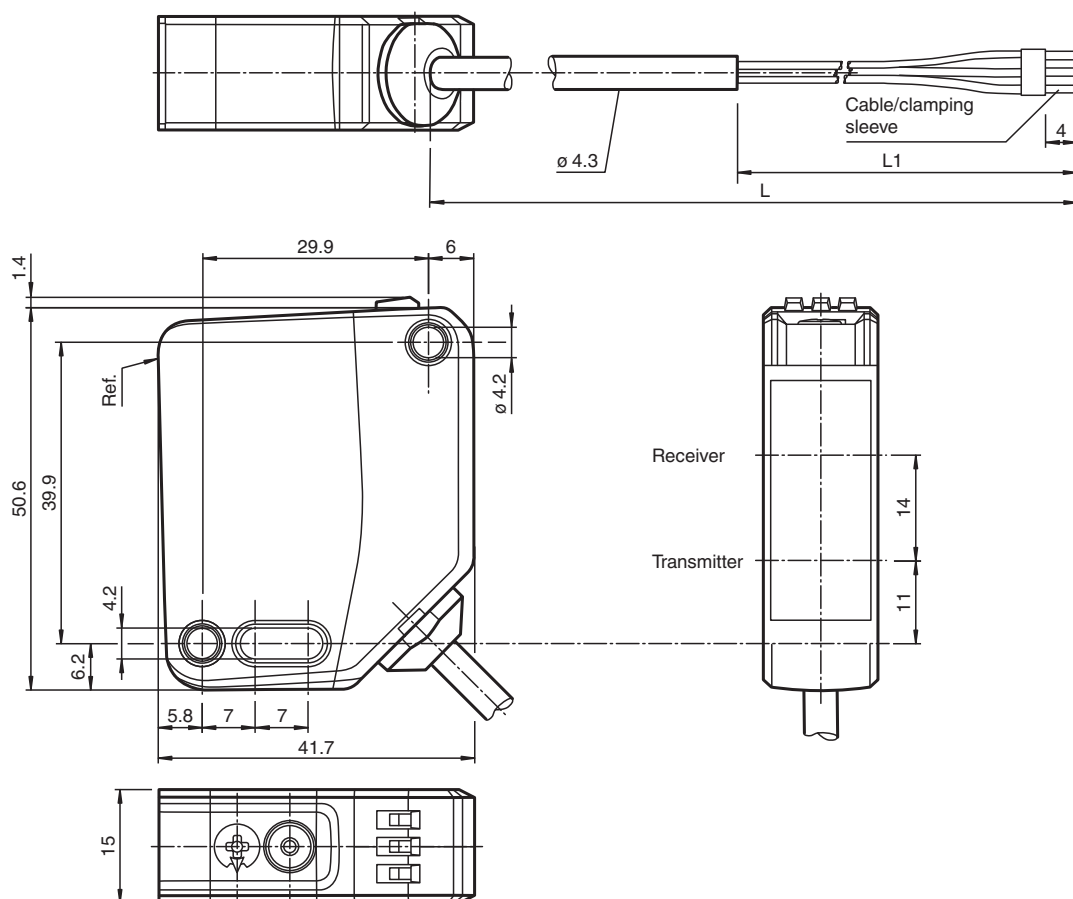
The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

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

### Safety Information



## 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                                 |
| <b>Functional safety related parameters</b> |                                                          |
| MTTF <sub>d</sub>                           | 560 a                                                    |
| Mission Time (T <sub>M</sub> )              | 20 a                                                     |
| Diagnostic Coverage (DC)                    | 0 %                                                      |

## Technical Data

### 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      | $U_B$ | 10 ... 30 V DC                 |
| Ripple                 |       | max. 10 %                      |
| No-load supply current | $I_0$ | < 15 mA at 24 V supply voltage |
| Protection class       |       | III                            |

### Interface

|                             |  |                                                       |
|-----------------------------|--|-------------------------------------------------------|
| Interface type              |  | IO-Link ( via C/Q = BK )                              |
| IO-Link revision            |  | 1.1                                                   |
| Device profile              |  | Identification and diagnosis<br>Smart Sensor type 2.4 |
| Device ID                   |  | 0x111703 (1120003)                                    |
| Transfer rate               |  | COM2 (38.4 kBaud)                                     |
| 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 - BK: NPN normally open / dark-on, PNP normally closed / light-on, IO-Link<br>/Q - WH: 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, 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 | $f$   | 1650 Hz                                                                                                                                                                                                                           |
| Response time       |       | 300 μs                                                                                                                                                                                                                            |

### Conformity

|                         |  |                 |
|-------------------------|--|-----------------|
| Communication interface |  | IEC 61131-9     |
| Product standard        |  | EN 60947-5-2    |
| Laser safety            |  | EN 60825-1:2014 |

### Approvals and certificates

|                |  |                                                                                                                                      |
|----------------|--|--------------------------------------------------------------------------------------------------------------------------------------|
| EAC conformity |  | TR CU 020/2011                                                                                                                       |
| 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 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 |

### 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

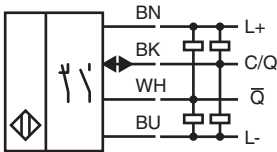
|                |  |         |
|----------------|--|---------|
| Housing width  |  | 15 mm   |
| Housing height |  | 50.6 mm |
| Housing depth  |  | 41.7 mm |

Release date: 2022-03-30 Date of issue: 2022-03-30 Filename: 295670-100234\_eng.pdf

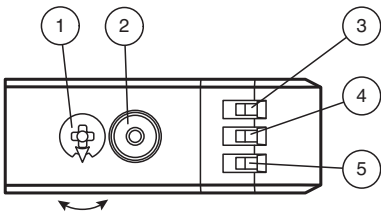
Technical Data

|                      |                     |
|----------------------|---------------------|
| Degree of protection | IP67 / IP69 / IP69K |
| Connection           | 2 m fixed cable     |
| Material             |                     |
| Housing              | PC (Polycarbonate)  |
| Optical face         | PMMA                |
| Mass                 | approx. 74 g        |
| Cable length         | 2 m                 |

Connection



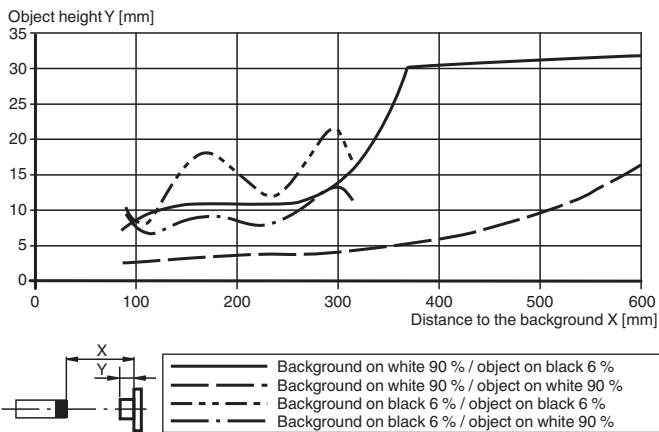
Assembly



|   |                                      |    |
|---|--------------------------------------|----|
| 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

Minimum object height (typical)



Accessories

|  |                      |                                                               |
|--|----------------------|---------------------------------------------------------------|
|  | <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 |

## Accessories

|                                                                                     |                             |                                                                                                              |
|-------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------|
|    | <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                                   |
|    | <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°.