



## Triangulation sensor (BGS) OBT20-R101-2P1-IO-V31-IR



- Miniature 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



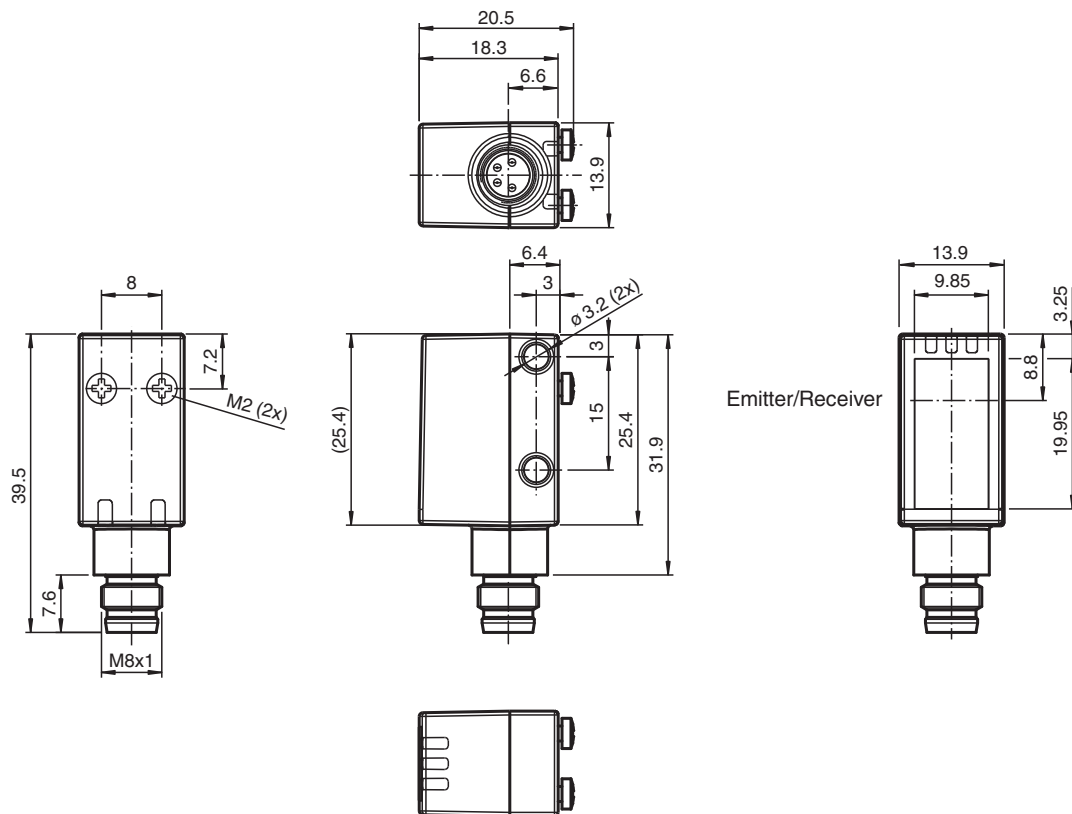
### Function

The miniature optical sensors are the first devices of their kind to offer an end-to-end solution in a small single standard design — from thru-beam sensor through to a distance measurement device. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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

The use of Multi Pixel Technology gives the standard sensors a high level of flexibility and enables them to adapt more effectively to their operating environment.

### Dimensions



## Technical Data

### General specifications

|                                   |                                 |
|-----------------------------------|---------------------------------|
| Detection range                   | 7 ... 20 mm                     |
| Detection range max.              | 5 ... 25 mm                     |
| Background suppression            | starts from 25 mm               |
| Reference target                  | standard white, 100 mm x 100 mm |
| Light source                      | LED                             |
| Light type                        | modulated infrared light 850 nm |
| LED risk group labelling          | exempt group                    |
| Black-white difference (6 %/90 %) | approx. 1 mm                    |
| Diameter of the light spot        | approx. 1.5 mm at 20 mm         |
| Opening angle                     | approx. 3 °                     |
| Ambient light limit               | EN 60947-5-2 : 40000 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 - object detected<br>constantly off - object not detected                                      |

### Electrical specifications

|                        |                |                                |
|------------------------|----------------|--------------------------------|
| Operating voltage      | U <sub>B</sub> | 10 ... 30 V DC                 |
| Ripple                 |                | max. 10 %                      |
| No-load supply current | I <sub>0</sub> | < 25 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              | Smart Sensor                                          |
| Device ID                   | 0x110509 (1115401)                                    |
| 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      |                | C/Q - Pin4: NPN normally closed / dark-on, PNP normally open / light-on, IO-Link /Q - Pin2: NPN normally open / light-on, PNP normally closed / 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 <sub>d</sub> | ≤ 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 |

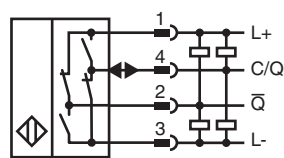
### Approvals and certificates

Release date: 2023-04-05 Date of issue: 2023-04-05 Filename: 267075-100513\_eng.pdf

Technical Data

|                           |  |                                                              |
|---------------------------|--|--------------------------------------------------------------|
| UL approval               |  | E87056 , cULus Listed , class 2 power supply , type rating 1 |
| Ambient conditions        |  |                                                              |
| Ambient temperature       |  | -40 ... 60 °C (-40 ... 140 °F)                               |
| Storage temperature       |  | -40 ... 70 °C (-40 ... 158 °F)                               |
| Mechanical specifications |  |                                                              |
| Housing width             |  | 13.9 mm                                                      |
| Housing height            |  | 31.9 mm                                                      |
| Housing depth             |  | 18.3 mm                                                      |
| Degree of protection      |  | IP67 / IP69 / IP69K                                          |
| Connection                |  | M8 x 1 connector, 4-pin                                      |
| Material                  |  |                                                              |
| Housing                   |  | PC (Polycarbonate)                                           |
| Optical face              |  | PMMA                                                         |
| Mass                      |  | approx. 10 g                                                 |

Connection



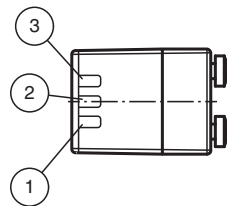
Connection Assignment



Wire colors in accordance with EN 60947-5-2

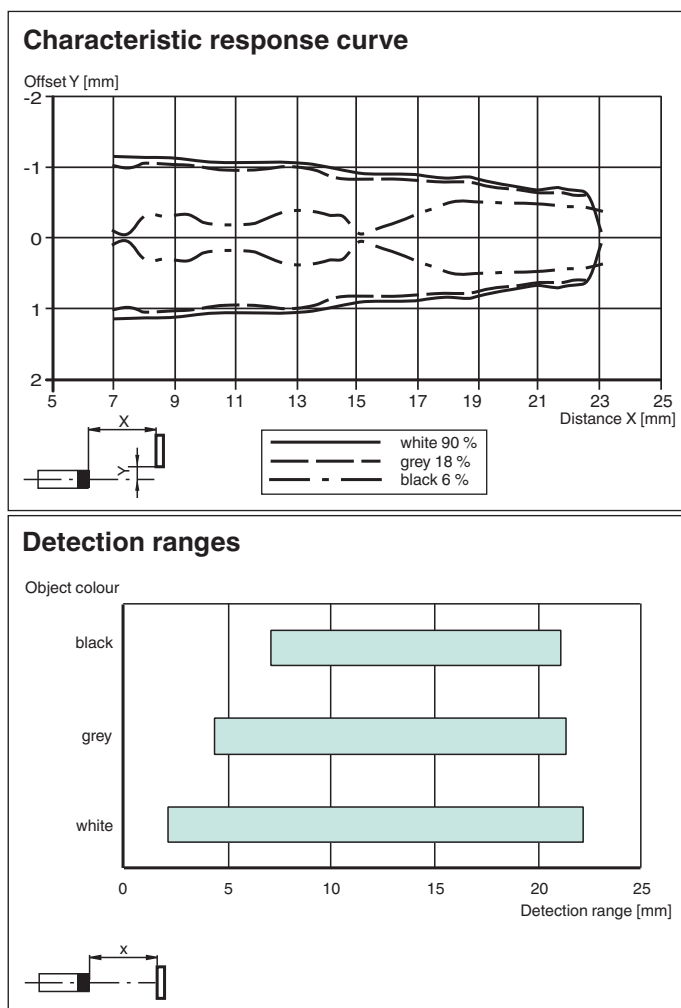
|   |    |         |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue)  |
| 4 | BK | (black) |

Assembly



|   |                                |
|---|--------------------------------|
| 1 | Operating indicator / dark on  |
| 2 | Signal indicator               |
| 3 | Operating indicator / light on |

## Characteristic Curve



## Accessories

|                                                                                     |                            |                                                                                |
|-------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------|
|  | <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>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 |
|  | <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     |

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

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