



## Triangulation sensor (BGS) OBOT40-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



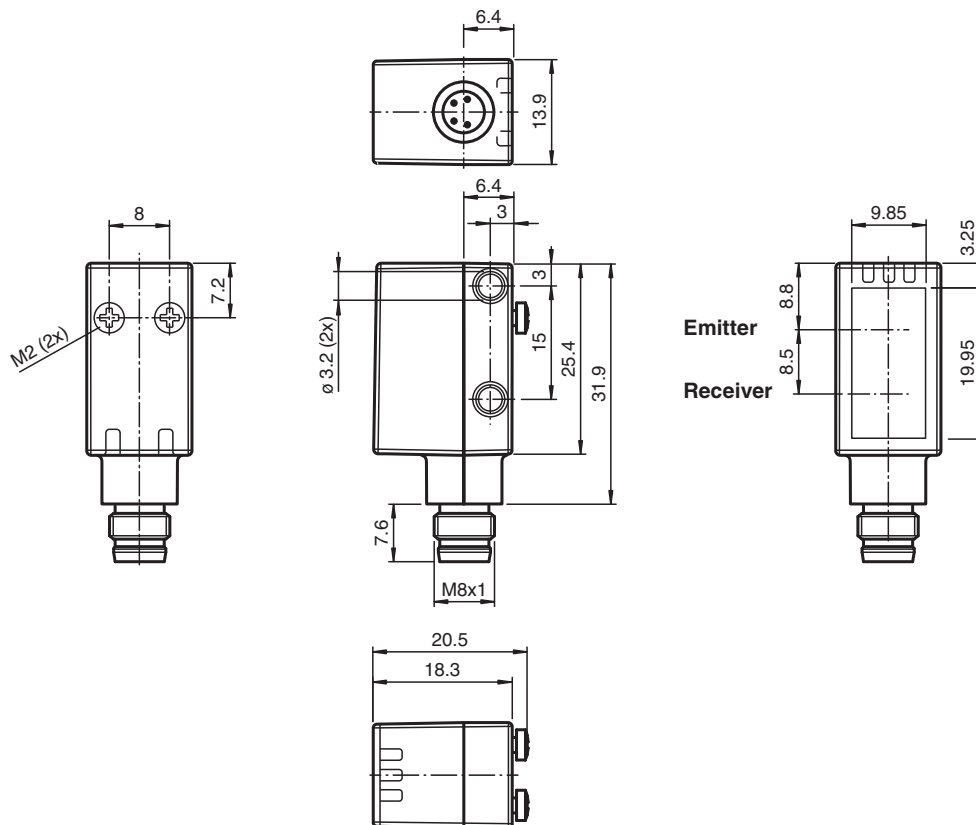
### Function

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

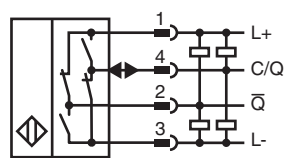
|                                             |                |                                                                                                                                                            |
|---------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General specifications</b>               |                |                                                                                                                                                            |
| Detection range                             |                | 10 ... 40 mm                                                                                                                                               |
| Detection range max.                        |                | 10 ... 50 mm                                                                                                                                               |
| Background suppression                      |                | starts from 50 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. 3 mm at 40 mm                                                                                                                                      |
| Opening angle                               |                | approx. 5 °                                                                                                                                                |
| Ambient light limit                         |                | EN 60947-5-2 : 40000 Lux                                                                                                                                   |
| <b>Functional safety related parameters</b> |                |                                                                                                                                                            |
| MTTF <sub>d</sub>                           |                | 600 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                                                                     |
| <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> | < 25 mA at 24 V supply voltage                                                                                                                             |
| Protection class                            |                | III                                                                                                                                                        |
| <b>Interface</b>                            |                |                                                                                                                                                            |
| Interface type                              |                | IO-Link ( via C/Q = BK )                                                                                                                                   |
| IO-Link revision                            |                | 1.1                                                                                                                                                        |
| Device profile                              |                | Smart Sensor                                                                                                                                               |
| Device ID                                   |                | 0x11050A (1115402)                                                                                                                                         |
| 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                              |                | C/Q - Pin4: NPN normally closed / dark-on, PNP normally open / light-on, IO-Link<br>/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                                                                                                                                                       |
| <b>Conformity</b>                           |                |                                                                                                                                                            |
| Communication interface                     |                | IEC 61131-9                                                                                                                                                |
| Product standard                            |                | EN 60947-5-2                                                                                                                                               |
| <b>Approvals and certificates</b>           |                |                                                                                                                                                            |

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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



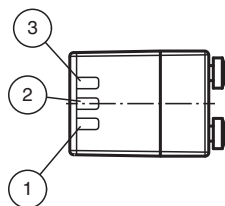
Connection Assignment



Wire colors in accordance with EN 60947-5-2

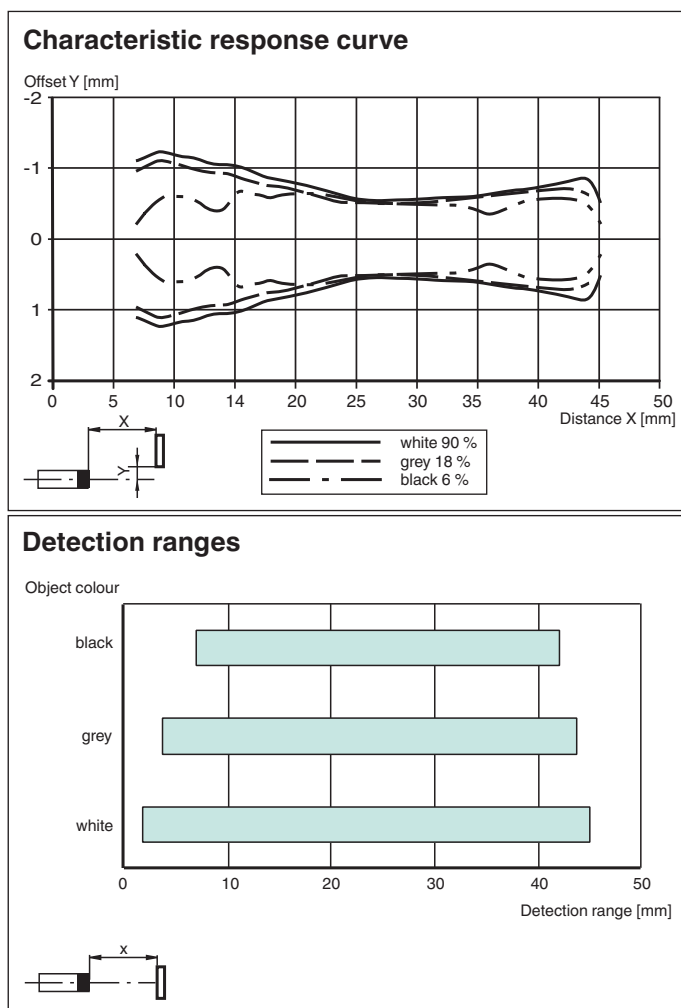
|   |    |         |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue)  |
| 4 | BK | (black) |

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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