



## Triangulation sensor (BGS) OBT300-R103-2EP-IO



- 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

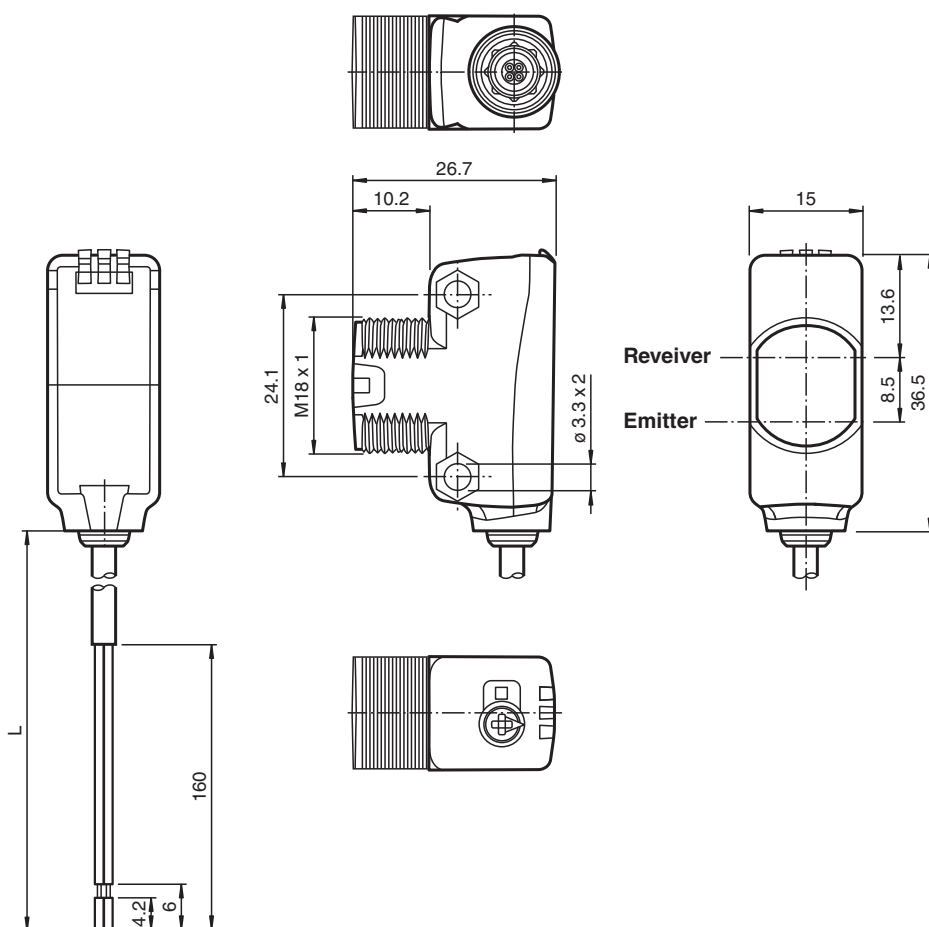
The R103 series miniature optical sensors are the first devices of their kind to offer an end-to-end solution in a small single standard design — from thru-beam sensor through to a distance measurement device. As a result of this design, the sensors are able to perform practically all standard automation tasks.

The 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.

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



Release date: 2025-01-30 Date of issue: 2025-01-30 Filename: 267075-100262\_eng.pdf

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

Pepperl+Fuchs Group  
www.pepperl-fuchs.com

USA: +1 330 486 0001  
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111  
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091  
fa-info@sg.pepperl-fuchs.com

**PEPPERL+FUCHS**

## Technical Data

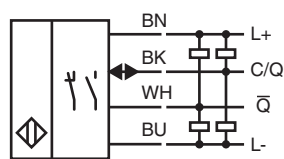
|                                             |                |                                                                                                                                                                                                                                   |
|---------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General specifications</b>               |                |                                                                                                                                                                                                                                   |
| Detection range                             |                | 5 ... 300 mm                                                                                                                                                                                                                      |
| Detection range min.                        |                | 5 ... 25 mm                                                                                                                                                                                                                       |
| Detection range max.                        |                | 5 ... 300 mm                                                                                                                                                                                                                      |
| Adjustment range                            |                | 25 ... 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 %)           |                | < 15 % at 300 mm                                                                                                                                                                                                                  |
| Diameter of the light spot                  |                | approx. 18 mm at a distance of 300 mm                                                                                                                                                                                             |
| Opening angle                               |                | approx. 3 °                                                                                                                                                                                                                       |
| 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                                                                                                                                            |
| Control elements                            |                | Light-on/dark-on changeover switch                                                                                                                                                                                                |
| Control elements                            |                | Sensing range adjuster                                                                                                                                                                                                            |
| <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                                   |                | 0x110604 (1115652)                                                                                                                                                                                                                |
| 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                              |                | The switching type of the sensor is adjustable. The default setting is:<br>C/Q - BK: NPN normally open / light-on, PNP normally closed / dark-on, IO-Link<br>/Q - WH: NPN normally closed / dark-on, PNP normally open / light-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>                           |                |                                                                                                                                                                                                                                   |

Release date: 2025-01-30 Date of issue: 2025-01-30 Filename: 267075-100262\_eng.pdf

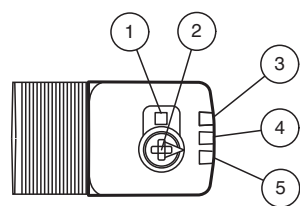
Technical Data

|                            |                                                                                                                                                  |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 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                                                                                     |
| Ambient conditions         |                                                                                                                                                  |
| Ambient temperature        | -40 ... 60 °C (-40 ... 140 °F) , cable, fixed installation<br>-25 ... 60 °C (-13 ... 140 °F) , movable cable not appropriate for conveyor chains |
| Storage temperature        | -40 ... 70 °C (-40 ... 158 °F)                                                                                                                   |
| Mechanical specifications  |                                                                                                                                                  |
| Degree of protection       | IP67 / IP69 / IP69K                                                                                                                              |
| Connection                 | 2 m fixed cable                                                                                                                                  |
| Material                   |                                                                                                                                                  |
| Housing                    | PC (Polycarbonate)                                                                                                                               |
| Optical face               | PMMA                                                                                                                                             |
| Mass                       | approx. 38 g                                                                                                                                     |
| Dimensions                 |                                                                                                                                                  |
| Height                     | 36.5 mm                                                                                                                                          |
| Width                      | 15 mm                                                                                                                                            |
| Depth                      | 26.7 mm                                                                                                                                          |
| Cable length               | 2 m                                                                                                                                              |

Connection



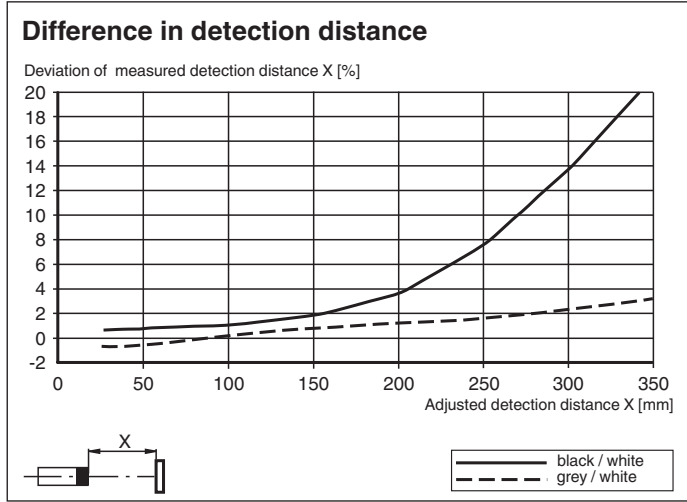
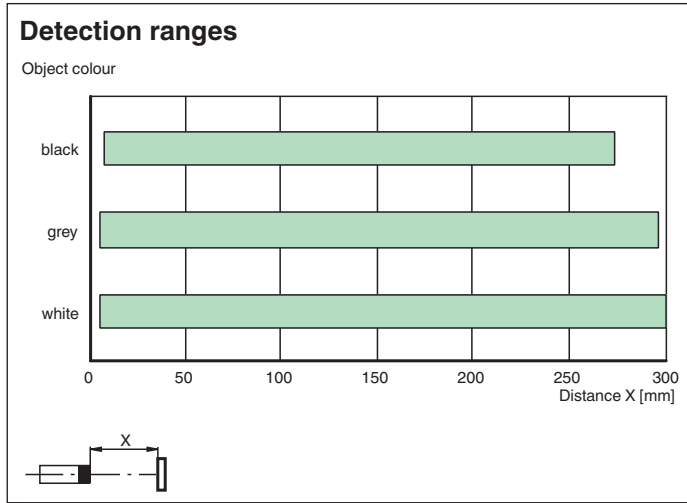
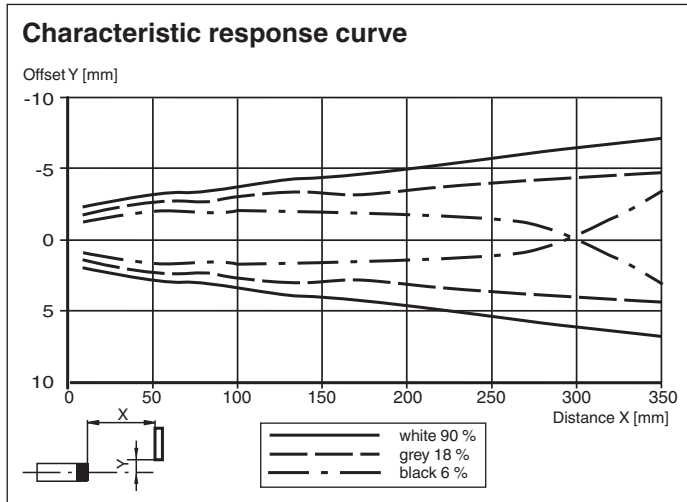
Assembly



|   |                                    |
|---|------------------------------------|
| 1 | Light-on/dark-on changeover switch |
| 2 | Sensing range adjuster             |
| 3 | Operating indicator / dark on      |
| 4 | Function indicator                 |
| 5 | Operating indicator / light on     |

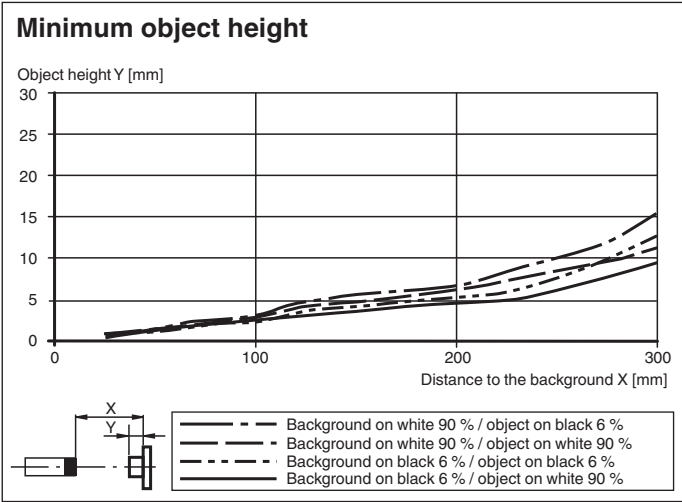
Release date: 2025-01-30 Date of issue: 2025-01-30 Filename: 267075-100262\_eng.pdf

Characteristic Curve

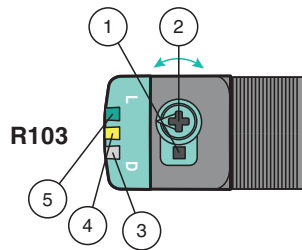


Release date: 2025-01-30 Date of issue: 2025-01-30 Filename: 267075-100262\_eng.pdf

Characteristic Curve



## Configuration



- 1 - Light-on / dark-on changeover switch
- 2 - Sensing range / sensitivity adjuster
- 3 - Operating indicator / dark on
- 4 - Signal indicator
- 5 - Operating indicator / light on

To unlock the adjustment functions turn the sensing range adjuster / sensitivity adjuster for more than 180 degrees.

### Sensing Range/ Sensitivity

Turn sensing range / sensitivity adjuster clockwise to increase sensing range / sensitivity.

Turn sensing range / sensitivity adjuster counter clockwise to decrease sensing range / sensitivity.

If the end of the adjustment range is reached, the signal indicator starts flashing with 8 Hz.

### Light-on / Dark-on Configuration

Press the light-on / dark-on changeover switch for more than 1 second (less than 4 seconds). The light-on / dark-on mode changes and the operating indicators are activated accordingly.

If you press the light-on / dark-on changeover switch for more than 4 seconds, the light-on / dark-on mode changes back to the original setting. On release of the light-on / dark-on changeover switch the current state is activated.

### Restore Factory Settings

Press the light-on / dark-on changeover switch for more than 10 seconds (less than 30 seconds) until all LEDs turn off. On release of the light-on / dark-on changeover switch the signal indicator turns on. After 5 seconds the sensor resumes operation with factory default settings.

After 5 minutes of inactivity the sensing range / sensitivity adjustment is locked. In order to reactivate the sensing range / sensitivity adjustment, turn the sensing range / sensitivity adjuster for more than 180 degrees.