



### Model Number

**OBT100-R101-2EP-IO-1T-L-Y0244**

Triangulation sensor (BGE)  
with fixed cable and 4-pin, M8 connector

### Features

- Miniature 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

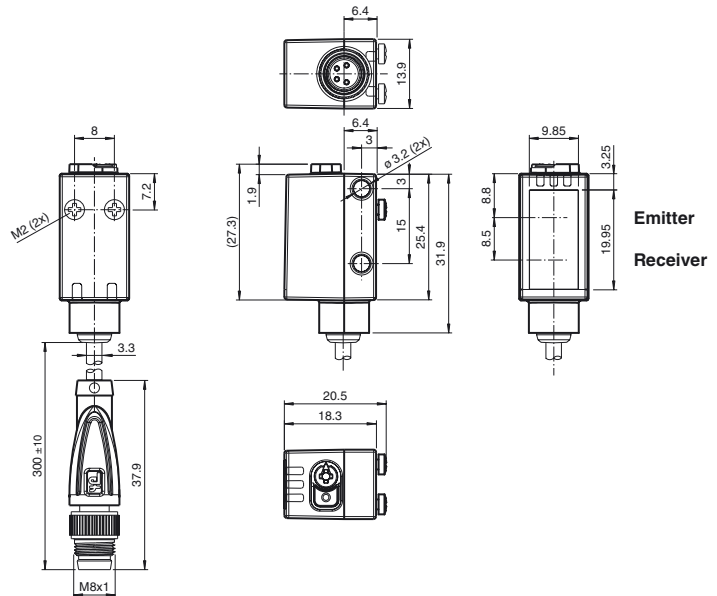
### Product information

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.

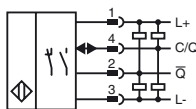
The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

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



### Electrical connection



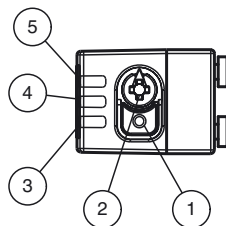
### Pinout

Wire colors in accordance with EN 60947-5-2



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

### Indicators/operating means



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

**Technical data****General specifications**

|                                   |                                                       |
|-----------------------------------|-------------------------------------------------------|
| Detection range                   | 7 ... 100 mm                                          |
| Detection range min.              | 7 ... 25 mm                                           |
| Detection range max.              | 7 ... 100 mm                                          |
| Adjustment range                  | 25 ... 100 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 < 1 mm in the range of 150 mm ... 250 mm |
| Pulse length                      | 3 µs                                                  |
| Repetition rate                   | approx. 13 kHz                                        |
| max. pulse energy                 | 10.4 nJ                                               |
| Black/White difference (6 %/90 %) | < 5 % at 150 mm                                       |
| Diameter of the light spot        | < 1 mm at a distance of 60 mm                         |
| Angle of divergence               | approx. 0.3 °                                         |
| Ambient light limit               | EN 60947-5-2 : 40000 Lux                              |

**Functional safety related parameters**

|                                |       |
|--------------------------------|-------|
| MTTF <sub>d</sub>              | 560 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> | < 20 mA at 24 V supply voltage |
| Protection class       |                | III                            |

**Interface**

|                             |                                                       |
|-----------------------------|-------------------------------------------------------|
| Interface type              | IO-Link ( via C/Q = pin 4 )                           |
| Device profile              | Smart Sensor                                          |
| Transfer rate               | COM 2 (38.4 kBaud)                                    |
| IO-Link Revision            | 1.1                                                   |
| Min. cycle time             | 2.3 ms                                                |
| Process data width          | Process data input 1 Bit<br>Process data output 2 Bit |
| SIO mode support            | yes                                                   |
| Device ID                   | 0x110703 (1115907)                                    |
| 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 / light-on, PNP normally closed / dark-on, IO-Link<br>/Q - Pin2: 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                                                                                                                                                                                                                                     | 1650 Hz    |
| Response time       | 300 μs                                                                                                                                                                                                                                |            |

**Conformity**

|                         |                  |
|-------------------------|------------------|
| Communication interface | IEC 61131-9      |
| Product standard        | EN 60947-5-2     |
| Laser safety            | IEC 60825-1:2007 |

**Ambient conditions**

|                     |                                                                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Ambient temperature | -40 ... 60 °C (-40 ... 140 °F) , fixed cable<br>-25 ... 60 °C (-13 ... 140 °F) , movable cable not appropriate for conveyor chains |
| Storage temperature | -40 ... 70 °C (-40 ... 158 °F)                                                                                                     |

**Mechanical specifications**

|               |         |
|---------------|---------|
| Housing width | 13.9 mm |
|---------------|---------|

**Laserlabel****Accessories****IO-Link-Master02-USB**

IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection

**V3-WM-2M-PUR**

Cable socket, M8, 3-pin, PUR cable

**OMH-R101**

Mounting Clamp

**OMH-R101-Front**

Mounting Clamp

**OMH-4.1**

Mounting Clamp

**OMH-ML6**

Mounting bracket

**OMH-ML6-U**

Mounting bracket

**OMH-ML6-Z**

Mounting bracket

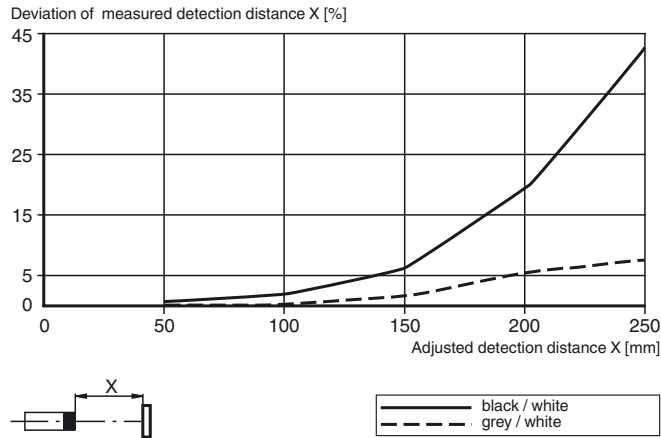
Other suitable accessories can be found at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)

|                      |                                                      |
|----------------------|------------------------------------------------------|
| Housing height       | 33.8 mm                                              |
| Housing depth        | 18.3 mm                                              |
| Degree of protection | IP67 / IP69 / IP69K                                  |
| Connection           | fixed cable 300 mm with M8 x 1 male connector; 4-pin |
| Material             |                                                      |
| Housing              | PC (Polycarbonate)                                   |
| Optical face         | PMMA                                                 |
| Mass                 | approx. 17 g                                         |
| Cable length         | 0.3 m                                                |

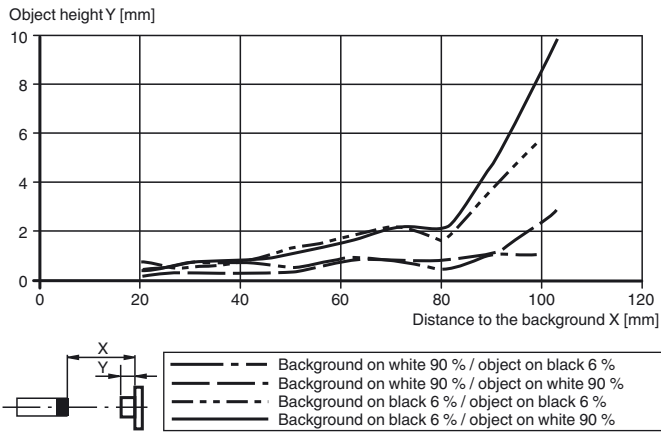
#### Approvals and certificates

|              |                                                                                                                                      |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------|
| UL approval  | E87056, cULus Listed, class 2 power supply, type rating 1                                                                            |
| 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 |

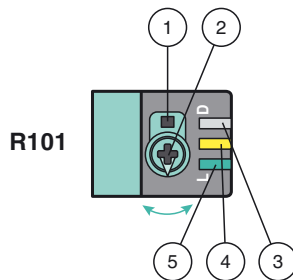
#### Difference in detection distance



#### Minimum object height



### Functions and Operation



- 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 for more than 180 degrees.

#### Sensing Range / Sensitivity

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

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

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

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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.