



 $\epsilon$ 







# **Model Number**

## OBT100-R100-2EP-IO-1T-L-Y0232

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**

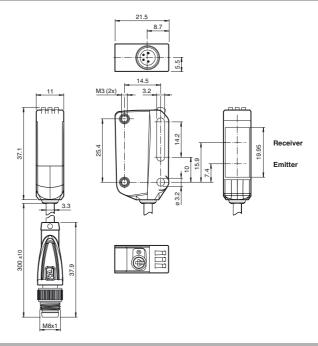
The R100 series miniature optical sensors are the first devices of their kind to offer an end-to-end solution in a small single standard design — from thru-beam sensor through to a distance measurement device. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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

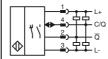
The DuraBeam laser sensors are durable and can be used in the same way as a standard

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**

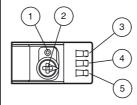


## **Pinout**

Wire colors in accordance with EN 60947-5-2

(brown (white) (blue) (black) WH BU BK

# Indicators/operating means



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

## **Technical data**

#### General specifications

7 ... 100 mm Detection range 7 ... 25 mm Detection range min. 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 Wave length

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

EN 60947-5-2: 40000 Lux Ambient light limit

# Functional safety related parameters

 $MTTF_d$ 560 a Mission Time (T<sub>M</sub>) 20 a Diagnostic Coverage (DC) 0 %

Indicators/operating means

Operation indicator LED green:

constantly on - power on flashing (4Hz) - short circuit

flashing with short break (1 Hz) - IO-Link mode

Function indicator

constantly on - background detected (object not detected)

constantly off - object detected Light-on/dark-on changeover switch

Control elements Control elements Sensing range adjuster

**Electrical specifications** Operating voltage

 $U_{\mathsf{B}}$ 10 ... 30 V DC

Ripple max. 10 %

No-load supply current  $I_0$ < 20 mA at 24 V supply voltage

Protection class

Interface

IO-Link (via C/Q = pin 4) Interface type Device profile COM 2 (38.4 kBaud) Transfer rate **IO-Link Revision** 1.1

Min. cycle time 2.3 ms Process data witdh Process data input 1 Bit

Process data output 2 Bit SIO mode support

Device ID 0x110703 (1115907)

Compatible master port type

Output

Switching type The switching type of the sensor is adjustable. The default

C/Q - Pin4: NPN normally open / light-on, PNP normally closed /

/Q - Pin2: NPN normally closed / dark-on, PNP normally open /

Signal output 2 push-pull (4 in 1)outputs, short-circuit protected, reverse

polarity protected, overvoltage protected

Switching voltage max, 30 V DC

max. 100 mA, resistive load Switching current DC-12 and DC-13 Usage category

Voltage drop  $U_d$ ≤ 1.5 V DC 1650 Hz Switching frequency Response time 300 μs

Conformity

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

**Ambient conditions** 

Housing width

Ambient temperature -40 ... 60 °C (-40 ... 140 °F) , fixed cable

-25 ... 60 °C (-13 ... 140 °F) , movable cable not appropriate for

conveyor chains

-40 ... 70 °C (-40 ... 158 °F) Storage temperature

Mechanical specifications

#### Laserlabel



#### CLASS 1 LASER PRODUCT

IEC 60825-1: 2007 certified. Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50. dated June 24, 2007

# CLASS 1 LASER PRODUCT

IEC 60825-1: 2007 certified. Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

#### **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-R10X-01

Mounting bracket

#### OMH-R10X-02

Mounting bracket

# OMH-R10X-04

Mounting bracket

#### OMH-R10X-10

Mounting bracket

## OMH-ML100-03

Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

# OMH-ML100-031

Mounting aid for round steel

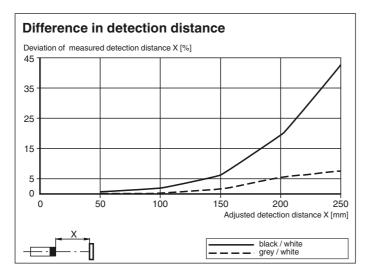
ø 10 ... 14 mm or sheet 1 mm ... 5 mm

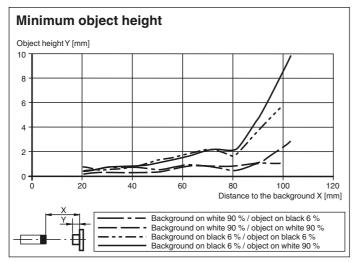
Other suitable accessories can be found at www.pepperl-fuchs.com

eng.xml Date of issue: 2019-01 Release date: 2019-01-07 09:00

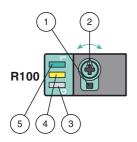
11 mm

Housing height	37.1 mm
Housing depth	21.5 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





# **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 /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.