Model Number

OBT100-R101-2EP-IO-L

Triangulation sensor (BGS)

with fixed cable

Features

- Miniature design with versatile mounting options
- DuraBeam Laser Sensors - durable and employable like an LED
- Extended temperature range -40°C ... 60°C
- High degree of protection IP69K
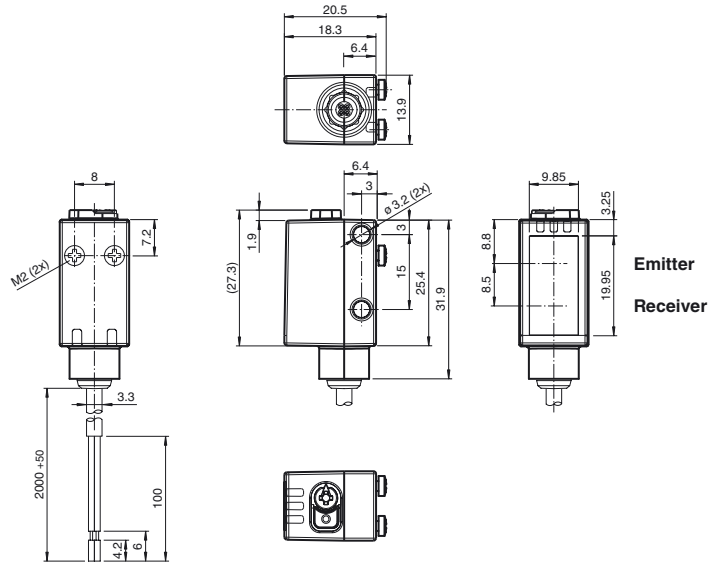- IO-link interface for service and process data

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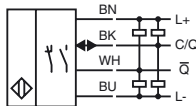
The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

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.
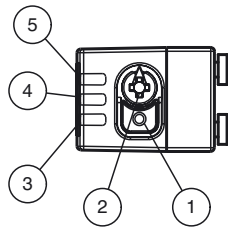
Dimensions

Electrical connection

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

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

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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 80 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

$MTTF_d$	560 a
Mission Time (T_M)	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	LED yellow: constantly on - object detected constantly off - object not detected
Control elements	Light-on/dark-on changeover switch
Control elements	Sensing range adjuster

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I_0	< 20 mA at 24 V supply voltage
Protection class		III

Interface

Interface type	IO-Link (via C/Q = BK)
Device profile	Smart Sensor
Transfer rate	COM 2 (38.4 kBaud)
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	yes
Device ID	0x110603 (1115651)
Compatible master port type	A

Output

Switching type		The switching type of the sensor is adjustable. The default setting is: C/Q - BK: NPN normally open / light-on, PNP normally closed / dark-on, IO-Link /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_d	≤ 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	EN 60825-1:2014

Ambient conditions

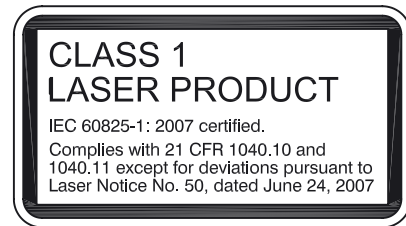|	
Ambient temperature	-40 ... 60 °C (-40 ... 140 °F) , fixed cable -25 ... 60 °C (-13 ... 140 °F) , movable cable not appropriate for conveyor chains
Storage temperature	-40 ... 70 °C (-40 ... 158 °F)

Mechanical specifications

Housing width	13.9 mm

Laserlabel

CLASS 1
LASER
PRODUCT

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
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1040.11 except for deviations pursuant to
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Accessories

IO-Link-Master02-USB
IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection

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

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

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Housing height	33.8 mm
Housing depth	18.3 mm
Degree of protection	IP67 / IP69 / IP69K
Connection	2 m fixed cable
Material	
Housing	PC (Polycarbonate)
Optical face	PMMA
Mass	approx. 36 g
Cable length	2 m

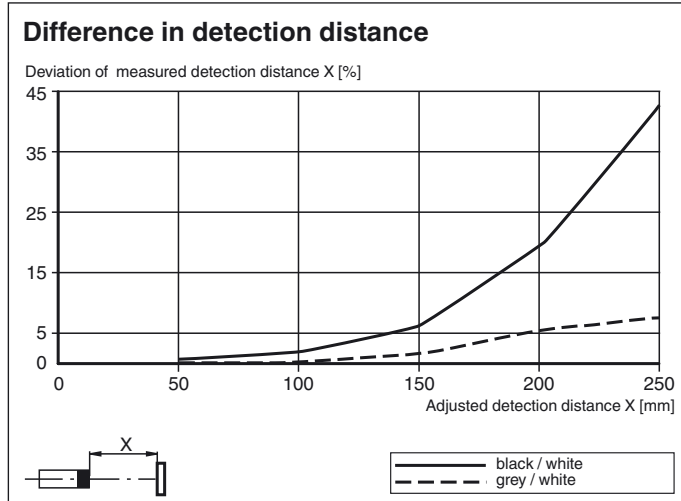| **Approvals and certificates**	
UL approval	E87056 , cULus Listed , class 2 power supply , type rating 1
FDA approval	IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

Curves/Diagrams

Characteristic response curve

white 90 %
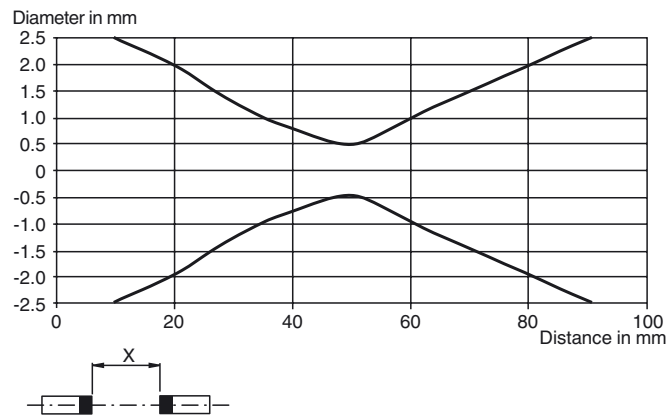grey 18 %
black 6 %

Detection ranges
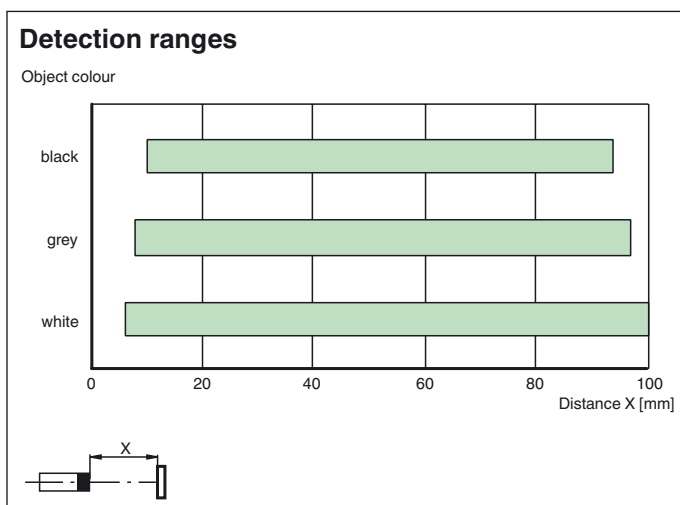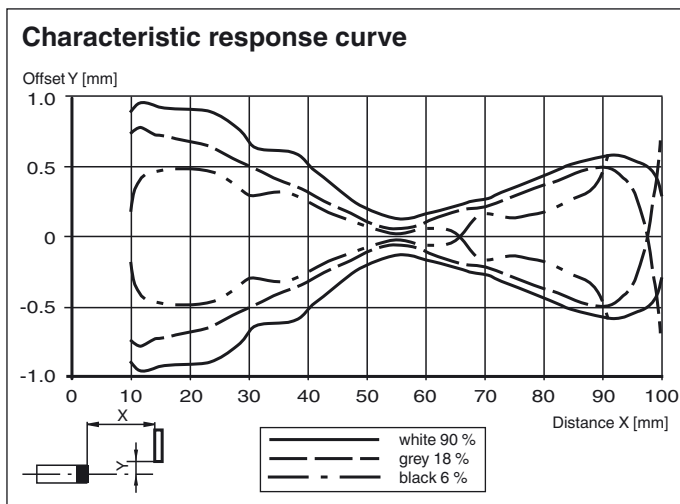
Release date: 2019-03-26 09:37   Date of issue: 2019-03-26   267075-100236_eng.xml

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".
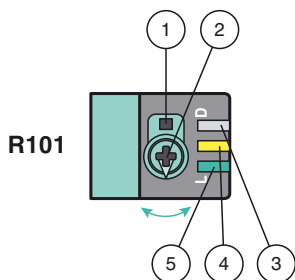
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Difference in detection distance

Deviation of measured detection distance X [%]

(graph: y-axis 45, 35, 25, 15, 5, 0; x-axis 0, 50, 100, 150, 200, 250; x-axis label: Adjusted detection distance X [mm])

X

——— black / white
– – – grey / white

Light spot diameter

Diameter in mm

(graph: y-axis 2.5, 2.0, 1.5, 1.0, 0.5, 0, -0.5, -1.0, -1.5, -2.0, -2.5; x-axis 0, 20, 40, 60, 80, 100; x-axis label: Distance in mm)

X

Black-White-Ratio / Grey- White Ratio

in%

(graph: y-axis 6, 5, 4, 3, 2, 1, 0, -1, -2, -3, -4, -5; x-axis 20, 30, 40, 50, 60, 70, 80, 90, 100; x-axis label: in white)

——— black 6 % / grey 18 %
– – – grey 18% / white 90 %
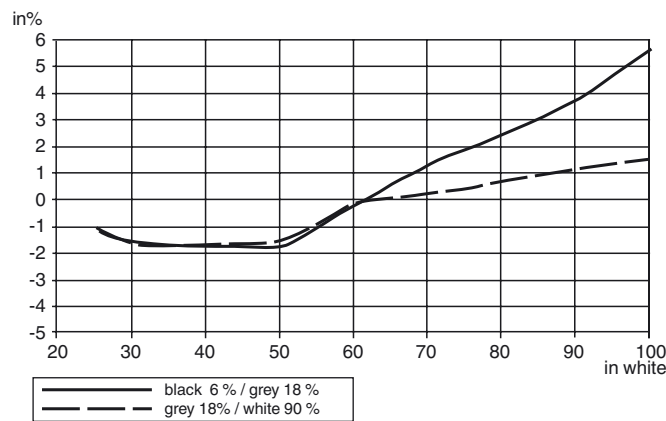
Functions and Operation

R101

① ②

⑤ ④ ③

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

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

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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 /sensivity 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 / sensivity adjustment is locked. In order to reactivate the sensing range /sensivity adjustment, turn the sensing range / sensivity adjuster for more than 180 degrees.

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