Dimensions

Model Number

OBT300-R100-2EP-IO-V31-L

Triangulation sensor (BGS)

with 4-pin, M8 x 1 connector

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

Electrical connection

Pinout

Wire colors in accordance with EN 60947-5-2

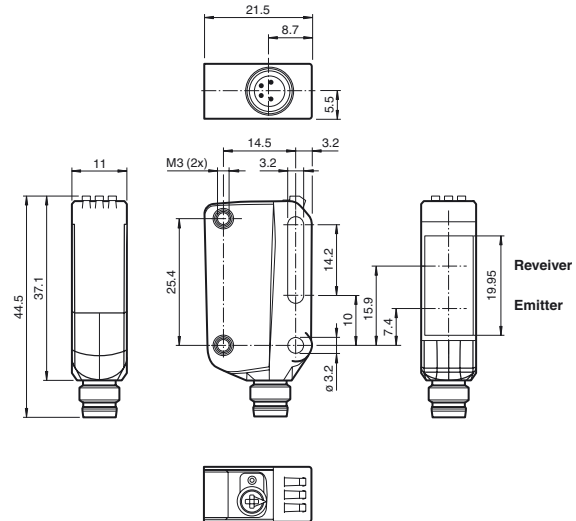| 1 | BN | (brown) |
2	WH	(white)
3	BU	(blue)
4	BK	(black)

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.

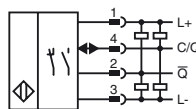The entire series enables sensors to communicate via IO-Link.

The DuraBeam laser sensors are durable and can be used in the same way as a standard 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.
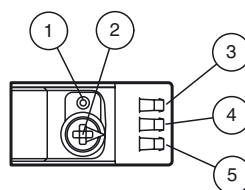
Indicators/operating means

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 ... 300 mm
Detection range min.	7 ... 25 mm
Detection range max.	7 ... 300 mm
Adjustment range	25 ... 300 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 150-250 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	approx. 1 mm at a distance of 200 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

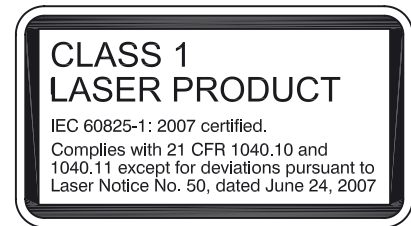|	
Interface type	IO-Link (via C/Q = pin 4)
Device profile	Smart Sensor
Transfer rate	COM 2 (38.4 kBaud)
IO-Link Revision	1.1
Min. cycle time	2.3 ms
Process data witdh	Process data input 1 Bit Process data output 2 Bit
SIO mode support	yes
Device ID	0x110602 (1115650)
Compatible master port type	A

Output

Switching type		The switching type of the sensor is adjustable. The default set-ting is: C/Q - Pin4: NPN normally open / light-on, PNP normally closed / dark-on, IO-Link /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 pola-rity 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

Ambient conditions

Ambient temperature	-40 ... 60 °C (-40 ... 140 °F)
Storage temperature	-40 ... 70 °C (-40 ... 158 °F)

Mechanical specifications

Housing width	11 mm
Housing height	44.5 mm
Housing depth	21.5 mm
Degree of protection	IP67 / IP69 / IP69K
Connection	M8 x 1 connector, 4-pin
Material	

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

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Accessories

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

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

V31-GM-2M-PUR
Female cordset, M8, 4-pin, PUR cable

V31-WM-2M-PUR
Female cordset, M8, 4-pin, PUR cable

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

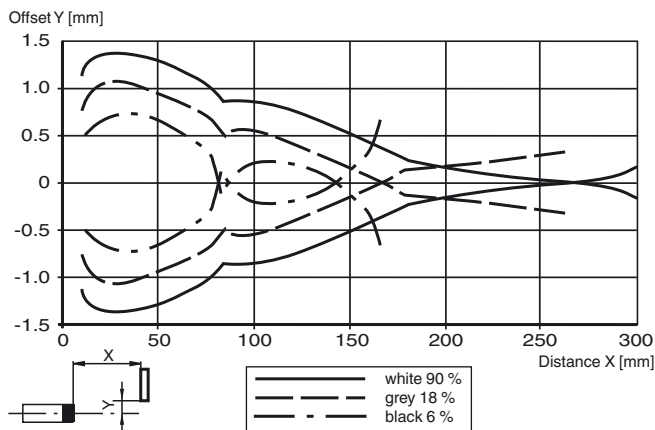|	
Housing	PC (Polycarbonate)
Optical face	PMMA
Mass	approx. 10 g
Compliance with standards and directives	
Directive conformity	
EMC Directive 2004/108/EC	EN 60947-5-2:2007+A1:2012
Standard conformity	
Product standard	EN 60947-5-2:2007+A1:2012 IEC 60947-5-2:2007 + A1:2012
Standards	UL 60947-5-2: 2014 IEC 61131-9:2013 IEC 60825-1:2007 EN 60825-1:2007 EN 61131-9:2013

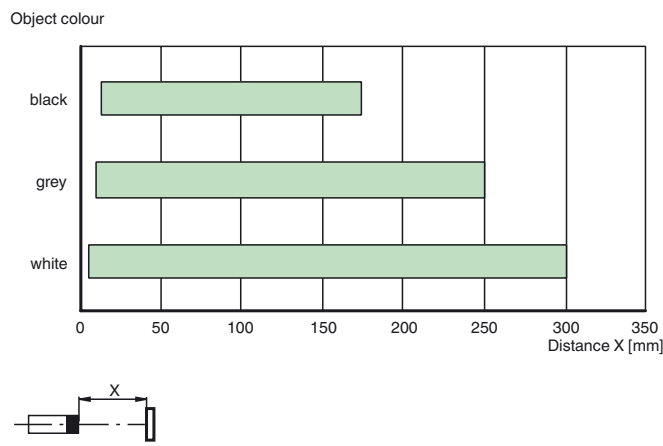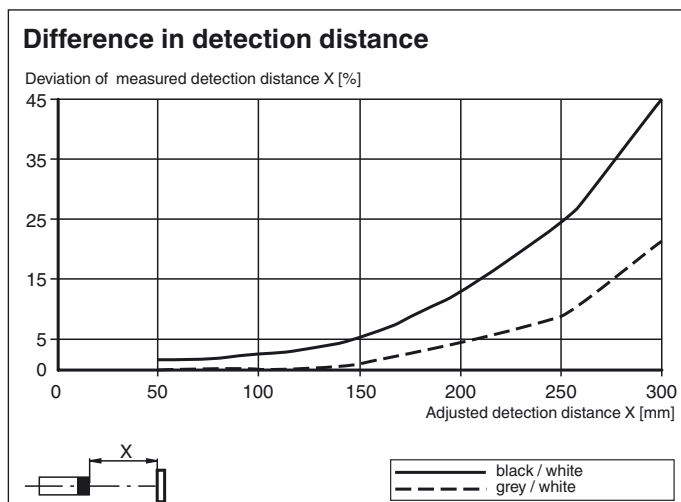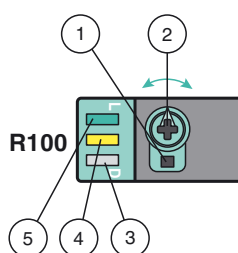|	
Approvals and certificates	
UL approval	E87056 , cULus Listed , class 2 power supply , type rating 1
FDA approval	IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

Curves/Diagrams

Characteristic response curve

Detection ranges

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

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Difference in detection distance

Deviation of measured detection distance X [%]

Adjusted detection distance X [mm]

—— black / white
- - - grey / white

Functions and Operation

R100

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.

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