



# Triangulation sensor (BGS)

## OBT150-R102-E5-IO-0,3M-V31



- 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



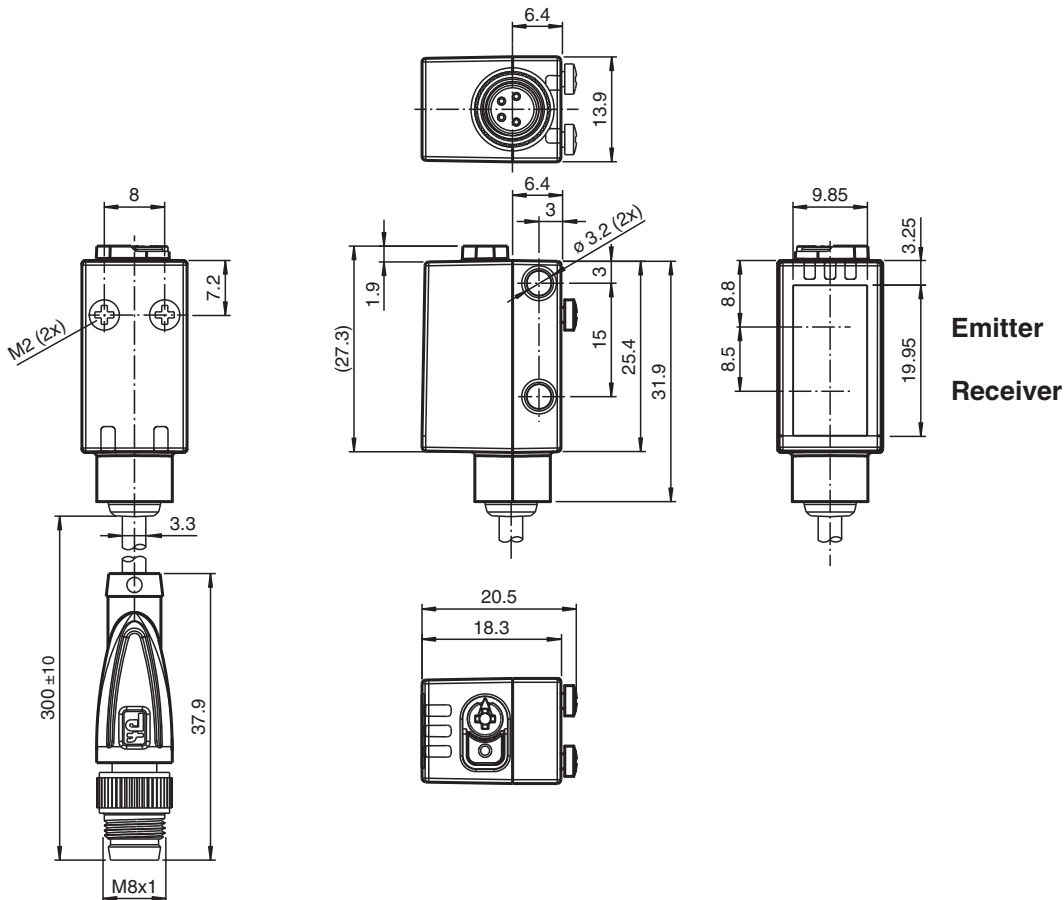
### Function

The 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



**Emitter**  
**Receiver**

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

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## Technical Data

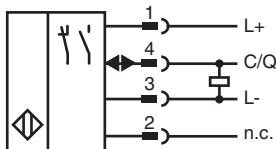
General specifications		
Detection range		5 ... 150 mm
Detection range min.		5 ... 25 mm
Detection range max.		5 ... 150 mm
Adjustment range		25 ... 150 mm
Reference target		standard white, 100 mm x 100 mm
Light source		LED
Light type		modulated visible red light
LED risk group labelling		exempt group
Black-white difference (6%/90%)		< 5 % at 150 mm
Diameter of the light spot		approx. 10 mm at a distance of 150 mm
Opening angle		approx. 3 °
Ambient light limit		EN 60947-5-2 : 40000 Lux
Functional safety related parameters		
MTTF <sub>d</sub>		600 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		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 <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
Interface		
Interface type		IO-Link
IO-Link revision		1.1
Device profile		Identification and Diagnosis - I&D Smart Sensor - SSP 0
Process data		Input 1 Bit - switching signal 1 Bit Output 2 Bit - Emitter deactivation 1 Bit - evaluation freeze 1 Bit
Vendor ID		1 (0x0001)
Device ID		1115671 (0x110617)
Transfer rate		COM2 (38.4 kBit/s)
Min. cycle time		2.3 ms
SIO mode support		yes
Compatible master port type		Class A
Output		
Switching type		The switching type of the sensor is adjustable. The default setting is: C/Q - BK: PNP normally open / light-on, IO-Link n.c. - Pin2: open
Signal output		1 PNP, short-circuit protected, reverse polarity 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

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Switching frequency	f	500 Hz
Response time		1 ms
<b>Conformity</b>		
Communication interface		IEC 61131-9
Product standard		EN 60947-5-2
<b>Approvals and certificates</b>		
UL approval		E87056 , cULus Listed , class 2 power supply , type rating 1
<b>Ambient conditions</b>		
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)
<b>Mechanical specifications</b>		
Housing width		13.9 mm
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
<b>Material</b>		
Housing		PC (Polycarbonate)
Optical face		Float glass
Mass		approx. 17 g
Cable length		0.3 m

## Connection



## Connection Assignment



Wire colors in accordance with EN 60947-5-2

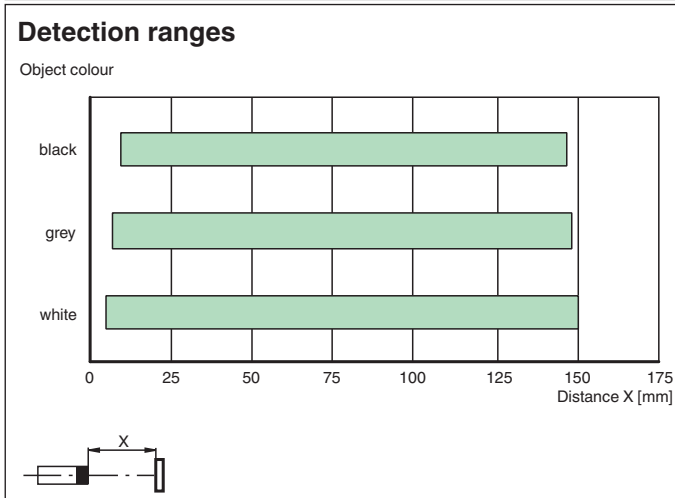
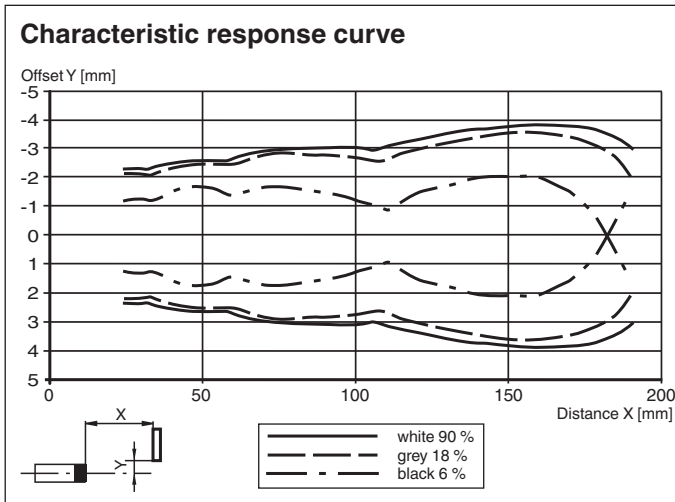
1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

**Assembly**



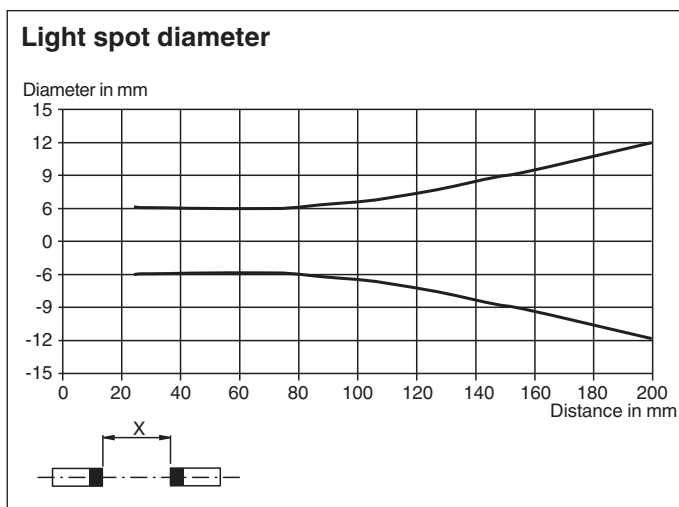
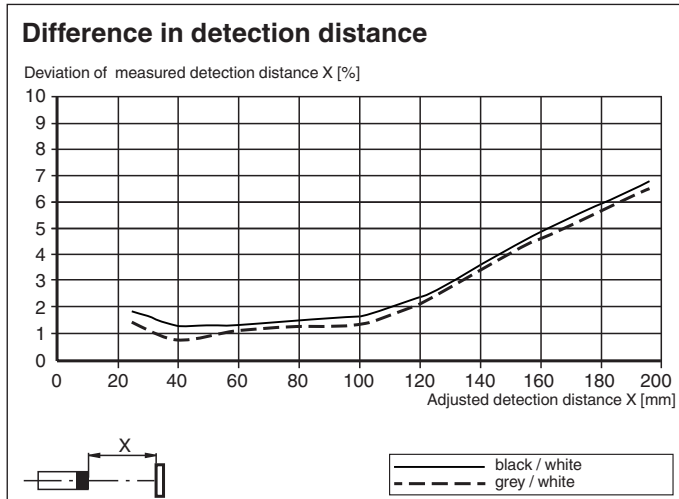
1	Light-on/dark-on changeover switch
2	Sensing range adjuster
3	Operating indicator / dark on
4	Signal indicator
5	Operating indicator / light on

**Characteristic Curve**



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## Characteristic Curve











## Accessories

	<b>OMH-R101-Front</b>	Mounting Clamp
	<b>OMH-4.1</b>	Mounting Clamp
	<b>OMH-ML6</b>	Mounting bracket
	<b>OMH-ML6-U</b>	Mounting bracket
	<b>OMH-ML6-Z</b>	Mounting bracket
	<b>ICE2-8IOL-G65L-V1D</b>	EtherNet/IP IO-Link master with 8 inputs/outputs
	<b>ICE3-8IOL-G65L-V1D</b>	PROFINET IO IO-Link master with 8 inputs/outputs
	<b>ICE2-8IOL-K45S-RJ45</b>	EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, screw terminal

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**Accessories**

	<b>ICE3-8IOL-K45P-RJ45</b>	PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, push-in terminals
	<b>ICE3-8IOL-K45S-RJ45</b>	PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, screw terminal
	<b>IO-Link-Master02-USB</b>	IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection
	<b>ICE1-8IOL-G30L-V1D</b>	Ethernet IO-Link module with 8 inputs/outputs
	<b>ICE1-8IOL-G60L-V1D</b>	Ethernet IO-Link module with 8 inputs/outputs
	<b>ICE2-8IOL-K45P-RJ45</b>	EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, push-in connectors
	<b>V31-GM-2M-PUR</b>	Female cordset single-ended M8 straight A-coded, 4-pin, PUR cable grey
	<b>V31-WM-2M-PUR</b>	Female cordset single-ended M8 angled A-coded, 4-pin, PUR cable grey

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## 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 for more than 180 degrees.

### Sensing Range / Sensitivity

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

Turn sensing range /sensitivity adjuster counterclockwise 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 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.