

Triangulation sensor (BGS)

OBT650-R200-2EP1-IO-V1

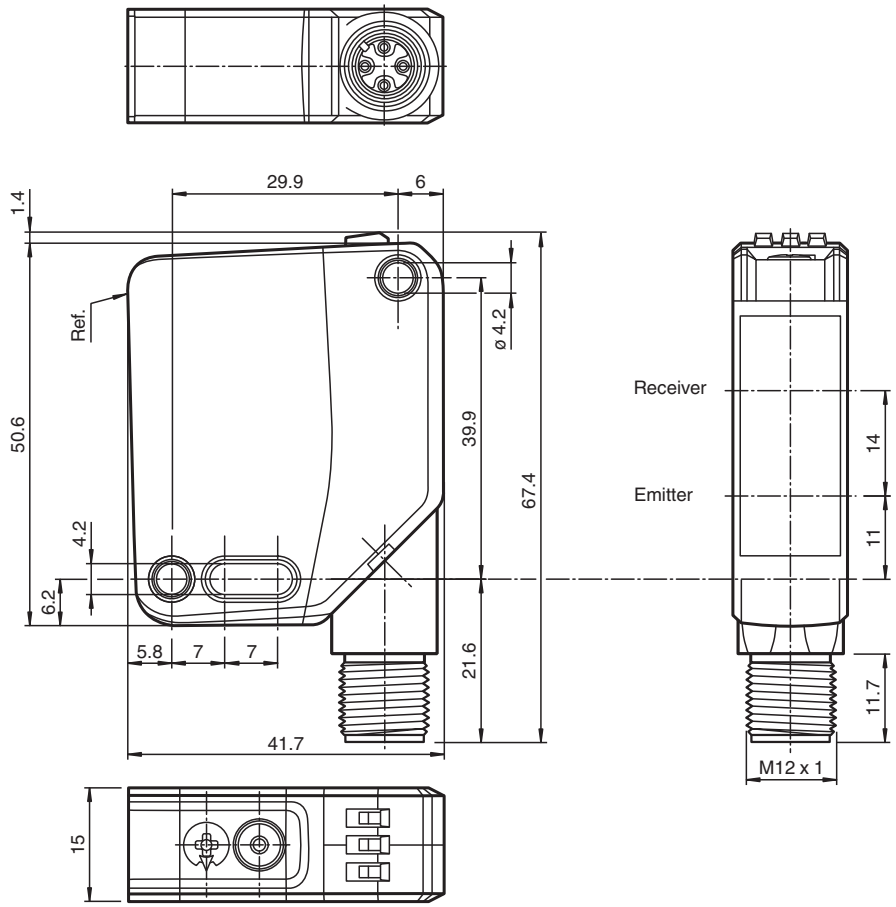


- Medium design with versatile mounting options
- Best background suppressor in its class
- Precision object detection, almost irrespective of the color
- Extended temperature range
  -40 °C ... 60 °C
- High degree of protection IP69K
- IO-Link interface for service and process data

Function

The optical sensors in the series are the first devices to offer an end-to-end solution in a medium-sized standard design – from the thru-beam sensor through to the measuring distance sensor. 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.
Multi Pixel Technology (MPT) ensures that the standard sensors are flexible and can be adapted to the application environment.

Dimensions



Release date: 2026-05-22 Date of issue: 2026-05-22 Filename: 295670-100380_eng.pdf

Technical Data

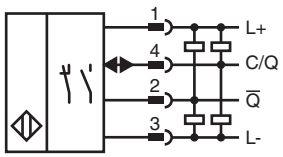
General specifications		
Detection range		10 ... 650 mm
Detection range min.		10 ... 100 mm
Detection range max.		10 ... 650 mm
Adjustment range		100 ... 650 mm
Reference target		standard white, 100 mm x 100 mm
Light source		LED
Light type		modulated visible red light
LED risk group labelling		exempt group
Black-white difference (6 %/90 %)		< 6 % at 650 mm
Diameter of the light spot		approx. 20 mm x 20 mm at a distance of 650 mm
Opening angle		approx. 2 °
Ambient light limit		EN 60947-5-2 : 70000 Lux
Functional safety related parameters		
$MTTF_d$		600 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	< 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 2.4
Process data		Input 1 Bit - switching signal 1 Bit Output 2 Bit - Emitter deactivation 1 Bit - evaluation control function 1 Bit
Vendor ID		1 (0x0001)
Device ID		1119751 (0x111607)
Transfer rate		COM2 (38.4 kBit/s)
Min. cycle time		2.3 ms
SIO mode support		yes
Compatible master port type		A
Output		
Switching type		The default setting is: C/Q - Pin4: NPN normally closed / light-on, PNP normally open / dark-on, IO-Link /Q - Pin2: NPN normally open / dark-on, PNP normally closed / 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

Release date: 2026-05-22 Date of issue: 2026-05-22 Filename: 295670-100380_eng.pdf

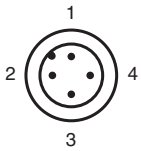
Technical Data

Switching frequency	f	500 Hz
Response time		1 ms
Conformity		
Communication interface		IEC 61131-9
Product standard		EN 60947-5-2
Approvals and certificates		
UL approval		E87056 , cULus Listed , class 2 power supply , type rating 1
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		-40 ... 60 °C (-40 ... 140 °F)
Storage temperature		-40 ... 70 °C (-40 ... 158 °F)
Mechanical specifications		
Degree of protection		IP67 / IP69 / IP69K
Connection		4-pin, M12 x 1 connector, 90° rotatable
Material		
Housing		PC (Polycarbonate)
Optical face		PMMA
Mass		approx. 37 g
Dimensions		
Height		50.6 mm
Width		15 mm
Depth		41.7 mm

Connection Assignment



Connection Assignment

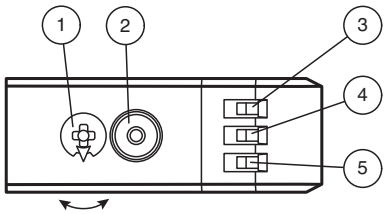


Wire colors in accordance with EN 60947-5-2

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

Release date: 2026-05-22 Date of issue: 2026-05-22 Filename: 295670-100380_eng.pdf

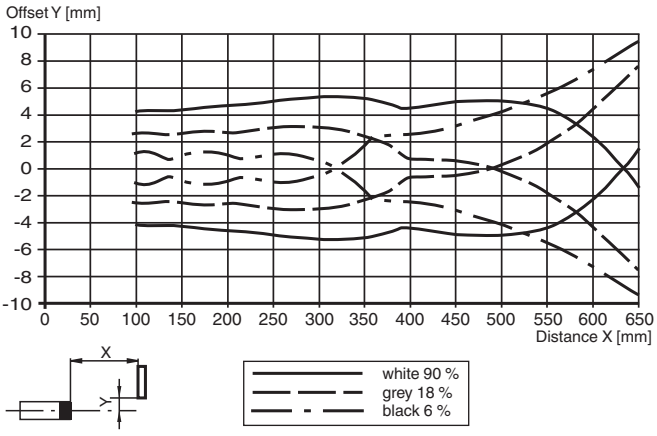
Assembly



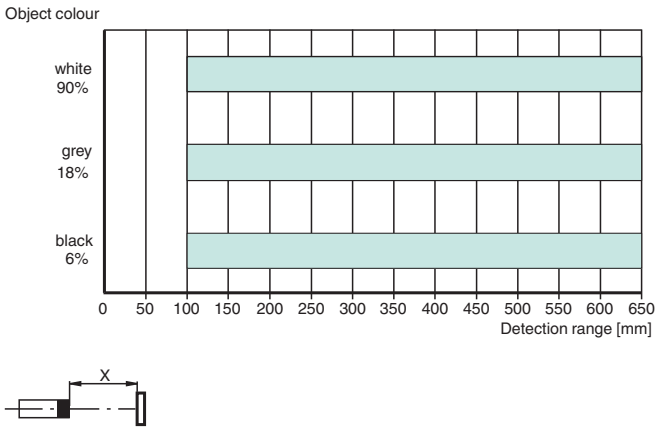
1	Sensitivity adjustment	
2	Light-on / dark-on changeover switch	
3	Operating indicator / dark on	GN
4	Signal indicator	YE
5	Operating indicator / light on	GN

Characteristic Curve

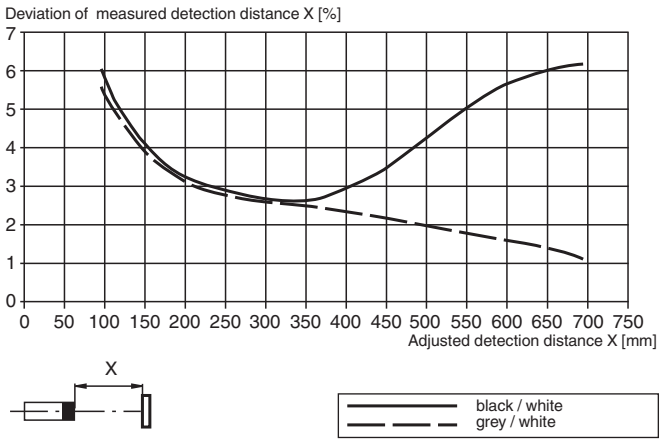
Characteristic response curve



Detection ranges



Difference in detection distance



Release date: 2026-05-22 Date of issue: 2026-05-22 Filename: 295670-100380_eng.pdf

Commissioning

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.

Release date: 2026-05-22 Date of issue: 2026-05-22 Filename: 295670-100380_eng.pdf