

# Triangulation sensor (BGS)

## OBT650-R201-E5F-Y0395-SET



- Sensor with mounting bracket, preassembled
- Particularly suitable for conveyor systems
- Best background suppressor in its class
- Automatic switching threshold adaptation eliminates soiling effects
- Precision object detection, almost irrespective of the color
- Extended temperature range  
-40 °C ... 60 °C
- High degree of protection IP69K



### Technical Data

#### General specifications

Detection range	30 ... 650 mm
Detection range min.	30 ... 100 mm
Detection range max.	30 ... 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 <sub>d</sub>	600 a
Mission Time (T <sub>M</sub> )	20 a
Diagnostic Coverage (DC)	0 %

#### Indicators/operating means

Operation indicator	LED green: power on ; flashing (4 Hz) - short-circuit
Function indicator	LED yellow: lights when object is detected ; flashing (approx. 4 Hz) at Pollution
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

#### Output

Stability alarm output		1 PNP, active when level falls below function reserve after approx. 5 s. Immediately active if the beam is interrupted 4 times during the flashtime.
Switching type		The switching type of the sensor is adjustable. The default setting is: Q - Pin4: PNP normally open / light-on Alarm output - Pin2: PNP normally open / light-on detected when soiled
Signal output		2 PNP outputs, short-circuit-proof, reverse polarity protection, surge-proof
Switching voltage		max. 30 V DC

Release date: 2023-04-24 Date of issue: 2023-04-24 Filename: 70143179\_eng.pdf

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

Pepperl+Fuchs Group  
www.pepperl-fuchs.com

USA: +1 330 486 0001  
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111  
fa-info@de.pepperl-fuchs.com

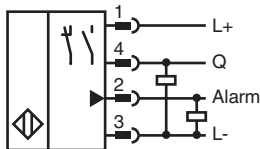
Singapore: +65 6779 9091  
fa-info@sg.pepperl-fuchs.com

 PEPPERL+FUCHS

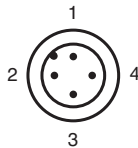
## Technical Data

Switching current		max. 100 mA , resistive load
Usage category		DC-12 and DC-13
Voltage drop	$U_d$	$\leq 1.5$ V DC
Switching frequency	$f$	200 Hz
Response time		2.5 ms
<b>Conformity</b>		
Product standard		EN 60947-5-2
<b>Approvals and certificates</b>		
UL approval		E87056 , cULus Listed , class 2 power supply , type rating 1
CCC approval		CCC approval / marking not required for products rated $\leq 36$ V
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 60 °C (-40 ... 140 °F) , fixed cable -20 ... 60 °C (-4 ... 140 °F) , movable cable not appropriate for conveyor chains
Storage temperature		-40 ... 70 °C (-40 ... 158 °F)
<b>Mechanical specifications</b>		
Housing width		76 mm
Housing height		40 mm
Housing depth		71 mm
Degree of protection		IP67 / IP69 / IP69K
Connection		300 mm fixed cable with M12 x 1, 4-pin connector
<b>Material</b>		
Housing		PC (Polycarbonate) Retainer PA 6 (Polyamid)
Optical face		PMMA
Mass		approx. 95 g
Cable length		0.3 m

## Connection



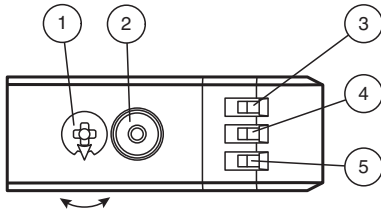
## Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

## Assembly



1	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

## System Description

### System Description

The triangulation sensor with background suppression (BGS) contains both an emitter and a receiver in a single housing. Targeted blanking of objects outside the scanning range is made possible by a corresponding angle arrangement between emitter and receiver (2 receiver elements). The triangulation sensor (BGS) detects objects regardless of their surface structure, brightness and color, as well as the brightness of the background.

## 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.

## Maintenance

### Maintenance

**Cleaning:** Clean the optical interfaces of the sensor (e.g., lenses) at regular intervals.  
**Maintenance:** Check the mounting fittings and the electrical connections regularly.

## Accessories

	<b>V1-G-2M-PUR</b>	Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable grey
---	--------------------	---