Triangulation sensor (BGS)

# OBT650-R201-E5F-0,3M-V1-Y0394
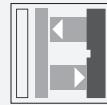
- Particularly suitable for conveyor systems
- Best background suppressor in its class
- Automatic switching threshold adaptation eliminates soiling effects
- Precision object detection, almost irrespective of the color
- Extended temperature range -40 °C ... 60 °C
- High degree of protection IP69K

Triangulation sensor with background suppression
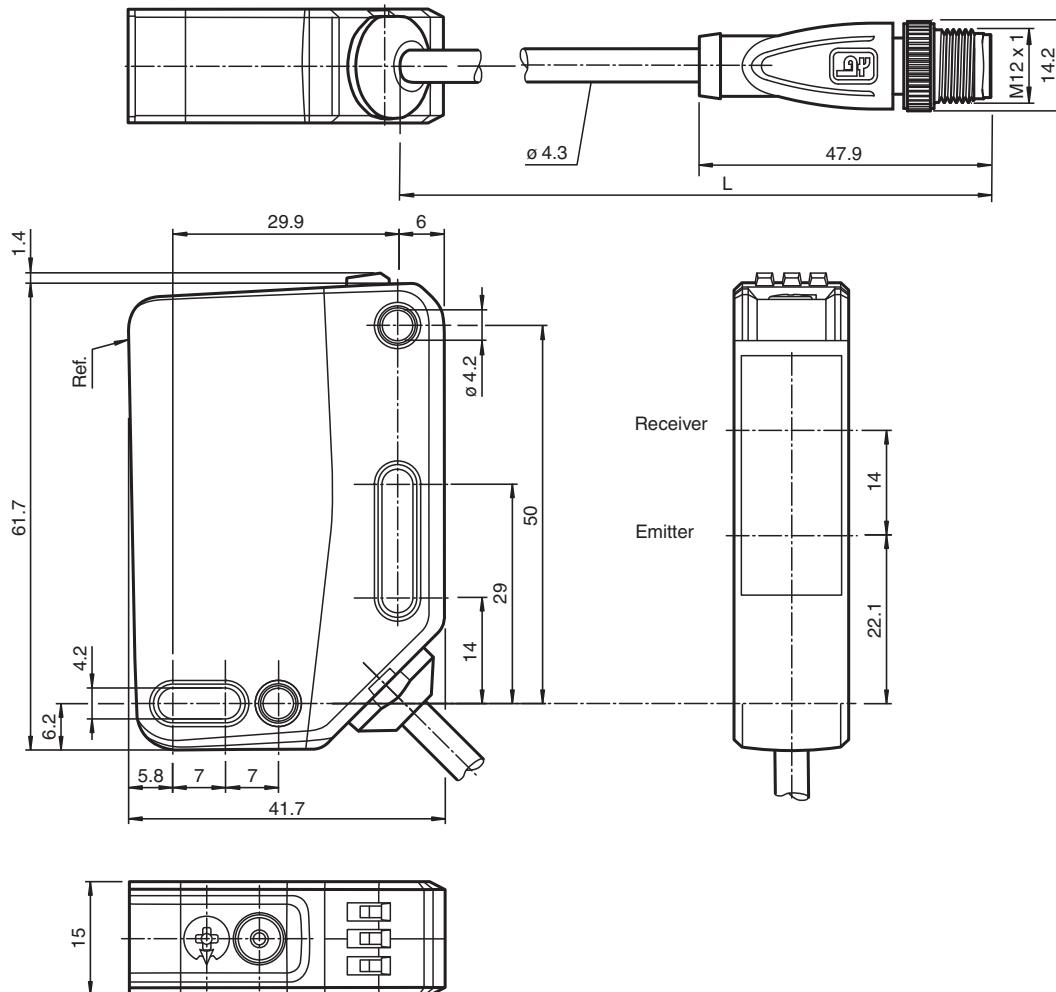
CE   c(UL)us LISTED   UKCA

Dimensions

Technical Data

General specifications

Detection range	10 ... 650 mm

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Technical Data

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: 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_B	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I_0	< 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
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	200 Hz
Response time		2.5 ms
Conformity		
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) , fixed cable -20 ... 60 °C (-4 ... 140 °F) , movable cable not appropriate for conveyor chains
Storage temperature		-40 ... 70 °C (-40 ... 158 °F)
Mechanical specifications		
Housing width		15 mm
Housing height		61.7 mm
Housing depth		41.7 mm
Degree of protection		IP67 / IP69 / IP69K
Connection		300 mm fixed cable with M12 x 1, 4-pin connector
Material		

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

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Technical Data

Housing	PC (Polycarbonate)
Optical face	PMMA
Mass	approx. 55 g
Cable length	0.3 m

Connection


```
1 — L+
4 — Q
2 — Alarm
3 — L-
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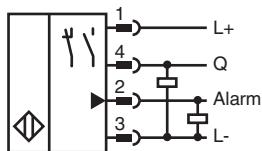
Connection Assignment
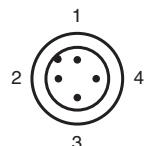
Wire colors in accordance with EN 60947-5-2

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

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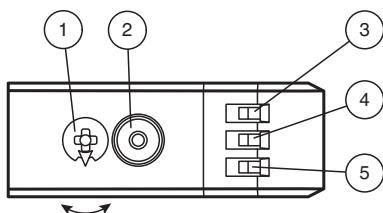
1	Sensitivity adjustment	
2	Light-on / dark-on changeover switch	
3	Operating indicator / dark on	GN
4	Signal indicator	YE
5	Operating indicator / light on	GN

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Characteristic Curve

Characteristic response curve

Offset Y [mm]

Distance X [mm]

white 90 %
grey 18 %
black 6 %

Detection ranges

Object colour

white 90%

grey 18%

black 6%
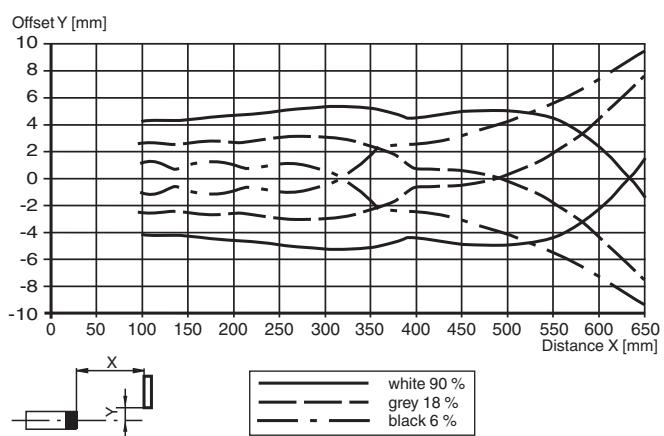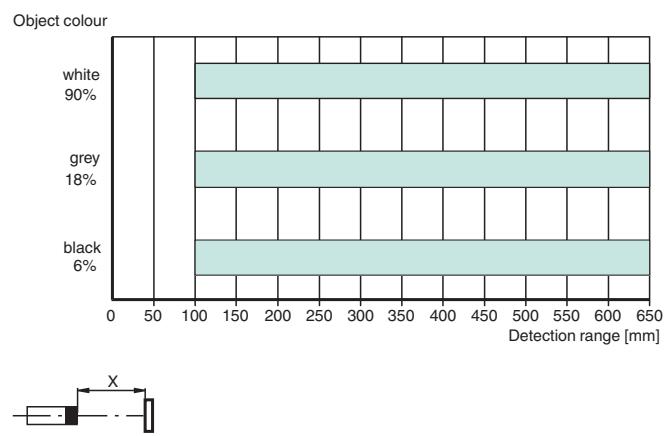
Detection range [mm]

Difference in detection distance

Deviation of measured detection distance X [%]

Adjusted detection distance X [mm]

black / white
grey / white
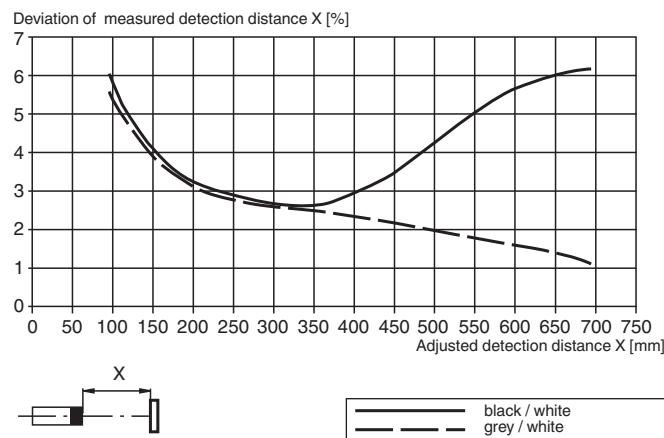
Commissioning

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

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

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Commissioning

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.

Accessories

	V1-G-2M-PUR	Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable grey
	V1-W-2M-PUR	Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey
	MH-R20x/F77-03	Mounting aid

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