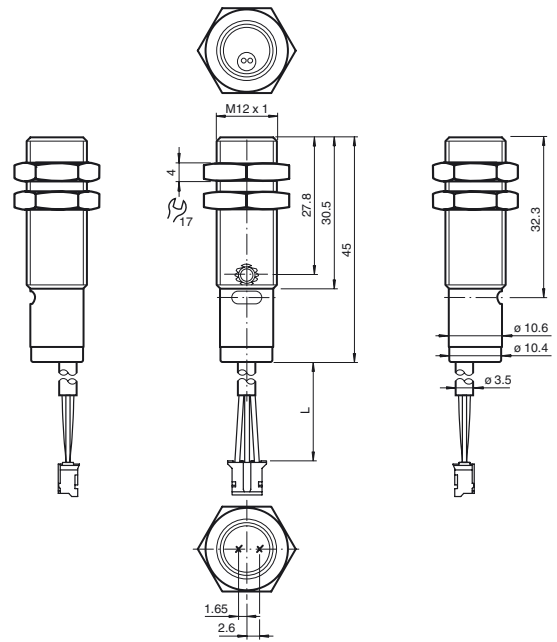## Model Number

OBD300-12GM40-E2-Y70103860

Diffuse mode sensor
Cable with 3-pin Würth connector

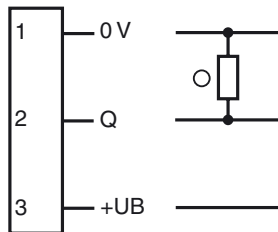## Features

- Robust M12 threaded housing
- Less space required
- Light/dark ON, programmable
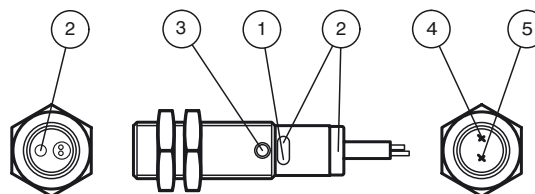- Degree of protection IP67

Dimensions

M12 x 1
4
27.8
30.5
45
17
L
32.3
ø 10.6
ø 10.4
ø 3.5
1.65
2.6

Electrical connection

Option:

1	— 0 V
2	— Q
3	— +UB

○ = Light on
● = Dark on

Pinout

Wire colors in accordance with EN 60947-5-2

1 2 3

1	BU	(blue)
2	BK	(black)
3	BN	(brown)

Indicators/operating means

1	Operating display	green
2	Signal display	yellow
3	Potentiometer	
4	Emitter	
5	Receiver	

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

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Technical data

General specifications

Detection range	0 ... 300 mm
Adjustment range	20 ... 300 mm
Reference target	standard white 100 mm x 100 mm
Light source	LED
Light type	red , 640 nm
Angle deviation	+/- 2 °
Diameter of the light spot	approx. 20 mm at a distance of 300 mm
Angle of divergence	approx. 4 °
Optical face	frontal
Ambient light limit	EN 60947-5-2 10000 Lux

Functional safety related parameters

$MTTF_d$	800 a
Mission Time (T_M)	20 a
Diagnostic Coverage (DC)	0 %

Indicators/operating means

Operation indicator	LED green: Power on
Function indicator	LED yellow ON: lights when object is detected
Control elements	Sensing range adjuster

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC , class 2
Ripple		10 %
No-load supply current	I_0	≤ 15 mA

Output

Switching type		light on
Signal output		1 PNP output, short-circuit protected, reverse polarity protected, open collector
Switching voltage		max. 30 V DC
Switching current		max. 100 mA , resistive load
Voltage drop	U_d	≤ 2 V
Switching frequency	f	≤ 1000 Hz
Response time		0.5 ms

Conformity

Product standard	EN 60947-5-2

Ambient conditions

Ambient temperature	-30 ... 60 °C (-22 ... 140 °F)
Storage temperature	-40 ... 70 °C (-40 ... 158 °F)

Mechanical specifications

Degree of protection		IP67
Connection		Fixed cable with 3-pin Würth connector
Material		
Housing		brass, nickel-plated
Optical face		PMMA
Cable		
Length	L	130 mm
Mass		approx. 45 g

Compliance with standards and directives

Standard conformity	
Standards	UL 508

Approvals and certificates

UL approval	cULus Listed, Class 2 Power Source, Type 1 enclosure
CCC approval	CCC approval / marking not required for products rated ≤36 V
Approvals	CE, cULus Listed 57M3 (Only in association with UL Class 2 power supply; Type 1 enclosure)

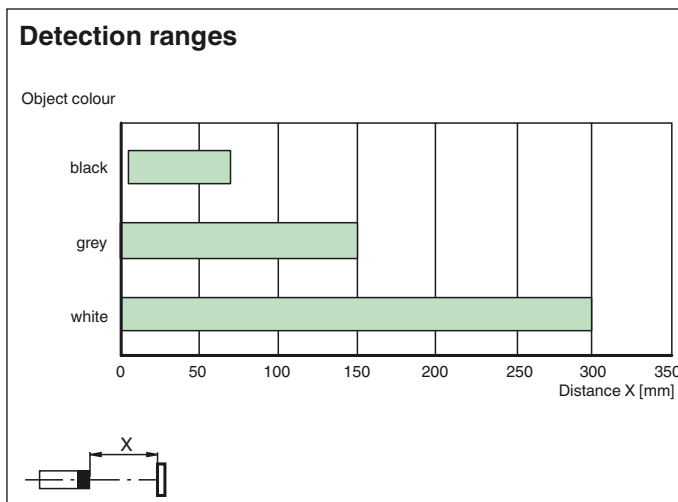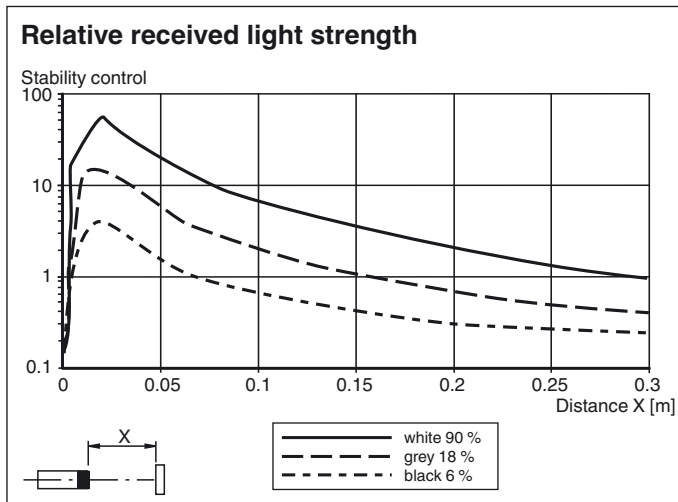## Accessories

BF 12
Mounting flange, 12 mm

BF 12-F
Plastic mounting adapter, 12 mm

BF 5-30
Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm

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

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

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Relative received light strength

Stability control

Distance X [m]

——	white 90 %
– – –	grey 18 %
– · – ·	black 6 %

Detection ranges

Object colour

Distance X [mm]

System Description

A retroreflective sensor contains both an emitter and a receiver in a single housing. The light of the emitter ist reflected by the detected object, returned to, and evaluated by the receiver. The sensing range depends on the object color. For dark or very small objects, the sensing range is reduced.

Mounting

The sensor has an M12 x 1 threaded design and a nut with AF = 17 mm to be tightened with a maximum torque of 1.5 Nm.
- Direct sensor mounting: Screw into a single bore hole of Ø 12 mm.
- Sensor mounting with bracket: Possible. Not included in the delivery.

When mounting the sensor, ensure the visibility of the control elements and LEDs.

Adjusting the sensitivity

Apply operating voltage to the sensor. The power indicator lights green.

Application type I: During normal operation, an object is present in the detection field of the sensor. Adjust the sensitivity of the sensor as follows.

Turn the sensitivity adjuster counter-clockwise until it reaches minimum. Next determine the positions A and B:
- Position A: Position the object in the scanning range of the sensor. Turn the sensitivity adjuster clockwise until the yellow indicator lights up.
  => The sensitivity adjuster is now set to position A. Make a note of this setting.
- Position B: Remove the object from the scanning range of the sensor. Turn the sensitivity adjuster counter-clockwise until the yellow indicator lights up again.
  => The sensitivity adjuster is now set to position B. Make a note of this setting.

Application type II: During normal operation, no object (e.g. parked pallet etc.) is present in the detection range of the sensor.

It is not necessary to determine the position with an object present in order to adjust the sensitivity of the sensor.

In case no object is present, the yellow indicator will not even light up when the adjuster is set to the absolute maximum.

Application type III: During normal operation, no object (e.g. parked pallet etc.) is present in the detection range of the sensor. It cannot be guaranteed that no object will ever be present in the detection range of the sensor.

Determine the liely position of the object to set the sensor's sensitivity, compare application type I. Therefore, place an object at the most likely position and, after you have determined A and B, remove the object again. For optimum adjustment turn the sensitivity adjuster in the middle between the positions A and B.

Maintenance

Cleaning: Clean the light emitter of the sensor at regular intervals.
Servicing: Check the mounting screw connections and the electrical plug connections regularly.

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