Model Number

OBG8000-R201-2EP-IO-V1

Retroreflective sensor (glass)
with fixed cable and M12 connector, 4-pin

Features

- Medium design with versatile mounting options
- Detects transparent objects, i.e., clear glass, PET and transparent films
- Two machines in one: clear object detection or reflection operating mode with long range
- High degree of protection IP69K
- IO-link interface for service and process data

Product information

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.
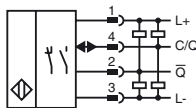
The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

Multi Pixel Technology (MPT) ensures that the standard sensors are flexible and can be adapted to the application environment.
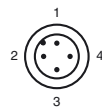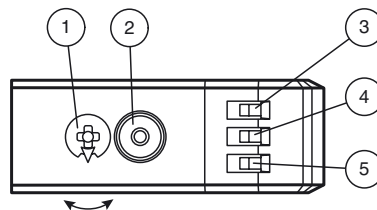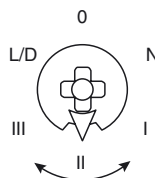
Dimensions
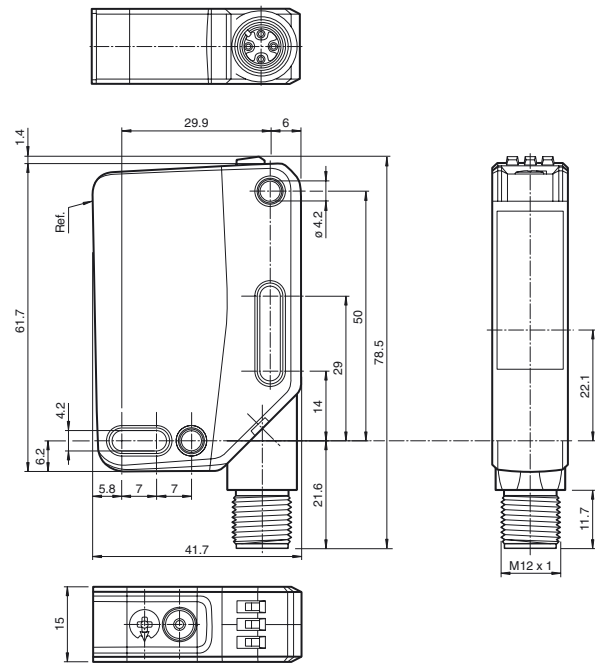
Electrical connection

Pinout

Wire colors in accordance with EN 60947-5-2

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

Indicators/operating means

1	Mode rotary switch	
2	Teach-in button	
3	Operating indicator/dark-on	GN
4	Function indicator	YE
5	Operating indicator/light-on	GN

N	Normal operation
I	10 % contrast detection
II	18 % contrast detection
III	40 % contrast detection
L/D	Switching type
0	Keylock

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

Pepperl+Fuchs Group　　　　USA: +1 330 486 0001　　　　Germany: +49 621 776 4411　　　　Singapore: +65 6779 9091
www.pepperl-fuchs.com　　　　fa-info@us.pepperl-fuchs.com　　fa-info@de.pepperl-fuchs.com　　fa-info@sg.pepperl-fuchs.com

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Technical data

General specifications

Effective detection range		0 ... 5.6 m in TEACH mode ; 0 ... 8 m at switch position "N"
Reflector distance		0 ... 5.6 m in TEACH mode ; 0 ... 8 m at switch position "N"
Threshold detection range		9 m
Reference target		H85-2 reflector
Light source		LED
Light type		modulated visible red light
LED risk group labelling		exempt group
Polarization filter		yes
Diameter of the light spot		approx. 170 mm at a distance of 3.5 m
Angle of divergence		approx. 5 °
Ambient light limit		EN 60947-5-2 : 18000 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	Yellow LED: Permanently lit - light path clear Permanently off - object detected Flashing (4 Hz) - insufficient operating reserve
Control elements	Teach-In key
Control elements	5-step rotary switch for operating modes selection
Contrast detection levels	10 % - clean, water filled PET bottles 18 % - clear glass bottles 40 % - colored glass or opaque materials Adjustable via rotary switch

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 (via C/Q = pin 4)
Device profile	Identification and diagnosis Smart Sensor type 2.4
Transfer rate	COM 2 (38.4 kBaud)
IO-Link Revision	1.1
Min. cycle time	2.3 ms
Process data witdh	Process data input 2 Bit Process data output 2 Bit
SIO mode support	yes
Device ID	0x111A11 (1120785)
Compatible master port type	A

Output

Switching type		The switching type of the sensor is adjustable. The default setting is: C/Q - Pin4: NPN normally open / dark-on, PNP normally closed / light-on, IO-Link /Q - Pin2: NPN normally closed / light-on, PNP normally open / dark-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
Switching frequency	f	500 Hz
Response time		1 ms

Conformity

Communication interface	IEC 61131-9
Product standard	EN 60947-5-2

Ambient conditions

Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
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	4-pin, M12 x 1 connector, 90° rotatable

Accessories

V1-G-2M-PUR
Female cordset, M12, 4-pin, PUR cable

V1-W-2M-PUR
Female cordset, M12, 4-pin, PUR cable

REF-H85-2
Reflector, rectangular 84.5 mm x 84.5 mm, mounting holes

OFR-100/100
Reflective tape 100 mm x 100 mm

REF-VR10
Reflector, rectangular 60 mm x 19 mm, mounting holes

REF-C110-2
Reflector, round ø 84 mm, central mounting hole
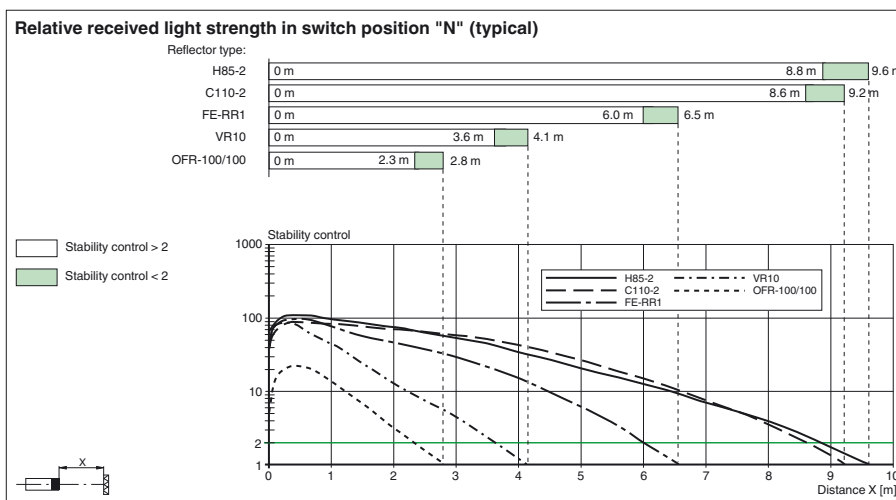
IO-Link-Master02-USB
IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection

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

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Material	
Housing	PC (Polycarbonate)
Optical face	PMMA
Mass	approx. 47 g
Cable length	0.3 m

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

Curves/Diagrams

Characteristic response curve

Offset Y [mm]

Distance X [m]

—— H85-2	– – – VR10		
– – C110-2	······ OFR-100/100		
–·–·– FE-RR1			

Relative received light strength in switch position "N" (typical)

Reflector type:

H85-2	0 m	8.8 m	9.6 m
C110-2	0 m	8.6 m	9.2 m
FE-RR1	0 m	6.0 m	6.5 m
VR10	0 m	3.6 m	4.1 m
OFR-100/100	0 m	2.3 m	2.8 m

☐ Stability control > 2

▨ Stability control < 2

Stability control

—— H85-2	–·–·– VR10		
– – C110-2	······ OFR-100/100		
–·–·– FE-RR1			

Distance X [m]
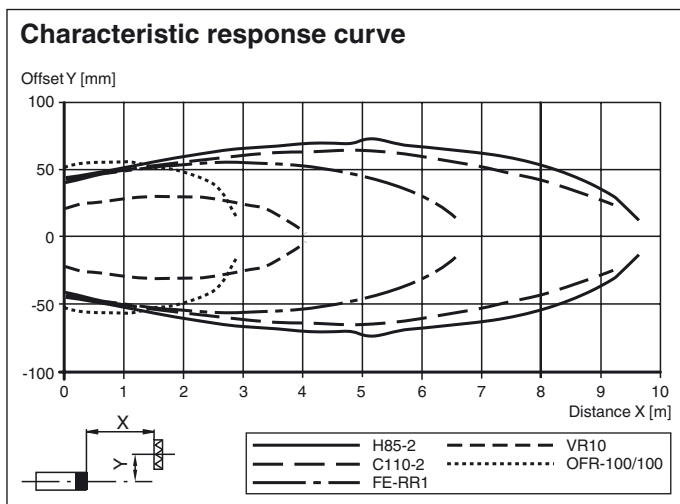
Settings

Teach-in:

Use the rotary switch to select the required operating mode: Normal mode (N) or contrast level I – III.

To teach in a threshold or activate an operating mode, press the "TI" button until the yellow and green LEDs flash in phase (approx. 1 s).

Release the "TI" button. Teach-in starts.

Successful teach-in is indicated by alternating flashing (2.5 Hz) of the yellow and green LEDs. The sensor will now operate in the selected operating mode with the taught-in threshold.

An unsuccessful teach-in is indicated by rapidly alternating flashing (8 Hz) of the yellow and green LEDs. After an unsuccessful teach-in, the sensor continues to operate with the previous valid setting after the relevant visual fault signal is issued.

Every taught-in switching threshold can be re-taught (overwritten) by pressing the "TI" button again.

Note: To ensure that the device functions reliably in Contrast mode, the device must be powered on at least 30 s before Teach-in.

Setting the Device to Maximum Sensitivity
Use the rotary switch to select the Normal mode (N) position.
Press the "TI" button for > 4 s. The yellow and green LEDs will go out.
Release the "TI" button.
The settings will be reset to maximum sensitivity. After successfully resetting, the yellow and green LEDs will flash alternately (2.5 Hz).

Switching between light on/dark on
Use the rotary switch to select the light on/dark on (L/D) position.
Press the "TI" button for > 1 s.

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The respective operating indicator LED (L/D) will illuminate green and the switching type will change.

To reset the switching type, press the "TI" button for > 4 s.
The respective operating indicator LED (L/D) will illuminate green and the operating indicator will be reset to the most recently active switching type.

Reset to Default Settings
Use the rotary switch to select the O position.
Press the "TI" button for > 10 s. The yellow and the green LEDs will both switch off.
Release the "TI" button. The yellow LED is on.
After resetting, the sensor will operate with the following default settings:

- Normal mode (N)
- Maximum sensitivity adjustment
- Dark on
- Pin 2 (white core): antivalent switching output