Model Number

OBR6000-R103-2EP-IO

Retroreflective sensor
with fixed cable

Features

- Miniature design with versatile mounting options

- Extended temperature range -40°C ... 60°C

- High degree of protection IP69K

- IO-link interface for service and process data

Product information

The R103 series miniature optical sensors are the first devices of their kind to offer an end-to-end solution in a small single standard design — from thru-beam sensor through to a distance measurement device. As a result of this design, the sensors are able to perform practically all standard automation tasks.

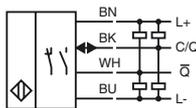The entire series enables sensors to communicate via IO-Link.

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

The use of Multi Pixel Technology gives the standard sensors a high level of flexibility and enables them to adapt more effectively to their operating environment.
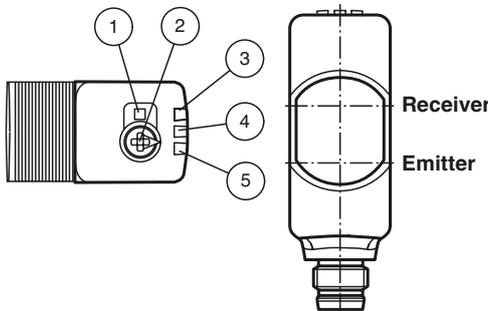
Dimensions
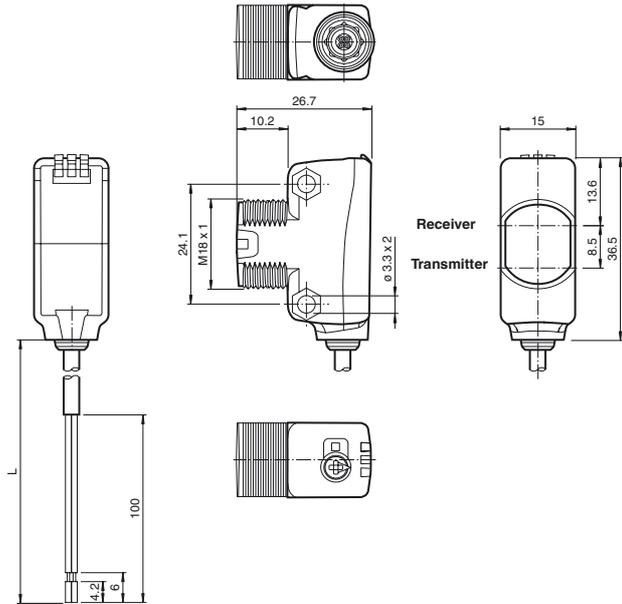
Electrical connection

Indicators/operating means

1	Light-on/dark-on changeover switch
2	Sensivity adjuster
3	Operating indicator / dark on
4	Function indicator
5	Operating indicator / light on

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

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Technical data

General specifications

Effective detection range	0 ... 6 m
Reflector distance	0.03 ... 6 m
Threshold detection range	8 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. 65 mm at a distance of 1 m
Angle of divergence	3.7 °
Ambient light limit	EN 60947-5-2

Functional safety related parameters

$MTTF_d$	724 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	Light-on/dark-on changeover switch
Control elements	sensitivity adjustment
Parameterization indicator	IO link communication: green LED goes out briefly (1 Hz)

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)
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	0x110204 (1114628)
Compatible master port type	A

Output

Switching type		The switching type of the sensor is adjustable. The default setting is: C/Q - BK: NPN normally open / dark-on, PNP normally closed / light-on, IO-Link /Q - WH: 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	1000 Hz
Response time		0.5 ms

Conformity

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

Ambient conditions

Ambient temperature	-40 ... 60 °C (-40 ... 140 °F) , fixed cable -25 ... 60 °C (-13 ... 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	36.5 mm
Housing depth	26.7 mm
Degree of protection	IP67 / IP69 / IP69K
Connection	2 m fixed cable
Material	
Housing	PC (Polycarbonate)
Optical face	PMMA
Mass	approx. 38 g

Accessories

IO-Link-Master02-USB
IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection

OMH-R103-01
Mounting bracket

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

REF-H33
Reflector with screw fixing

REF-H50
Reflector, rectangular 51 mm x 61 mm, mounting holes, fixing strap

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

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

OMH-R101-Front
Mounting Clamp

OMH-R101
Mounting Clamp

OMH-4.1
Mounting Clamp

OMH-ML6
Mounting bracket

OMH-ML6-U
Mounting bracket

OMH-ML6-Z
Mounting bracket

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

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Cable length	2 m

Approvals and certificates

UL approval	E87056 , cULus Listed , class 2 power supply , type rating 1

Curves/Diagrams

Characteristic response curve

Offset Y [mm]

Distance X [m]

- H85-2
- C110-2
- H50
- FE-RR1
- VR10
- OFR-100/100

Relative received light strength

Reflector type:

H85-2	30 mm	8.2 m
C110-2	30 mm	8.0 m
H50	30 mm	6.3 m
FE-RR1	60 mm	5.8 m
VR10	30 mm	2.8 m
OFR-100/100	150 mm	2.9 m

Excess gain > 2

Excess gain < 2

Excess gain

- H85-2
- C110-2
- H50
- FE-RR1
- VR10
- OFR-100/100

Distance X [m]
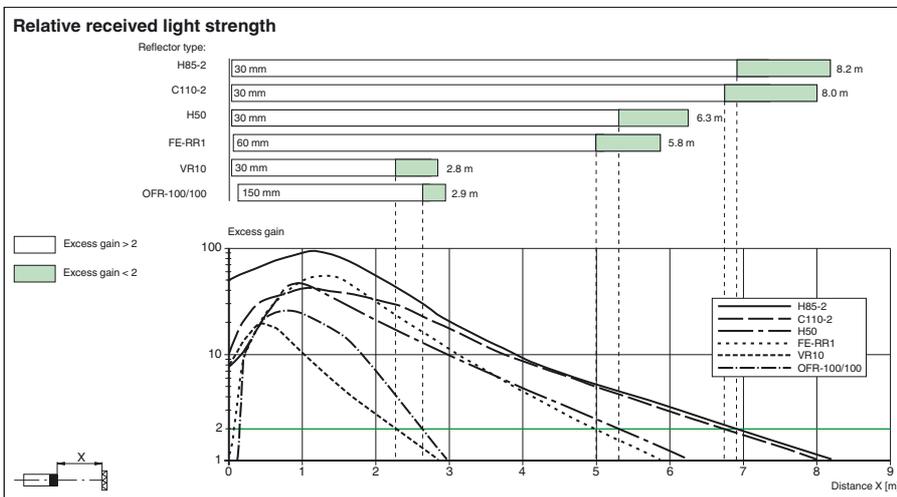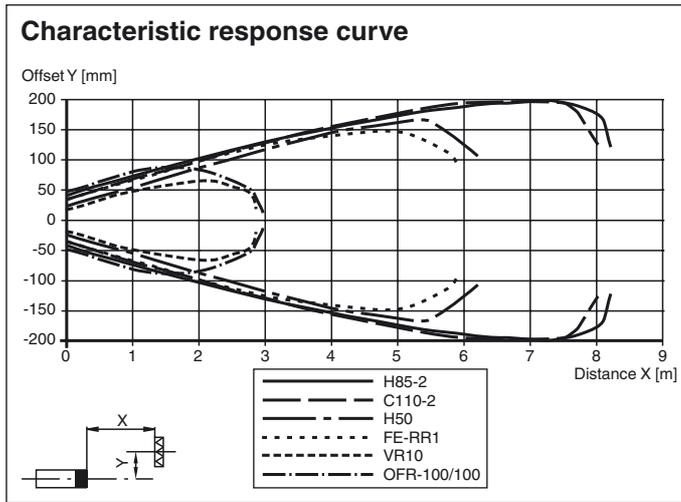
Functions and Operation

R103
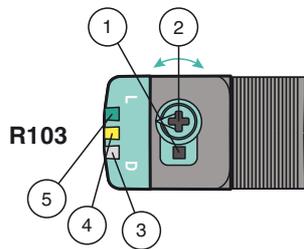
1 - Light-on / dark-on changeover switch

2 - Sensing range / sensitivity adjuster

3 - Operating indicator / dark on

4 - Signal indicator

5 - Operating indicator / light on

To unlock the adjustment functions turn the sensing range adjuster / 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.

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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.

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