



Model Number

OBE12M-R101-S2EP-IO-V31

Thru-beam sensor
with 4-pin, M8 x 1 connector

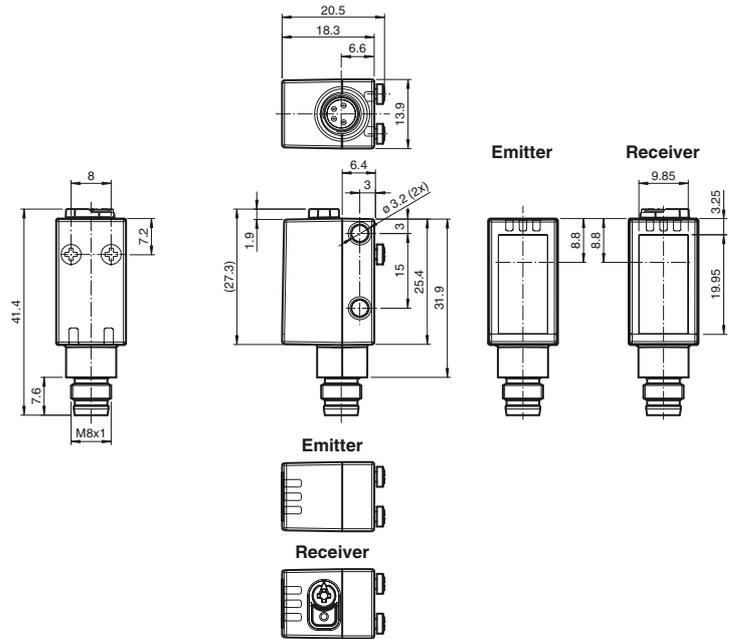
Features

- Miniature design with versatile mounting options
- IO-link interface for service and process data
- Various frequencies for avoiding mutual interference (cross-talk immunity)
- Extended temperature range -40°C ... 60°C
- High degree of protection IP69K

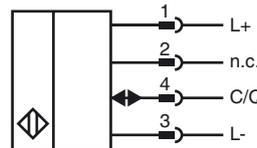
Product information

The R101 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.

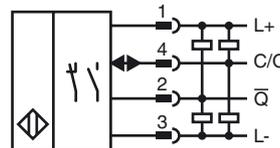
Dimensions



Electrical connection emitter



Electrical connection receiver



Pinout



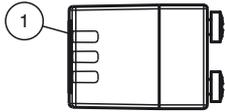
Wire colors in accordance with EN 60947-5-2

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

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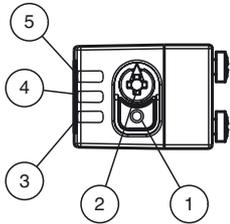
Indicators/operating means

Emitter



1	Operating indicator
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Receiver



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

Accessories

V31-WM-2M-PUR

Female cordset, M8, 4-pin, PUR cable

V31-GM-2M-PUR

Female cordset, M8, 4-pin, PUR cable

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

Technical data	
System components	
Emitter	OBE12M-R101-S-IO-V31
Receiver	OBE12M-R101-2EP-IO-V31
General specifications	
Effective detection range	0 ... 12 m
Threshold detection range	15 m
Light source	LED
Light type	modulated visible red light
LED risk group labelling	exempt group
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 : 30000 Lux
Functional safety related parameters	
MTTF _d	462 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)—operating reserve not reached
Control elements	Receiver: light/dark switch
Control elements	Receiver: 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 Emitter: ≤ 14 mA Receiver: ≤ 13 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 width	Emitter: Process data output: 2 Bit Receiver: Process data input: 2 Bit Process data output: 2 Bit
SIO mode support	yes
Device ID	Emitter: 0x110401 (1115137) Receiver: 0x110301 (1114881)
Compatible master port type	A
Input	
Test input	emitter deactivation at +U _B
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 1000 Hz
Response time	0.5 ms
Ambient conditions	
Ambient temperature	-40 ... 60 °C (-40 ... 140 °F)
Storage temperature	-40 ... 70 °C (-40 ... 158 °F)
Mechanical specifications	
Degree of protection	IP67 / IP69 / IP69K
Connection	M8 x 1 connector, 4-pin
Material	
Housing	PC (Polycarbonate)
Optical face	PMMA
Mass	Emitter: approx. 10 g receiver: approx. 10 g

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

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

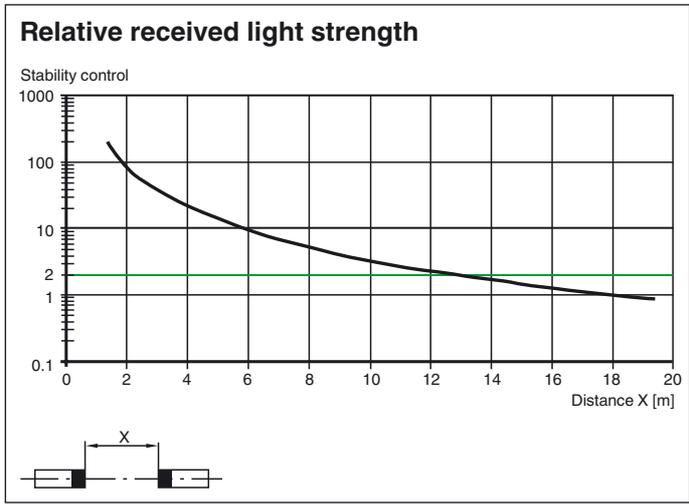
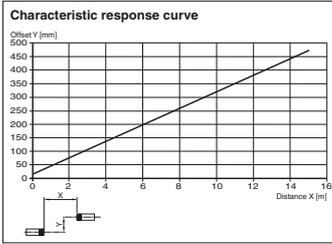
Compliance with standards and directives

Directive conformity	
EMC Directive 2004/108/EC	EN 60947-5-2:2007 + A1:2012
Standard conformity	
Product standard	EN 60947-5-2:2007 + A1:2012 IEC 60947-5-2:2007 + A1:2012
Standards	
	UL 60947-5-2: 2014 IEC 61131-9:2013 EN 62471:2008 EN 61131-9:2013

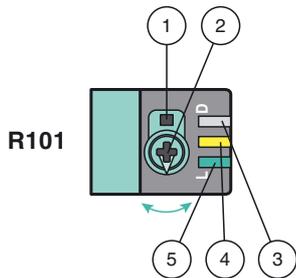
Approvals and certificates

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

Curves/Diagrams



Functions and Operation



- 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 for more than 180 degrees.

Sensing Range / Sensitivity

Turn sensing range / sensivity 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.