



Model Number

OBE20M-R101-SEP-IO-V3-L

Laser thru-beam sensor
with 3-pin, M8 x 1 connector

Features

- Miniature design with versatile mounting options
- DuraBeam Laser Sensors - durable and employable like an LED
- 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

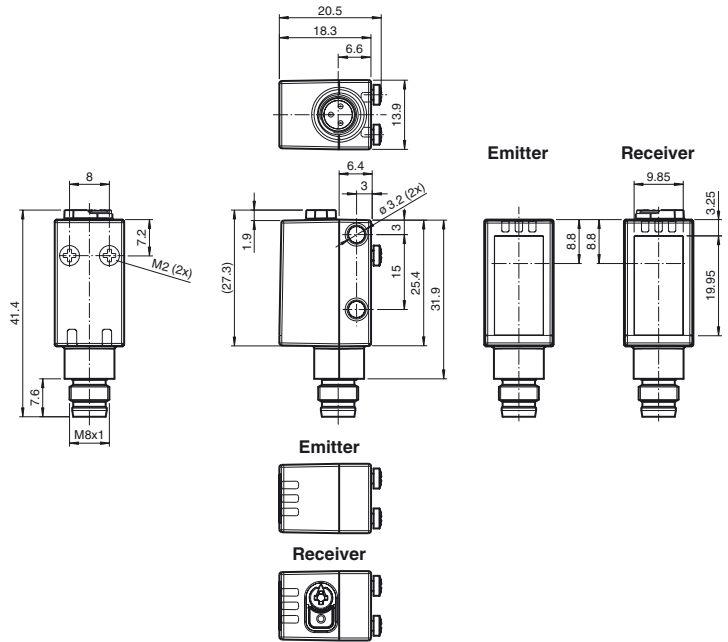
Product information

The 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.

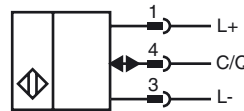
The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

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.

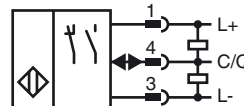
Dimensions



Electrical connection emitter



Electrical connection receiver



Pinout



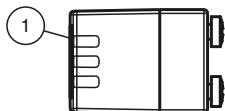
Wire colors in accordance with EN 60947-5-2

- 1 | BN (brown)
- 3 | BU (blue)
- 4 | BK (black)

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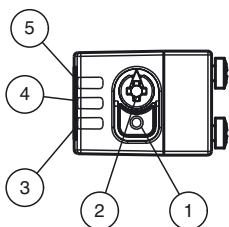
Indicators/operating means

Emitter



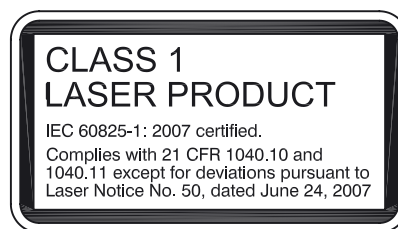
1	Operating indicator
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Receiver



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

Laserlabel



Accessories

V3-WM-2M-PUR

Cable socket, M8, 3-pin, PUR cable

V3-GM-2M-PUR

Cable socket, M8, 3-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

OMH-R101

Mounting Clamp

OMH-R101-Front

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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Technical data**System components**

Emitter	OBE20M-R101-S-IO-V3-L
Receiver	OBE20M-R101-EP-IO-V3-L

General specifications

Effective detection range	0 ... 20 m
Threshold detection range	30 m
Light source	laser diode
Light type	modulated visible red light
Laser nominal ratings	
Note	LASER LIGHT , DO NOT STARE INTO BEAM
Laser class	1
Wave length	680 nm
Beam divergence	> 5 mrad ; d63 < 2 mm in the range of 250 mm ... 750 mm
Pulse length	1.6 μ s
Repetition rate	max. 17.6 kHz
max. pulse energy	9.6 nJ
Diameter of the light spot	approx. 50 mm at a distance of 20 m
Angle of divergence	approx. 0.3 °
Ambient light limit	EN 60947-5-2 : 30000 Lux

Functional safety related parameters

MTTF _d	440 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	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: ≤ 13 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: 0x110402 (1115138) Receiver: 0x110302 (1114882)
Compatible master port type	A

Input

Test input	emitter deactivation at +U _B
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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	
Signal output	1 push-pull (4 in 1) output, 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	1250 Hz
Response time		0.4 ms

Conformity

Communication interface	IEC 61131-9
Product standard	EN 60947-5-2
Laser safety	EN 60825-1:2014

Ambient conditions

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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

Ambient temperature -40 ... 60 °C (-40 ... 140 °F)

Storage temperature -40 ... 70 °C (-40 ... 158 °F)

Mechanical specifications

Housing width 13.9 mm

Housing height 33.8 mm

Housing depth 18.3 mm

Degree of protection IP67 / IP69 / IP69K

Connection M8 x 1 connector, 3-pin

Material

Housing PC (Polycarbonate)

Optical face PMMA

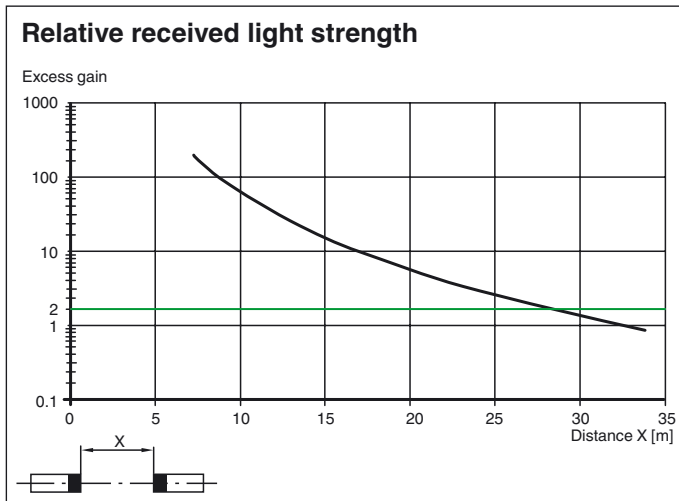
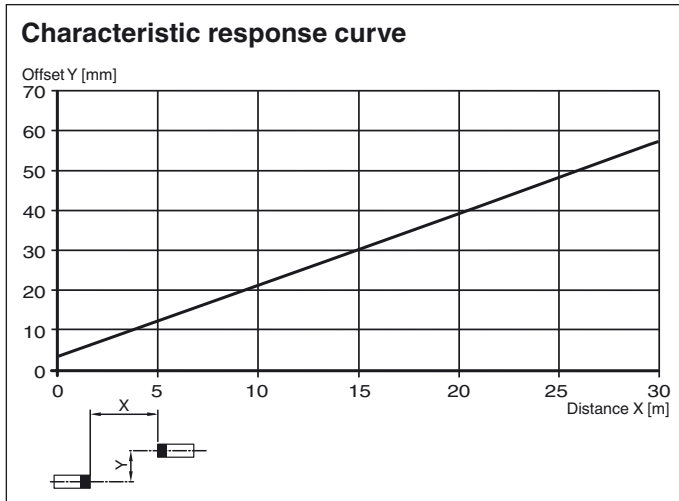
Mass Emitter: approx. 10 g receiver: approx. 10 g

Approvals and certificates

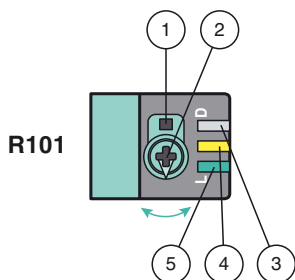
UL approval E87056 , cULus Listed , class 2 power supply , type rating 1

FDA approval IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

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

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To unlock the adjustment functions turn the sensing range 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

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.