



## Model Number

**OBE40M-R201-S2EP-IO-0,3M-V31-L**

Laser thru-beam sensor  
with fixed cable

## Features

- Medium 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

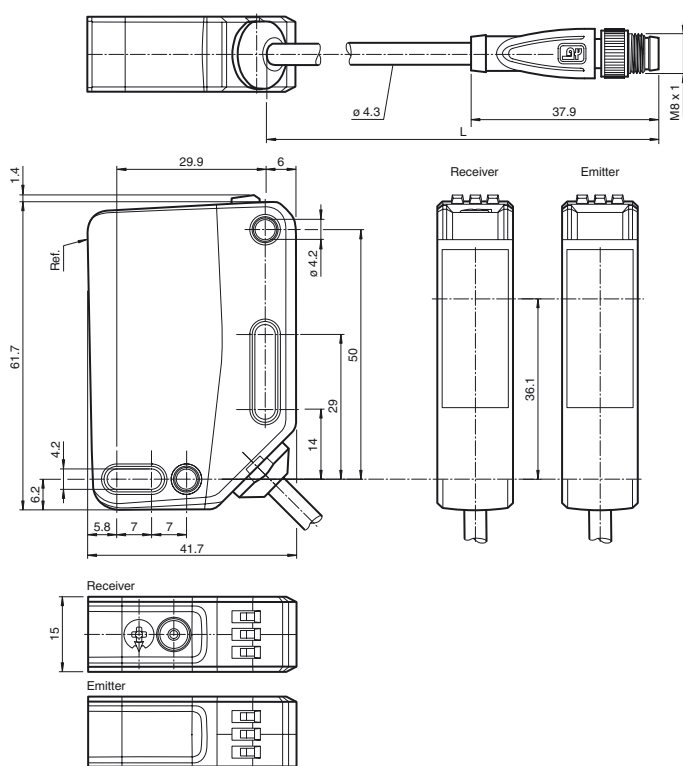
The optical sensors in the series are the first devices to offer an end-to-end solution in a medium-sized standard design—from the thru-beam sensor through to the measuring distance sensor. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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

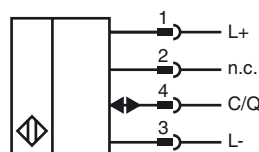
The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

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

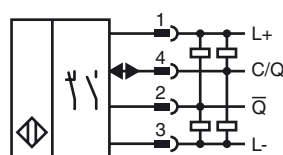
## Dimensions



## Electrical connection emitter



## Electrical connection receiver



## Pinout

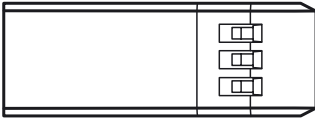


Wire colors in accordance with EN 60947-5-2

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

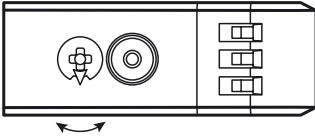
## Indicators/operating means

### Emitter



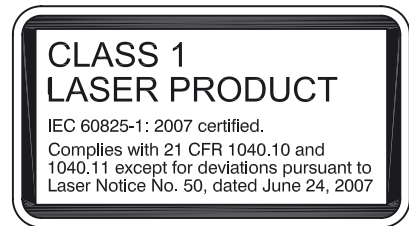
1	Operating indicator
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### Receiver



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

## Laserlabel



## Accessories

### IO-Link-Master02-USB

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

### V31-WM-2M-PUR

Female cordset single-ended, M8, 4-pin, PUR cable

### V31-GM-2M-PUR

Female cordset single-ended, M8, 4-pin, PUR cable

### OMH-RL31-02

Mounting bracket narrow

### OMH-RL31-03

Mounting bracket narrow

### OMH-RL31-04

Mounting aid for round steel  $\varnothing$  12 mm or sheet 1.5 mm ... 3 mm

### OMH-RL31-07

Mounting bracket including adjustment

### OMH-R20x-Quick-Mount

Quick mounting accessory

Other suitable accessories can be found at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)

## Technical data

### System components

Emitter	OBE40M-R201-S-IO-0,3M-V31-L
Receiver	OBE40M-R201-2EP-IO-0,3M-V31-L

### General specifications

Effective detection range	0 ... 40 m
Threshold detection range	50 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 µs
Repetition rate	max. 17.6 kHz
max. pulse energy	9.6 nJ
Alignment aid	LED red (in receiver lens) illuminated constantly: beam is interrupted, flashes: reaching switching point, off: sufficient stability control
Diameter of the light spot	approx. 80 mm at a distance of 40 m
Angle of divergence	approx. 0.12 °
Ambient light limit	EN 60947-5-2 : 40000 Lux

### Functional safety related parameters

MTTF <sub>d</sub>	440 a
Mission Time (T <sub>M</sub> )	20 a
Diagnostic Coverage (DC)	60 %

### 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

### Electrical specifications

Operating voltage	U <sub>B</sub>	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I <sub>0</sub>	Emitter: ≤ 13 mA Receiver: ≤ 15 mA at 24 V Operating voltage
Protection class		III

### Interface

Interface type	IO-Link ( via C/Q = pin 4 )
Device profile	Identification and diagnosis Smart Sensor: Receiver: type 2.4 Emitter: -
Transfer rate	COM 2 (38.4 kBaud)
IO-Link Revision	1.1
Min. cycle time	2.3 ms
Process data width	Emitter: Process data input: 0 bit Process data output: 1 bit Receiver: Process data input: 2 bit Process data output: 2 bit
SIO mode support	yes
Device ID	Emitter: 0x111412 (1119250) Receiver: 0x111312 (1118994)
Compatible master port type	A

### Input

Test input	emitter deactivation at +U <sub>B</sub>
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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 /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 <sub>d</sub> ≤ 1.5 V DC

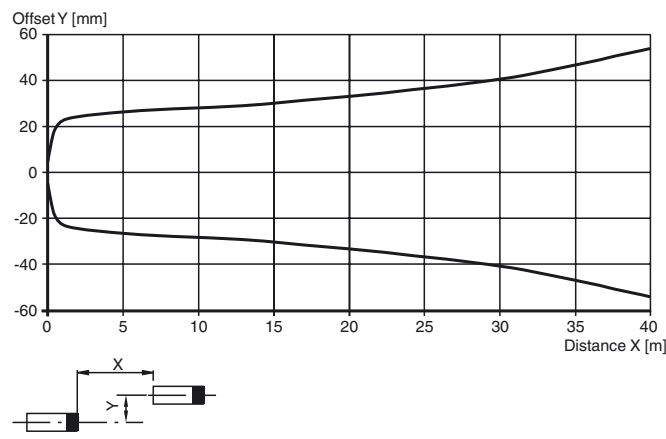
Release date: 2018-05-23 09:21 Date of issue: 2019-10-31 301131\_eng.xml

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

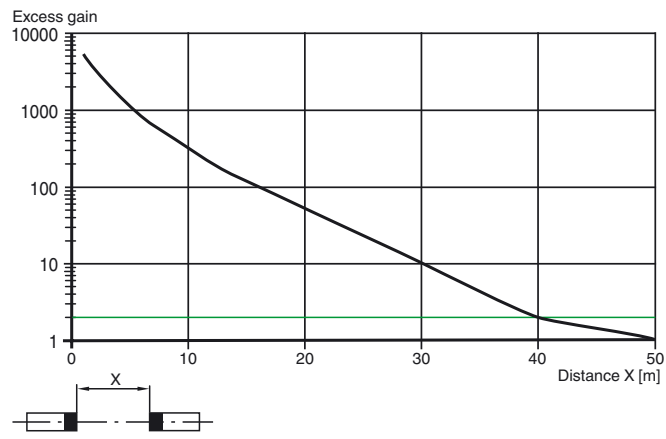
Switching frequency	f	1250 Hz
Response time		0.4 ms
<b>Conformity</b>		
Communication interface		IEC 61131-9
Product standard		EN 60947-5-2
Laser safety		EN 60825-1:2014
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 60 °C (-40 ... 140 °F) , fixed cable -20 ... 60 °C (-4 ... 140 °F) , movable cable not appropriate for conveyor chains
Storage temperature		-40 ... 70 °C (-40 ... 158 °F)
<b>Mechanical specifications</b>		
Housing width		15 mm
Housing height		61.7 mm
Housing depth		41.7 mm
Degree of protection		IP67 / IP69 / IP69K
Connection		fixed cable 300 mm with M8 x 1 male connector; 4-pin
<b>Material</b>		
Housing		PC (Polycarbonate)
Optical face		PMMA
Mass		Emitter: approx. 51 g receiver: approx. 51 g
Cable length		0.3 m
<b>Approvals and certificates</b>		
UL approval		E87056 , cULus Listed , class 2 power supply , type rating 1
CCC approval		CCC approval / marking not required for products rated ≤36 V
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

**Characteristic response curve**



**Relative received light strength**



## Functions and Operation

To unlock the adjustment functions turn the sensing range /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.

**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.