









#### **Model Number**

#### OBE20M-R102-S2EP-IO-V31-L

Thru-beam sensor with 4-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

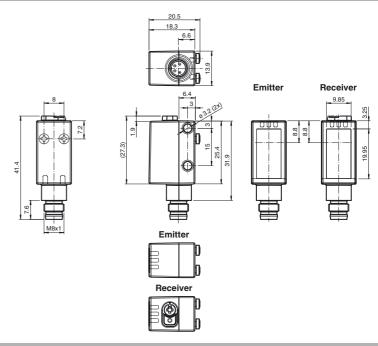
# **Product information**

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.

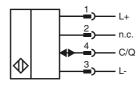
The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

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.

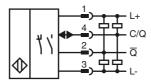
# **Dimensions**



# **Electrical connection emitter**



#### **Electrical connection receiver**



#### **Pinout**

Wire colors in accordance with EN 60947-5-2



2 3	BN WH BU	(bro (whi (blu
4	BK	(bla

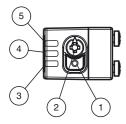
Release date: 2018-12-17 11:43

# Indicators/operating means

#### **Emitter**



#### Receiver



- Light-on/dark-on changeover switch
- Sensitivity adjuster

Operating indicator

- 3 Operating indicator / light on
- 4 Signal indicator
- 5 Operating indicator / dark on

# Laserlabel



### CLASS 1 LASER PRODUCT

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

# CLASS 1 LASER PRODUCT

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

#### **Accessories**

### 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

#### V31-GM-2M-PUR

Female cordset, M8, 4-pin, PUR cable

# V31-WM-2M-PUR

Female cordset, M8, 4-pin, PUR cable

Other suitable accessories can be found at  $\ensuremath{\varsigma}$ www.pepperl-fuchs.com

**PEPPERL+FUCHS** 

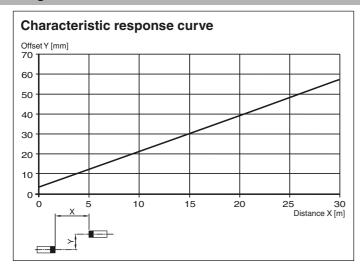
Custom some series		
System components		0.750014 P./00 0.10 1/0/ 1
Emitter		OBE20M-R102-S-IO-V31-L
Receiver		OBE20M-R102-2EP-IO-V31-L
General specifications		
Effective detection range		0 20 m
Threshold detection range		30 m
Light source		laser diode
Light type		modulated visible red light
Laser nominal 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 µs
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 para	meters	
MTTF <sub>d</sub>		440 a
Mission Time (T <sub>M</sub> )		20 a
Diagnostic Coverage (DC)		0%
Indicators/operating means		- ·-
Operation indicator		LED green:
Operation indicator		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 <sub>B</sub>	10 30 V DC
Ripple		max. 10 %
No-load supply current	I <sub>O</sub>	Emitter: ≤ 13 mA
Protection class		Receiver: ≤ 13 mA at 24 V supply voltage
		III
Interface		10.11.1.7.1.000
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		Emitter:
		Process data output: 2 Bit Receiver:
		Process data input: 2 Bit
		Process data output: 2 Bit
SIO mode support		yes
Device ID		Emitter: 0x110406 (1115142)
		Receiver: 0x110306 (1114886)
Compatible master port type		A
Input		
Test input		emitter deactivation at +U <sub>B</sub>
Output		
Switching type		The switching type of the sensor is adjustable. The default
Owntorning type		setting is:
		C/Q - Pin4: NPN normally open / dark-on, PNP normally clos
		light-on, IO-Link
		/Q - Pin2: NPN normally closed / light-on, PNP normally ope dark-on
Signal output		
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
0 1: 1: 1	f	1250 Hz
Switching frequency		0.4
Switching frequency Response time		0.4 ms
		0.4 ms
Response time		IEC 61131-9
Response time Conformity		
Response time  Conformity  Communication interface		IEC 61131-9

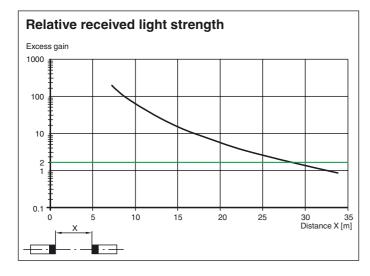
PEPPERL+FUCHS

#### **Ambient conditions**

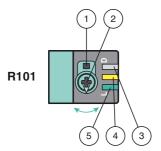
Ambient temperature	-40 60 °C (-40 140 °F)
Storage temperature	-40 70 °C (-40 158 °F)
Mechanical specifications	
Housing width	13.9 mm
Housing height	33.8 mm
Housing depth	18.3 mm
Degree of protection	IP67 / IP69 / IP69K
Connection	M8 x 1 connector, 4-pin
Material	
Housing	PC (Polycarbonate)
Optical face	Float glass
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

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 /sensivity 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 / sensivity adjustment is locked. In order to reactivate the sensing range / sensivity adjustment, turn the sensing range / sensivity adjuster for more than 180 degrees.