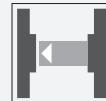




## Thru-beam sensor (pair) OBE20M-R101-S2EP-IO-L



- 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

### Laser thru-beam sensor



# IO-Link

### Function

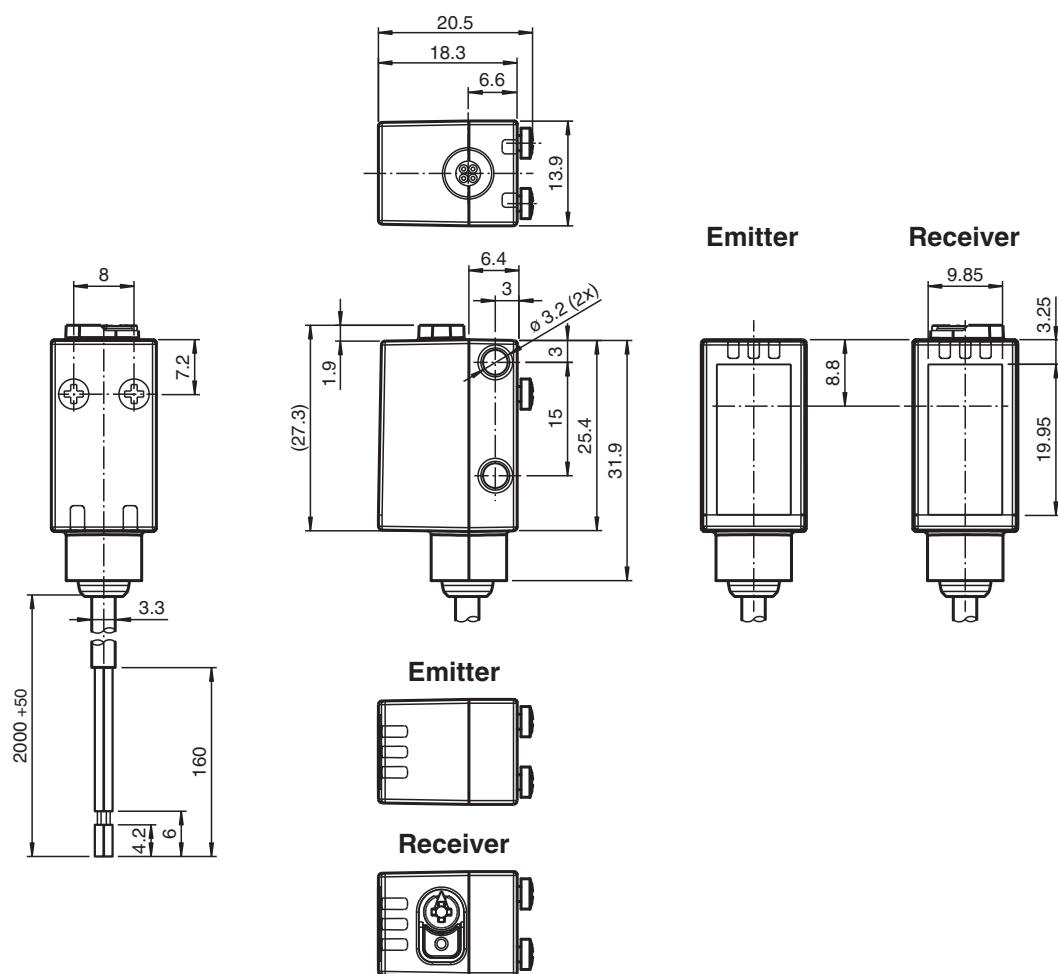
The miniature optical sensors are the first devices of their kind to offer an end-to- end solution in a small single standard design — from thru-beam sensor through to a distance measurement device. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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

Release date: 2025-01-30 Date of issue: 2025-01-30 Filename: 281015\_eng.pdf



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

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 PEPPERL+FUCHS

## Technical Data

System components		
Emitter	OBE20M-R101-S-IO-L	
Receiver	OBE20M-R101-2EP-IO-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	
Opening angle	approx. 0.3 °	
Ambient light limit	EN 60947-5-2 : 30000 Lux	
Functional safety related parameters		
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: 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>0</sub>	Emitter: ≤ 13 mA Receiver: ≤ 13 mA at 24 V supply voltage
Protection class	III	
Interface		
Interface type	IO-Link ( via C/Q = pin 4 )	
IO-Link revision	1.1	
Device ID	Emitter: 0x110402 (1115138) Reciever: 0x110302 (1114882)	
Transfer rate	COM2 (38.4 kBit/s)	
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	
Compatible master port type	A	
Input		
Test input	emitter deactivation at +U <sub>B</sub>	

## Technical Data

### 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	$U_d$	$\leq 1.5$ 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

### Approvals and certificates

UL approval	E87056, cULus Listed, class 2 power supply, type rating 1
FDA approval	IEC 60825-1:2014 Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3 as described in Laser Notice 56, dated May 8, 2019.

### Ambient conditions

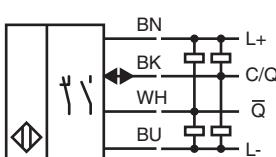
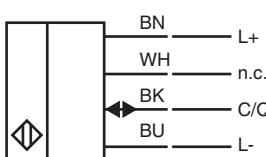
Ambient temperature	-40 ... 60 °C (-40 ... 140 °F), cable, fixed installation
Storage temperature	-25 ... 60 °C (-13 ... 140 °F), movable cable not appropriate for conveyor chains

### Mechanical specifications

Degree of protection	IP67 / IP69 / IP69K
Connection	2 m fixed cable
Material	
Housing	PC (Polycarbonate)
Optical face	PMMA
Mass	Emitter: approx. 10 g receiver: approx. 10 g
Dimensions	
Height	33.8 mm
Width	13.9 mm
Depth	18.3 mm
Cable length	2 m

## Connection

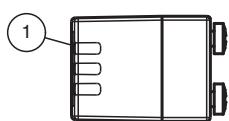
Release date: 2025-01-30 Date of issue: 2025-01-30 Filename: 281015\_eng.pdf



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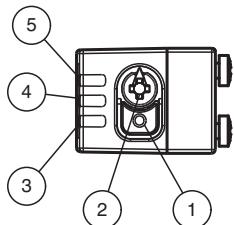
## Assembly

### Emitter



1	Operating indicator
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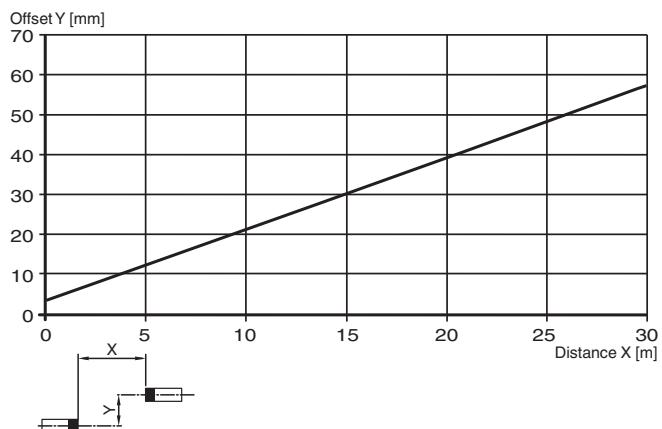
### Receiver



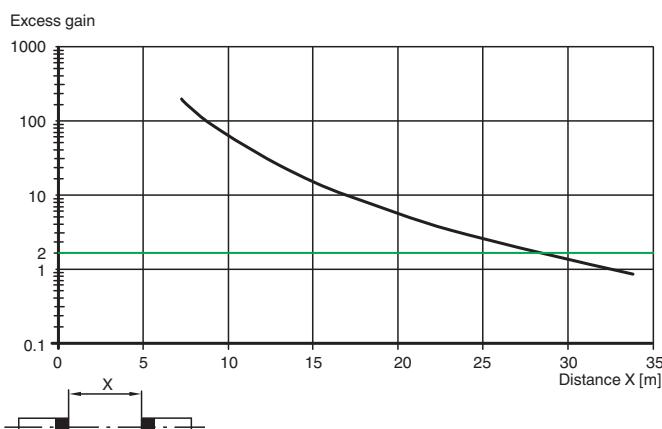
1	Light-on/dark-on changeover switch
2	Sensitivity adjuster
3	Operating indicator / light on
4	Signal indicator
5	Operating indicator / dark on

## Characteristic Curve

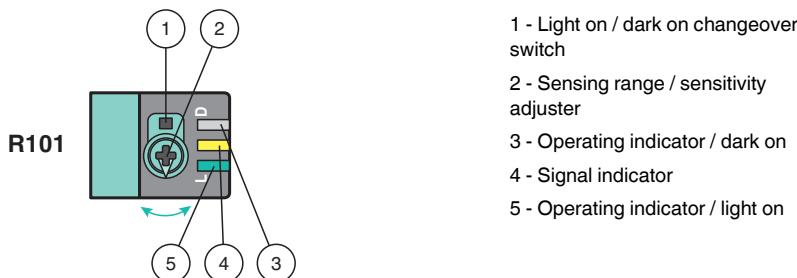
### Characteristic response curve



### Relative received light strength



## Configuration



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 counterclockwise 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 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.