



## Thru-beam sensor (pair) OBE40M-R201-S2EP-IO-V31-L



- 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

### Laser thru-beam sensor



# IO-Link

### Function

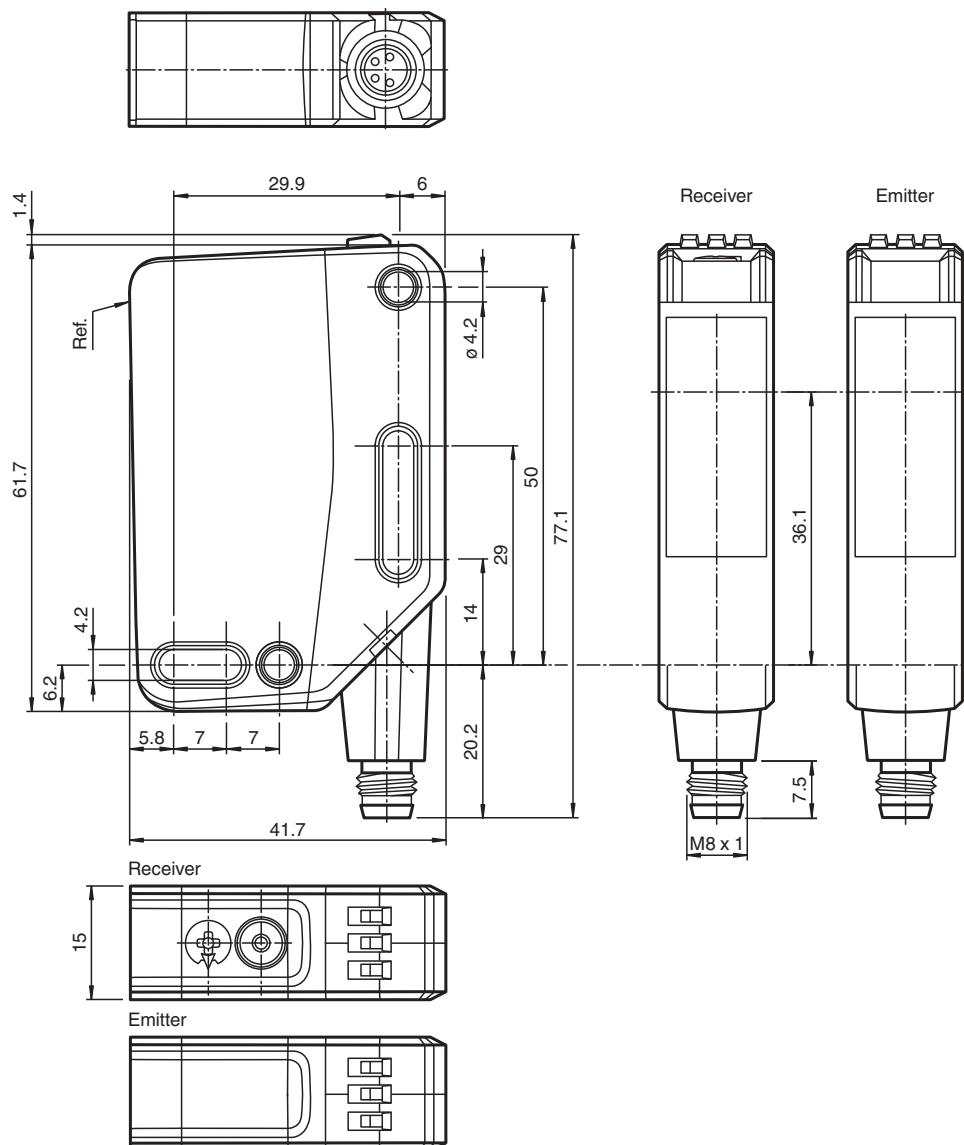
The optical sensors in the series are the first devices to offer an end-to-end solution in a medium-sized standard design – from the thru-beam sensor through to the measuring distance sensor. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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



## Technical Data

### System components

Emitter	OBE40M-R201-S-IO-V31-L
Receiver	OBE40M-R201-2EP-IO-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 $\mu$ s
Repetition rate	max. 17.6 kHz
max. pulse energy	9.6 nJ

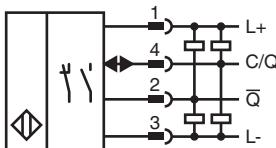
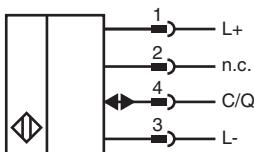
## Technical Data

Alignment aid	LED red (in receiver lens) illuminated constantly: beam is interrupted, flashes: reaching switching point, off: sufficient operating reserve	
Diameter of the light spot	approx. 80 mm at a distance of 40 m	
Opening angle	approx. 0.12 °	
Ambient light limit	EN 60947-5-2 : 40000 Lux	
<b>Functional safety related parameters</b>		
MTTF <sub>d</sub>	440 a	
Mission Time (T <sub>M</sub> )	20 a	
Diagnostic Coverage (DC)	60 %	
<b>Indicators/operating means</b>		
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	
<b>Electrical specifications</b>		
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
<b>Interface</b>		
Interface type	IO-Link ( via C/Q = pin 4 )	
IO-Link revision		1.1
Device profile	Identification and diagnosis Smart Sensor: Receiver: type 2.4 Emitter: -	
Device ID	Emitter: 0x111412 (1119250) Receiver: 0x111312 (1118994)	
Transfer rate	COM2 (38.4 kBit/s)	
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	
Compatible master port type	A	
<b>Input</b>		
Test input	emitter deactivation at +U <sub>B</sub>	
<b>Output</b>		
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
Switching frequency	f	1250 Hz
Response time		0.4 ms

## Technical Data

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
CCC approval	CCC approval / marking not required for products rated $\leq 36$ V
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)
Storage temperature	-40 ... 70 °C (-40 ... 158 °F)
Mechanical specifications	
Degree of protection	IP67 / IP69 / IP69K
Connection	4-pin, M8 x 1 connector, 90° rotatable
Material	
Housing	PC (Polycarbonate)
Optical face	PMMA
Mass	Emitter: approx. 44 g receiver: approx. 44 g
Dimensions	
Height	61.7 mm
Width	15 mm
Depth	41.7 mm

## Connection Assignment



## Connection Assignment



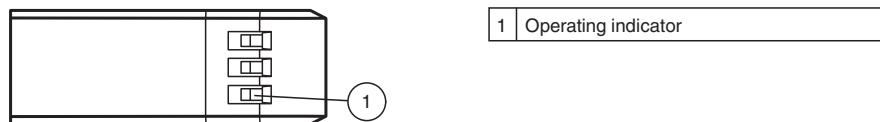
## Connection Assignment

Wire colors in accordance with EN 60947-5-2

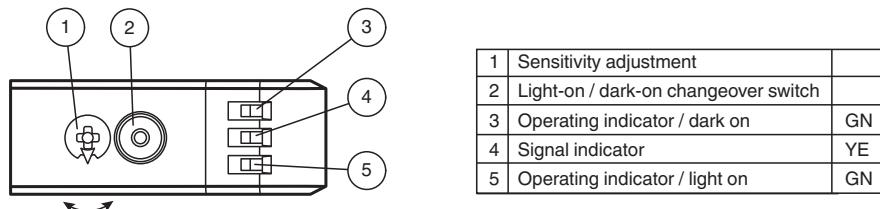
1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

## Assembly

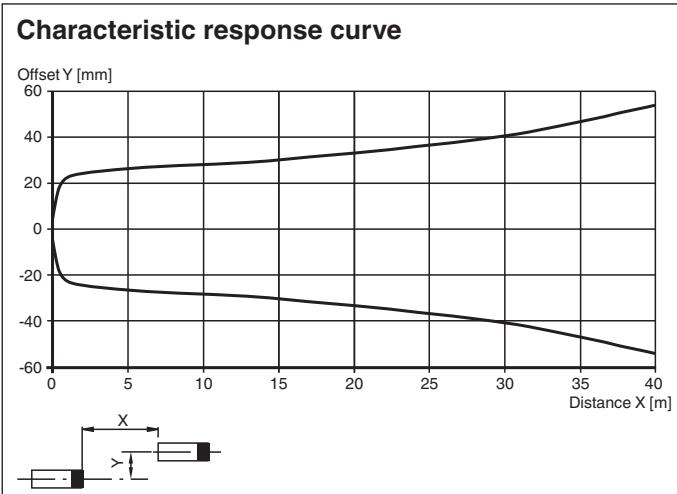
### Emitter



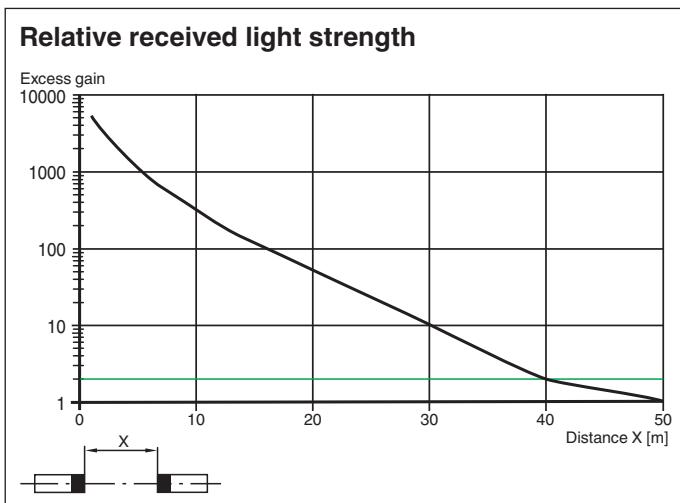
### Receiver



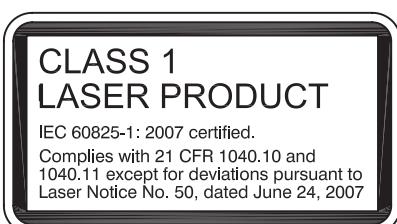
## Characteristic Curve



## Characteristic Curve



## Safety Information



## Commissioning

Release date: 2025-01-17 | Filename: 301130\_eng.pdf

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.