



Thru-beam sensor (pair)
OBE12M-R101-S2EP-IO-V31



- Miniature design with versatile mounting options
- 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



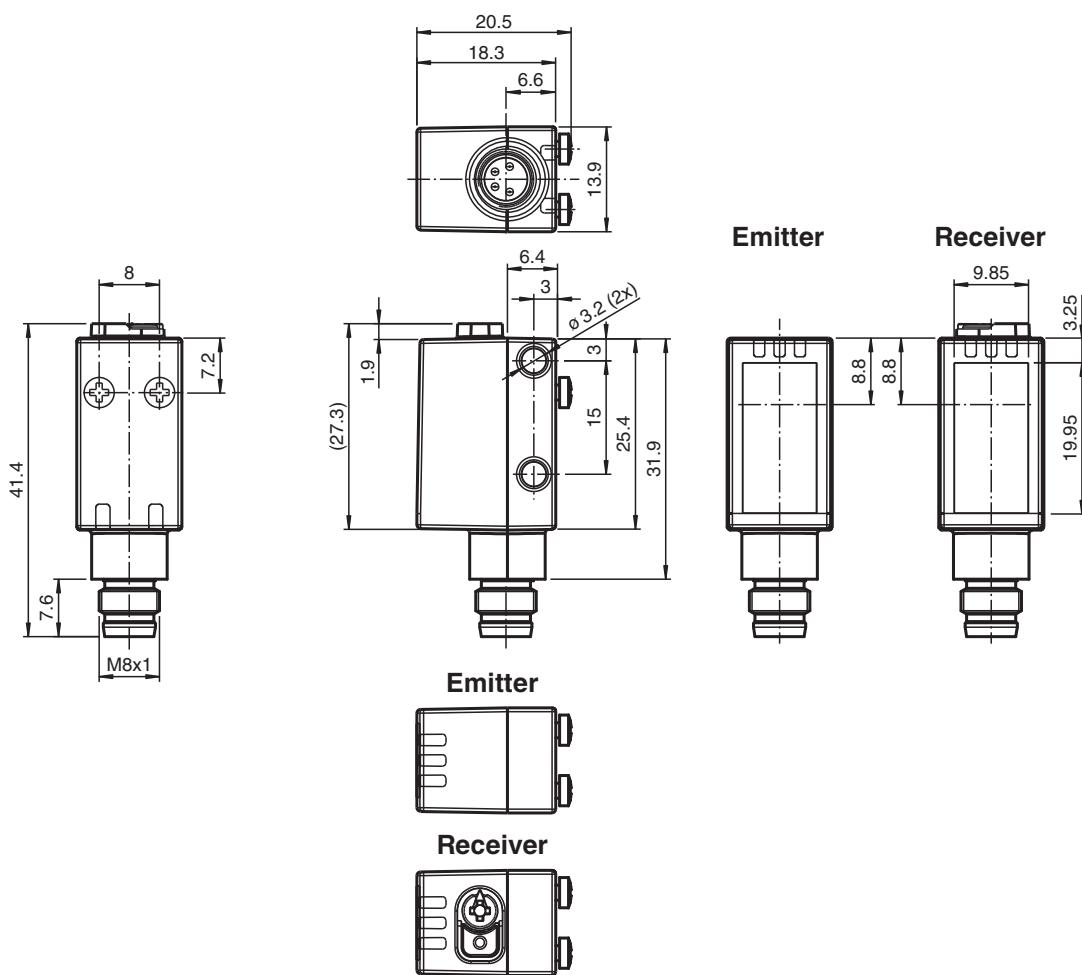
Function

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



Technical Data

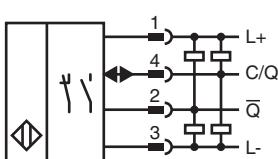
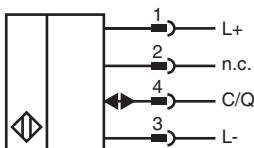
System components		
Emitter	OBE12M-R101-S-IO-V31	
Receiver	OBE12M-R101-2EP-IO-V31	
General specifications		
Effective detection range	0 ... 12 m	
Threshold detection range	15 m	
Light source	LED	
Light type	modulated visible red light	
LED risk group labelling	exempt group	
Diameter of the light spot	approx. 65 mm at a distance of 1 m	
Opening angle	3.7 °	
Ambient light limit	EN 60947-5-2 : 30000 Lux	
Functional safety related parameters		
MTTF _d	462 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: ≤ 14 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: 0x110401 (1115137) Receiver: 0x110301 (1114881)	
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 _B	
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	

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

Technical Data

Voltage drop	U _d	≤ 1.5 V DC
Switching frequency	f	1000 Hz
Response time		0.5 ms
Compliance with standards and directives		
Directive conformity		
EMC Directive 2004/108/EC	EN 60947-5-2:2007+A1:2012	
Standard conformity		
Product standard	EN 60947-5-2:2007+A1:2012 IEC 60947-5-2:2007 + A1:2012	
Standards	UL 60947-5-2: 2014 IEC 61131-9:2013 EN 62471:2008 EN 61131-9:2013	
Approvals and certificates		
UL approval	E87056, cULus Listed, class 2 power supply, type rating 1	
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	41.4 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	PMMA	
Mass	Emitter: approx. 10 g receiver: approx. 10 g	

Connection



Connection Assignment

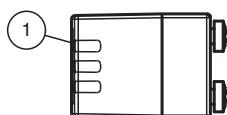


Wire colors in accordance with EN 60947-5-2

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

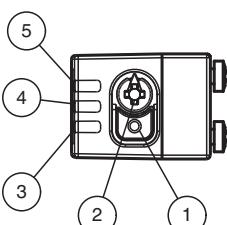
Assembly

Emitter



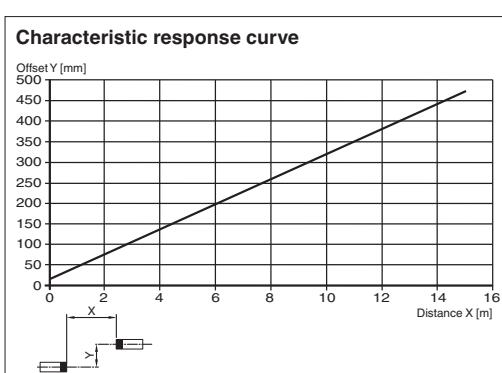
1	Operating indicator
---	---------------------

Receiver

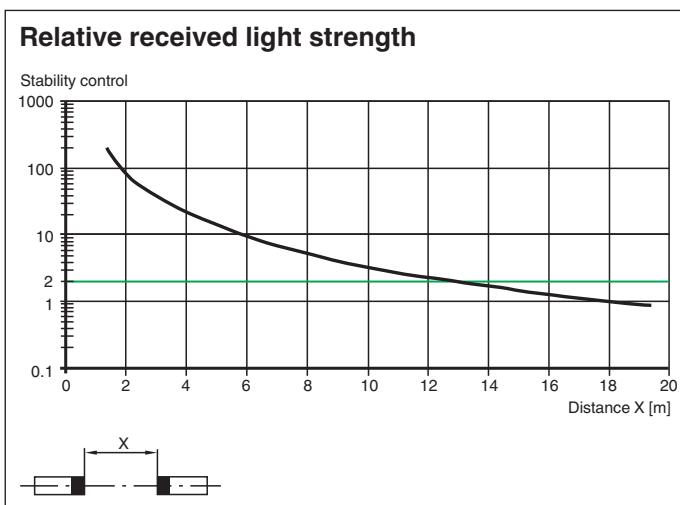


1	Light-on/dark-on changeover switch
2	Sensitivity adjuster
3	Operating indicator / light on
4	Signal indicator
5	Operating indicator / dark on

Characteristic Curve



Characteristic Curve



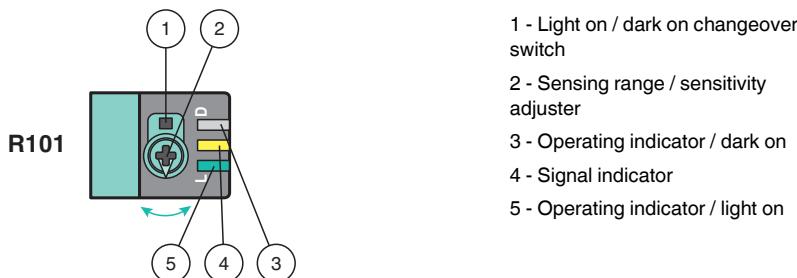
Accessories

	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
	ICE2-8IOL-G65L-V1D	EtherNet/IP IO-Link master with 8 inputs/outputs
	ICE3-8IOL-G65L-V1D	PROFINET IO IO-Link master with 8 inputs/outputs
	ICE2-8IOL-K45S-RJ45	EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, screw terminal
	ICE3-8IOL-K45P-RJ45	PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, push-in terminals
	ICE3-8IOL-K45S-RJ45	PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, screw terminal
	IO-Link-Master02-USB	IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection
	ICE1-8IOL-G30L-V1D	Ethernet IO-Link module with 8 inputs/outputs
	ICE1-8IOL-G60L-V1D	Ethernet IO-Link module with 8 inputs/outputs

Accessories

	ICE2-8IOL-K45P-RJ45	EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, push-in connectors
	V31-GM-2M-PUR	Female cordset single-ended M8 straight A-coded, 4-pin, PUR cable grey
	V31-WM-2M-PUR	Female cordset single-ended M8 angled A-coded, 4-pin, PUR cable grey

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.