







Model Number

OBE12M-R100-S2EP-IO-V31

Thru-beam sensor with 4-pin, M8 x 1 connector

Features

- 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

Product information

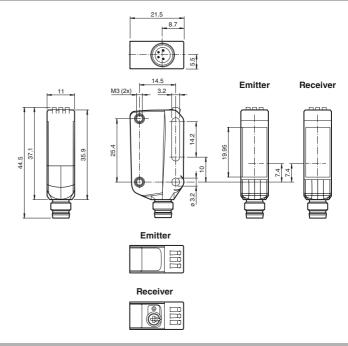
The R100 series miniature optical sensors are the first devices of their kind to offer an end-to-end solution in a small single standard design — from thru-beam sensor through to a distance measurement device. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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

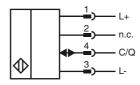
The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

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.

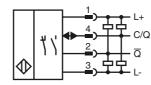
Dimensions



Electrical connection emitter



Electrical connection receiver



Pinout

Wire colors in accordance with EN 60947-5-2



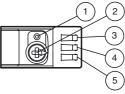
1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

Indicators/operating means

Emitter



Receiver



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

Accessories

IO-Link-Master02-USB

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

OMH-R10X-01

Mounting bracket

OMH-R10X-02

Mounting bracket

OMH-R10X-04

Mounting bracket

OMH-R10X-10

Mounting bracket

OMH-ML100-03

Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

OMH-ML100-031

Mounting aid for round steel ø 10 ... 14 mm or sheet 1 mm ... 5 mm

V31-GM-2M-PUR

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

V31-WM-2M-PUR

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

Other suitable accessories can be found at www.pepperl-fuchs.com

fa-info@sg.pepperl-fuchs.com

fa-info@de.pepperl-fuchs.com

www.pepperl-fuchs.com

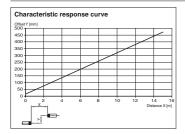
fa-info@us.pepperl-fuchs.com

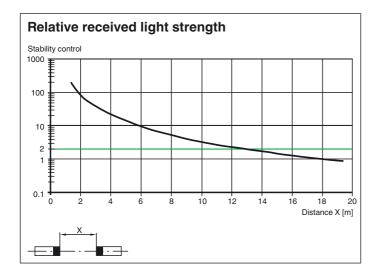
System components	Technical data		
Receiver OBE12M-R100-2EP-IQ-V31	System components		
General specifications 0 12 m Trinsehold detection range 15 m Light source LED Light source LED Light source approx. 65 mm at distance of 1 m LED risk group labelling exempt group Diameter of the light spot approx. 65 mm at a distance of 1 m Angle of divergence 3.7 ° Ambient light limit EN 60947-5-2 : 30000 Lux Functional safety related parameters WTF1g MTF1g 462 a MITF1g 462 a Mission Time (Tsh) 20 a Diagnostic Coverage (DC) 0% Inciticator (Departure) Up Function indicator LED green:	Emitter		OBE12M-R100-S-IO-V31
Effective detection range Light vector Light type Light source Light type Light type Light source Light type Ambient light limit End Angle of divergence 3,7° Ambient light limit Functional safety related parameters MTT-g Mission Time (T _M) Diagnostic Coverage (DC) 10° Mission Time (T _M) Operation indicator Operation indicator Control elements Receiver: sensitivity adjustment Permanenty off - object detected Fleating (14-12) - incurity and the are Permanenty off - object detected Fleating (14-12) - incurity and the are Receiver: sensitivity adjustment Dollank (14-12) - incurity and the are Receiver: sensitivity adjustment Interface Interface Interface (10 incurity and the are Process data output (10 incurity and the are Process data output (10 incurity and	Receiver		OBE12M-R100-2EP-IO-V31
Threshold detection range	General specifications		
Light type	Effective detection range		0 12 m
Light type modulated visible red light LED risk group labelling exempt group Angle of divergence 3.7° Angle of divergence 3.7° Angle of divergence 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 LED green: constantly on - power on flashing (4Hz) - short circuit flashing with short break (1 Hz) - IO-Link mode Function indicator LED green: constantly on - power on flashing (4Hz) - short circuit flashing with short break (1 Hz) - IO-Link mode Function indicator Vellow LED: Permanently Id- light path clear Function indicator Permanently Id- light path clear Function indicator Permanently Id- light path clear Function indicator Receiver: light/dark switch Control elements Receiver: sensitivity adjustment Parameterization indicator IO-Link (via Cip epin 4) File Process III- File Process	Threshold detection range		15 m
LED risk group labelling	Light source		LED
Diameter of the light spot approx. 65 mm at a distance of 1 m	Light type		modulated visible red light
Angle of divergence Ambient light limit Ambient light limit Functional safety related parameters MTTrd Mission Time (Ttg) Department of the properties of t	• •		
Ambient light limit EN 60947-5-2 : 30000 Lux	• '		
### Support			
MTFd 482 a Mission Time (T _M) 20 a Diagnostic Coverage (DC) 0 % Indicators/operating means LED green:	•		EN 60947-5-2 : 30000 Lux
Mission Time (T _M) Diagnostic Coverage (DC) Diagnostic Coverage (DC) O % Diagnostic Coverage (DC) O % Deration indicator Control elements Control elements Parameterization indicator Control elements Parameterization indicator Control elements Parameterization indicator Control elements Parameterization indicator Parameterization indicator Control elements Parameterization indicator Parameterization indicator Dia communication: green LED goes out briefly (1 Hz) Electrical specifications Operating voltage Ripple Robord Supply current Receiver: 14 mA Receiver: 13 mA at 24 V supply voltage Ill Interface Interface Interface type Interface ype	• •	meters	400 -
Diagnostic Coverage (DC) Indicators/operating means	•		10-0
Indicators/operating means Operation indicator LED green: constantly on - power on liashing (Hz) - short circuit flashing with short break (1 Hz) - IO-Link mode Function indicator Function indicator Function indicator Permanently it - light path clear Permanently it - light path clear Permanently it - light path clear Permanently it - object detected Flashing (4 Hz) - insufficient operating reserve Control elements Receiver: light/dark switch Control elements Parameterization indicator Olink communication: green LED goes out briefly (1 Hz) Electrical specifications Operating voltage Ripple Ill Interface Interface type Io-Link (via C/Q = pin 4) Transfer rate COM 2 (38.4 kBaud) Io-Link Revision 1.1 Min. cycle time Process data witdh Finiter- Process data output: 2 Bit Receiver: Process data output: 2 Bit	\ 14D		
Deration indicator LED green: constantly on - power on flashing (4Hz) - short circuit flashing with short break (1 Hz) - IO-Link mode Function indicator Function indicator Function indicator Function indicator Yellow LED: Permanently if - light path clear Permanently if - loght path clear Permanently in	3 , ,		0 /0
constantly on - power on flashing (4Hz) - short circuit flashing (4Hz) - insufficient operating reserve Permanently of - object detected Flashing (4Hz) - insufficient operating reserve Receiver: sensitivity adjustment Parameterization indicator I/O link communication: green LED goes out briefly (1Hz) Flectrical specifications Operating voltage Use Title (1 max 10 max 10 % No-load supply current Isometical specifications Isome			LED groop:
Permanently lit - light path clear Permanently of - object detected Flashing (4 Hz) - insufficient operating reserve Receiver: right/dark switch Receiver: light/dark switch Receiver: light/dark switch Receiver: sensitivity adjustment Parameterization indicator Electrical specifications Operating voltage Ug 10 30 V DC Ripple Ro-load supply current Ighter S 13 mA at 24 V supply voltage Ripple Illetriace Interface type Interface Interface ype Interface (20 Mg 2(8.4 kBaud)) Interface Interface type Interface (23 ms) Process data witdh Revision I.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 Receiver: Process data output: 2 Bit Process data output: 2 Bit Receiver: Process data output: 2 Bit Process data output: 2 Bit Receiver: Process data output: 2 Bit Process data output: 2 Bit Receiver: Process data output: 2 Bit Process data output: 2 Bit Process data output: 2 Bit Receiver: Process data output: 2 Bit Process data output: 2 Bit Process data output: 2 Bit Receiver: Process data output: 2 Bit Process data input: 2 Bit Process data output: 2 Bit Process data out			constantly on - power on flashing (4Hz) - short circuit flashing with short break (1 Hz) - IO-Link mode
Control elements Parameterization indicator Electrical specifications Operating voltage Operating voltage No-load supply current Io Emitter: ≤ 14 mA Receiver: ≤ 13 mA at 24 V supply voltage Interface type Interface type Interface type Interface type IO-Link (via C/Q = pin 4) County Emitter: ≤ 14 mA Receiver: ≤ 13 mA at 24 V supply voltage Interface type IO-Link (via C/Q = pin 4) County Emitter: State type Interface type Interface type Interface type IO-Link (via C/Q = pin 4) Interface Interface type Interfa	Function indicator		Permanently lit - light path clear Permanently off - object detected
Parameterization indicator IO link communication: green LED goes out briefly (1 Hz)	Control elements		Receiver: light/dark switch
Departing voltage UB 10 30 V DC Ripple max. 10 %			
Operating voltage U _B 10 30 V DC max. 10 % max. 10 % No-load supply current I ₀ Emitter: ≤ 14 mA Receiver: ≤ 13 mA at 24 V supply voltage Interface III 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 output: 2 Bit Process data output: 2 Bit Receiver: Process data output: 2 Bit Receiver: 0x110401 (1115137) Receiver: 0x110301 (1114881) Compatible master port type A Input Imput Test input emitter: 0x110401 (1115137) Receiver: 0x110301 (1114881) Output The switching type of the sensor is adjustable. The default 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 clos light-on, Io-Link / Q - Pin2: NPN normally closed / light-on, PNP normally open dark-on Switching voltage max. 30 V DC Switching voltage max. 30 V DC Switching voltage max. 30 V DC Switching frequency f 1000 Hz Response time 0.5 ms Conformity Communication interface IEC 61131-9 Product standard EN 60947-5-2 Ambient conditions -40 60 °C (-40 140 °F) Stora			IO link communication: green LED goes out briefly (1 Hz)
Ripple max. 10 % No-load supply current l ₀ Emitter: ≤ 13 mA at 24 V supply voltage Protection class III Interface 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 output: 2 Bit Proce	Electrical specifications		
No-load supply current Protection class Ill Interface Interface type Int	• •	U_B	
Receiver: ≤ 13 mA at 24 V supply voltage	• •		
Interface Interface type	,	I ₀	Receiver: ≤ 13 mA at 24 V supply voltage
Interface type			III
Transfer rate			10 Link (vita 0/0 vita 4)
IO-Link Revision	**		` '
Min. cycle time Process data witdh Process data witdh Emitter: Process data output: 2 Bit Receiver: Process data input: 2 Bit Process data output: 2 Bit Proces data output			
Process data witdh Process data output: 2 Bit Receiver: Process data output: 2 Bit Receiver: Process data output: 2 Bit Process	10 2		***
SIO mode support Device ID Emitter: 0x110401 (1115137) Receiver: 0x110301 (1114881) Compatible master port type A Input Test input 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 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 ∨ DC Switching current max. 100 mA , resistive load Usage category DC-12 and DC-13 Voltage drop Voltage drop Voltage drop Voltage drop Switching frequency f 1000 Hz Response time 0.5 ms Conformity Communication interface Product standard EN 60947-5-2 Ambient conditions Ambient temperature -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width 11 mm Housing height 44.5 mm	•		Process data output: 2 Bit Receiver: Process data input: 2 Bit
Device ID Emitter: 0x110401 (1115137) Receiver: 0x110301 (1114881) Compatible master port type A Input Test input emitter deactivation at +UB 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 clos light-on, IO-Link /Q - Pin2: NPN normally closed / light-on, PNP normally ope 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 Ud ≤1.5 V DC Switching frequency f 1000 Hz Response time 0.5 ms Conformity Communication interface IEC 61131-9 Product standard EN 60947-5-2 Ambient conditions Ambient temperature -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width 11 mm Housing height 44.5 mm	SIO mada aunnart		
Compatible master port type A Input rest input emitter deactivation at +UB Output The switching type of the sensor is adjustable. The default 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 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 Ud ≤ 1.5 V DC Switching frequency f 1000 Hz Response time 0.5 ms Conformity Communication interface IEC 61131-9 Product standard EN 60947-5-2 Ambient conditions Ambient temperature -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width 11 mm Housing height 44.5 mm	• • • • • • • • • • • • • • • • • • • •		Emitter: 0x110401 (1115137)
Input emitter deactivation at +U _B Output Switching type The switching type of the sensor is adjustable. The default setting is:	Compatible master port type		` '
Test input 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 clos light-on, IO-Link /Q - Pin2: NPN normally closed / light-on, PNP normally ope 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 Ud ≤1.5 V DC Switching frequency f 1000 Hz Response time 0.5 ms Conformity Communication interface IEC 61131-9 Product standard EN 60947-5-2 Ambient conditions Ambient temperature -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width 11 mm Housing height 44.5 mm			,
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 close light-on, IO-Link /Q - Pin2: NPN normally closed / light-on, PNP normally ope 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 ≤ 1.5 V DC Switching frequency f 1000 Hz Response time 0.5 ms Conformity Communication interface Communication interface IEC 61131-9 Product standard EN 60947-5-2 Ambient conditions Ambient temperature Ambient temperature -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width 11 mm Housing height 44.5 mm	•		emitter deactivation at +U _D
Switching type The switching type of the sensor is adjustable. The default 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 2 push-pull (4 in 1)outputs, short-circuit protected, reverse polarity protected, overvoltage protected Switching voltage Switching current Usage category Voltage drop Ud ≤ 1.5 V DC Switching frequency f 1000 Hz Response time Conformity Communication interface Product standard EN 60947-5-2 Ambient conditions Ambient temperature -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width 11 mm Housing height 13 mm	·		
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 Ud ≤ 1.5 V DC Switching frequency f 1000 Hz Response time 0.5 ms Conformity Communication interface IEC 61131-9 Product standard EN 60947-5-2 Ambient conditions Ambient temperature -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width 11 mm Housing height 44.5 mm	•		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
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	Signal output		
$\begin{array}{llllllllllllllllllllllllllllllllllll$	= = =		max. 30 V DC
Voltage drop U _d ≤ 1.5 V DC Switching frequency f 1000 Hz Response time 0.5 ms Conformity Communication interface IEC 61131-9 Product standard EN 60947-5-2 Ambient conditions Ambient temperature -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width 11 mm Housing height 44.5 mm	•		
Switching frequency f 1000 Hz Response time 0.5 ms Conformity Communication interface Product standard IEC 61131-9 Product standard EN 60947-5-2 Ambient conditions -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width Housing height 11 mm Housing height 44.5 mm	= = = =		
Response time 0.5 ms Conformity Communication interface IEC 61131-9 Product standard EN 60947-5-2 Ambient conditions Ambient temperature -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width 11 mm Housing height 44.5 mm	<u> </u>	-	
Conformity Communication interface IEC 61131-9 Product standard EN 60947-5-2 Ambient conditions Ambient temperature -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width 11 mm Housing height 44.5 mm	= : :	Ť	
Communication interface IEC 61131-9 Product standard EN 60947-5-2 Ambient conditions Ambient temperature -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width 11 mm Housing height 44.5 mm	·		U.O IIIS
Product standard EN 60947-5-2 Ambient conditions Ambient temperature -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width 11 mm Housing height 44.5 mm	•		IFC 61101 0
Ambient conditions Ambient temperature -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width 11 mm Housing height 44.5 mm			
Ambient temperature -40 60 °C (-40 140 °F) Storage temperature -40 70 °C (-40 158 °F) Mechanical specifications Housing width 11 mm Housing height 44.5 mm			EIN 0U947-0-2
Mechanical specifications Housing width 11 mm Housing height 44.5 mm			-40 60 °C (-40 140 °F)
Mechanical specifications Housing width 11 mm Housing height 44.5 mm	Storage temperature		-40 70 °C (-40 158 °F)
Housing width 11 mm Housing height 44.5 mm	· ·		.575 5 (15 150 1)
Housing height 44.5 mm	•		11 mm
5 0	•		
	Housing height		44.5 mm

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

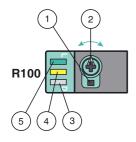
Degree of protection	IP67 / IP69 / IP69K
Connection	M8 x 1 connector, 4-pin
Material	
Housing	PC (Polycarbonate)
Optical face	PMMA
Mass	Emitter: approx. 10 g receiver: approx. 10 g
Approvals and certificates	
UL approval	E87056 , cULus Listed , class 2 power supply , type rating 1

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 /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.

5 PEPPERL+FUCHS

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.