







### **Model Number**

#### OBE12M-R101-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**

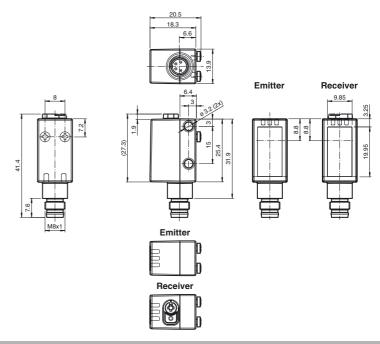
The miniature optical sensors are the first devices of their kind to offer an end-to- end solution in a small single standard design — from thru-beam sensor through to a distance measurement device. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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

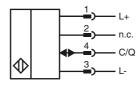
The use of Multi Pixel Technology gives the standard sensors a high level of flexibility and enables them to adapt more effectively to their operating environment.

fa-info@us.pepperl-fuchs.com

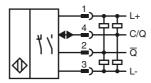
## **Dimensions**



## **Electrical connection emitter**



### **Electrical connection receiver**



### **Pinout**

Wire colors in accordance with EN 60947-5-2



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

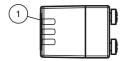
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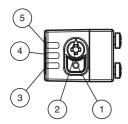
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## Indicators/operating means

## Emitter



### Receiver



- 1 Operating indicator
- 1 Light-on/dark-on changeover switch
- 2 Sensitivity adjuster
- 3 Operating indicator / light on
- 4 Signal indicator
- 5 Operating indicator / dark 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-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 www.pepperl-fuchs.com

setting is: C/Q - Pin4: NPN normally open / dark-on, PNP normally o light-on, IO-Link	_		
System components			
Receiver	Technical data		
Receiver	System components		
General specifications         012 m           Effective detection range         012 m           Threshold detection range         15 m           Light source         LED           Light source         LED           Light source         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         EN 60947-5-2: 30000 Lux           MTTG         462 a           Mission Time (Tr <sub>III</sub> )         20 a           Diagnostic Coverage (DC)         0 %           Indicators/Operating means         LED green:           Operation indicator         LED green:           Operation indicator         LED green:           Control elements         LED green:           Control elements         Receiver: light/dark switch           Control elements         Receiver: sensitivity adjustment           Parameterization indicator         Vg           Electrical specifications         Receiver: sensitivity adjustment           Parameterization indicator         In max. 10 %           Protection class         Ill           Interface         Interface           Interface         C			
Effective detection range	Receiver		OBE12M-R101-2EP-IO-V31
Threshold detection range   15 m   LED	•		
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 Angle of divergence 3.7." Ambient light limit EN 60947-5-2: 30000 Lux Functional safety related parameters MTTFg 482 a Mission Time (T <sub>M</sub> ) 20 a Diagnostic Coverage (DC) 0% Indicators/operating means Operation indicator  Velow LED: Permanently in light path clear Permanently off - object detected Flashing (41x) - short circuit flashing with short break (1 1x) - IO-Link mode Velow LED: Permanently in light path clear Permanently in light path clear Permanently off - object detected Flashing (41x) - insufficient operating reserve Receiver: light/dark switch Control elements Permanently in light path clear Permanently off - object detected Flashing (41x) - insufficient operating reserve Receiver: light/dark switch Control elements Permanently off - object detected Permanently off - object detected Flashing (41x) - insufficient operating reserve Receiver: light/dark switch Receiver: light/dark switch Receiver: sight and at 24 V supply voltage III Interface III Interface Interface bye Interface COM 2 (38.4 kBaud) Interface Interface bye Interface COM 2 (38.4 kBaud) Interface Interface Support Ves Device ID Emitter: Stantant Light Receiver: Process data output: 2 Bit Receiver: Process data viltut: 3 Bit Receiver: Process data viltut: 4 Bit Receiver: Process data viltut: 4 Bit Receiver: Process data viltut: 5 Bit Receiver: Process dat			
Light type  LED risk group labelling  Dameter of the light spot  Angle of divergence  Angle of divergence  Angle of divergence  Angle of divergence  Mission Time (T <sub>M</sub> )  Diagnostic Coverage (DC)  Indicators Operating  Operation indicator  Operation indicator  Control elements  Control elements  Parameterization indicator  Control elements  Pacawer: Ight/dark switch  Parameterization indicator  Control elements  Pacawer: Ight/dark switch  Parameterization indicator  Control elements  Pacawer: Ight/dark switch  Parameterization indicator  Ill olink communication: green LED goes out briefly (1 Hz).  Electrical specifications  Protection class  Ill terface  Interface type  Frocess data witdh  Process data input: 2 Bit Process data output: 2 Bit Process data output: 2 Bit Process data input: 2 Bit Proce	•		
LED risk group labelling			
Diameter of the light spot   Angle of divergence   3.7°	• ,,		•
Angle of divergence  Ambient light limit  EN 60947-5-2:30000 Lux  EN 60947-5-2:30000 Lux  Mission Time (Tr <sub>kt</sub> )  Applies to September 1462 a  Mission Time (Tr <sub>kt</sub> )  Operation indicator  Operation indicator  Operation indicator  Function indicato	0 1 0		
Ambient light limit Functional safety related parameters MTTF <sub>d</sub> Mission Time (T <sub>M</sub> ) Diagnostic Coverage (PC) Indicators/operating means Operation indicator  Operation indicator  Constantly on-power on flashing (H±2) - short circuit flashing with short break (1 H±2) - IO-Link mode very light of the parameter of flashing (H±2) - short circuit flashing with short break (1 H±2) - IO-Link mode very light of the parametry permanently off - Object detected plashing (H±2) - short circuit flashing with short break (1 H±2) - IO-Link mode very light of the parametry permanently off - Object detected plashing (H±2) - insufficient operating reserve  Control elements Parameterization indicator  Control elements Parameterization indicator  Io link communication: green LED goes out briefly (1 H±2) (Interest as pecifications) Operating voltage Ug nax. 10 % No-load supply current Protection class  Ill  Interface  Interface  Interface type	= :		••
Mission Time (Ti <sub>th</sub> )  Diagnostic Coverage (DC)  Indicators/operating means  Operation indicator  Eunction indicator  Function indicator  Control elements  Control elements  Control elements  Receiver: gight/dark switch  Parameter/zation indicator  Flectrical specifications  Operating voltage  Ug  10 30 V DC  max. 10 %  Flipple  max. 10 %  Protection class  III  Interface  Interface type  Interface typ	•		EN 60947-5-2 : 30000 Lux
Mission Time (T <sub>M</sub> ) 20 a Diagnostic Coverage (DC) Diagnostic Coverage (DC) Diagnostic Coverage (DC) Diagnostic Coverage (DC) Depretation indicator  Operation indicator  Function indicato	Functional safety related parar	neters	
Diagnostic Coverage (DC)  Indicators/operating means  Operation indicator  Operation indicator  Function indicator  Function indicator  Function indicator  Function indicator  Function indicator  Control elements  Control elements  Control elements  Parameterization indicator  Par	MTTF <sub>d</sub>		462 a
Indicators/operating means  Operation indicator  CED green: constantly on - power on flashing (4Hz) - short circuit flashing with short break (1 Hz) - IO-Link mode  Function indicator  Function indicator  Permanently lit - light path clear Permanently lit light path lit - light path light path lit - light path	Mission Time (T <sub>M</sub> )		20 a
LED green: constantly on - power on flashing (4Hz) - short circuit flashing with short break (1 Hz) - IO-Link mode  Function indicator  Yellow LED: Permanently if - object detected Flashing (4 Hz) - insufficient operating reserve Receiver: light/dark switch  Control elements  Receiver: sensitivity adjustment Parameterization indicator  Electrical specifications  Operating voltage  Operating voltage  Protection class  UB  Frotection class  UB  Frotection class  UB  Frotection class  UB  Interface  Interface type	Diagnostic Coverage (DC)		0 %
Constantly on - power on flashing (AHz) - short circuit flashing (AHz) - short circuit flashing (AHz) - short circuit flashing with short break (1 Hz) - IO-Link mode  Function indicator  Permanently lif - light path clear Permanently lif - object detected Flashing (4 Hz) - insufficient operating reserve  Control elements Receiver: light/dark switch Control elements Parameterization indicator Parameterization indicator Permanently lif - object detected flashing (4 Hz) - insufficient operating reserve  Receiver: light/dark switch Perceiver sensitivity adjustment Poperating voltage UB 10 30 V DC Ripple max. 10 % No-load supply current Interface Interface type Interface ype Inter	Indicators/operating means		
flashing (4Hz) - short circuit   flashing (4Hz) - lo-Link mode	Operation indicator		
Function indicator			
Permanently lit - light path clear Permanently off - object detected Flashing (4 Hz) - insufficient operating reserve  Control elements Receiver: Ight/dark switch Ight Ight Ight Ight Ight Ight Ight Igh			flashing with short break (1 Hz) - IO-Link mode
Permanently off - object detected Flashing (4 Hz) - insufficient operating reserve  Control elements Receiver: light/dark switch  Parameterization indicator  Electrical specifications  Operating voltage U <sub>B</sub> 10 30 V DC  Ripple max. 10 %  No-load supply current I <sub>D</sub> Emitter: ≤ 14 mA Receiver: \$13 mA at 24 V supply voltage  Protection class III  Interface  Interface ype 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: Ox10401 (1115137)  Receiver: Process data input: 2 Bit Process data output: 2 Bit Process data input: 2 B	Function indicator		
Flashing (4 Hz) - insufficient operating reserve			
Control elements Parameterization indicator  Electrical specifications  Operating voltage  Operating voltage  Operating voltage  Protection class  Ill  Interface  Interface type  Transfer rate  COM 2 (38.4 kBaud)  IO-Link (via C/Q = pin 4)  Transfer rate  COM 2 (38.4 kBaud)  IO-Link Revision  I.1  Min. cycle time  Process data witdh  Process data witdh  Process data input: 2 Bit Receiver: Process data output: 2 Bit Receiver: Process data output: 2 Bit Receiver: Process data input: 2 Bit Receiver: Process data input: 2 Bit Receiver: Process data output: 2 Bit Process data output: 2			
Parameterization indicator  Electrical specifications Operating voltage  Ripple No-load supply current No-load supply current Io Interface Interface Interface yes Incompany Process data witdh Process data witdh  Emitter: Very Company Device ID  Emitter: Very Compa	Control elements		Receiver: light/dark switch
Electrical specifications  Operating voltage Ripple Rippl	Control elements		Receiver: sensitivity adjustment
Operating voltage     UB (Pipple)     10 30 V DC (max. 10 % Protection class)       Protection class     III       Interface     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 Process data output: 2 Bit Process data output: 2 Bit Receiver: Process data output: 2 Bit			IO link communication: green LED goes out briefly (1 Hz)
Ripple max. 10 %  No-load supply current log Emitter: ≤ 14 mA Receiver: ≤ 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 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	•		
No-load supply current  Protection class  III  Interface  Interface  Interface type  Interface type  Interface type  Interface to COM 2 (38.4 kBaud)  Interface type  Interfa		U <sub>B</sub>	
Receiver: ≤ 13 mA at 24 V supply voltage			
Protection class   III	No-load supply current	10	
Interface type	Protection class		
Transfer rate   COM 2 (38.4 kBaud)	Interface		
IO-Link Revision	Interface type		IO-Link ( via C/Q = pin 4 )
Min. cycle time         2.3 ms           Process data witdh         Emitter:	Transfer rate		COM 2 (38.4 kBaud)
Process data witdh  Emitter: Process data output: 2 Bit Receiver: Process data input: 2 Bit Process data output: 2 Bit Process da			
Process data output: 2 Bit Receiver: Process data input: 2 Bit Process data input: 2 Bit Process data input: 2 Bit Process data output: 3 Process data output: 2 Process data output: 3 Process data output: 3 Process data output: 4 Process data output: 2 Process data output: 3 Process data output: 4 Process data output: 4 Process data output: 4 Process data output: 5 Process data output: 6 Process data output: 7 Process data output: 9 Process data out	•		
Receiver:   Process data input: 2 Bit   Process data output: 2 Bit   Side	Process data witdn		<del></del>
Process data output: 2 Bit			Receiver:
SIO mode support   Device ID			
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 defausetting is:  C/Q - Pin4: NPN normally open / dark-on, PNP normally olight-on, IO-Link //Q - Pin2: NPN normally closed / light-on, PNP normally olark-on  Signal output  2 push-pull (4 in 1)outputs, short-circuit protected, revers polarity protected, overvoltage protected  Switching voltage  max. 30 V DC  Switching current  max. 100 mA , resistive load  Usage category  Voltage drop  Ud  ≤ 1.5 V DC  Switching frequency  f 1000 Hz  Response time  0.5 ms  Ambient conditions  Ambient temperature  -40 60 °C (-40 140 °F)  Storage temperature  -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width  18.3 mm  Housing depth  33.8 mm  Degree of protection  IP67 / IP69 / IP69K  Connection  M8 x 1 connector, 4-pin	SIO mode support		•
Receiver: 0x11030 i (1114881)  Compatible master port type  Input  Test input  Switching type  The switching type of the sensor is adjustable. The defausetting is:  C/Q - Pin4: NPN normally open / dark-on, PNP normally olight-on, IO-Link  //Q - Pin2: NPN normally closed / light-on, PNP normally of dark-on  Signal output  2 push-pull (4 in 1)outputs, short-circuit protected, revers polarity protected, overvoltage protected  Switching voltage  Switching current  Usage category  Voltage drop  Voltage drop  Voltage drop  Voltage drop  Voltage drop  Switching frequency  Fasponse time  0.5 ms  Ambient conditions  Ambient conditions  Ambient temperature  -40 60 °C (-40 140 °F)  Storage temperature  -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width  18.3 mm  Housing depth  33.8 mm  Degree of protection  IP67 / IP69 / IP69K  Connection  M8 x 1 connector, 4-pin			•
Test input  Test input  Cutput  Switching type  The switching type of the sensor is adjustable. The defausetting is:  C/Q - Pin4: NPN normally open / dark-on, PNP normally olight-on, IO-Link /Q - Pin2: NPN normally closed / light-on, PNP normally of dark-on  Signal output  2 push-pull (4 in 1)outputs, short-circuit protected, revers polarity protected, overvoltage protected  Switching voltage  max. 30 V DC  Switching current  max. 100 mA , resistive load  Usage category  Voltage drop  Ud  ≤ 1.5 V DC  Switching frequency  f 1000 Hz  Response time  0.5 ms  Ambient conditions  Ambient temperature  -40 60 °C (-40 140 °F)  Storage temperature  -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width  18.3 mm  Housing height  13.9 mm  Housing depth  33.8 mm  Degree of protection  IP67 / IP69 / IP69K  Connection  M8 x 1 connector, 4-pin	20110012		
Test input  Output  Switching type  The switching type of the sensor is adjustable. The defausetting is:  C/Q - Pin4: NPN normally open / dark-on, PNP normally of light-on, IO-Link /Q - Pin2: NPN normally closed / light-on, PNP normally of dark-on  Signal output  2 push-pull (4 in 1)outputs, short-circuit protected, revers 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  Ambient conditions  Ambient temperature  -40 60 °C (-40 140 °F)  Storage temperature  -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width  18.3 mm  Housing height  13.9 mm  Housing depth  33.8 mm  Degree of protection  IP67 / IP69 / IP69K  Connection  M8 x 1 connector, 4-pin	Compatible master port type		A
Output  Switching type  The switching type of the sensor is adjustable. The defausetting is: C/Q - Pin4: NPN normally open / dark-on, PNP normally olight-on, IO-Link /Q - Pin2: NPN normally closed / light-on, PNP normally odark-on  Signal output  2 push-pull (4 in 1)outputs, short-circuit protected, revers 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  Ambient conditions  Ambient temperature  -40 60 °C (-40 140 °F)  Storage temperature  -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width 18.3 mm  Housing height 13.9 mm  Housing depth 33.8 mm  Degree of protection  IP67 / IP69 / IP69K  Connection M8 x 1 connector, 4-pin	Input		
Switching type  The switching type of the sensor is adjustable. The defausetting is:  C/Q - Pin4: NPN normally open / dark-on, PNP normally of light-on, IO-Link /Q - Pin2: NPN normally closed / light-on, PNP normally of dark-on  Signal output  2 push-pull (4 in 1)outputs, short-circuit protected, revers polarity protected, overvoltage protected  Switching voltage  max. 30 V DC  Switching current  max. 100 mA , resistive load  Usage category  Voltage drop  Ud ≤1.5 V DC  Switching frequency  f 1000 Hz  Response time  0.5 ms  Ambient conditions  Ambient temperature  -40 60 °C (-40 140 °F)  Storage temperature  -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width  18.3 mm  Housing height  13.9 mm  Housing depth  33.8 mm  Degree of protection  IP67 / IP69 / IP69K  Connection  M8 x 1 connector, 4-pin	Test input		emitter deactivation at +U <sub>B</sub>
setting is:  C/Q - Pin4: NPN normally open / dark-on, PNP normally of light-on, IO-Link /Q - Pin2: NPN normally closed / light-on, PNP normally of dark-on  Signal output  2 push-pull (4 in 1)outputs, short-circuit protected, revers 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  Ambient conditions  Ambient temperature  -40 60 °C (-40 140 °F)  Storage temperature  -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width  18.3 mm  Housing height  13.9 mm  Housing depth  33.8 mm  Degree of protection  IP67 / IP69 / IP69K  Connection  M8 x 1 connector, 4-pin	Output		
C/Q - Pin4: NPN normally open / dark-on, PNP normally of light-on, IO-Link /Q - Pin2: NPN normally closed / light-on, PNP normally of dark-on  Signal output  2 push-pull (4 in 1)outputs, short-circuit protected, revers 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  Voltage drop  Switching frequency  f 1000 Hz  Response time  0.5 ms  Ambient conditions  Ambient temperature  -40 60 °C (-40 140 °F)  Storage temperature  -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width  18.3 mm  Housing height  13.9 mm  Housing depth  33.8 mm  Degree of protection  IP67 / IP69 / IP69K  Connection  M8 x 1 connector, 4-pin	Switching type		The switching type of the sensor is adjustable. The default
light-on, IO-Link /Q - Pin2: NPN normally closed / light-on, PNP normally dark-on  Signal output 2 push-pull (4 in 1) outputs, short-circuit protected, revers 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  Ambient conditions  Ambient temperature -40 60 °C (-40 140 °F)  Storage temperature -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width 18.3 mm  Housing height 13.9 mm  Housing depth 33.8 mm  Degree of protection IP67 / IP69 / IP69K  Connection M8 x 1 connector, 4-pin			C/Q - Pin4: NPN normally open / dark-on, PNP normally close
dark-on  Signal output  2 push-pull (4 in 1)outputs, short-circuit protected, revers 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  Ambient conditions  Ambient temperature  -40 60 °C (-40 140 °F)  Storage temperature  -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width  18.3 mm  Housing height  13.9 mm  Housing depth  33.8 mm  Degree of protection  IP67 / IP69 / IP69K  Connection  M8 x 1 connector, 4-pin			light-on, IO-Link
Signal output       2 push-pull (4 in 1)outputs, short-circuit protected, revers 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 1000 Hz         Response time       0.5 ms         Ambient conditions         Ambient temperature       -40 60 °C (-40 140 °F)         Storage temperature       -40 70 °C (-40 158 °F)         Mechanical specifications         Housing width       18.3 mm         Housing height       13.9 mm         Housing depth       33.8 mm         Degree of protection       IP67 / IP69 / IP69K         Connection       M8 x 1 connector, 4-pin			/Q - Pin2: NPN normally closed / light-on, PNP normally open
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 1000 Hz Response time 0.5 ms  Ambient conditions Ambient temperature -40 60 °C (-40 140 °F)  Storage temperature -40 70 °C (-40 158 °F)  Mechanical specifications Housing width 18.3 mm Housing height 13.9 mm Housing depth 33.8 mm Degree of protection IP67 / IP69 / IP69K Connection M8 x 1 connector, 4-pin	Signal output		
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	Signal output		
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Switching voltage		max. 30 V DC
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	Switching current		max. 100 mA , resistive load
Switching frequency f 1000 Hz Response time 0.5 ms  Ambient conditions  Ambient temperature -40 60 °C (-40 140 °F)  Storage temperature -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width 18.3 mm  Housing height 13.9 mm  Housing depth 33.8 mm  Degree of protection IP67 / IP69 / IP69K  Connection M8 x 1 connector, 4-pin	Usage category		
Response time 0.5 ms  Ambient conditions Ambient temperature -40 60 °C (-40 140 °F)  Storage temperature -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width 18.3 mm  Housing height 13.9 mm  Housing depth 33.8 mm  Degree of protection IP67 / IP69 / IP69K  Connection M8 x 1 connector, 4-pin	• '		
Ambient conditions Ambient temperature -40 60 °C (-40 140 °F)  Storage temperature -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width 18.3 mm Housing height 13.9 mm  Housing depth 33.8 mm  Degree of protection IP67 / IP69 / IP69K  Connection M8 x 1 connector, 4-pin	= : :	f	
Ambient temperature -40 60 °C (-40 140 °F)  Storage temperature -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width 18.3 mm  Housing height 13.9 mm  Housing depth 33.8 mm  Degree of protection IP67 / IP69 / IP69K  Connection M8 x 1 connector, 4-pin			0.5 ms
Storage temperature -40 70 °C (-40 158 °F)  Mechanical specifications  Housing width 18.3 mm  Housing height 13.9 mm  Housing depth 33.8 mm  Degree of protection IP67 / IP69 / IP69K  Connection M8 x 1 connector, 4-pin			40 0000 (40 44005)
Mechanical specificationsHousing width18.3 mmHousing height13.9 mmHousing depth33.8 mmDegree of protectionIP67 / IP69 / IP69KConnectionM8 x 1 connector, 4-pin	Ambient temperature		-40 60 °C (-40 140 °F)
Mechanical specifications       Housing width     18.3 mm       Housing height     13.9 mm       Housing depth     33.8 mm       Degree of protection     IP67 / IP69 / IP69K       Connection     M8 x 1 connector, 4-pin	Storage temperature		-40 70 °C (-40 158 °F)
Housing width 18.3 mm Housing height 13.9 mm Housing depth 33.8 mm Degree of protection IP67 / IP69 / IP69K Connection M8 x 1 connector, 4-pin			,
Housing height 13.9 mm  Housing depth 33.8 mm  Degree of protection IP67 / IP69 / IP69K  Connection M8 x 1 connector, 4-pin	· · · · · · · · · · · · · · · · · · ·		18.3 mm
Degree of protection IP67 / IP69 / IP69K Connection M8 x 1 connector, 4-pin	=		13.9 mm
Connection M8 x 1 connector, 4-pin	Housing depth		33.8 mm
• •	- :		
Material			M8 x 1 connector, 4-pin
Librarium DC (Polyrouthonote)	iviaterial		PO (P. I I. )

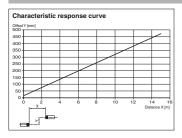
Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

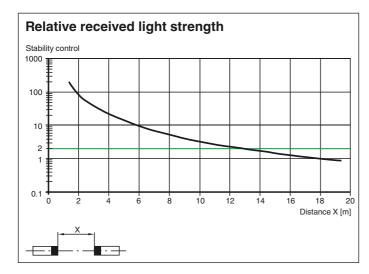
Housing

PC (Polycarbonate)

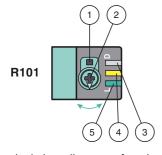
Optical face	PMMA
Mass	Emitter: approx. 10 g receiver: approx. 10 g
Compliance with standards and directives	
Directive conformity	
EMC Directive 2004/108/EC	EN 60947-5-2:2007+A1:2012
Standard conformity	
Product standard	EN 60947-5-2:2007+A1:2012 IEC 60947-5-2:2007 + A1:2012
Standards	UL 60947-5-2: 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

## **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.

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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.