



Model Number

OBE20M-R100-S2EP-IO-V31-IR

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

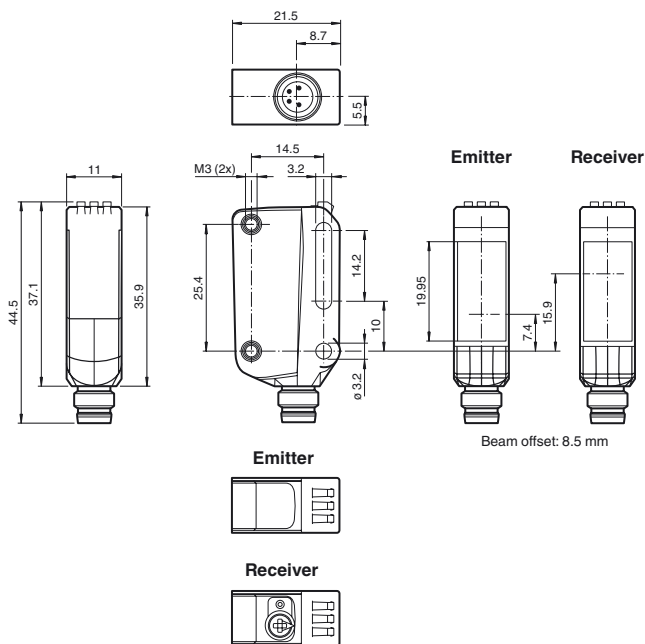
The R100 series miniature optical sensors are the first devices of their kind to offer an end-to-end solution in a small single standard design — from thru-beam sensor through to a distance measurement device. As a result of this design, the sensors are able to perform practically all standard automation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

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

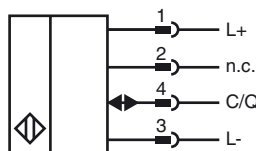
The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

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.

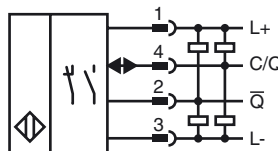
Dimensions



Electrical connection emitter



Electrical connection receiver



Pinout



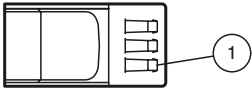
Wire colors in accordance with EN 60947-5-2

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

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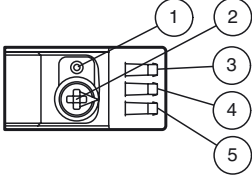
Indicators/operating means

Emitter



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

Receiver



| | |
|---|------------------------------------|
| 1 | Light-on/Dark-on changeover switch |
| 2 | Sensitivity adjuster |
| 3 | Operating indicator / dark on |
| 4 | Signal indicator |
| 5 | 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 \varnothing 12 mm or sheet 1.5 mm ... 3 mm

OMH-ML100-031

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

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

| Technical data | |
|---|---|
| System components | |
| Emitter | OBE20M-R100-S-IO-V31-IR |
| Receiver | OBE20M-R100-2EP-IO-V31-IR |
| General specifications | |
| Effective detection range | 0.2 ... 20 m |
| Threshold detection range | 25 m |
| Light source | LED |
| Light type | modulated infrared light 850 nm |
| LED risk group labelling | exempt group |
| Diameter of the light spot | approx. 100 mm at a distance of 1 m |
| Angle of divergence | 5.4 ° |
| 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) |
| Transfer rate | COM 2 (38.4 kBaud) |
| IO-Link Revision | 1.1 |
| 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 |
| Device ID | Emitter: 0x110401 (1115137) Receiver: 0x110301 (1114881) |
| 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 |
| 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 | 36 mm |
| Housing depth | 21.5 mm |

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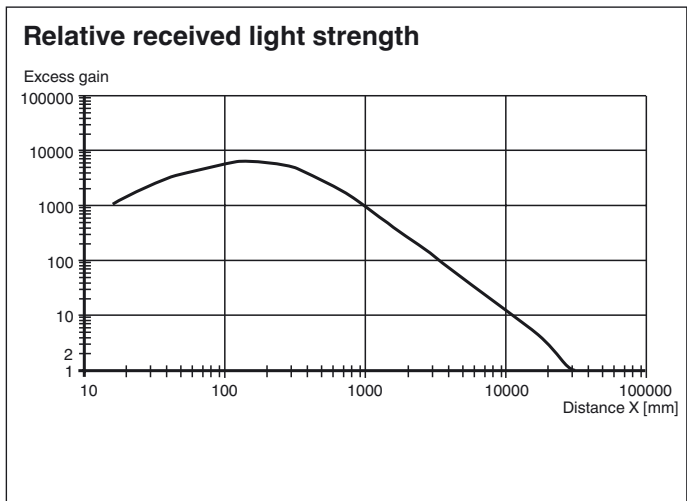
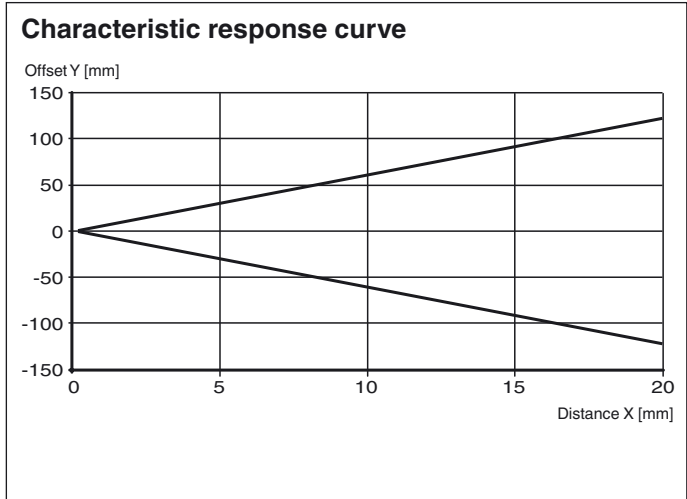
Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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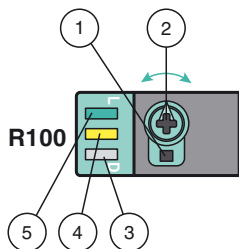
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|----------------------|--|
| Degree of protection | IP67 / IP69 / IP69K |
| Connection | M8 x 1 connector, 4-pin |
| Material | |
| Housing | PC (Polycarbonate) |
| Optical face | PMMA |
| Mass | Emitter: approx. 10 g receiver: approx. 10 g |

| | |
|-----------------------------------|--|
| 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.

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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.