



**Model Number**

**OBE40M-R201-S2EP-IO-0,3M-V1-L**

Laser thru-beam sensor  
with fixed cable

**Features**

- 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

**Product information**

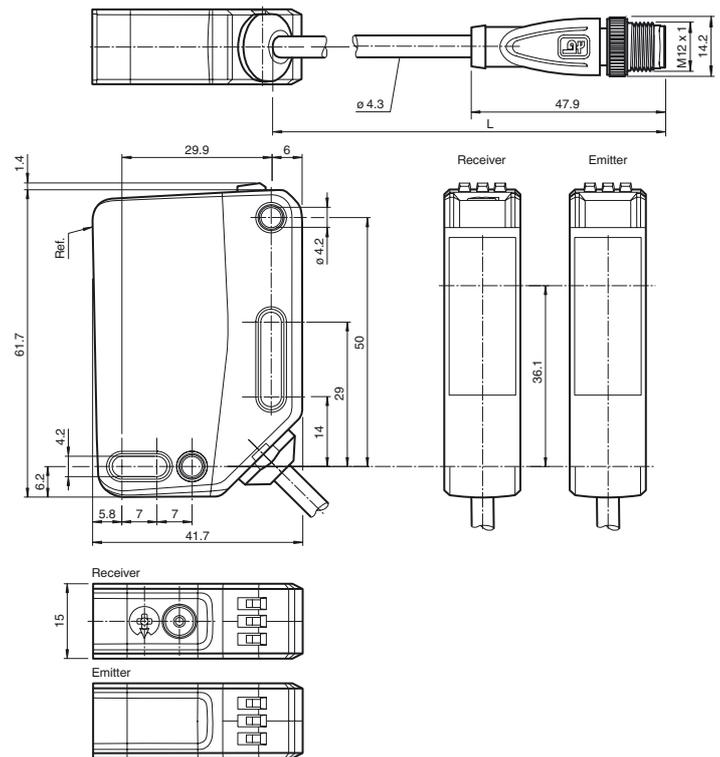
The optical sensors in the series are the first devices to offer an end-to-end solution in a medium-sized standard design—from the thru-beam sensor through to the measuring distance sensor. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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

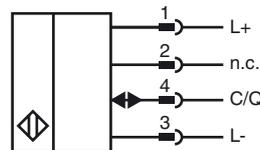
The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

Multi Pixel Technology (MPT) ensures that the standard sensors are flexible and can be adapted to the application environment.

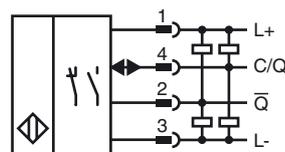
**Dimensions**



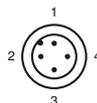
**Electrical connection emitter**



**Electrical connection receiver**



**Pinout**



Wire colors in accordance with EN 60947-5-2

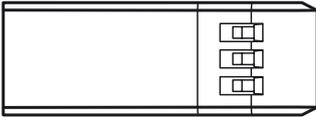
- 1 | BN (brown)
- 2 | WH (white)
- 3 | BU (blue)
- 4 | BK (black)

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

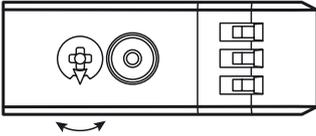
**Indicators/operating means**

**Emitter**



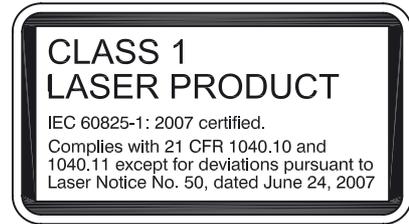
|   |                     |
|---|---------------------|
| 1 | Operating indicator |
|---|---------------------|

**Receiver**



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

**Laserlabel**



**Accessories**

**IO-Link-Master02-USB**

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

**V1-G-2M-PUR**

Female cordset, M12, 4-pin, PUR cable

**V1-W-2M-PUR**

Female cordset, M12, 4-pin, PUR cable

**OMH-RL31-02**

Mounting bracket narrow

**OMH-RL31-03**

Mounting bracket narrow

**OMH-RL31-04**

Mounting aid for round steel  $\varnothing$  12 mm or sheet 1.5 mm ... 3 mm

**OMH-RL31-07**

Mounting bracket including adjustment

**OMH-R20x-Quick-Mount**

Quick mounting accessory

Other suitable accessories can be found at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)

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| Technical data                              |   |
|---|---|
| <b>System components</b>                    |   |
| Emitter                                     | OBE40M-R201-S-IO-0,3M-V1-L  |
| Receiver                                    | OBE40M-R201-2EP-IO-0,3M-V1-L  |
| <b>General specifications</b>               |   |
| 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 µs  |
| Repetition rate                             | max. 17.6 kHz   |
| max. pulse energy                           | 9.6 nJ  |
| Alignment aid                               | LED red (in receiver lens)<br>illuminated constantly: beam is interrupted,<br>flashes: reaching switching point,<br>off: sufficient stability control   |
| Diameter of the light spot                  | approx. 80 mm at a distance of 40 m   |
| Angle of divergence                         | 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:<br>constantly on - power on<br>flashing (4Hz) - short circuit<br>flashing with short break (1 Hz) - IO-Link mode   |
| Function indicator                          | Yellow LED:<br>Permanently lit - light path clear<br>Permanently off - object detected<br>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<br>Receiver: ≤ 15 mA at 24 V Operating voltage  |
| Protection class                            | III   |
| <b>Interface</b>                            |   |
| Interface type                              | IO-Link ( via C/Q = pin 4 )   |
| Device profile                              | Identification and diagnosis<br>Smart Sensor:<br>Receiver: type 2.4<br>Emitter: -   |
| Transfer rate                               | COM 2 (38.4 kBaud)  |
| IO-Link Revision                            | 1.1   |
| Min. cycle time                             | 2.3 ms  |
| Process data width                          | Emitter:<br>Process data input: 0 bit<br>Process data output: 1 bit<br>Receiver:<br>Process data input: 2 bit<br>Process data output: 2 bit   |
| SIO mode support                            | yes   |
| Device ID                                   | Emitter: 0x111412 (1119250)<br>Receiver: 0x111312 (1118994)   |
| 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:<br>C/Q - Pin4: NPN normally open / dark-on, PNP normally closed / light-on, IO-Link<br>/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   |

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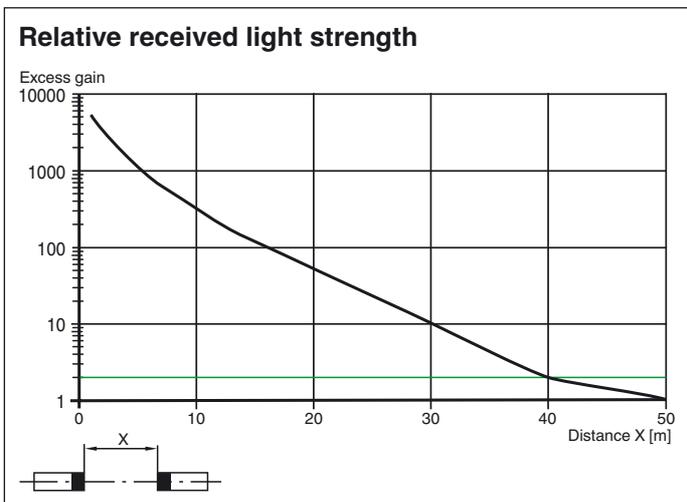
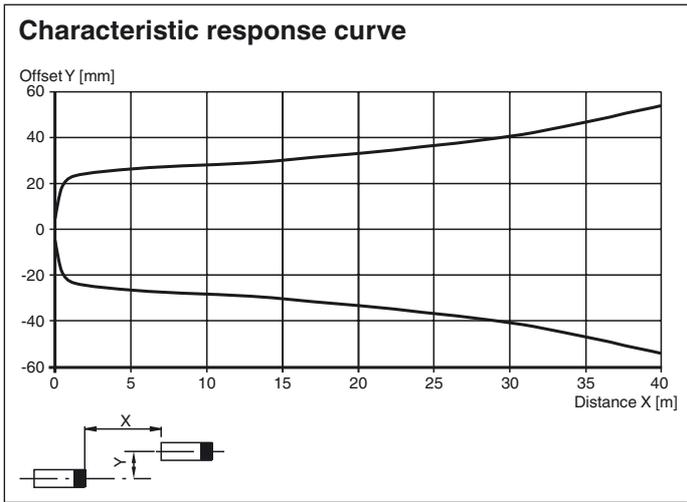
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**PEPPERL+FUCHS**

|                                  |   |   |
|----------------------------------|---|---|
| Switching frequency              | f | 1250 Hz   |
| Response time                    |   | 0.4 ms  |
| <b>Conformity</b>                |   |   |
| Communication interface          |   | IEC 61131-9   |
| Product standard                 |   | EN 60947-5-2  |
| Laser safety                     |   | EN 60825-1:2014   |
| <b>Ambient conditions</b>        |   |   |
| Ambient temperature              |   | -40 ... 60 °C (-40 ... 140 °F) , fixed cable<br>-20 ... 60 °C (-4 ... 140 °F) , movable cable not appropriate for conveyor chains |
| Storage temperature              |   | -40 ... 70 °C (-40 ... 158 °F)  |
| <b>Mechanical specifications</b> |   |   |
| Housing width                    |   | 15 mm   |
| Housing height                   |   | 61.7 mm   |
| Housing depth                    |   | 41.7 mm   |
| Degree of protection             |   | IP67 / IP69 / IP69K   |
| Connection                       |   | 300 mm fixed cable with M12 x 1, 4-pin connector  |
| <b>Material</b>                  |   |   |
| Housing                          |   | PC (Polycarbonate)  |
| Optical face                     |   | PMMA  |
| Mass                             |   | Emitter: approx. 55 g receiver: approx. 55 g  |
| Cable length                     |   | 0.3 m   |

|                                   |  |
|-----------------------------------|--|
| <b>Approvals and certificates</b> |  |
| UL approval                       | E87056 , cULus Listed , class 2 power supply , type rating 1   |
| CCC approval                      | CCC approval / marking not required for products rated ≤36 V   |
| FDA approval                      | IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 |

**Curves/Diagrams**



**Functions and Operation**

To unlock the adjustment functions turn the sensing range /sensitivity adjuster for more than 180 degrees.

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### 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.