



Model Number

OBE40M-R201-SEP-IO-V3-L

Laser thru-beam sensor
with 3-pin, M8 x 1 connector

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

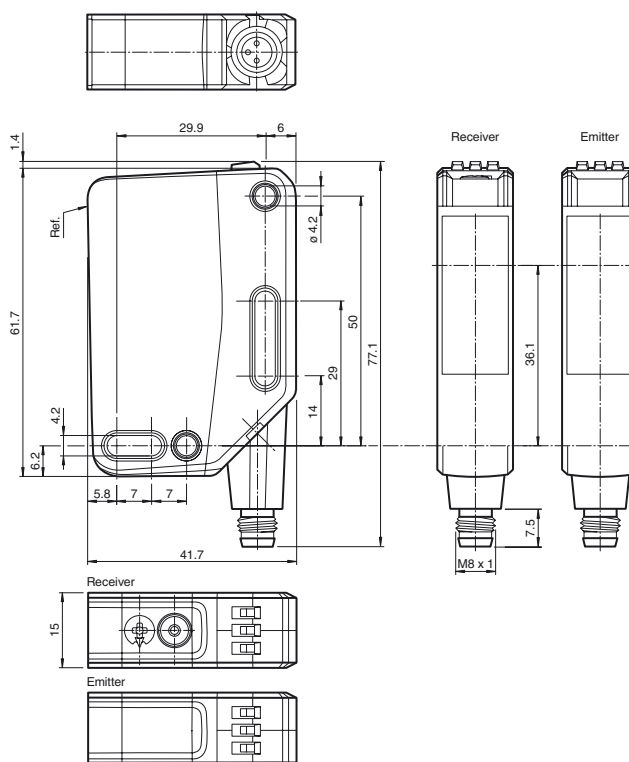
The optical sensors in the series are the first devices to offer an end-to-end solution in a medium-sized standard design—from the thru-beam sensor through to the measuring distance sensor. As a result of this design, the sensors are able to perform practically all standard automation tasks.

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

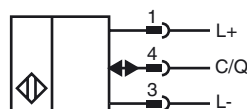
The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

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

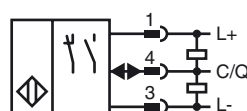
Dimensions



Electrical connection emitter



Electrical connection receiver



Pinout

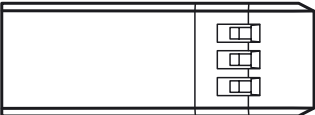


Wire colors in accordance with EN 60947-5-2

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

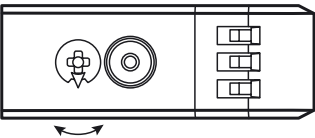
Indicators/operating means

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

V3-GM-2M-PUR

Female cordset single-ended, M8, 3-pin, PUR cable

V3-WM-2M-PUR

Female cordset single-ended, M8, 3-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

Release date: 2018-05-23 09:21 Date of issue: 2019-10-31 301128_eng.xml

Technical data**System components**

| | |
|----------|------------------------|
| Emitter | OBE40M-R201-S-IO-V3-L |
| Receiver | OBE40M-R201-EP-IO-V3-L |

General specifications

| | |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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) illuminated constantly: beam is interrupted, flashes: reaching switching point, 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 |

Functional safety related parameters

| | |
|--------------------------------|-------|
| MTTF _d | 440 a |
| Mission Time (T _M) | 20 a |
| Diagnostic Coverage (DC) | 60 % |

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 |

Electrical specifications

| | | |
|------------------------|----------------|-----------------------------------------------------------------|
| Operating voltage | U _B | 10 ... 30 V DC |
| Ripple | | max. 10 % |
| No-load supply current | I ₀ | Emitter: ≤ 13 mA Receiver: ≤ 15 mA at 24 V Operating voltage |
| Protection class | | III |

Interface

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|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Interface type | IO-Link (via C/Q = pin 4) |
| Device profile | Identification and diagnosis Smart Sensor: Receiver: type 2.4 Emitter: - |
| Transfer rate | COM 2 (38.4 kBaud) |
| IO-Link Revision | 1.1 |
| Min. cycle time | 2.3 ms |
| Process data width | Emitter: Process data input: 0 bit Process data output: 1 bit Receiver: Process data input: 2 bit Process data output: 2 bit |
| SIO mode support | yes |
| Device ID | Emitter: 0x111412 (1119250) Receiver: 0x111312 (1118994) |
| Compatible master port type | A |

Input

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|------------|-----------------------------------------|
| Test input | emitter deactivation at +U _B |
|------------|-----------------------------------------|

Output

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|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 |
| Signal output | 1 push-pull (4 in 1) output, 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 1250 Hz |
| Response time | 0.4 ms |

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

Conformity

| | |
|-------------------------|-----------------|
| Communication interface | IEC 61131-9 |
| Product standard | EN 60947-5-2 |
| Laser safety | EN 60825-1:2014 |

Ambient conditions

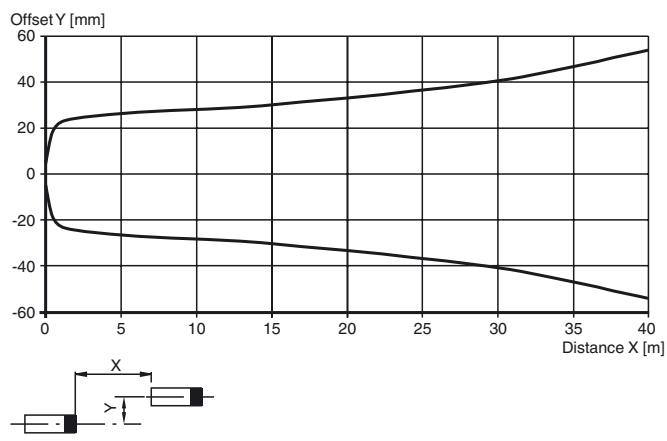
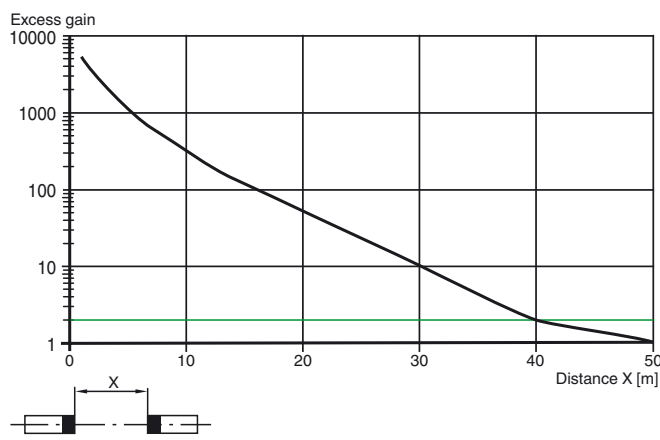
| | |
|---------------------|--------------------------------|
| Ambient temperature | -40 ... 60 °C (-40 ... 140 °F) |
| Storage temperature | -40 ... 70 °C (-40 ... 158 °F) |

Mechanical specifications

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|----------------------|-------------------------------------------------|
| Housing width | 15 mm |
| Housing height | 61.7 mm |
| Housing depth | 41.7 mm |
| Degree of protection | IP67 / IP69 / IP69K |
| Connection | Connector plug, M8 x 1, 3 pin, rotatable by 90° |
| Material | |
| Housing | PC (Polycarbonate) |
| Optical face | PMMA |
| Mass | Emitter: approx. 44 g receiver: approx. 44 g |

Approvals and certificates

| | |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 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**Characteristic response curve****Relative received light strength****Functions and Operation**

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.

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.