# Thru-beam sensor (pair)
# OBE25M-R201-SEP-IO-V3
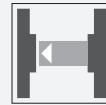
- Medium design with versatile mounting options
- IO-Link interface for service and process data
- Various frequencies for avoiding mutual interference (cross-talk immunity)
- Extended temperature range -40 °C ... 60 °C
- High degree of protection IP69K

CE ᴄ(UL)ᵤₛ LISTED UKCA ◈ **IO**-Link

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.

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

| Pepperl+Fuchs Group | USA: +1 330 486 0001 | Germany: +49 621 776 1111 | Singapore: +65 6779 9091 | **PEPPERL+FUCHS** | 1 |
| www.pepperl-fuchs.com | fa-info@us.pepperl-fuchs.com | fa-info@de.pepperl-fuchs.com | fa-info@sg.pepperl-fuchs.com | | |

## Dimensions

Receiver

Emitter
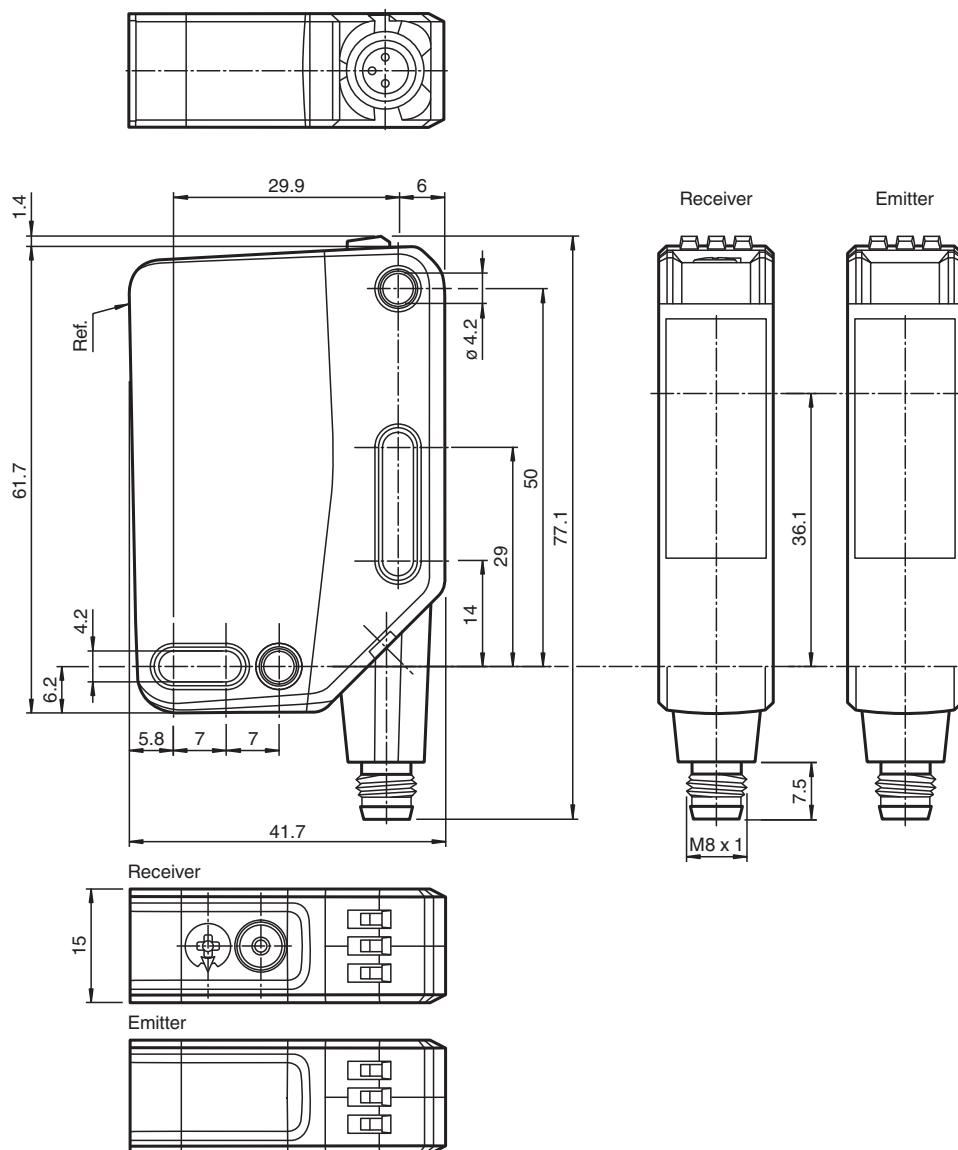
Receiver

Emitter

## Technical Data

**System components**

| Emitter | OBE25M-R201-S-IO-V3 |
| --- | --- |
| Receiver | OBE25M-R201-EP-IO-V3 |

**General specifications**

| Effective detection range | 0 ... 25 m |
| --- | --- |
| Threshold detection range | 33 m |
| Light source | LED |
| Light type | modulated visible red light |
| LED risk group labelling | exempt group |
| 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. 850 mm at a distance of 25 m |
| Opening angle | approx. 2 ° |
| Ambient light limit | EN 60947-5-2 : 40000 Lux |

**Functional safety related parameters**

| $MTTF_d$ | 462 a |
| --- | --- |

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

Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS

2

## Technical Data

| | | |
|---|---|---|
| Mission Time ($T_M$) | | 20 a |
| Diagnostic Coverage (DC) | | 60 % |
| **Indicators/operating means** | | |
| 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 |
| **Electrical specifications** | | |
| Operating voltage | $U_B$ | 10 ... 30 V DC |
| Ripple | | max. 10 % |
| No-load supply current | $I_0$ | Emitter: ≤ 15 mA<br>Receiver: ≤ 15 mA at 24 V Operating voltage |
| Protection class | | III |
| **Interface** | | |
| Interface type | | IO-Link ( via C/Q = pin 4 ) |
| IO-Link revision | | 1.1 |
| Device profile | | Identification and diagnosis<br>Smart Sensor:<br>Receiver: type 2.4<br>Emitter: - |
| Device ID | | Emitter: 0x111411 (1119249)<br>Receiver: 0x111311 (1118993) |
| Transfer rate | | COM2 (38.4 kBit/s) |
| 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 |
| 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:<br>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 | 1000 Hz |
| Response time | | 0.5 ms |
| **Conformity** | | |
| Communication interface | | IEC 61131-9 |
| Product standard | | EN 60947-5-2 |
| **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 |
| **Ambient conditions** | | |
| Ambient temperature | | -40 ... 60 °C (-40 ... 140 °F) |

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

| Pepperl+Fuchs Group | USA: +1 330 486 0001 | Germany: +49 621 776 1111 | Singapore: +65 6779 9091 | |
|---|---|---|---|---|
| www.pepperl-fuchs.com | fa-info@us.pepperl-fuchs.com | fa-info@de.pepperl-fuchs.com | fa-info@sg.pepperl-fuchs.com | |

PEPPERL+FUCHS                    3

## Technical Data

| | |
|---|---|
| Storage temperature | -40 ... 70 °C (-40 ... 158 °F) |
| **Mechanical specifications** | |
| 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 |

## Connection
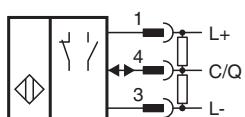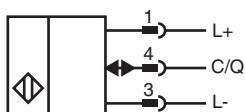




## Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

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

Pepperl+Fuchs Group　　USA: +1 330 486 0001　　Germany: +49 621 776 1111　　Singapore: +65 6779 9091
www.pepperl-fuchs.com　　fa-info@us.pepperl-fuchs.com　　fa-info@de.pepperl-fuchs.com　　fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS　　4

## Assembly

**Emitter**
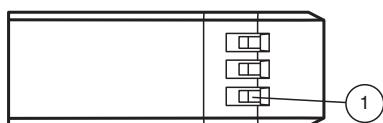
| 1 | Operating indicator |
|---|---------------------|

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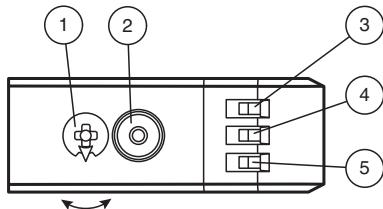
| 1 | Sensitivity adjustment | |
|---|------------------------|---|
| 2 | Light-on / dark-on changeover switch | |
| 3 | Operating indicator / dark on | GN |
| 4 | Signal indicator | YE |
| 5 | Operating indicator / light on | GN |

## Characteristic Curve

**Characteristic response curve**

Offset Y [mm]

Distance X [m]
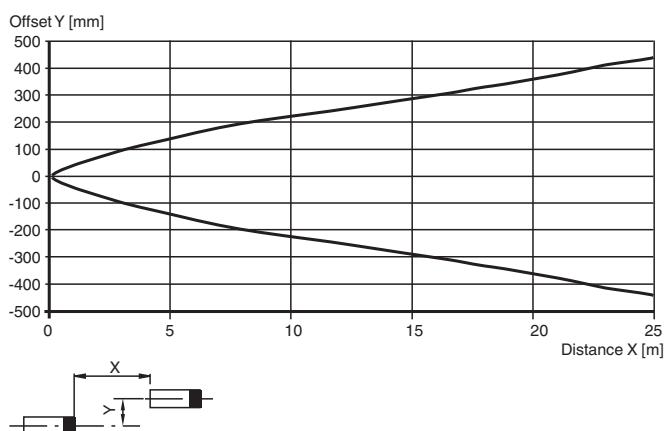
**Relative received light strength**

Excess gain

Distance X [m]
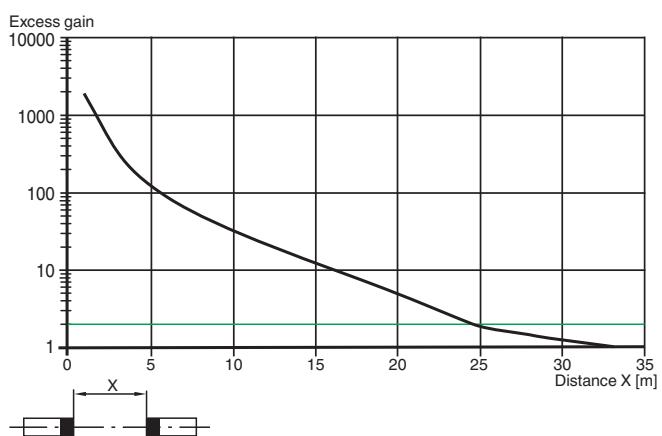
## Commissioning

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.

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

**PEPPERL+FUCHS**

## Commissioning

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.

## Accessories

| | | |
|---|---|---|
| | **OMH-RL31-02** | Mounting bracket narrow |
| | **OMH-RL31-03** | Mounting bracket narrow |
| | **OMH-RL31-04** | Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm |
| | **OMH-RL31-07** | Mounting bracket including adjustment |
| | **OMH-RL31-08** | Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm |
| | **OMH-R20x-Quick-Mount** | Quick mounting accessory |
| | **ICE2-8IOL-G65L-V1D** | EtherNet/IP IO-Link master with 8 inputs/outputs |
| | **ICE3-8IOL-G65L-V1D** | PROFINET IO IO-Link master with 8 inputs/outputs |
| | **ICE2-8IOL-K45S-RJ45** | EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, screw terminal |
| | **ICE3-8IOL-K45P-RJ45** | PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, push-in terminals |
| | **ICE3-8IOL-K45S-RJ45** | PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, screw terminal |
| | **IO-Link-Master02-USB** | IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection |
| | **ICE1-8IOL-G30L-V1D** | Ethernet IO-Link module with 8 inputs/outputs |
| | **ICE1-8IOL-G60L-V1D** | Ethernet IO-Link module with 8 inputs/outputs |
| | **ICE2-8IOL-K45P-RJ45** | EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, push-in connectors |
| | **V3-GM-2M-PUR** | Female cordset single-ended M8 straight A-coded, 3-pin, PUR cable grey |
| | **V3-WM-2M-PUR** | Female cordset single-ended M8 angled A-coded, 3-pin, PUR cable grey |

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

**PEPPERL+FUCHS**