



### Model Number

**OBR7500-R100-2EP1-IO-0,3M-V1**

Retroreflective sensor  
with fixed cable and M12 connector, 4-pin

### Features

- Miniature design with versatile mounting options
- Extended temperature range  
-40°C ... 60°C
- High degree of protection IP69K
- IO-link interface for service and process data

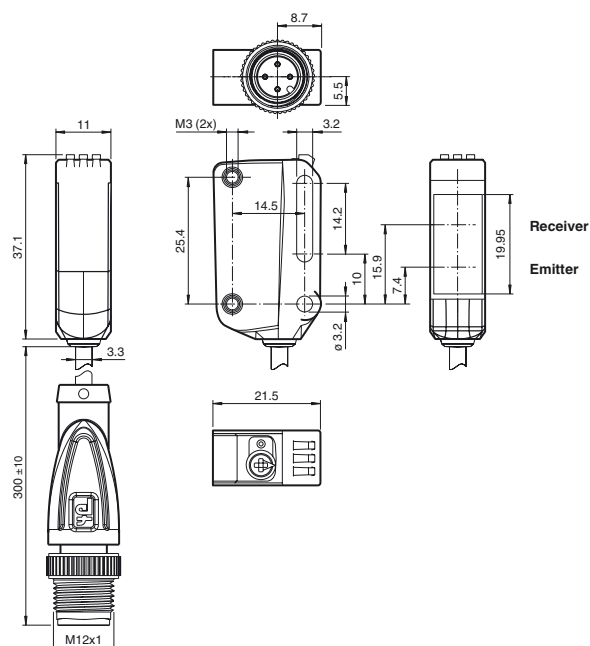
### Product information

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.

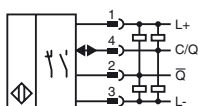
The DuraBeam laser sensors are durable and can be used in the same way as a standard sensor.

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.

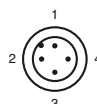
### Dimensions



### Electrical connection



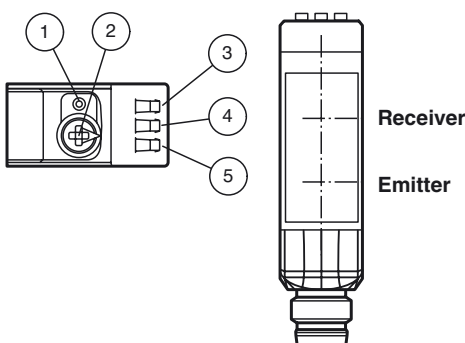
### Pinout



Wire colors in accordance with EN 60947-5-2

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

### Indicators/operating means



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

**Technical data****General specifications**

|                            |                                    |
|----------------------------|------------------------------------|
| Effective detection range  | 0 ... 7.5 m                        |
| Reflector distance         | 0.03 ... 7.5 m                     |
| Threshold detection range  | 10 m                               |
| Reference target           | H85-2 reflector                    |
| Light source               | LED                                |
| Light type                 | modulated visible red light        |
| LED risk group labelling   | exempt group                       |
| Polarization filter        | yes                                |
| 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                       |

**Functional safety related parameters**

|                                |       |
|--------------------------------|-------|
| MTTF <sub>d</sub>              | 724 a |
| Mission Time (T <sub>M</sub> ) | 20 a  |
| Diagnostic Coverage (DC)       | 0 %   |

**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           | Light-on/dark-on changeover switch                                                                                                         |
| Control elements           | sensitivity adjustment                                                                                                                     |
| Parameterization indicator | IO link communication: green LED goes out briefly (1 Hz)                                                                                   |

**Electrical specifications**

|                        |                |                                |
|------------------------|----------------|--------------------------------|
| Operating voltage      | U <sub>B</sub> | 10 ... 30 V DC                 |
| Ripple                 |                | max. 10 %                      |
| No-load supply current | I <sub>0</sub> | < 25 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          | Process data input 2 Bit<br>Process data output 2 Bit |
| SIO mode support            | yes                                                   |
| Device ID                   | 0x110211 (1114641)                                    |
| Compatible master port type | A                                                     |

**Output**

|                     |                                                                                                                                                                                                                                       |            |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Switching type      | The switching type of the sensor is adjustable. The default setting is:<br>C/Q - Pin4: NPN normally closed / light-on, PNP normally open / dark-on, IO-Link<br>/Q - Pin2: NPN normally open / dark-on, PNP normally closed / light-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 |
| 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) , fixed cable<br>-25 ... 60 °C (-13 ... 140 °F) , movable cable not appropriate for conveyor chains |
| Storage temperature | -40 ... 70 °C (-40 ... 158 °F)                                                                                                     |

**Mechanical specifications**

|                      |                                                  |
|----------------------|--------------------------------------------------|
| Housing width        | 11 mm                                            |
| Housing height       | 37.1 mm                                          |
| Housing depth        | 21.5 mm                                          |
| Degree of protection | IP67 / IP69 / IP69K                              |
| Connection           | 300 mm fixed cable with M12 x 1, 4-pin connector |
| Material             |                                                  |
| Housing              | PC (Polycarbonate)                               |
| Optical face         | PMMA                                             |
| Mass                 | approx. 21 g                                     |

**Accessories****IO-Link-Master02-USB**

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

**REF-H85-2**

Reflector, rectangular 84.5 mm x 84.5 mm, mounting holes

**REF-H50**

Reflector, rectangular 51 mm x 61 mm, mounting holes, fixing strap

**REF-VR10**

Reflector, rectangular 60 mm x 19 mm, mounting holes

**OFR-100/100**

Reflective tape 100 mm x 100 mm

**REF-H33**

Reflector with screw fixing

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

Female cordset, M12, 4-pin, PUR cable

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

Female cordset, M12, 4-pin, PUR cable

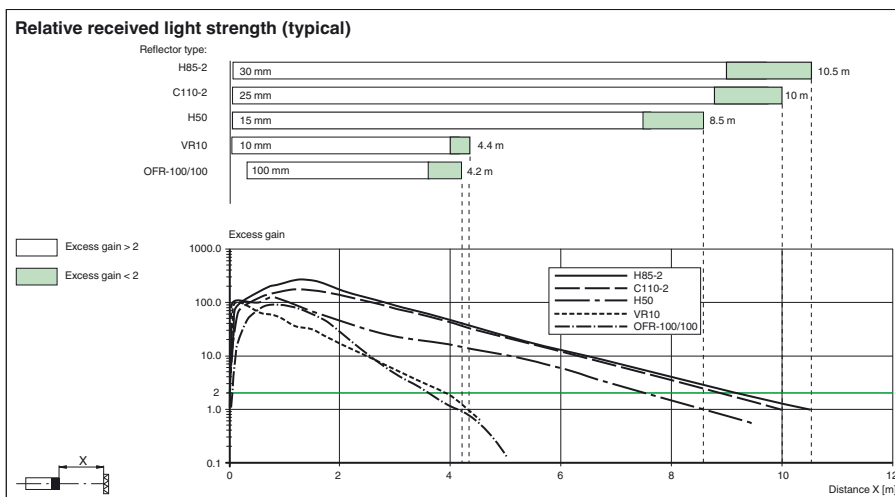
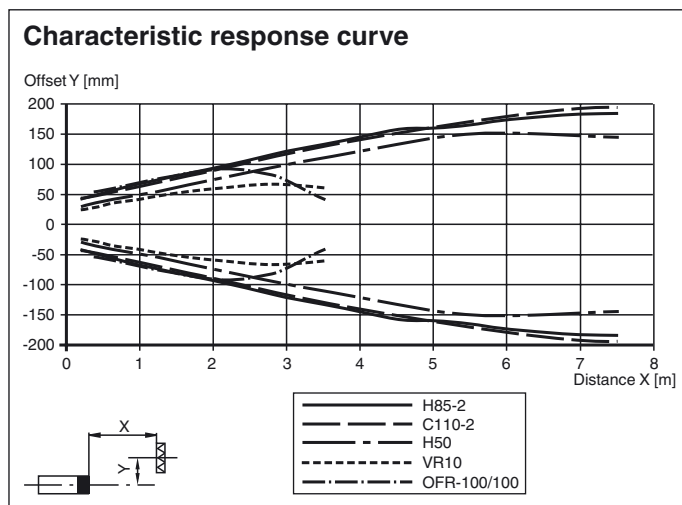
Other suitable accessories can be found at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)

Cable length 0.3 m

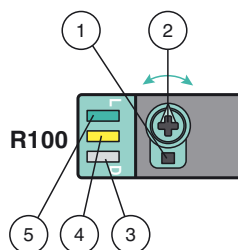
#### Approvals and certificates

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.

#### 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.