



## Retroreflective sensor OBR7500-R101-E5-0,3M-V1



- Miniature design with versatile mounting options
- Extended temperature range  
-40 °C ... 60 °C
- High degree of protection IP69K

Retroreflective sensor with polarization filter



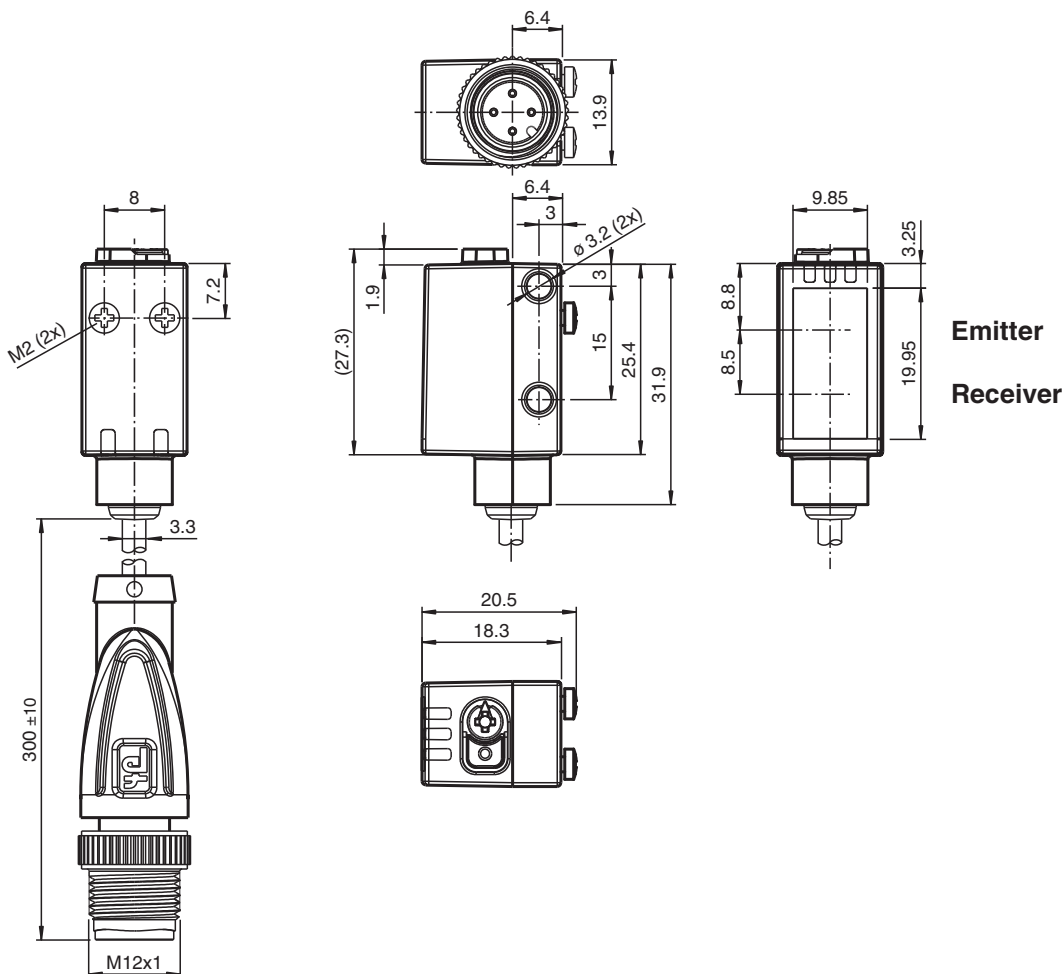
### Function

The 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 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



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

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## 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 |
| Opening angle              | 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 | Green LED:<br>Permanently lit - power on<br>Flashing (4 Hz) - short circuit                                                                |
| 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                                                                                                                     |

### 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                            |

### Output

|                     |                                                                                                                                       |                                                            |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Switching type      | The switching type of the sensor is adjustable. The default setting is:<br>Q - Pin4: PNP normally open / dark-on<br>n.c. - Pin2: open |                                                            |
| Signal output       |                                                                                                                                       | 1 PNP, short-circuit protected, reverse polarity 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 |

### Approvals and certificates

|             |                                                              |
|-------------|--------------------------------------------------------------|
| UL approval | E87056 , cULus Listed , class 2 power supply , type rating 1 |
|-------------|--------------------------------------------------------------|

### 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

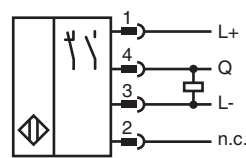
|                      |                     |
|----------------------|---------------------|
| Housing width        | 13.9 mm             |
| Housing height       | 33.8 mm             |
| Housing depth        | 18.3 mm             |
| Degree of protection | IP67 / IP69 / IP69K |

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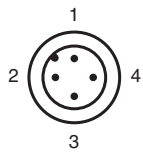
Technical Data

|              |                                                  |
|--------------|--------------------------------------------------|
| Connection   | 300 mm fixed cable with M12 x 1, 4-pin connector |
| Material     |                                                  |
| Housing      | PC (Polycarbonate)                               |
| Optical face | PMMA                                             |
| Mass         | approx. 21 g                                     |
| Cable length | 0.3 m                                            |

Connection



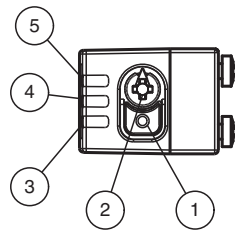
Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

Assembly

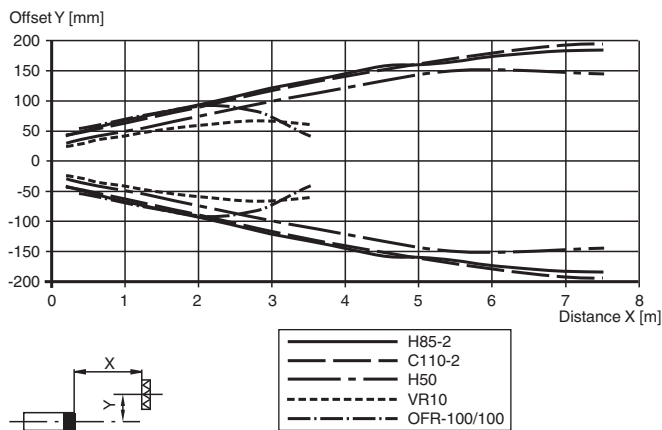


|   |                                    |
|---|------------------------------------|
| 1 | Light-on/dark-on changeover switch |
| 2 | Sensitivity adjuster               |
| 3 | Operating indicator / dark on      |
| 4 | Signal indicator                   |
| 5 | Operating indicator / light on     |

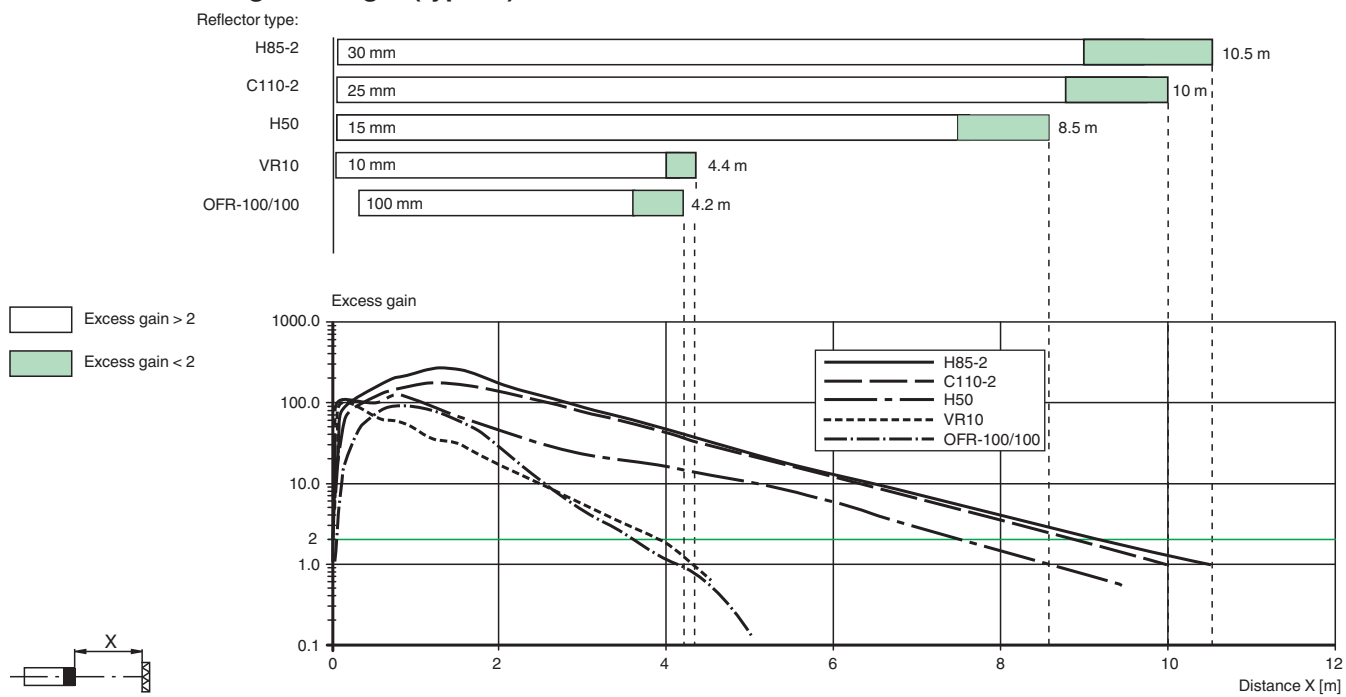
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Characteristic Curve

Characteristic response curve



Relative received light strength (typical)



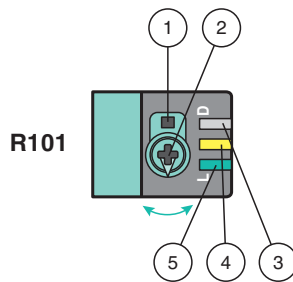
Accessories

|                                                                                     |                |                  |
|-------------------------------------------------------------------------------------|----------------|------------------|
|  | OMH-R101       | Mounting Clamp   |
|  | OMH-R101-Front | Mounting Clamp   |
|  | OMH-4.1        | Mounting Clamp   |
|  | OMH-ML6        | Mounting bracket |
|  | OMH-ML6-U      | Mounting bracket |

## Accessories

|                                                                                   |                    |                                                                         |
|-----------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------|
|  | <b>OMH-ML6-Z</b>   | Mounting bracket                                                        |
|  | <b>OFR-100/100</b> | Reflective tape 100 mm x 100 mm                                         |
|  | <b>REF-H33</b>     | Reflector with screw fixing                                             |
|  | <b>REF-H50</b>     | Reflector, rectangular 51 mm x 61 mm, mounting holes, fixing strap      |
|  | <b>REF-H85-2</b>   | Reflector, rectangular 84.5 mm x 84.5 mm, mounting holes                |
|  | <b>REF-VR10</b>    | Reflector, rectangular 60 mm x 19 mm, mounting holes                    |
|  | <b>V1-G-2M-PUR</b> | Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable grey |
|  | <b>V1-W-2M-PUR</b> | Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey   |

## Configuration



- 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 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 counterclockwise 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 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.