**Model Number**

M4.2/MV4.2-8000-RT/76a/95/110

Thru-beam sensor with 4-pin, M8 x 1 connector

**Dimensions**

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Receiver</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="dimension_image" alt="Dimensions Image" /></td>
<td><img src="dimension_image" alt="Dimensions Image" /></td>
</tr>
</tbody>
</table>

**Electrical connection**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>+UB</td>
<td>I/O</td>
<td>0 V</td>
<td>Q</td>
</tr>
</tbody>
</table>

**Emitter**

1. Test

**Pinout**

![Pinout Image](pinout_image)

**Indicators/operating means**

![Indicators Image](indicators_image)

- 1: Operating display green
- 2: Signal display (only Receiver) yellow
- 3: Optical axis
- 4: Sensitivity adjustment (only Receiver)

**Features**

- High-precision sensors for complex applications
- Miniature design with very robust and versatile mounting options
- Optical surface made of scratch-resistant glass for areas that are prone to high levels of dirt
- Maximum immunity thanks to unique encrypted emission frequency
- Very short response time
- Rear mounting option for easy mounting without mounting bracket

**Product information**

The ML4.2 series is characterized by a robust, powerful and standard design in a miniature housing. The housing offers IP67/IP69K degree of protection, a scratch- and chemical-resistant lens, highly visible LEDs and robust all-metal bushings for mounting. Adjustable and tamper-proof sensors are available with a universal push-pull output and an electrical light ON/dark ON switch. The sensors have a high ambient light limit. Reflections from the background are suppressed. The unusually small, sharp light spot and the quick response time offer maximum switching precision on object edges. Both red and infrared light sources are available. A high-performance fixed focus background suppressor is a useful feature. The sensors are suitable for precise object detection and open up a wide range of application fields.

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".
**Thru-beam sensor M4.2/MV4.2-8000-RT/76a/95/110**

### Technical data

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emitter</td>
<td>M4.2-8000-RT/76a/95</td>
</tr>
<tr>
<td>Receiver</td>
<td>MV4.2-8000-RT/40b/95/110</td>
</tr>
</tbody>
</table>

### General specifications

- Effective detection range: 0 ... 8000 mm
- Threshold detection range: 10000 mm
- Light source: LED
- Light type: modulated visible red light
- Target size: min. 7 mm
- Diameter of the light spot: 300 mm at 8000 mm detection range
- Angle of divergence: approx. 2 °
- Ambient light limit: 40000 Lux
- Modulated light: 5000 Lux

### Functional safety related parameters

- MTTF<sub>d</sub>: 550 a
- Mission Time (T<sub>M</sub>): 20 a
- Diagnostic Coverage (DC): 60 %

### Indicators/operating means

- Operating display: LED green, statically lit Power on, Undervoltage indicator: Green LED, pulsing (approx. 0.8 Hz), short-circuit: LED green flashing (approx. 4 Hz)
- Function display: LED yellow, lights up with receiver lit, flashes when falling short of the stability control
- Controls: sensitivity adjustment

### Electrical specifications

- Operating voltage: U<sub>B</sub> 10 ... 30 V DC
- Ripple: < 10 %
- No-load supply current: I<sub>0</sub> < 15 mA at 24 V DC

### Input

- Test input: emitter deactivation at +U<sub>B</sub>

### Output

- Switching type: light/dark on electrically switchable
- Signal output: Push-pull output, short-circuit protected, reverse polarity protected
- Switching voltage: max. 30 V DC
- Switching current: max. 100 mA
- Voltage drop: U<sub>d</sub> ≤ 2.5 V DC
- Switching frequency: f 2000 Hz
- Response time: 250 µs

### Ambient conditions

- Ambient temperature: -20 ... 60 °C (-4 ... 140 °F)
- Storage temperature: -20 ... 75 °C (-4 ... 167 °F)

### Mechanical specifications

- Protection degree: IP67 / IP69K
- Connection: M8 x 1 connector, 4-pin
- Material: Housing: ABS
- Optical face: glass pane
- Mass: 15 g (device)

### Compliance with standards and directives

- Shock and impact resistance: IEC / EN 60068. half-sine, 40 g in each X, Y and Z directions
- Vibration resistance: IEC / EN 60068-2-6. Sinus. 10 -2000 Hz, 10 g in each X, Y and Z directions

### Approvals and certificates

- CE conformity: yes
- UL approval: cULus Listed
- CCC approval: CCC approval / marking not required for products rated ≤36 V

### Accessories

- OMH-4.1
  - Mounting Clamp
- OMH-ML6
  - Mounting bracket
- OMH-ML6-U
  - Mounting bracket
- OMH-ML6-Z
  - Mounting bracket
- OMH-11-02 Aperture-V-H 0.5 mm
  - Slit diaphragm can be affixed for detecting very small parts
- OMH-11-04 Aperture-V-H 1.0 mm
  - Slit diaphragm can be affixed for detecting very small parts
- OMH-11-06 Aperture-V-H 1.5 mm
  - Slit diaphragm can be affixed for detecting very small parts
- OMH-11-08 Aperture-V-H 2.0 mm
  - Slit diaphragm can be affixed for detecting very small parts
- V31-GM-2M-PVC
  - M8, 4-pin socket, PVC cable
- V31-WM-2M-PVC
  - M8, 4-pin socket, PVC cable

Other suitable accessories can be found at www.pepperl-fuchs.com
To aid in the detection of small objects, various apertures OMH-11-... can be placed on the sensors. This results in different detection ranges:

<table>
<thead>
<tr>
<th>Aperture</th>
<th>Aperture type</th>
<th>Min. object size</th>
</tr>
</thead>
<tbody>
<tr>
<td>No aperture</td>
<td>Vertical</td>
<td>7.0 mm</td>
</tr>
<tr>
<td>OMH-11-06 Vertical</td>
<td>2.0 mm</td>
<td></td>
</tr>
<tr>
<td>OMH-11-05 Vertical</td>
<td>1.5 mm</td>
<td></td>
</tr>
<tr>
<td>OMH-11-06 Horizontal</td>
<td>1.5 mm</td>
<td></td>
</tr>
<tr>
<td>OMH-11-04 Vertical</td>
<td>1.0 mm</td>
<td></td>
</tr>
<tr>
<td>OMH-11-06 Horizontal</td>
<td>1.0 mm</td>
<td></td>
</tr>
<tr>
<td>OMH-11-02 Vertical</td>
<td>0.5 mm</td>
<td></td>
</tr>
<tr>
<td>OMH-11-02 Horizontal</td>
<td>0.5 mm</td>
<td></td>
</tr>
</tbody>
</table>

Detection range

- Effective detection range
- Range limit
**Aperture alignment**

When attaching the aperture, make sure that the sensor lens is aligned exactly with the black aperture.

![Correct Alignment](image1)

![Incorrect Alignment](image2)