**Model Number**

M4.2/MV4.2-8000-RT/76a/110/115

**Thru-beam sensor**
with 2 m fixed cable

**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.
Thru-beam sensor

M4.2/MV4.2-8000-RT/76a/110/115

Technical data

System components
Emitter
M4.2-8000-RT/76a/115
Receiver
MV4.2-8000-RT/40b/110/115

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
Continuous light
40000 Lux
Modulated light
5000 Lux

Functional safety related parameters

MTTFd
550 a
Mission Time (Tf)
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
10 ... 30 V DC
Ripple
< 10 %
No-load supply current
I₀ < 15 mA at 24 V DC

Input

Test input
emitter deactivation at +U₂

Output

Switching type
light/dark on electrically switchable
Signal output
Push-pull output, short-circuit protected, reverse polarity protec-
ted
Switching voltage
max. 30 V DC
Switching current
max. 100 mA
Voltage drop
U₃ ≤ 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
2 m fixed cable
Material
Housing
ABS
Optical face
glass pane
Mass
15 g (device)

Compliance with standards and directives

Standard conformity
Product standard
EN 60947-5-2:2007
IEC 60947-5-2:2007
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

Other suitable accessories can be found at www.pepperl-fuchs.com
Curves/Diagrams

**Characteristic response curve**

Offset Y [mm]

- 200
- 180
- 160
- 140
- 120
- 100
- 80
- 60
- 40
- 20
- 0

Distance X [m]

0 1 2 3 4 5 6 7 8 9 10

**Relative received light strength**

Stability control

- 1000
- 100
- 10
- 1

Distance X [m]

0 2 4 6 8 10 12

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></td>
<td>7.0 mm</td>
</tr>
<tr>
<td>OMH-11-08</td>
<td>Vertical</td>
<td>2.0 mm</td>
</tr>
<tr>
<td>OMH-11-08</td>
<td>Horizontal</td>
<td>2.0 mm</td>
</tr>
<tr>
<td>OMH-11-05</td>
<td>Vertical</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>OMH-11-05</td>
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</tr>
<tr>
<td>OMH-11-04</td>
<td>Vertical</td>
<td>1.0 mm</td>
</tr>
<tr>
<td>OMH-11-04</td>
<td>Horizontal</td>
<td>1.0 mm</td>
</tr>
<tr>
<td>OMH-11-02</td>
<td>Vertical</td>
<td>0.5 mm</td>
</tr>
<tr>
<td>OMH-11-02</td>
<td>Horizontal</td>
<td>0.5 mm</td>
</tr>
</tbody>
</table>
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)