



Model Number

M7/MV7/59/76a/102/143

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

Features

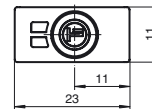
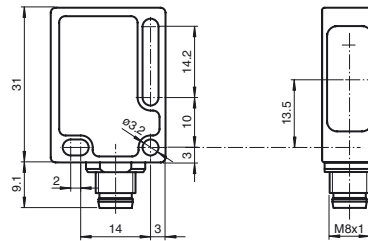
- Reliable sensor for standard applications
- Miniature design with versatile mounting options
- Automatic adjustment of sensitivity via TEACH-IN
- Resistant against noise: reliable operation under all conditions
- Certified by ECOLAB

Product information

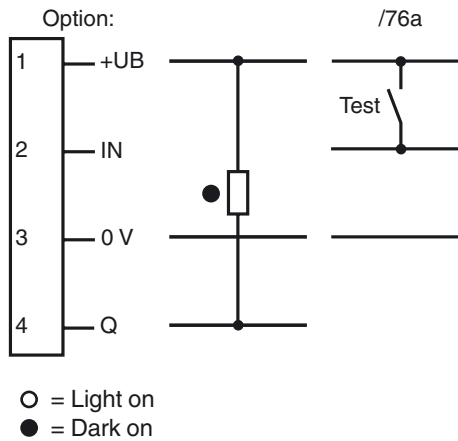
Small, robust, effective, and reliable - these are the properties of the ML7 sensor series. Due to their small size, number of versions, and two different lens positions, they are particularly suited for installation in tight spaces. The robust design and high quality of Pepperl+Fuchs mean they can also be used under harsh environmental conditions. The efficient technology, switching frequencies up to 1000 Hz, high resistance to ambient light, and 4-in-1 output make the series suitable for non-contact object detection.

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Dimensions



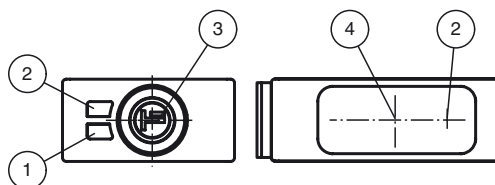
Electrical connection



Pinout



Indicators/operating means



| | | |
|---|----------------------------|--------|
| 1 | Operating display | green |
| 2 | Signal display (Receiver) | yellow |
| 3 | Teach-In button (Receiver) | |
| 4 | Optical center | |

Technical data**System components**

| | |
|----------|----------------|
| Emitter | M7/76a/143 |
| Receiver | MV7/59/102/143 |

General specifications

| | |
|----------------------------|---------------------------------------|
| Effective detection range | 0 ... 3.5 m |
| Threshold detection range | 4.5 m |
| Light source | LED |
| Light type | modulated visible red light |
| Target size | min. 7 mm |
| Diameter of the light spot | approx. 180 mm at a distance of 3.5 m |
| Angle of divergence | approx. 3 ° |
| Ambient light limit | 40000 Lux |

Functional safety related parameters

| | |
|--------------------------------|--------|
| MTTF _d | 1130 a |
| Mission Time (T _M) | 20 a |
| Diagnostic Coverage (DC) | 60 % |

Indicators/operating means

| | |
|-------------------|--|
| Operating display | Receiver: LED green, flashes in case of short-circuit Emitter: LED green |
| Function display | Receiver: LED yellow, lights up when light beam is free, flashes when falling short of the stability control |
| Controls | Receiver: TEACH-IN key |

Electrical specifications

| | | |
|------------------------|----------------|---------------------------------------|
| Operating voltage | U _B | 10 ... 30 V DC , class 2 |
| Ripple | | max. 10 % |
| No-load supply current | I ₀ | Emitter: ≤ 17 mA Receiver: ≤ 15 mA |

Input

| | |
|------------|---|
| Test input | emitter deactivation at +U _B |
|------------|---|

Output

| | | |
|---------------------|---|------------|
| Switching type | dark on | |
| Signal output | 1 NPN output, short-circuit protected, reverse polarity protected, open collector | |
| Switching voltage | max. 30 V DC | |
| Switching current | max. 100 mA | |
| Voltage drop | U _d | ≤ 1.5 V DC |
| Switching frequency | f | 1000 Hz |
| Response time | | 0.5 ms |

Ambient conditions

| | |
|---------------------|--------------------------------|
| Ambient temperature | -20 ... 60 °C (-4 ... 140 °F) |
| Storage temperature | -40 ... 75 °C (-40 ... 167 °F) |

Mechanical specifications

| | |
|-------------------|--------------------------------------|
| Protection degree | IP67 / IP69K |
| Connection | M8 x 1 connector, 4-pin |
| Material | |
| Housing | PC (glass-fiber-reinforced Makrolon) |
| Optical face | PMMA |
| Connector | plastic |
| Mass | approx. 20 g (emitter and receiver) |

Compliance with standards and directives

| | |
|---------------------|---|
| Standard conformity | |
| Product standard | EN 60947-5-2:2007 IEC 60947-5-2:2007 |
| Standards | EN 50178, UL 508 |

Approvals and certificates

| | |
|------------------|---|
| Protection class | II, rated voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1 |
| UL approval | cULus |
| CCC approval | CCC approval / marking not required for products rated ≤ 36 V |

Accessories**Montagekit OMH-ML7-01**

Mounting set consisting of bracket OMH-ML-01 sheet OMH-ML7-03, and fastening material

Montagekit OMH-ML7-02

Mounting set consisting of bracket OMH-ML-02 sheet OMH-ML7-03, and fastening material

OMH-ML7-01

Mounting bracket

OMH-ML7-02

Mounting bracket

OMH-ML7-03

Fixing plate

V31-WM-2M-PUR

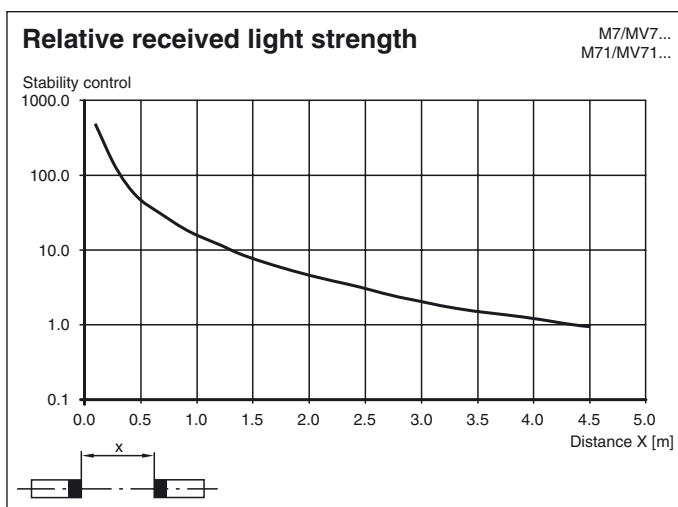
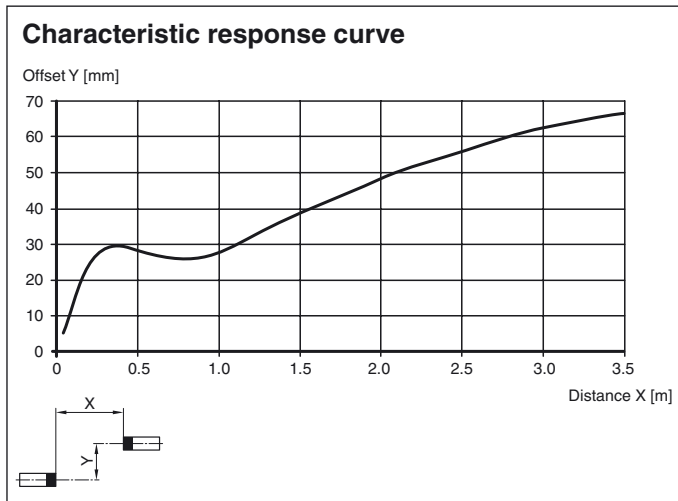
4-pin, M8 socket, PUR cable

V31-GM-2M-PUR

4-pin, M8 socket, PUR cable

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

Curves/Diagrams



Teach-In

Connect the sensors to operating voltage, the green LEDs green lights up constantly.

The receiver operates at max. sensitivity (delivery status) or with the last teached values.

- Mount transmitter and receiver opposite each other and align roughly.
- Adjust the transmitter to the receiver.
- Press the Teach-In button on the receiver - as an acknowledgement the green LED will quickly turn off one time.
- Press the Teach-In button on the receiver until both LEDs green and yellow are blinking in parallel (2 Hz). Release the Teach-In button now.
- While the green and yellow LEDs are blinking alternating (2 Hz) on the receiver the unit is in the internal set up procedure.
- **Teach-In successful:** Both LEDs green and yellow on the receiver are on. The unit is ready to use and in switching mode now.
- **Teach-In not successful:** Both LEDs on the receiver are flashing alternating (4 Hz) for approx. 5 seconds. Afterwards the sensor returns to max. sensitivity setting. Please retry the Teach-In procedure beginning by step 1.