



**Model Number**

**M7/MV7/59/76a/82b/103/143**

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

**Features**

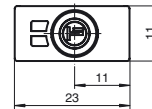
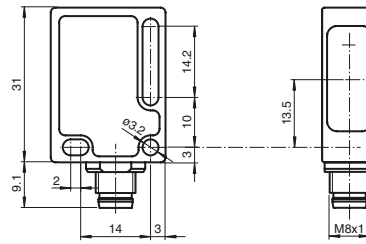
- Reliable sensor for standard applications
- Miniature design with versatile mounting options
- Automatic adjustment of sensitivity via TEACH-IN
- Resistant against noise: reliable operation under all conditions
- Certified by ECOLAB

**Product information**

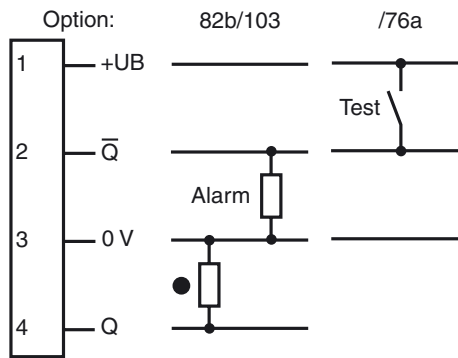
Small, robust, effective, and reliable - these are the properties of the ML7 sensor series. Due to their small size, number of versions, and two different lens positions, they are particularly suited for installation in tight spaces. The robust design and high quality of Pepperl+Fuchs mean they can also 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**



○ = Light on  
● = Dark on

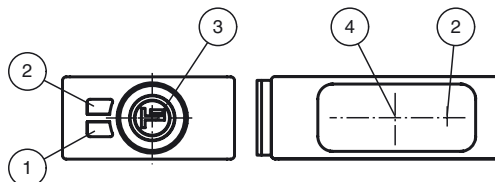
**Pinout**



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	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	MV7/59/82b/103/143

**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 <sub>d</sub>	1130 a
Mission Time (T <sub>M</sub> )	20 a
Diagnostic Coverage (DC)	60 %

**Indicators/operating means**

Operation indicator	Receiver: LED green, flashes in case of short-circuit Emitter: LED green
Function indicator	Receiver: LED yellow, lights up when light beam is free, flashes when falling short of the stability control
Control elements	Receiver: Teach-In key

**Electrical specifications**

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

**Input**

Test input	emitter deactivation at +U <sub>B</sub>
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**Output**

Pre-fault indication output	1 PNP, inactive when level falls below function reserve after approx. 5 s. Immediately inactive if the beam is interrupted 4 times during the flashtime.	
Switching type	dark on	
Signal output	1 PNP output, short-circuit protected, reverse polarity protected, open collector	
Switching voltage	max. 30 V DC	
Switching current	max. 100 mA	
Voltage drop	U <sub>d</sub>	≤ 1.5 V DC
Switching frequency	f	1000 Hz
Response time		0.5 ms

**Conformity**

Product standard	EN 60947-5-2
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**Ambient conditions**

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

**Mechanical specifications**

Housing width	23 mm
Housing height	31 mm
Housing depth	11 mm
Degree of protection	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)

**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 aid for ML7 and ML8 series, Mounting bracket

**OMH-ML7-02**

Mounting aid for ML7 and ML8 series, Mounting bracket

**OMH-ML7-03**

Mounting aid for ML7 and ML8 series, Fixing plate

**V31-WM-2M-PUR**

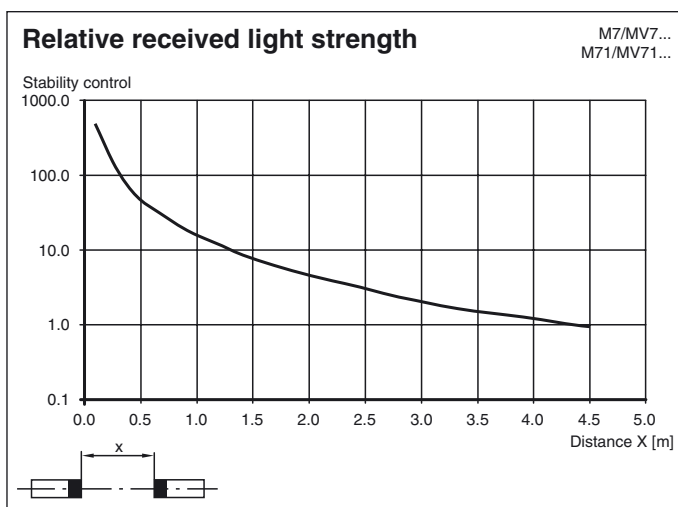
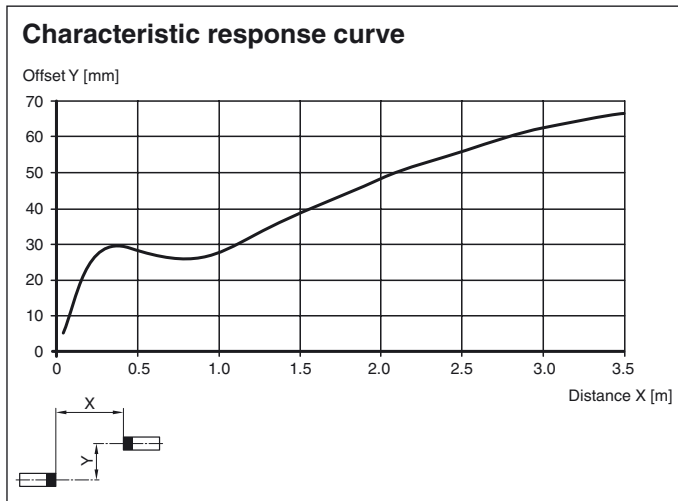
Female cordset single-ended, M8, 4-pin, PUR cable

**V31-GM-2M-PUR**

Female cordset single-ended, M8, 4-pin, PUR cable

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