Model Number

M7/MV7/59/76a/102/126b/143

Thru-beam sensor

with 4-pin, M8 x 1 connector

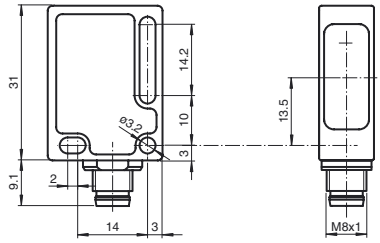
Features

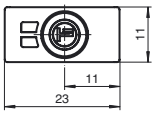
- Reliable sensor for standard applications
- Miniature design with versatile mounting options
- Automatic adjustment of sensitivity via TEACH-IN
- Resistant against noise: reliable operation under all conditions
- Certified by ECOLAB

Product information

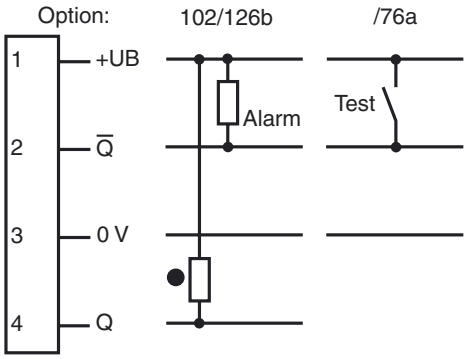
Small, robust, effective, and reliable - these are the properties of the ML7 sensor series. Due to their small size, number of versions, and two different lens positions, they are particularly suited for installation in tight spaces. The robust design and high quality of Pepperl+Fuchs mean they can also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

Dimensions





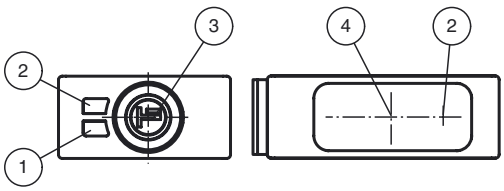
Electrical connection



○ = Light on
● = Dark on

Pinout

Indicators/operating means



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

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Technical data

System components		
Emitter		M7/76a/143
Receiver		MV7/59/102/126b/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		
Pre-fault indication output		1 NPN, inactive after failure to achieve the stability control minimum for approx. 5 s Immediately inactive if 4 beam interruptions occur within the flashing period.
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

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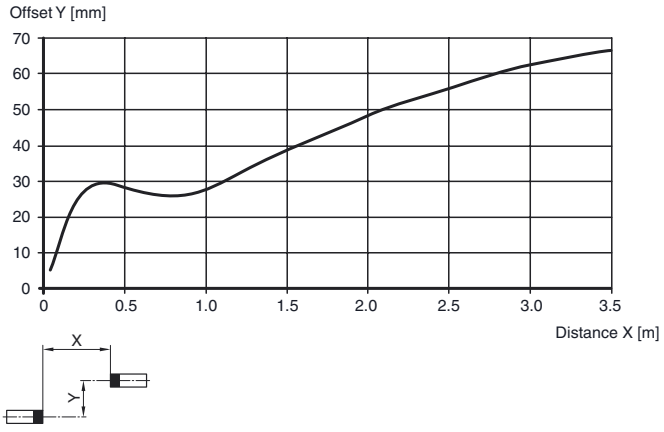
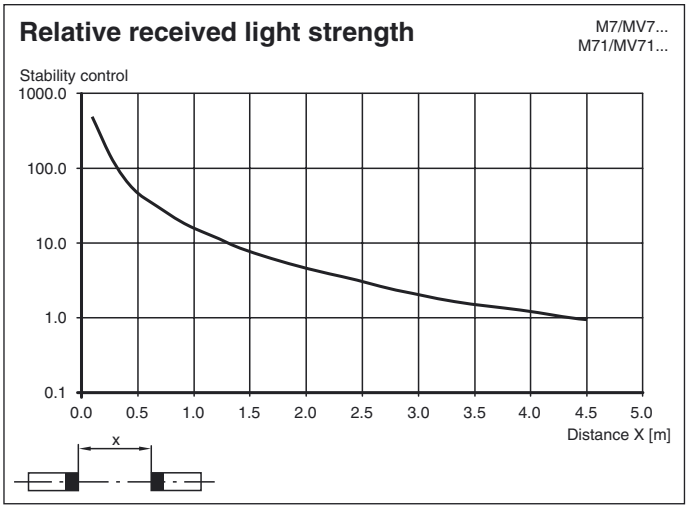
Curves/Diagrams

Characteristic response curve



Relative received light strength



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.

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