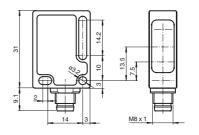## Model Number

ML7-8-200/25/103/143

Diffuse mode sensor
with 4-pin, M8 x 1 connector

Features

- Miniature design
- Automatic adjustment of sensitivity via TEACH-IN
- Clearly visible function indicators
- Flashing power on LED in case of short-circuit
- Not sensitive to ambient light
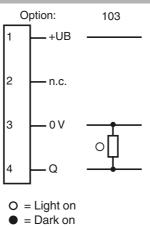- Protected against mutual interference (no cross-talk)

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.
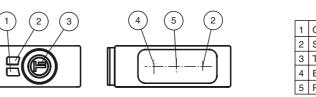
Dimensions

Electrical connection

Option: 103

1	+UB
2	n.c.
3	0 V
4	Q

○ = 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	yellow
3	TEACH-IN button	
4	Emitter	
5	Receiver	

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group
www.pepperl-fuchs.com | USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com | Germany: +49 621 776 1111
fa-info@de.pepperl-fuchs.com | Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com | **PEPPERL+FUCHS** **1**

Technical data

General specifications

Detection range	20 ... 200 mm
Adjustment range	60 ... 200 mm
Reference target	standard white, 100 mm x 100 mm
Light source	LED
Light type	modulated visible red light
Diameter of the light spot	approx. 15 mm at a distance of 200 mm
Angle of divergence	approx. 4.5 °
Ambient light limit	40000 Lux

Functional safety related parameters

$MTTF_d$		1610 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %

Indicators/operating means

Operation indicator	LED green, flashes in case of short-circuit
Function indicator	LED yellow, lights up with receiver lit
Control elements	Teach-In key

Electrical specifications

Operating voltage	U_B	10 ... 30 V DC , class 2
Ripple		max. 10 %
No-load supply current	I_0	< 20 mA

Output

Switching type		light 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_d	≤ 1.5 V DC
Switching frequency	f	1000 Hz
Response time		0.5 ms

Conformity

Product standard	EN 60947-5-2

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. 10 g

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

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

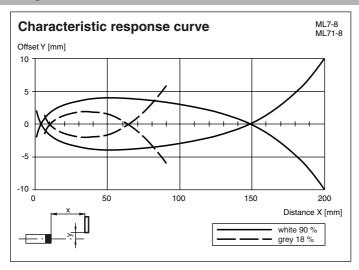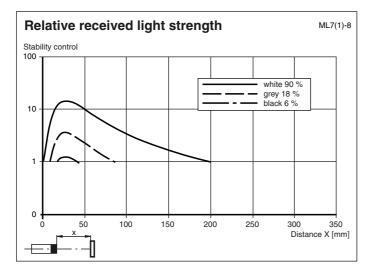**2** | Pepperl+Fuchs Group
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Curves/Diagrams

Characteristic response curve

ML7-8
ML71-8

Offset Y [mm]

white 90 %
grey 18 %

Distance X [mm]

Relative received light strength

ML7(1)-8

Stability control

white 90 %
grey 18 %
black 6 %

Distance X [mm]

TEACH-IN

Connect the sensor to operating voltage, the LED green lights up constantly. The sensor operates at max. sensitivity (delivery status) or with the last teached values.

- Adjust the unit to the target.
- Press the TEACH-IN button - as an acknowledge the green LED will switch off shortly for one time.
- Press the TEACH-IN button until both LED's green and yellow are blinking in parallel (2Hz). Release the TEACH-IN button now.
- While the green and yellow LEDs are blinking alternating (2Hz) the unit is in the internal set up procedure.
- **TEACH-IN successful:** Both LEDs green and yellow are on. The unit is ready to use and in switching mode now.
- **TEACH-IN not successful:** Both LEDs are flashing alternating (4Hz) 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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