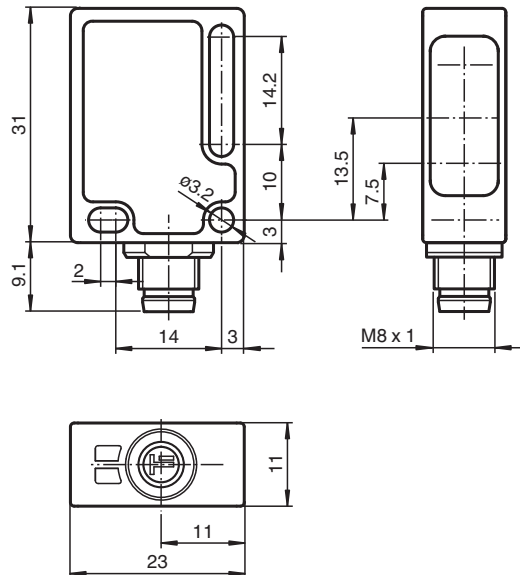# Diffuse mode sensor

ML7-8-200/25/102/143

- 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)

Diffuse mode sensor, miniature design, 200 mm adjustable detection range, red light, light on, NPN output, M8 plug

C E   c(UL)us   **ECOLAB®**   □

Function

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

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Dimensions

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

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

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Technical Data

Switching type		light-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
Conformity		
Product standard		EN 60947-5-2
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
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

Connection Assignment

Option: 102

1   +UB

2   n.c.

3   0 V

4   Q

○ = Light on
● = Dark on

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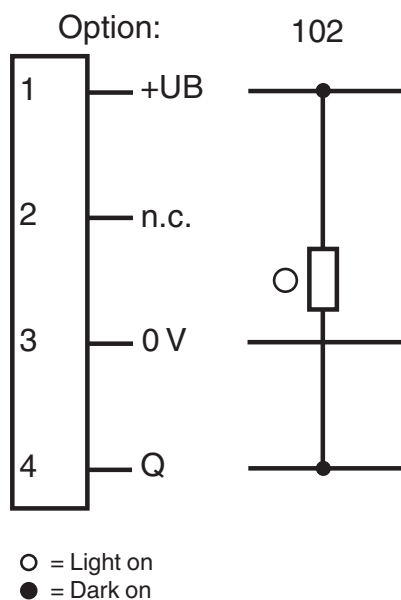
Connection Assignment

Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

Assembly
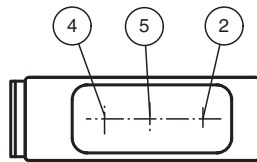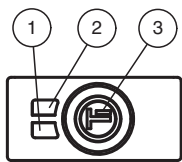
1	Operating display	green
2	Signal display	yellow
3	TEACH-IN button	
4	Emitter	
5	Receiver	

Characteristic Curve

Characteristic response curve

ML7-8
ML71-8

Offset Y [mm]

Distance X [mm]

white 90 %
grey 18 %

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

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Relative received light strength   ML7(1)-8

Stability control

| | | | | | | |
|white 90 %|
|grey 18 %|
|black 6 %|

Distance X [mm]

x
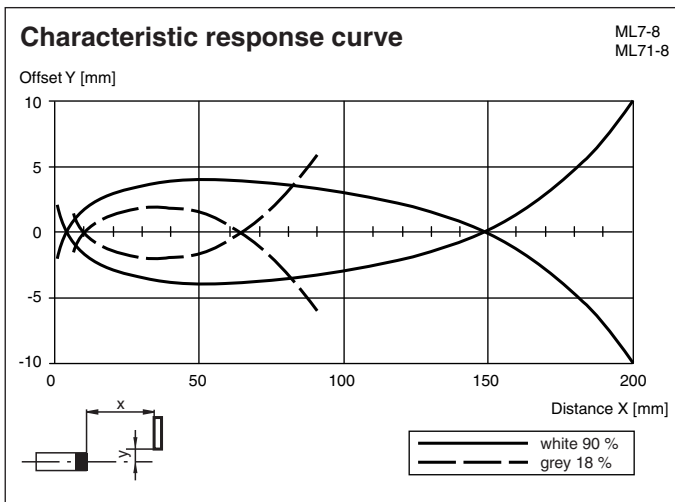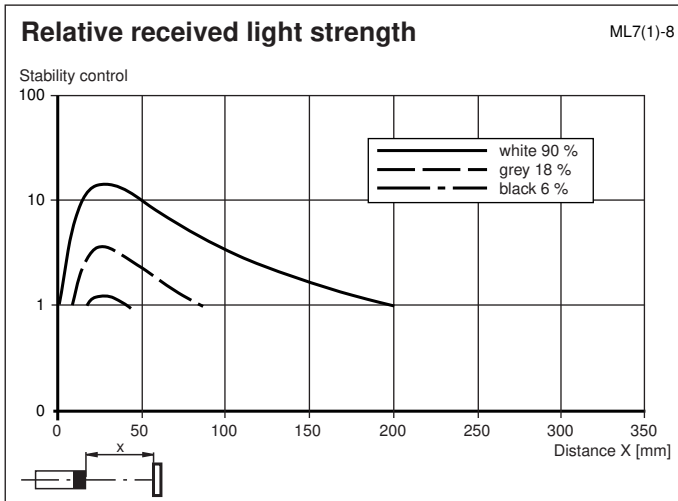
Accessories

	OMH-ML7-01	Mounting aid for ML7 and ML8 series, Mounting bracket
	V31-WM-2M-PUR	Female cordset single-ended M8 angled A-coded, 4-pin, PUR cable grey
	V31-GM-2M-PUR	Female cordset single-ended M8 straight A-coded, 4-pin, PUR cable grey

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

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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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