



Retroreflective sensor ML9-54-G-8736

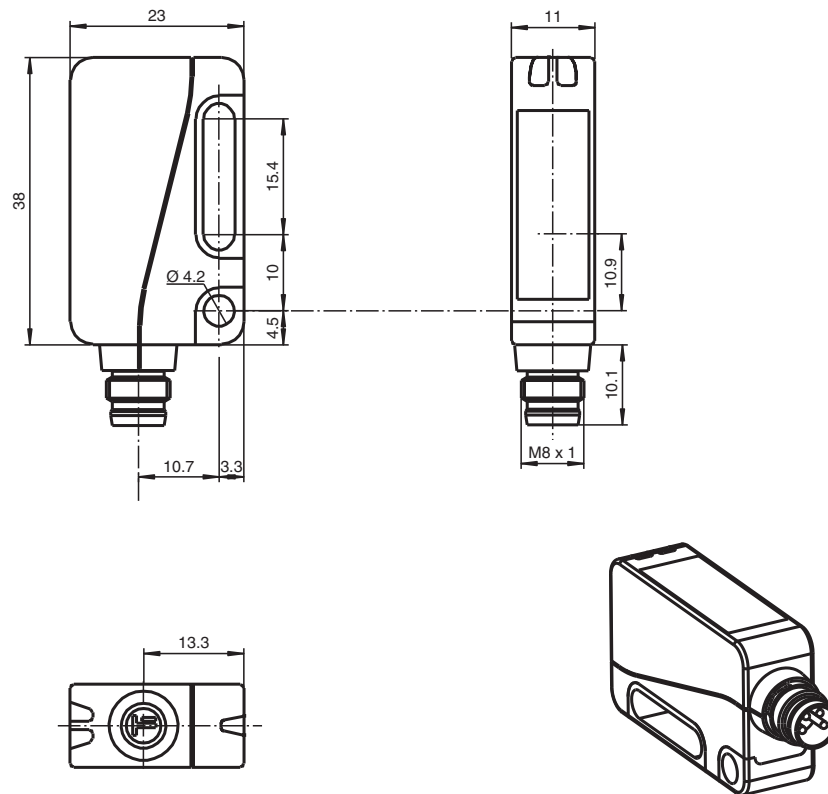


- Ultra bright LEDs for power on, weak signal indication and switching state
- Flashing power on LED in case of short-circuit
- TEACH-IN
- Automatic adjustment in case of soiling in contrast detection mode
- Not sensitive to ambient light, even with switched energy saving lamps
- Protected against mutual interference (no cross-talk)
- Protection class II

Retroreflective sensor with polarization filter for clear object detection



Dimensions



Technical Data

General specifications

Effective detection range	0 ... 3.5 m in TEACH mode
Reflector distance	0 ... 3.5 m in TEACH mode
Reference target	H85-2 reflector

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

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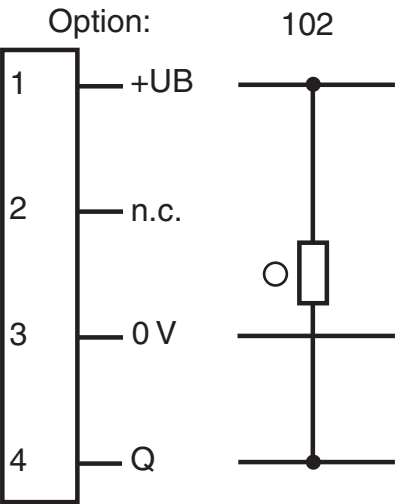
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Technical Data

Light source		LED
Light type		modulated visible red light , 660 nm
Polarization filter		yes
Angle deviation		max. $\pm 1^\circ$
Diameter of the light spot		approx. 40 mm at detection range 1 m
Opening angle		1.7 °
Ambient light limit		40000 Lux
Functional safety related parameters		
MTTF _d		1050 a
Mission Time (T _M)		20 a
Diagnostic Coverage (DC)		0 %
Indicators/operating means		
Operation indicator		LED green, statically lit Power on , Undervoltage indicator: Green LED, pulsing (approx. 0.8 Hz) , short-circuit : LED green flashing (approx. 4 Hz)
Function indicator		LED yellow: switching state ; Operating reserve ; Teach-In
Control elements		Teach-In key
Contrast detection levels		15 % - clear glass bottles
Electrical specifications		
Operating voltage	U _B	10 ... 30 V DC , class 2
Ripple		max. 10 %
No-load supply current	I ₀	< 20 mA at 24 V DC
Output		
Switching type		light/dark on, switchable
Signal output		1 NPN, short-circuit protected open collector
Switching voltage		max. 30 V DC
Switching current		max. 100 mA
Switching frequency	f	1000 Hz
Response time		500 µs
Conformity		
Product standard		EN 60947-5-2
Approvals and certificates		
Protection class		II, rated voltage ≤ 50 V AC with pollution degree 1-2 according to IEC 60664-1 functional insulation acc. to DIN EN 50178
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		38 mm
Housing depth		11 mm
Degree of protection		IP67
Connection		M8 x 1 connector, 4-pin
Material		
Housing		PC (glass-fiber-reinforced Makrolon)
Optical face		glass
Connector		plastic
Mass		approx. 25 g

Connection Assignment



○ = Light on
● = Dark on

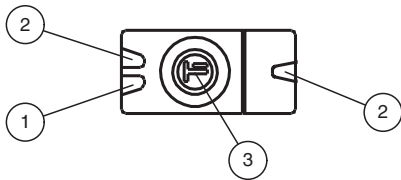
Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

Assembly

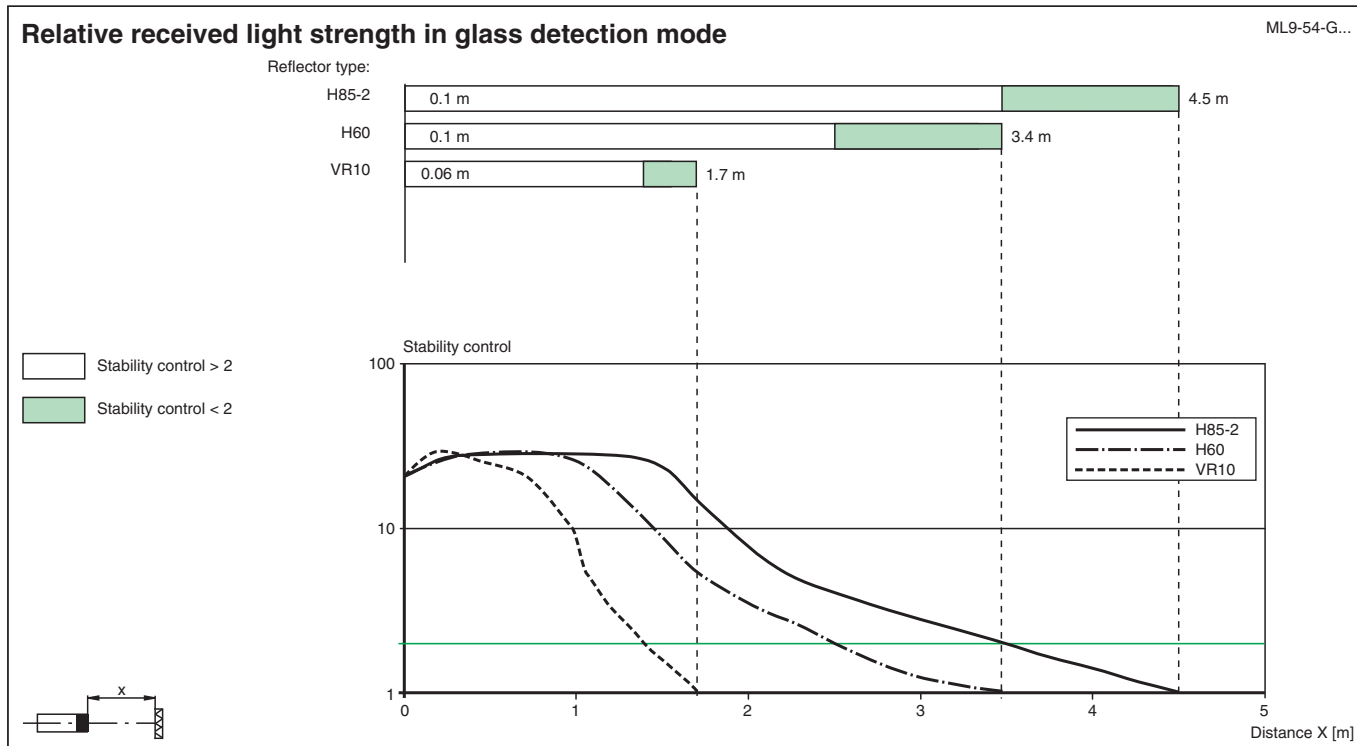


1	LED green
2	LED yellow
3	Teach-In

Mounting

Mount a suitable reflector opposite the sensor.

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Commissioning

Connect the operating voltage.

- The sensor automatically starts the teach-in process.
- The green and yellow LED indicators flash simultaneously (approx. 2.5 Hz). The green and yellow LED indicators flash alternately (approx. 2.5 Hz) while the sensor is being set up.

Teach-in successful: Green and yellow LED indicators light up. The device is ready for operation and 15 % contrast detection is enabled.

Teach-in unsuccessful: The sensor remains in teach-in mode until the teach-in process has been successfully completed.

Configuration

Light-on/dark-on switching via teach-in button

You can switch the output to be light on/dark on by holding down the teach-in button for between 5 seconds and 10 seconds.

- Press the teach-in button. The green LED indicator briefly goes out once as confirmation.
- Press and hold the teach-in button for between 5 seconds and 10 seconds. First, the yellow and green LED indicators will flash simultaneously (approx. 2.5 Hz). After 5 seconds, the yellow LED indicator is continuously lit and the green LED indicator flashes (approx. 2.5 Hz). Release the teach-in button. The output switching type (light-on/dark-on switching) has been changed.

Teach-In

Teach-in via the teach-in button

- Direct the sensor at a suitable reflector.
- Press the teach-in button. The green LED indicator briefly goes out once as confirmation.
- Press and hold the teach-in button until the yellow and green LED indicators flash simultaneously (approx. 2.5 Hz). Release the teach-in button. The green and yellow LED indicators flash alternately (approx. 2.5 Hz) while the sensor is being set up.

Teach-in successful: Green and yellow LED indicators light up. The device is ready for operation and 15 % contrast detection is enabled.

Teach-in unsuccessful: The sensor remains in teach-in mode until the teach-in process has been successfully completed.

Accessories

	V31-GM-2M-PVC	Female cordset single-ended M8 straight A-coded, 4-pin, PVC cable grey
	V31-WM-2M-PVC	Female cordset single-ended M8 angled A-coded, 4-pin, PVC cable grey
	V31-GM-5M-PUR	Female cordset single-ended M8 straight A-coded, 4-pin, PUR cable grey
	V31-WM-5M-PUR	Female cordset single-ended M8 angled A-coded, 4-pin, PUR cable grey

Accessories

	OMH-ML9	Mounting aid for ML9 series, Mounting bracket
	OMH-ML9-01	Mounting aid for ML9 series, Threaded bolt M3

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