Model Number

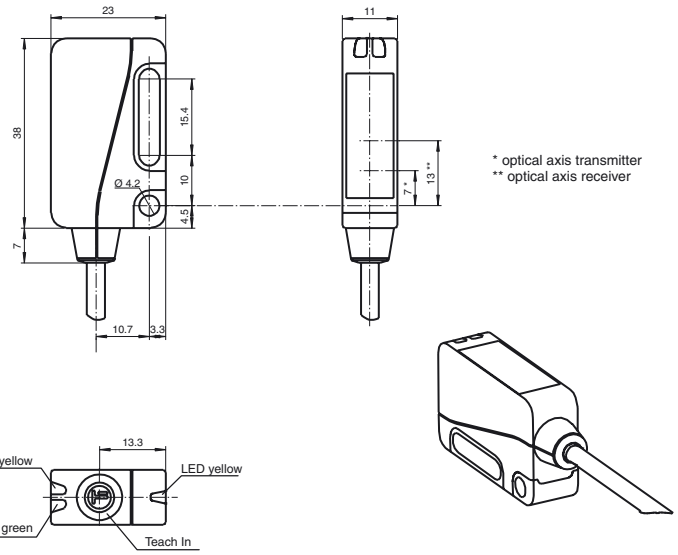
ML9-54/59/103/115/123

Retroreflective sensor
with 2 m fixed cable

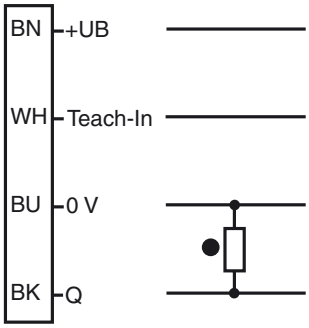
Features

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

Dimensions

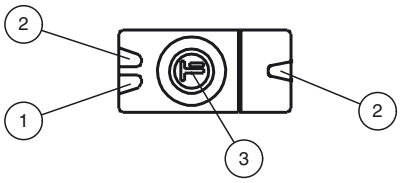


Electrical connection



○ = Light on
● = Dark on

Indicators/operating means



1	LED green
2	LED yellow
3	Teach-In

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Technical data

General specifications		
Effective detection range		0 ... 5 m
Threshold detection range		6 m
Reference target		H85-2 reflector
Light source		LED
Light type		modulated visible red light
Polarization filter		yes
Diameter of the light spot		approx. 110 mm at a distance of 3 m
Angle of divergence		approx. 2.1 °
Ambient light limit		30000 Lux
Functional safety related parameters		
$MTTF_d$		1240 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, lights up when light beam is free, flashes when falling short of the stability control
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 at 24 V
Input		
Function input		Ext. Teach-In input (ET)
Output		
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_d	≤ 2 V DC
Switching frequency	f	1000 Hz
Response time		0.5 ms
Ambient conditions		
Ambient temperature		-25 ... 60 °C (-13 ... 140 °F)
Storage temperature		-40 ... 75 °C (-40 ... 167 °F)
Mechanical specifications		
Degree of protection		IP67
Connection		2 m fixed cable
Material		
Housing		PC (glass-fiber-reinforced Makrolon)
Optical face		glass
Mass		approx. 50 g
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 ≤ 50 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

OMH-ML9
Mounting bracket

OMH-ML9-01
Threaded bolt M3

Other suitable accessories can be found at www.pepperl-fuchs.com

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Refer to “General Notes Relating to Pepperl+Fuchs Product Information”.
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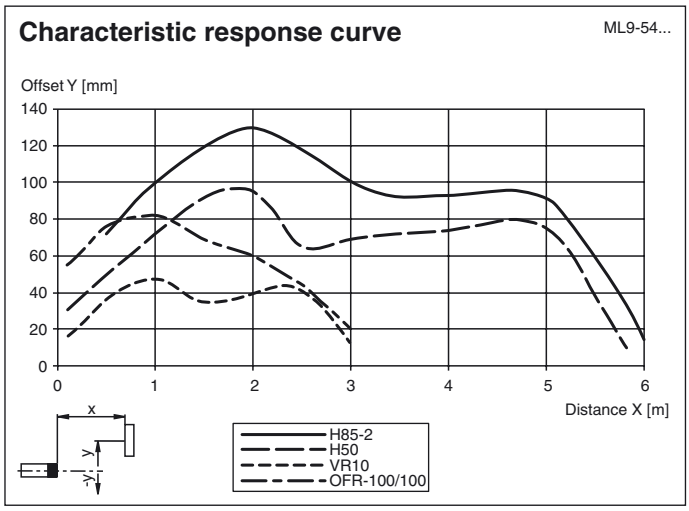
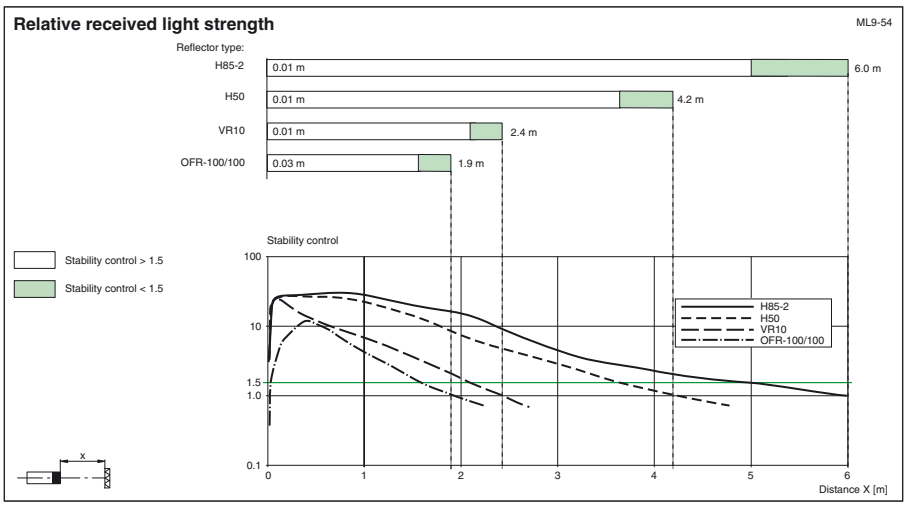
Curves/Diagrams





Setting Instructions

Setting Instructions for Devices with Teach-In

After the operating voltage is applied, the green LED lights up. The sensor is automatically in max. sensitivity status (state as supplied) or in the status of the most recent Teach-In setting.

Mount a suitable reflector opposite the photoelectric sensor.

Teach-In with the Teach key

- Align the sensor to a suitable reflector.
- Press the Teach key. The green LED indicator light goes off briefly to confirm this.
- Hold down the Teach key until the yellow and green indicator LEDs flash synchronously (about 2.5 Hz). Then release the Teach key
- During internal setup of the sensor, the green and yellow indicator LEDs flash alternately (about 2.5 Hz).
- Teach-In successful: The green and yellow indicator LEDs are lit. The device is ready for operation.
- Teach-In not successful: The green and yellow indicator LEDs flash quickly and alternately (about 8 Hz) for about 5 seconds. Then the sensor switches to the status with maximum sensitivity. After that, repeat the Teach-In procedure, starting with step 1.

Teach-In via external Teach-In input (ET)

Teach-In can also be initiated via the external Teach-In input (ET)

To do this, the ET must be open (or at 0 V) for at least 50 ms, after which +UB is applied for a duration of 50 to 80 ms.

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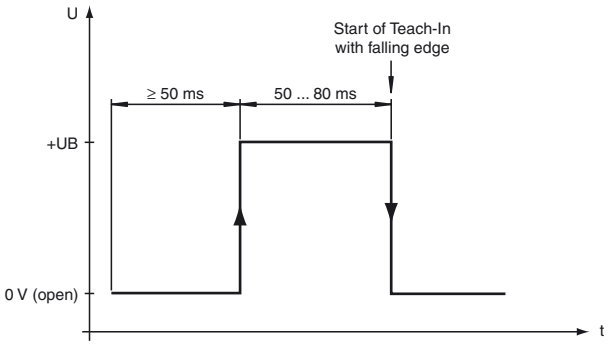
Teach-In lasts for a maximum of 11 seconds (if not successful)



Required voltage level at the external Teach-In input (ET)
to initiate a Teach-In

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