



Model Number

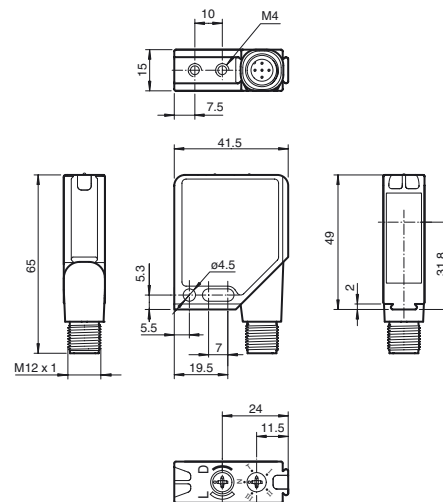
MLV12-54-G-7134

Retroreflective sensor
with 5-pin M12 connector, 90° adjustable
position

Features

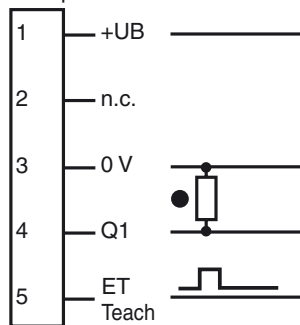
- Series of sensors in a widely used standard housing
- Reliable recognition of reflective objects and clear glass
- TEACH-IN switch for setting the contrast detection levels
- Automatic adjustment in case of soiling in contrast detection mode
- High level of stability thanks to the metal housing frame
- Resistant against noise: reliable operation under all conditions

Dimensions



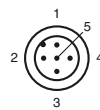
Electrical connection

Option:



○ = Light on
● = Dark on

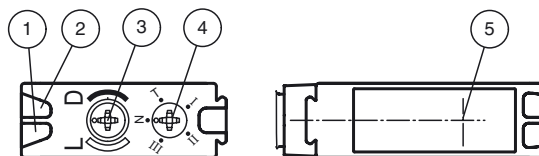
Pinout



Wire colors in accordance with EN 60947-5-2

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

Indicators/operating means



1	Operating display	green
2	Switch state	yellow
3	Bright/dark switch	
4	Teach-In switch	
5	Optical axis	

Technical data**General specifications**

Effective detection range	0 ... 4.2 m
Reflector distance	0 ... 4.2 m
Threshold detection range	5.6 m
Reference target	H85-2 reflector
Light source	LED
Light type	modulated visible red light , 660 nm
Polarization filter	yes
Diameter of the light spot	approx. 110 mm at detection range 4.2 m
Angle of divergence	1.5 °
Ambient light limit	
Continuous light	40000 Lux
Modulated light	5000 Lux

Functional safety related parameters

MTTF _d	1000 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	2 LEDs yellow for switching state, stability control, TEACH-IN and contrast detection mode
Control elements	rotary switch for light/dark, 5-step switch for contrast recognition adjustment
Contrast detection levels	10 % - clean, water filled PET bottles 18 % - clear glass bottles 30 % - films in heated environment adjustable by Teach-In key or external wire

Electrical specifications

Operating voltage	U _B	10 ... 30 V DC
Ripple		max. 10 %
No-load supply current	I ₀	max. 55 mA

Input

Function input	Ext. Teach-In input (ET)
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Output

Switching type	light/dark on switchable	
Signal output	1 PNP output, short-circuit protected, reverse polarity protected, open collector	
Switching voltage	max. 30 V DC	
Switching current	max. 0.2 A	
Voltage drop	U _d	≤ 2.5 V DC
Switching frequency	f	1000 Hz
Response time	0.5 ms	

Conformity

Product standard	EN 60947-5-2
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Ambient conditions

Ambient temperature	-40 ... 60 °C (-40 ... 140 °F)
Storage temperature	-40 ... 75 °C (-40 ... 167 °F)

Mechanical specifications

Housing width	41.5 mm
Housing height	49 mm
Housing depth	15 mm
Degree of protection	IP67
Connection	Metal connector, M12, 5-pin, 90° rotatable
Material	
Housing	Frame: nickel plated, die cast zinc, Laterals: glass-fiber reinforced plastic PC
Optical face	Plastic pane
Mass	60 g

Compliance with standards and directives

Standard conformity	
Shock and impact resistance	IEC / EN 60068. half-sine, 40 g in each X, Y and Z directions
Vibration resistance	IEC / EN 60068-2-6. Sinus. 10 -150 Hz, 5 g in each X, Y and Z directions

Approvals and certificates

Protection class	II, rated voltage ≤ 300 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-MLV12-HWG**

Mounting bracket for series MLV12 sensors

OMH-MLV12-HWK

Mounting bracket for series MLV12 sensors

OMH-K01

dove tail mounting clamp

OMH-K02

dove tail mounting clamp

OMH-K03

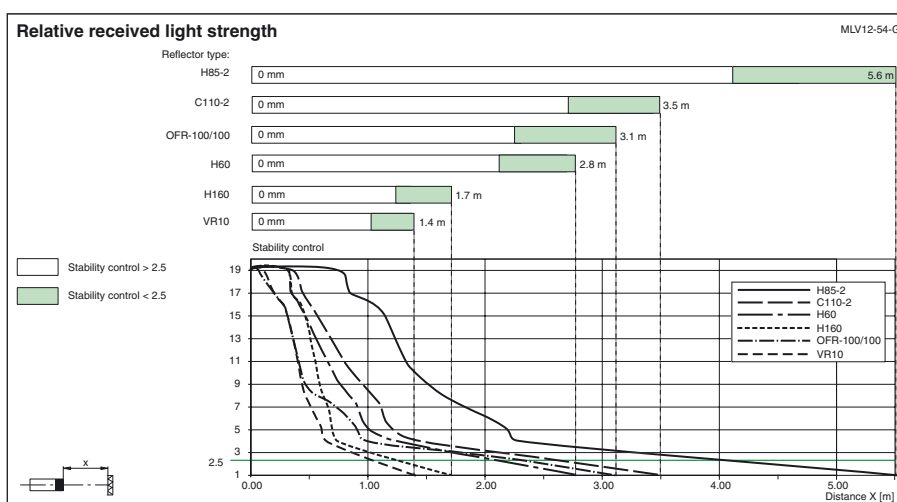
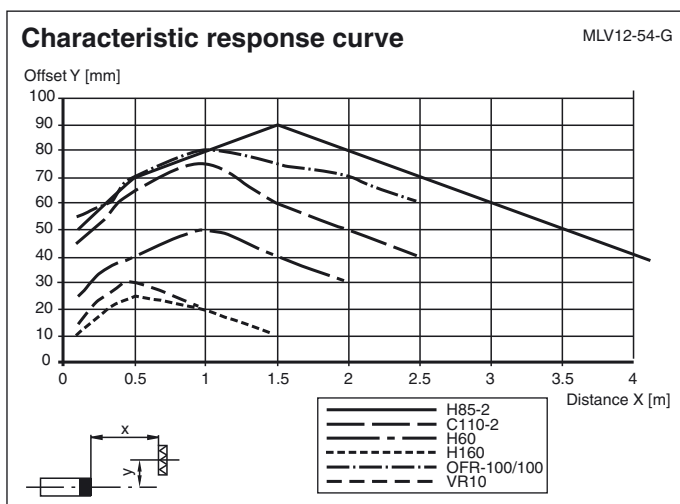
dove tail mounting clamp

OMH-06

Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm

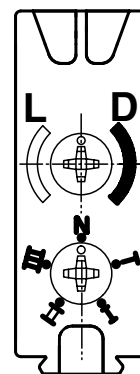
Other suitable accessories can be found at www.pepperl-fuchs.com

Curves/Diagrams



Teach-IN

- Schalterstellung "N" (Normalbetrieb):**
LEDs gelb leuchten bei freiem Lichtstrahl, blinken bei Unterschreiten der Funktionsreserve, aus bei Strahlunterbrechung.
- Schalterstellung "T" (TEACH-IN Betrieb):**
LED gelb blinkt nach 1s langsam (ca. 1,5 Hz).
Der Sensor ist nun bereit, über den mechanischen Schalter (Stellung I, II, III) oder ein externes Signal für einen bestimmten Kontrasterkennungswert eingestellt zu werden.
- Schalterstellungen "I", "II" und "III" (Kontrasterkennungs-Betrieb)**
Kontrasterkennungswerte: I für 10 %, II für 18 %, III für 30 %
1. LED gelb leuchtet konstant: Lichtweg frei
2. LED gelb aus: Objekt erkannt
3. LED gelb schnell blinkend: keine sichere Erfassung, Verschmutzung zu groß, Funktionsreserve zu gering.
Es ist eine direkte Umschaltung der Kontrasterkennungsstufen möglich, ohne vorher noch mal den Schalter in Stellung "T" bringen zu müssen.
- Externer Teach-Eingang (ET):**
In Schalterstellung "T" kann durch externes Anlegen eines Impulses über eine Steuerleitung an Stecker-Pin 5 die entsprechende Kontrasterkennung gewählt werden.
Die gewünschte Kontrasterkennung wird durch Anlegen eines High-Impulses bestimmter Breite eingestellt:
I: 50 ms (30 ms ... 100 ms)
II: 150 ms (100 ms ... 200 ms)
III: > 200 ms
- Vorausfallausgang (optional):**
Schalterstellung "N":
Inaktiv bei Unterschreiten der Funktionsreserve nach ca. 5s. Sofort inaktiv, wenn innerhalb der Blinkzeit 4 Lichtstrahlunterbrechungen stattfinden.
Kontrasterkennungsstufen:
Der Ausgang wird inaktiv, wenn die Verschmutzung keine Nachregelung mehr zulässt, gelbe LED blinkt schnell. Bei weiterer Verschmutzung ist eine Erkennung geringer Kontraste nicht mehr sichergestellt.
- Warmlaufzeit:**
Eine eventuelle Warmlaufzeit kann durch ein erneutes Einlernen (teachen) verkürzt werden.
- Switch position "N" (normal operation):**
Yellow LEDs light if the light beam is free, flash if the functional reserve is used, turn off if the light beam is interrupted.
- Switch position "T" (TEACH-IN operation):**
Yellow LED flashes slowly after 1 second (about 1.5 Hz).
The sensor is now ready to be set to a particular contrast detection value using the mechanical switch (position I, II, or III) or an external signal.
- Switch positions "I", "II", and "III" (contrast detection operation)**
Contrast detection values: I for 10 %, II for 18 %, III for 30 %.
1. Yellow LED lights continually: light path free
2. Yellow LED off: object detected





3. Yellow LED flashes quickly: unsure detection, too much contamination, functional reserve too low.

A direct switching of the contrast detection levels is possible without having to put the switch back into position "T" first.

- **External teach input (ET):**

In switch position "T", you can apply a pulse over a control line to plug pin 5 to select the corresponding contrast detection.

The desired contrast detection is set by applying a high pulse of a particular width:

- I: 50 ms (30 ms ... 100 ms)
- II: 150 ms (100 ms ... 200 ms)
- III: >200 ms

- **Pre-fault output (optional):**

Switch position "N":

Inactive if the functional reserve is used after approx. 5 sec. Immediately inactive if 4 light beam interruptions occur within the flashing time.

Contrast detection levels:

The output goes inactive if the contamination no longer permits readjustment; the yellow LED flashes quickly. In the case of additional contamination, the detection of low contrast is no longer guaranteed.

- **Warm-up period:**

Any warm-up period can be shortened by repeating the learn (teach) process.

