Model Number

MLV12-54-G/32/124

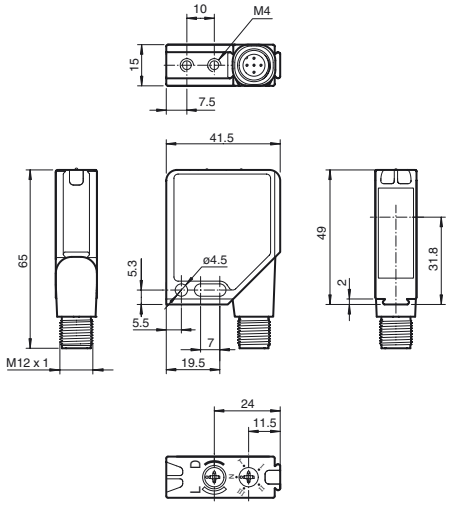
Retroreflective sensor

with 5-pin M12 connector, 90° adjustable position

Features

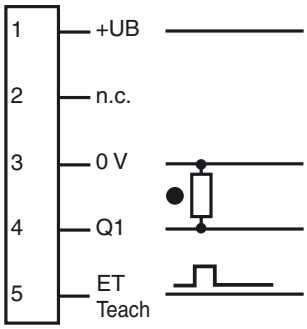
- Series of sensors in a widely used standard housing
- Reliable recognition of reflective objects and clear glass
- TEACH-IN switch for setting the contrast detection levels
- Automatic adjustment in case of soiling in contrast detection mode
- High level of stability thanks to the metal housing frame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

Dimensions



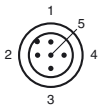
Electrical connection

Option:



○ = Light on
● = Dark on

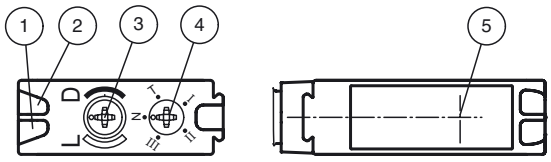
Pinout



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	

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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 40 % - colored glass or opaque materials 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)
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
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

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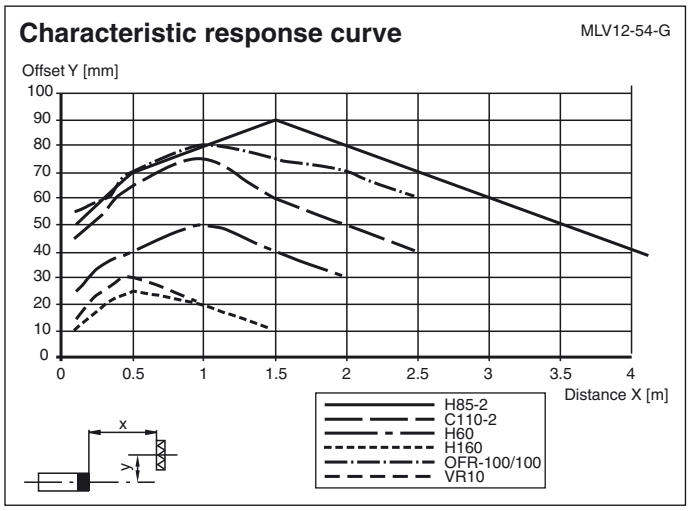
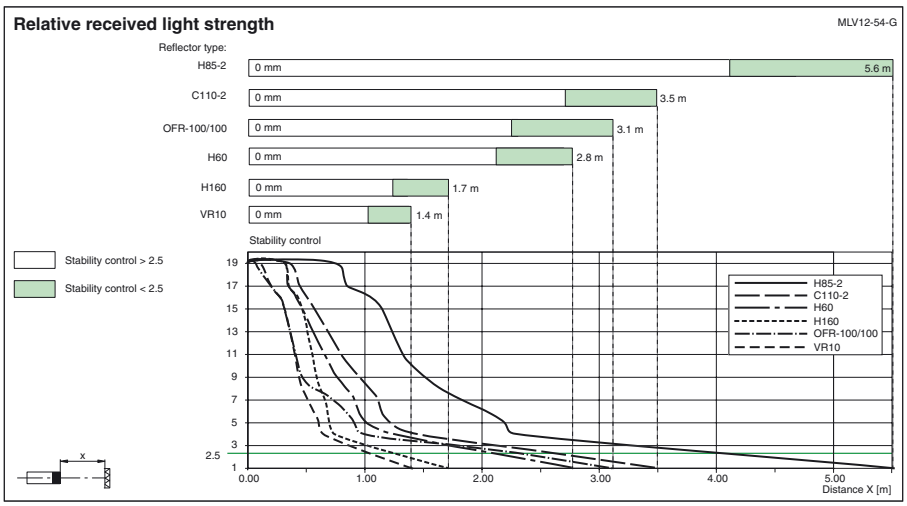
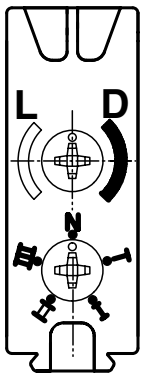
Curves/Diagrams





TEACH-IN



- **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 40 %.
  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.

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