Retroreflective sensor with polarization filter for clear object

**Model Number**

MLV12-54-G/76b/124/128

Retroreflective sensor with metal connector M12; 5-pin, 90° convertible

**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: ...76b/128

**Pinout**

**Indicators/operating means**
## 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
- **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
- **MTTFd**: 1000 a
- **Mission Time (Tm)**: 20 a
- **Diagnostic Coverage (DC)**: 90 %
- **Operating display**: LED green, flashes in case of short-circuit
- **Function display**: 2 LEDs yellow for switching state, stability control, TEACH-IN and contrast detection mode
- **Contrast detection levels**: 10 % - clean, water filled PET bottles
- **No-load supply current**: max. 55 mA
- **Test input**: emitter deactivation at 0 V ( Imax < 4mA at UB+ = 30 VDC )
- **Input**: Ext. Teach-In input (ET)
- **Switching type**: light/dark on switchable
- **Output**: push-pull (4 in 1) output, short-circuit protected, reverse polarity protected
- **Switching voltage**: max. 30 V DC
- **Switching current**: max. 0.2 A
- **Voltage drop**: Ud ≤ 2.5 V DC
- **Response time**: 0.5 ms
- **Ambient temperature**: -40 ... 60 °C (-40 ... 140 °F)
- **Storage temperature**: -40 ... 75 °C (-40 ... 167 °F)
- **Protection degree**: IP67

### Functional safety related parameters
- **Operating voltage**: UO 10 ... 30 V DC
- **Ripple**: max. 10 %
- **Ambient conditions**: -40 ... 60 °C (-40 ... 140 °F)
- **Storage temperature**: -40 ... 75 °C (-40 ... 167 °F)
- **Mechanical specifications**: Frame: nickel plated, die cast zinc, Laterals: glass-fiber reinforced plastic PC
- **Optical face**: Plastic pane
- **Mass**: 60 g
- **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

### Electrical specifications
- **Electrical specifications**: Protection degree: IP67
- **Connection**: Metal connector, M12, 5-pin, 90° rotatable
- **Material**: Housing: Frame: nickel plated, die cast zinc, Laterals: glass-fiber reinforced plastic PC
- **Safety specifications**: Switching type: light/dark on switchable
- **Switching voltage**: max. 30 V DC
- **Switching current**: max. 0.2 A
- **Voltage drop**: Ud ≤ 2.5 V DC
- **Switching frequency**: f 1000 Hz
- **Response time**: 0.5 ms

### Approvals and certificates
- **Approval class**: UL, 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

Characteristic response curve

MLV12-54-G

Offset Y [mm]

0 10 20 30 40 50 60 70 80 90 100

0 0.5 1 1.5 2 2.5 3 3.5 4

Distance X [m]

H85-2
C110-2
H60
H180
OFR-100/100
VR10

Relative received light strength

MLV12-54-G

Reflector type:

H85-2
C110-2
OFR-100/100
H60
H180
VR10

Stability control > 2.5
Stability control < 2.5
Stability control

0 2 4 6 8 10 12 14 16 18 20

0 0.5 1 1.5 2 2.5 3 3.5 4

Distance X [m]

Offset Y [mm]

0 10 20 30 40 50 60 70 80 90 100

0 mm
0 mm
0 mm
0 mm
0 mm
0 mm

0 mm
0 mm
0 mm

H85-2
C110-2
H60
H180
OFR-100/100
VR10

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.