Retroreflective sensor with polarization filter for clear object

**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:
1. +UB
2. n.c.
3. 0 V
4. Q1
5. ET Teach

O = Light on
● = Dark on

**Pinout**

**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**: HBS-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 °
- **Continuous light**: 40000 Lux
- **Modulated light**: 5000 Lux

#### Functional safety related parameters
- **MTTFd**: 1000 a
- **Mission Time (TM)**: 20 a
- **Diagnostic Coverage (DC)**: 0 %

#### Indicators/operating means
- **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
  - 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

- **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

#### Ambient conditions
- **Ambient temperature**: -40 ... 60 °C (-40 ... 140 °F)
- **Storage temperature**: -40 ... 75 °C (-40 ... 167 °F)

#### Mechanical specifications
- **Protection degree**: IP67
- **Connection**: Metal connector, M12, 5-pin, 90° rotatable
- **Material**: Housing: nickel plated, die cast zinc, Laterals: glass-fiber reinforced plastic PC

#### Compliance with standards and directives
- **Protection class**: II, rated voltage ≤ 300 V AC with pollution degree 1-2 according to IEC 60664-1
- **Approvals and certificates**: UL 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
• 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.