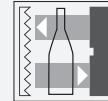




Retroreflective sensor

MLV41-54-G/25/76a/124/136



- Rugged series in corrosion-resistant metal housing
- Reliable recognition of reflective objects and clear glass
- Two machines in one: clear object detection or reflection operating mode with long range
- TEACH-IN switch for setting the contrast detection levels
- Automatic adjustment in case of soiling in contrast detection mode
- Resistant against noise: reliable operation under all conditions

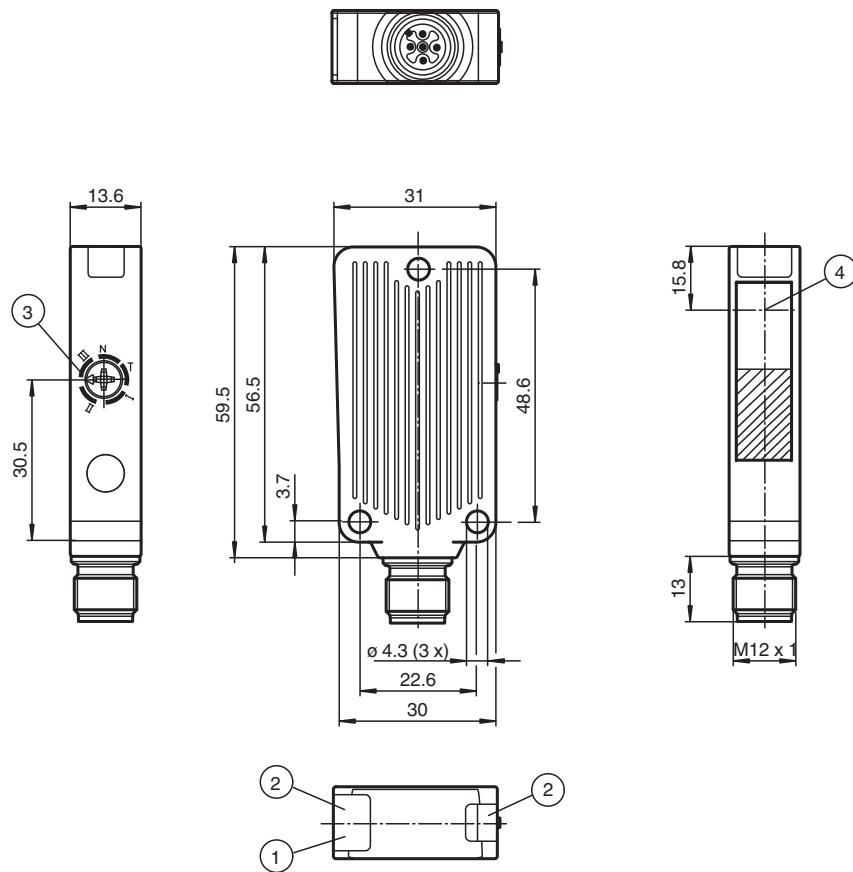
Robust retroreflective sensor for glass detection, compact housing design, 5.2 m detection range, red light, light on, 2 push-pull outputs, test input, M12 plug



Function

The unique and extremely popular design of the MLV41 series enables it to be mounted correctly in confined areas and offers all the functions that are normally only found on larger phototransistor sensors. The MLV41 series comes with a range of functions. For example, highly visible status LEDs on the front and back, resistance to ambient light, crosstalk protection and universally applicable output stages that permit every possible switching logic and polarity to be realized. The enhanced resistance to ambient light ensures reliable operation even where modern energy-saving lamps with electronic ballasts are in use. The same applies where multiple devices are present, i.e. the use of a number of sensors in the same vicinity causes no problems.

Dimensions



Technical Data

General specifications

| | |
|----------------------------|---|
| Effective detection range | 0 ... 4 m in TEACH mode 0 ... 5.2 m at switch position "N" |
| Reflector distance | 0 ... 4 m in TEACH mode 0 ... 5.2 m at switch position "N" |
| Threshold detection range | 6.5 m |
| Reference target | H85-2 reflector |
| Light source | LED |
| Light type | modulated visible red light , 660 nm |
| Polarization filter | yes |
| Angle deviation | max. $\pm 1^\circ$ |
| Diameter of the light spot | approx. 100 mm at detection range 4 m |
| Opening angle | 1.5 ° |
| Ambient light limit | 40000 Lux |

Functional safety related parameters

| | |
|--------------------------------|-------|
| MTTF _d | 900 a |
| Mission Time (T _M) | 20 a |
| Diagnostic Coverage (DC) | 60 % |

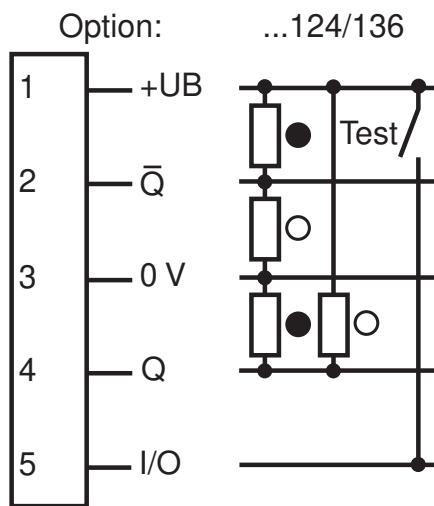
Indicators/operating means

| | |
|---------------------|--|
| 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 | 2 LEDs yellow for switching state, stability control, TEACH-IN and contrast detection mode |

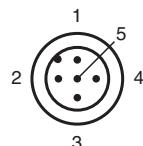
Technical Data

| | | |
|--|-------|---|
| Control elements | | |
| 5-step switch for setting the contrast detection levels. | | |
| Contrast detection levels | | 10 % - clean, water filled PET bottles 18 % - clear glass bottles 40 % - colored glass or opaque materials adjustable due to Teach-In switch |
| Electrical specifications | | |
| Operating voltage | U_B | 10 ... 30 V DC |
| Ripple | | max. 10 % |
| No-load supply current | I_0 | max. 35 mA |
| Input | | |
| Test input | | emitter deactivation with $+U_B$ |
| Output | | |
| Signal output | | 2 push-pull (4 in 1) outputs, complementary, short-circuit proof, reverse polarity protected |
| Switching voltage | | max. 30 V DC |
| Switching current | | max. 100 mA |
| 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 |
| Approvals and certificates | | |
| Protection class | | II, rated voltage ≤ 50 V AC with pollution degree 1-2 according to IEC 60664-1 , functional insulation acc. to DIN EN 50178 |
| UL approval | | cULus Listed 57M3 (Only in association with UL Class 2 power supply; Type 1 enclosure) |
| CCC approval | | CCC approval / marking not required for products rated ≤ 36 V |
| Ambient conditions | | |
| Ambient temperature | | -40 ... 60 °C (-40 ... 140 °F) |
| Storage temperature | | -40 ... 75 °C (-40 ... 167 °F) |
| Mechanical specifications | | |
| Housing width | | 31 mm |
| Housing height | | 56.5 mm |
| Housing depth | | 13.6 mm |
| Degree of protection | | IP67 |
| Connection | | 5-pin, M12 x 1 connector |
| Material | | |
| Housing | | Aluminum , Delta-Seal coated |
| Optical face | | glass pane |
| Connector | | metal |
| Mass | | 50 g |

Connection Assignment



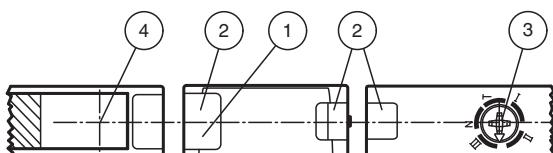
Connection Assignment



Wire colors in accordance with EN 60947-5-2

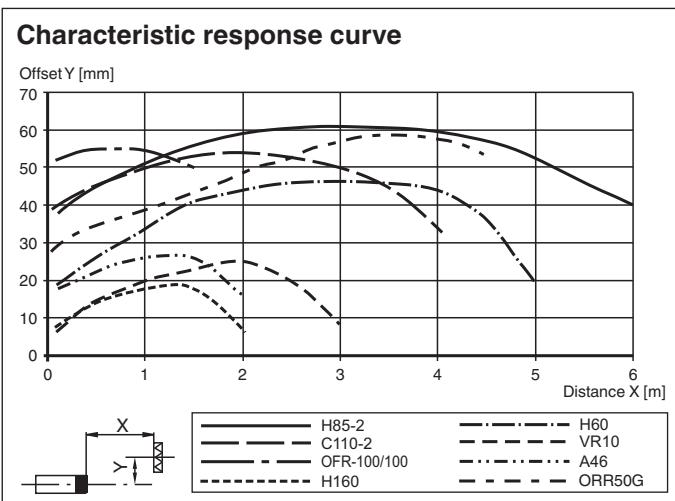
| | | |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue) |
| 4 | BK | (black) |
| 5 | GY | (gray) |

Assembly

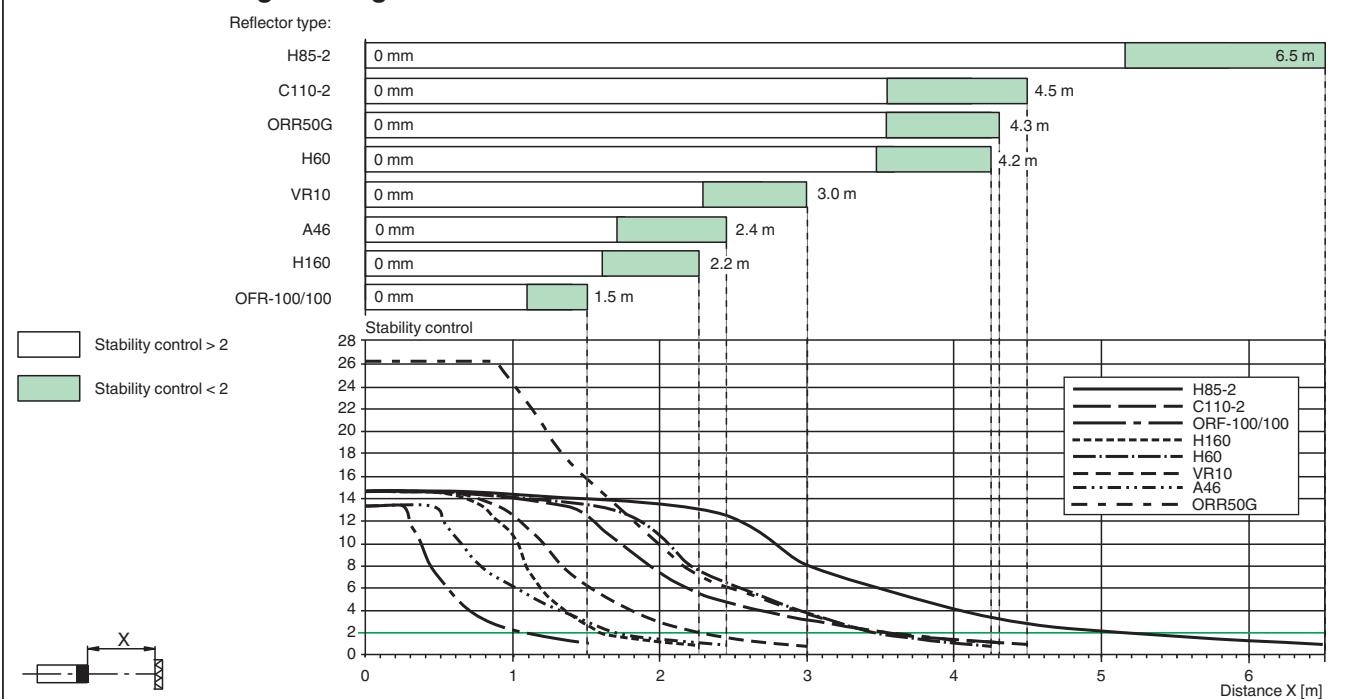


| | | |
|---|-------------------------------------|--------|
| 1 | Operating display | green |
| 2 | Functional display | yellow |
| 3 | Teach-In switch | |
| 4 | Optical center emitter and receiver | |

Characteristic Curve



Relative received light strength



Accessories

Release date: 2023-04-04 Date of issue: 2023-04-04 Filename: 183496_eng.pdf

| | | |
|--|---------------------|---|
| | OMH-09 | Mounting bracket for Sensors series MLV41 for M12 rod mounting |
| | V15-G-2M-PUR | Female cordset single-ended M12 straight A-coded, 5-pin, PUR cable grey |
| | REF-H85-2 | Reflector, rectangular 84.5 mm x 84.5 mm, mounting holes |
| | REF-H50 | Reflector, rectangular 51 mm x 61 mm, mounting holes, fixing strap |
| | REF-VR10 | Reflector, rectangular 60 mm x 19 mm, mounting holes |

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

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PEPPERL+FUCHS

Accessories

| | | |
|---|--------------------|--|
|  | ORR50G | Reflector, rectangular 50.9 mm x 60.9 mm, mounting holes, fixing strap and polarization filter |
|  | OFR-100/100 | Reflective tape 100 mm x 100 mm |

Teach-In

Adjustment instructions for TEACH-IN operation:

| Step | Switch position | LED green | LED yellow | Time/ frequency | Explanations/ comments |
|------|-----------------|-----------|------------|-----------------|--|
| 1 | N | on | flashes | 4/s | In switch position "N" directed towards reflector. Reflector detected without function reserve . |
| | N | on | on | - | In switch position "N" directed towards reflector. Reflector detected with function reserve (recommended). |
| 2 | T | off/on | on | 200 ms | The selection of a new switch position is indicated by the green LED going out for a short time. This also applies to the selection of the other switch positions. |
| | T | flashes | flashes | 2.5 s | <i>Slow</i> alternating flashing: Teach-In process has been performed correctly . Max. duration of the Teach-In process: 2 s |
| | T | flashes | flashes | 8/s | <i>Quick</i> alternating flashing: Teach-In process has not been performed correctly . (e.g. receiver signal not sufficient, sensor not directed correctly towards reflector) Status is terminated by turning switch to position N. |
| 3/1 | I | on | on | - | Contrast detection 10 % is activated. (e.g. clean PET bottles filled with water) |
| 3/2 | II | on | on | - | Contrast detection 18 % is activated. (e.g. clear glass bottles) |
| 3/3 | III | on | on | - | Contrast detection 40 % is activated. (e.g. coloured glass or non-transparent materials) |

Ext. teach input:

In switch position "T", the respective contrast detection level can be selected by externally 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