

Retroreflective sensor

MLV12-54-G/32/124

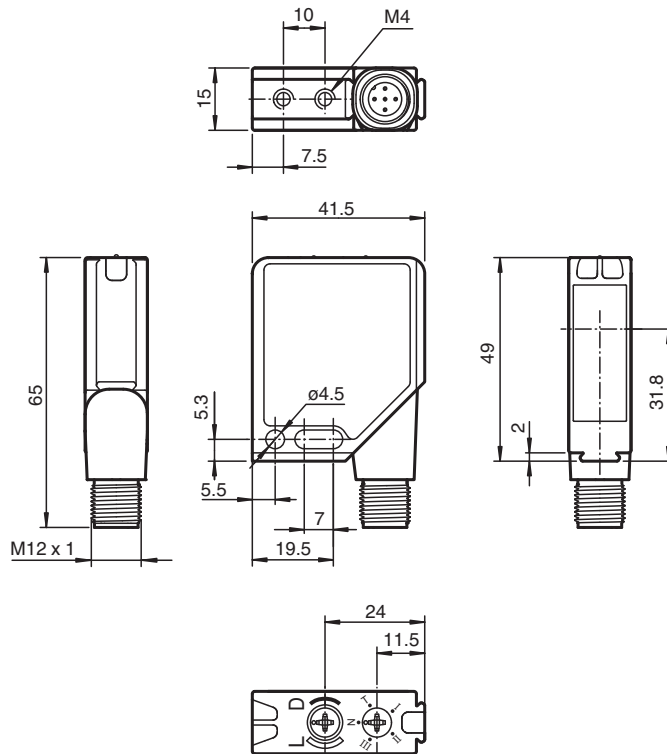


- Series of sensors in a widely used standard housing
- Reliable recognition of reflective objects and clear glass
- TEACH-IN switch for setting the contrast detection levels
- Automatic adjustment in case of soiling in contrast detection mode
- High level of stability thanks to the metal housing frame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

Retroreflective sensor for glass detection, small design, 5.6 m detection range, red light, light/dark on, PNP output, external Teach-In, M12 plug



Dimensions



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 |
| Opening angle | | 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 |
| 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 |
| Ambient conditions | | |
| Ambient temperature | | -40 ... 60 °C (-40 ... 140 °F) |
| Storage temperature | | -40 ... 75 °C (-40 ... 167 °F) |
| Mechanical specifications | | |

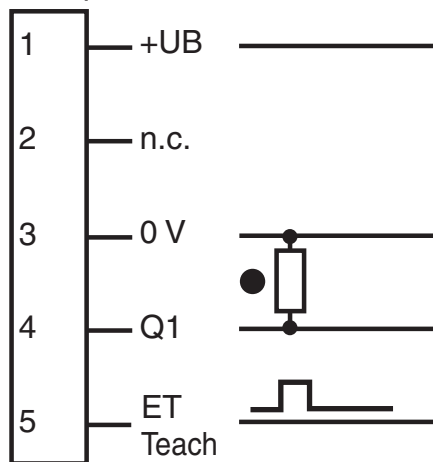
Release date: 2023-04-04 Date of issue: 2023-04-04 Filename: 208637_eng.pdf

Technical Data

| | |
|----------------------|---|
| 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 |

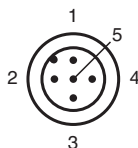
Connection Assignment

Option:



- = Light on
- = Dark on

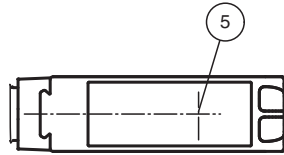
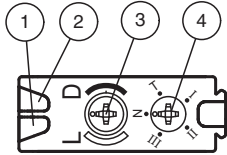
Connection Assignment



Wire colors in accordance with EN 60947-5-2

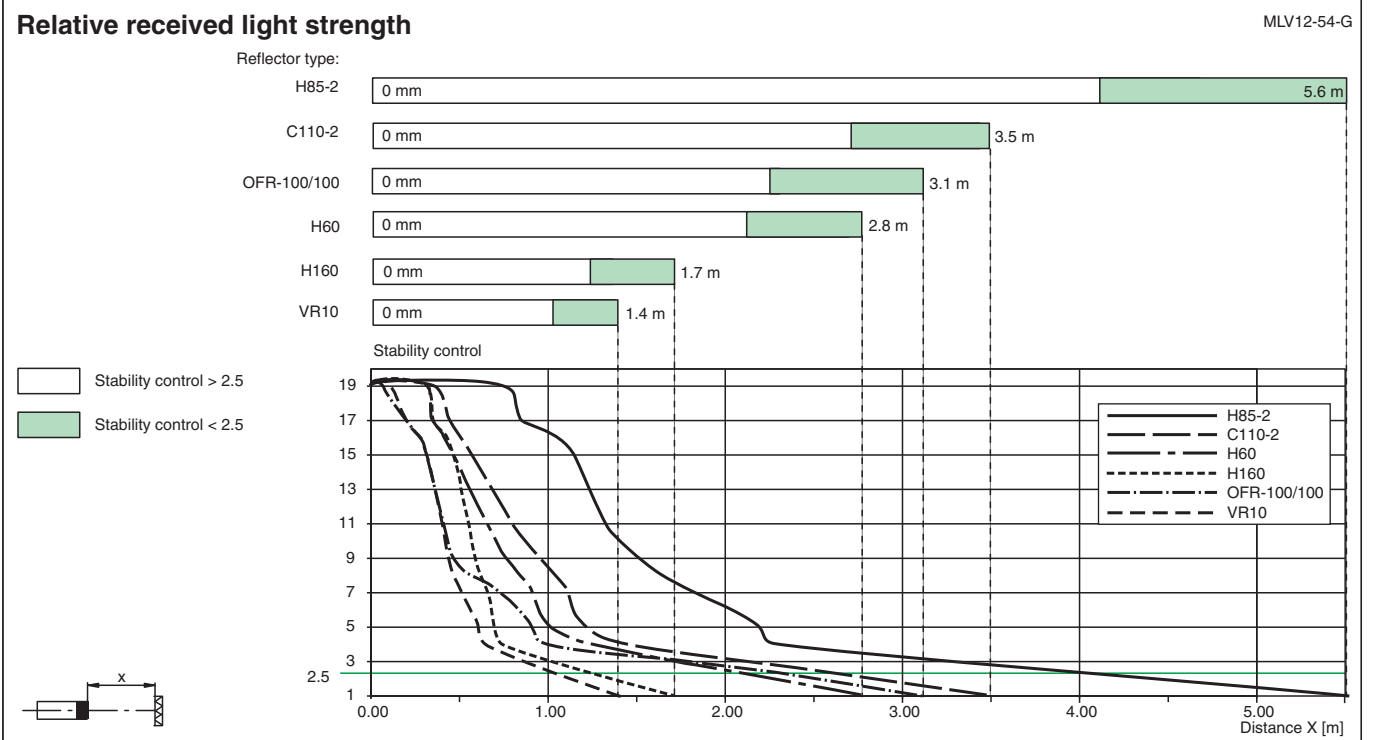
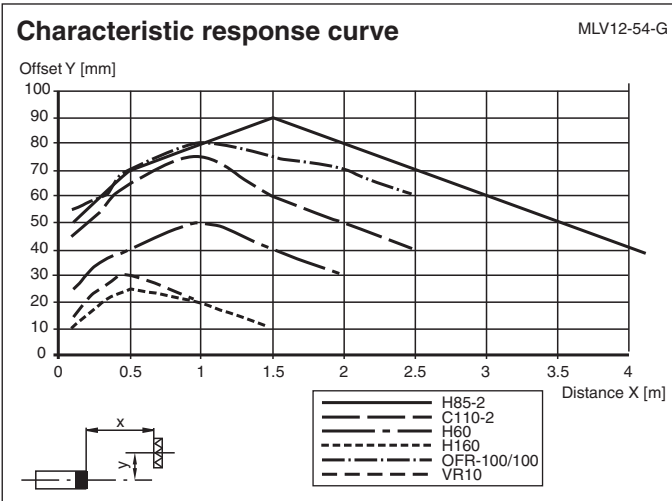
| | | |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue) |
| 4 | BK | (black) |
| 5 | GY | (gray) |

Assembly



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

Characteristic Curve








Accessories

| | | |
|--|----------------------|---|
| | OMH-MLV12-HWG | Mounting bracket for series MLV12 sensors |
|--|----------------------|---|

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Accessories

| | | |
|---|----------------------|---|
|  | 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 |

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.

