

- User-friendliest photoelectric sensor series for standard applications
- Miniature design
- Background evaluation uses background as reference for detection of difficult targets
- Simplest alignment and commissioning thanks to ultrabright transmitter LED
- Clear and functional display concept for the operating modes
- Full metal thread mounting

Diffuse mode sensor for standard applications, miniature design, background evaluation, 350 mm detection range, red light, NPN output, M8 plug



The optical sensors of this series are suitable for both standard and demanding applications. The series features a miniature housing design, two M3 metal-threaded mounting holes and a highly visible LED status indicator. Each device is equipped with a sensitivity adjuster and a light-on/dark-on changeover switch for increased flexibility. A wide variety of versions are available in both infrared light and red light with PowerBeam for easy alignment. Special versions with BlueBeam are suitable for challenging applications like those in the solar and battery industries.

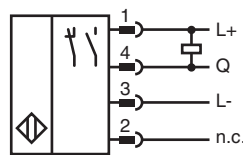
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## Technical Data

|                                             |                |                                                                                                                                                                     |
|---------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General specifications</b>               |                |                                                                                                                                                                     |
| Detection range                             |                | 5 ... 350 mm                                                                                                                                                        |
| Adjustment range                            |                | 30 ... 350 mm                                                                                                                                                       |
| Light source                                |                | LED                                                                                                                                                                 |
| Light type                                  |                | modulated visible red light                                                                                                                                         |
| Diameter of the light spot                  |                | approx. 20 mm at a distance of 350 mm                                                                                                                               |
| Opening angle                               |                | approx. 4 °                                                                                                                                                         |
| Optical face                                |                | frontal                                                                                                                                                             |
| Ambient light limit                         |                | EN 60947-5-2:2007+A1:2012                                                                                                                                           |
| <b>Functional safety related parameters</b> |                |                                                                                                                                                                     |
| MTTF <sub>d</sub>                           |                | 860 a                                                                                                                                                               |
| Mission Time (T <sub>M</sub> )              |                | 20 a                                                                                                                                                                |
| Diagnostic Coverage (DC)                    |                | 0 %                                                                                                                                                                 |
| <b>Indicators/operating means</b>           |                |                                                                                                                                                                     |
| Operation indicator                         |                | LED green: power on                                                                                                                                                 |
| Function indicator                          |                | LED yellow ON: sensor detects background                                                                                                                            |
| Control elements                            |                | Sensing range adjuster                                                                                                                                              |
| Control elements                            |                | Light-on/dark-on changeover switch                                                                                                                                  |
| <b>Electrical specifications</b>            |                |                                                                                                                                                                     |
| Operating voltage                           | U <sub>B</sub> | 10 ... 30 V DC                                                                                                                                                      |
| Ripple                                      |                | max. 10 %                                                                                                                                                           |
| No-load supply current                      | I <sub>0</sub> | < 20 mA                                                                                                                                                             |
| <b>Output</b>                               |                |                                                                                                                                                                     |
| Switching type                              |                | The switching type of the sensor is adjustable. The default setting is: light-on                                                                                    |
| Signal output                               |                | 1 NPN output, short-circuit protected, reverse polarity protected, open collector                                                                                   |
| Switching voltage                           |                | max. 30 V DC                                                                                                                                                        |
| Switching current                           |                | max. 100 mA , resistive load                                                                                                                                        |
| Voltage drop                                | U <sub>d</sub> | ≤ 1.5 V DC                                                                                                                                                          |
| Switching frequency                         | f              | 500 Hz                                                                                                                                                              |
| Response time                               |                | 1 ms                                                                                                                                                                |
| <b>Conformity</b>                           |                |                                                                                                                                                                     |
| Product standard                            |                | EN 60947-5-2                                                                                                                                                        |
| <b>Approvals and certificates</b>           |                |                                                                                                                                                                     |
| UL approval                                 |                | cULus Listed, Class 2 Power Source or listed Power Supply with a limited voltage output with (maybe integrated) fuse (max. 3.3 A according UL248), Type 1 enclosure |
| CCC approval                                |                | CCC approval / marking not required for products rated ≤36 V                                                                                                        |
| <b>Ambient conditions</b>                   |                |                                                                                                                                                                     |
| Ambient temperature                         |                | -30 ... 60 °C (-22 ... 140 °F)                                                                                                                                      |
| Storage temperature                         |                | -40 ... 70 °C (-40 ... 158 °F)                                                                                                                                      |
| <b>Mechanical specifications</b>            |                |                                                                                                                                                                     |
| Housing width                               |                | 11 mm                                                                                                                                                               |
| Housing height                              |                | 31 mm                                                                                                                                                               |
| Housing depth                               |                | 20 mm                                                                                                                                                               |
| Degree of protection                        |                | IP67                                                                                                                                                                |
| Connection                                  |                | Connector M8 x 1 , 4-pin                                                                                                                                            |
| Material                                    |                |                                                                                                                                                                     |
| Housing                                     |                | PC (Polycarbonate)                                                                                                                                                  |
| Optical face                                |                | PMMA                                                                                                                                                                |
| Mass                                        |                | approx. 10 g                                                                                                                                                        |
| Tightening torque, fastening screws         |                | 0.6 Nm                                                                                                                                                              |

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Connection



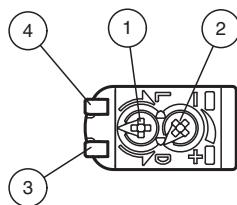
Connection Assignment



Wire colors in accordance with EN 60947-5-2

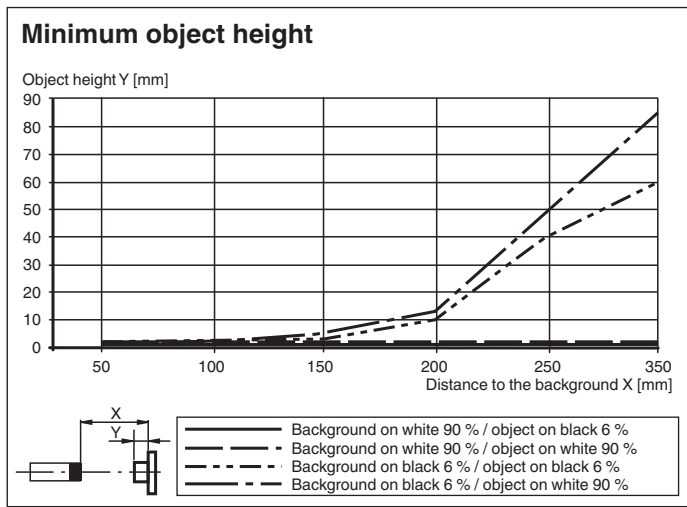
|   |    |         |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue)  |
| 4 | BK | (black) |

Assembly



|   |                          |        |
|---|--------------------------|--------|
| 1 | Light-Dark-switching     |        |
| 2 | Detection range adjuster |        |
| 3 | Signal display           | yellow |
| 4 | Operating display        | green  |

Characteristic Curve



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## Accessories

|                                                                                   |                      |                                                                        |
|-----------------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------|
|  | <b>OMH-ML100-09</b>  | Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm          |
|  | <b>OMH-ML100-03</b>  | Mounting aid for round steel ø 12 mm or sheet 1.5 mm ... 3 mm          |
|  | <b>OMH-ML100-04</b>  | Mounting aid for ML100 series, mounting bracket                        |
|  | <b>OMH-ML100-05</b>  | Mounting aid for ML100 series, mounting bracket                        |
|  | <b>OMH-F10-ML100</b> | Mounting aid for ML100 series                                          |
|  | <b>OMH-10</b>        | Mounting aid for ML100 series                                          |
|  | <b>V31-GM-2M-PUR</b> | Female cordset single-ended M8 straight A-coded, 4-pin, PUR cable grey |
|  | <b>V31-WM-2M-PUR</b> | Female cordset single-ended M8 angled A-coded, 4-pin, PUR cable grey   |
|  | <b>OMH-ML100-S1</b>  | Mounting bracket                                                       |

**Notes**

1. Set up the sensor to the background object.
2. Rotate the detection range adjuster clockwise until the yellow LED turns ON.
3. Continue to rotate the detection range adjuster clockwise until the yellow LED turns OFF.
4. Now counter-clockwise rotate the detection range adjuster just until the yellow LED turns ON again.

Preferably the background should be light or white.

Object should move transversely to the sensor.

The background should not vary in height.