



## Convergent beam sensor

ML100-8-HGU-100-RT/95/102/162



- Miniature design
- Diffuse mode sensor with long, narrow light spot
- Easy to use
- Very bright, highly visible light spot
- Full metal thread mounting

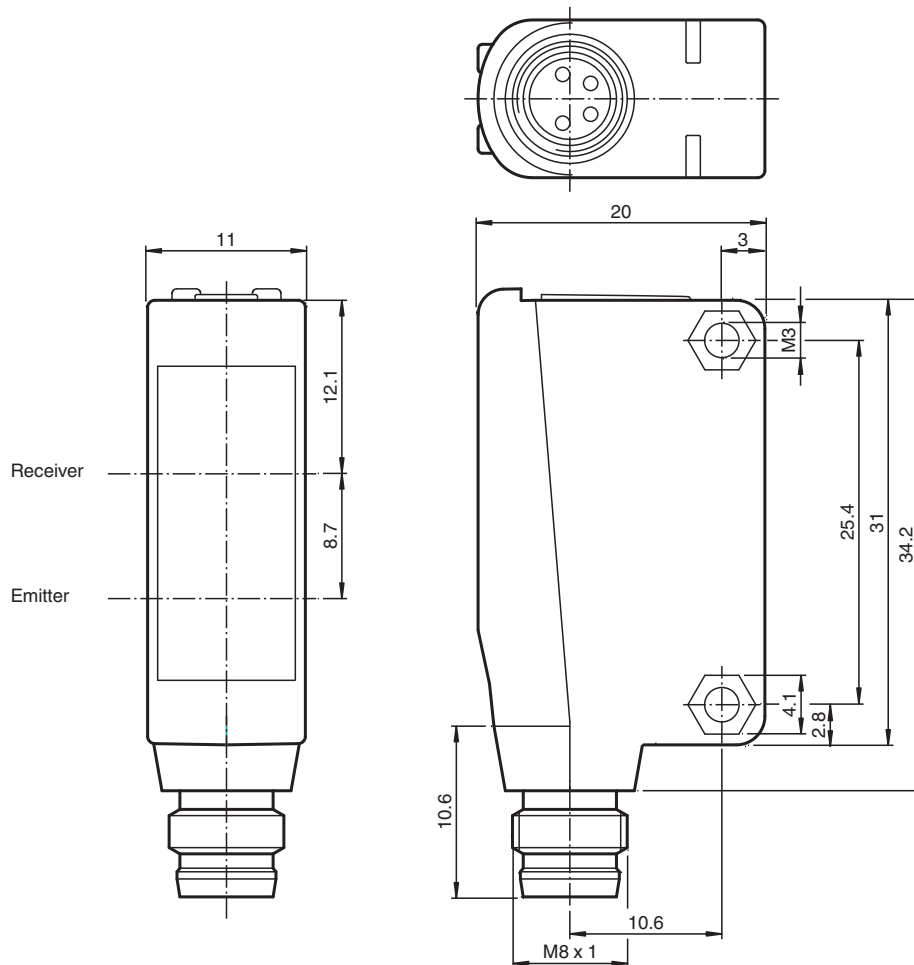
Convergent mode sensor, 100 mm adjustable detection range, red light, light/dark on, NPN output, M8 plug



### Function

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.

### Dimensions

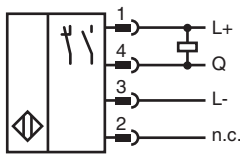


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## Technical Data

| General specifications               |                |   |
|--------------------------------------|----------------|---|
| Detection range                      |                | 10 ... 100 mm   |
| Adjustment range                     |                | 30 ... 100 mm   |
| Reference target                     |                | standard black, 100 mm x 100 mm   |
| Light source                         |                | LED   |
| Light type                           |                | modulated visible red light   |
| Polarization filter                  |                | no  |
| Diameter of the light spot           |                | approx. 6 mm x 60 mm at 100 mm  |
| Opening angle                        |                | Emitter: 3.5 ° vertical ; 30 ° horizontal   |
| Optical face                         |                | frontal   |
| Ambient light limit                  |                | EN 60947-5-2:2007+A1:2012   |
| Functional safety related parameters |                |   |
| MTTF <sub>d</sub>                    |                | 860 a   |
| Mission Time (T <sub>M</sub> )       |                | 20 a  |
| Diagnostic Coverage (DC)             |                | 0 %   |
| Indicators/operating means           |                |   |
| Operation indicator                  |                | LED green: power on   |
| Function indicator                   |                | LED yellow: lights when object is detected  |
| Control elements                     |                | Sensing range adjuster  |
| Control elements                     |                | Light-on/dark-on changeover switch  |
| Electrical specifications            |                |   |
| Operating voltage                    | U <sub>B</sub> | 10 ... 30 V DC  |
| Ripple                               |                | max. 10 %   |
| No-load supply current               | I <sub>0</sub> | < 20 mA   |
| Output                               |                |   |
| 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  |
| Conformity                           |                |   |
| Product standard                     |                | EN 60947-5-2  |
| Approvals and certificates           |                |   |
| 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  |
| Ambient conditions                   |                |   |
| Ambient temperature                  |                | -30 ... 60 °C (-22 ... 140 °F)  |
| Storage temperature                  |                | -40 ... 70 °C (-40 ... 158 °F)  |
| Mechanical specifications            |                |   |
| 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  |

## Connection



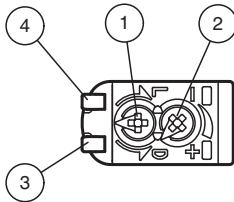
## Connection Assignment



Wire colors in accordance with EN 60947-5-2

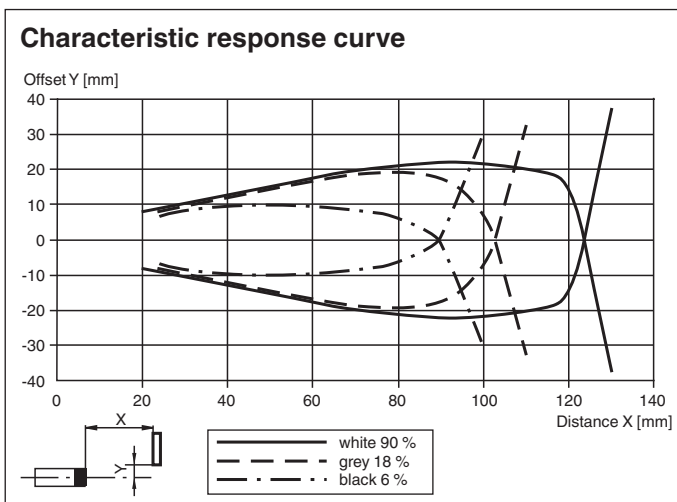
|   |    |         |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue)  |
| 4 | BK | (black) |

## Assembly



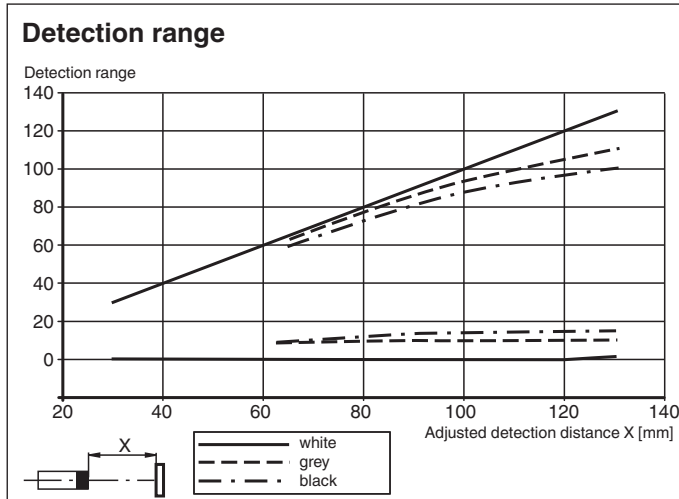
|   |                      |        |
|---|----------------------|--------|
| 1 | Light-Dark-switching |        |
| 2 | Sensitivity adjuster |        |
| 3 | Signal display       | yellow |
| 4 | Operating display    | green  |

## Characteristic Curve



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## Characteristic Curve



## Accessories

|  |                      |   |
|--|----------------------|---|
|  | <b>OMH-ML100-09</b>  | Mounting aid for round steel $\varnothing$ 12 mm or sheet 1.5 mm ... 3 mm |
|  | <b>OMH-ML100-03</b>  | Mounting aid for round steel $\varnothing$ 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  |