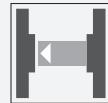




## Thru-beam sensor M100/MV100-RT-7870/98/103



- Miniature design
- Easy to use
- Very bright, highly visible light spot
- Full metal thread mounting
- Highly visible LEDs for Power ON and switching state
- Not sensitive to ambient light

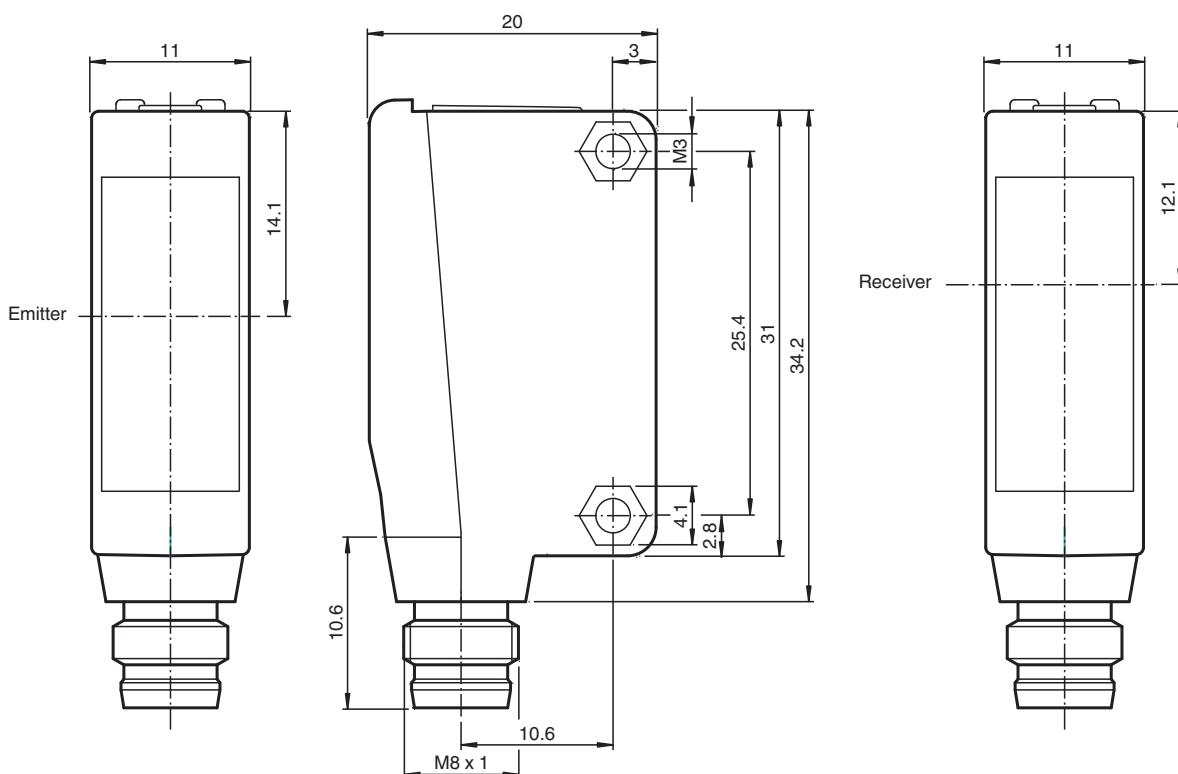
Thru-beam sensor, 10 m detection range, red light, light/dark on, DC version, PNP output, sensitivity adjuster, M8 plug



### 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



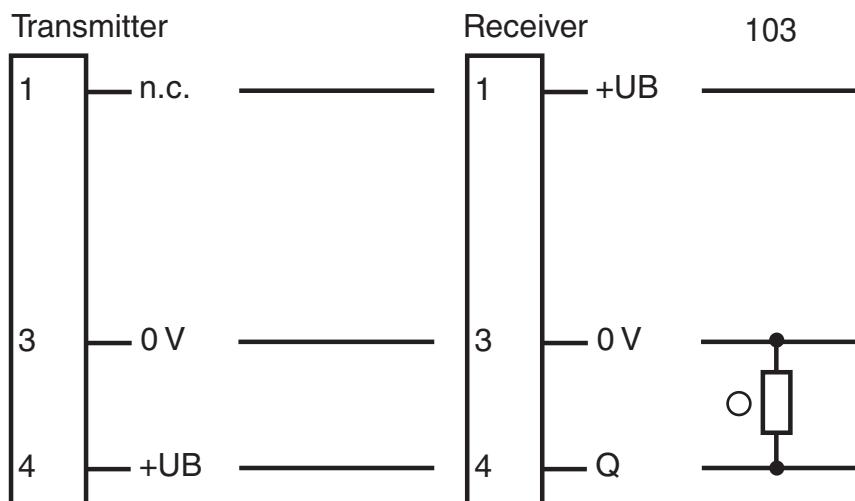
## Technical Data

| System components                        |                |   |
|--|----------------|---|
| Emitter                                  |                | M100-RT-7870/98   |
| Receiver                                 |                | MV100-RT/98/103   |
| General specifications                   |                |   |
| Effective detection range                |                | 0 ... 10 m  |
| Threshold detection range                |                | 15 m  |
| Light source                             |                | LED   |
| Light type                               |                | modulated visible red light   |
| Diameter of the light spot               |                | approx. 1 m at a distance of 15 m   |
| Opening angle                            |                | approx. 2 °   |
| Optical face                             |                | frontal   |
| Ambient light limit                      |                | EN 60947-5-2  |
| 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                       |                | Receiver: LED yellow, lights up when light beam is free, flashes when falling short of the operating reserve ; OFF when light beam is interrupted                   |
| Control elements                         |                | sensitivity adjustment  |
| 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> | Emitter: ≤ 15 mA<br>Receiver: ≤ 8 mA  |
| Input                                    |                |   |
| Test input                               |                | emitter deactivation at +U <sub>B</sub>   |
| Output                                   |                |   |
| Switching type                           |                | The switching type of the sensor is adjustable. The default setting is: light-on  |
| Signal output                            |                | 1 PNP 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              | 1000 Hz   |
| Response time                            |                | 0.5 ms  |
| Compliance with standards and directives |                |   |
| Directive conformity                     |                |   |
| EMC Directive 2004/108/EC                |                | EN 60947-5-2:2007+A1:2012   |
| Standard conformity                      |                |   |
| Standards                                |                | UL 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  |

## Technical Data

|                                     |                                     |
|-------------------------------------|-------------------------------------|
| Connection                          | M8 x 1 connector, 3-pin             |
| Material                            |                                     |
| Housing                             | PC (Polycarbonate)                  |
| Optical face                        | PMMA                                |
| Mass                                | approx. 20 g (emitter and receiver) |
| Tightening torque, fastening screws | 0.6 Nm                              |

## Connection Assignment



○ = Light on

● = Dark on

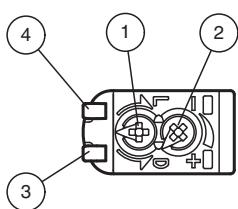
## Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

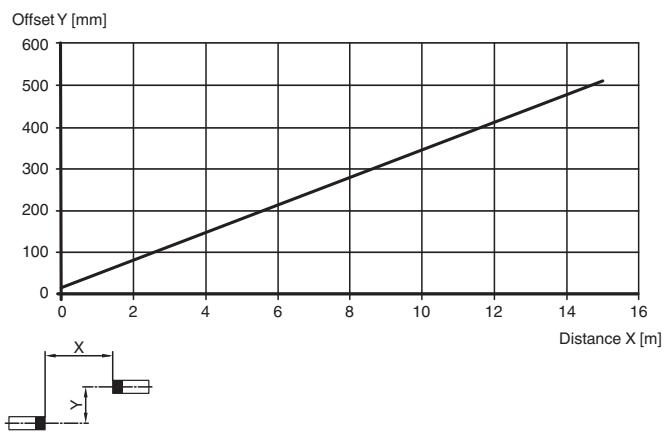
## Assembly



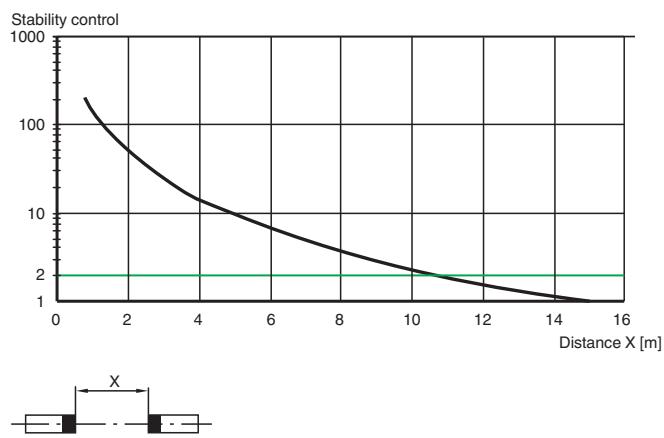
|   |                      |        |
|---|----------------------|--------|
| 1 | Light-Dark-switching |        |
| 2 | Sensitivity adjuster |        |
| 3 | Signal display       | yellow |
| 4 | Operating display    | green  |

## Characteristic Curve

### Characteristic response curve



### Relative received light strength



## Accessories

|  |                      |  |
|--|----------------------|--|
|  | <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>V3-WM-2M-PUR</b>  | Female cordset single-ended M8 angled A-coded, 3-pin, PUR cable grey |