



## Retroreflective sensor with polarization filter



OBR1000-R2-E2-0,2M-V31

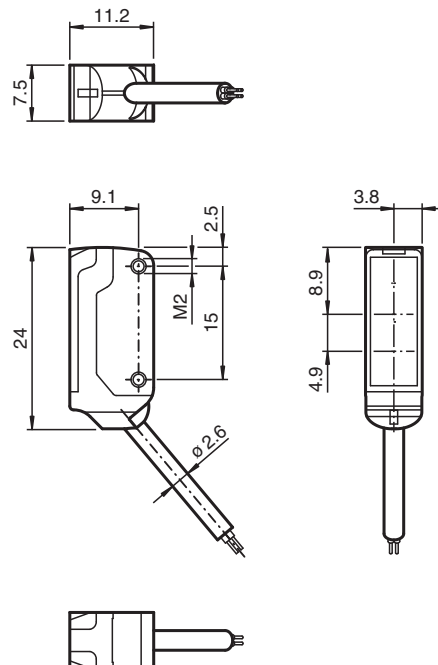
- Ultra-small housing design
- 45° cable outlet for maximum mounting freedom under extremely tight space constraints
- Improvement in machine availability with abrasion-resistant, antistatic glass front
- Integrated polarization filter allows the detection of reflective objects
- Extremely long detection range paves the way for new applications

Retroreflective sensor for standard applications, miniature design, polarization filter, 1000 mm detection range, red light, dark on, PNP output, fixed cable with M8 plug



The nano sensor has been developed for a broad range of applications. It offers excellent durability and is exceptionally easy to install. The housing is compact and, with its 45° cable outlet, can be installed in the smallest spaces. New functional principles and functionality open up a range of new options.

### Dimensions



## Technical Data

### General specifications

|                            |                                       |
|----------------------------|---------------------------------------|
| Effective detection range  | 0 ... 1 m                             |
| Reflector distance         | 40 ... 1000 mm                        |
| Threshold detection range  | 1.4 m                                 |
| Reference target           | H40 reflector                         |
| Light source               | LED                                   |
| Light type                 | modulated visible red light , 630 nm  |
| Polarization filter        | yes                                   |
| Angle deviation            | approx. 2 °                           |
| Diameter of the light spot | approx. 60 mm at a distance of 800 mm |
| Opening angle              | approx. 2 °                           |
| Optical face               | frontal                               |
| Ambient light limit        | EN 60947-5-2 : 30000 Lux              |

### Functional safety related parameters

|                                |       |
|--------------------------------|-------|
| MTTF <sub>d</sub>              | 800 a |
| Mission Time (T <sub>M</sub> ) | 20 a  |
| Diagnostic Coverage (DC)       | 0 %   |

### Indicators/operating means

|                     |                                                                                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Operation indicator | LED green, statically lit Power on , short-circuit : LED green flashing (approx. 4 Hz)                                                        |
| Function indicator  | LED yellow: lights up when receiving the light beam ; flashes when falling short of the stability control; OFF when light beam is interrupted |

### Electrical specifications

|                        |                |                          |
|------------------------|----------------|--------------------------|
| Operating voltage      | U <sub>B</sub> | 10 ... 30 V DC , class 2 |
| No-load supply current | I <sub>0</sub> | < 10 mA                  |

### Input

|            |                                   |
|------------|-----------------------------------|
| Test input | Test of switching function at 0 V |
|------------|-----------------------------------|

### Output

|                     |                |                                                                                   |
|---------------------|----------------|-----------------------------------------------------------------------------------|
| Switching type      |                | NO contact / dark-on                                                              |
| Signal output       |                | 1 PNP output, short-circuit protected, reverse polarity protected, open collector |
| Switching voltage   |                | max. 30 V DC                                                                      |
| Switching current   |                | max. 50 mA                                                                        |
| Voltage drop        | U <sub>d</sub> | ≤ 1.5 V DC                                                                        |
| Switching frequency | f              | approx. 800 Hz                                                                    |
| Response time       |                | 600 μs                                                                            |

### Conformity

|                  |              |
|------------------|--------------|
| Product standard | EN 60947-5-2 |
|------------------|--------------|

### Approvals and certificates

|                |                                                              |
|----------------|--------------------------------------------------------------|
| EAC conformity | TR CU 020/2011                                               |
| UL approval    | cULus Recognized, Class 2 Power Source                       |
| CCC approval   | CCC approval / marking not required for products rated ≤36 V |

### Ambient conditions

|                     |                                |
|---------------------|--------------------------------|
| Ambient temperature | -25 ... 60 °C (-13 ... 140 °F) |
| Storage temperature | -30 ... 70 °C (-22 ... 158 °F) |

### Mechanical specifications

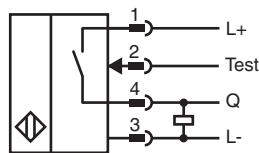
|                      |                                               |
|----------------------|-----------------------------------------------|
| Housing width        | 7.5 mm                                        |
| Housing height       | 24 mm                                         |
| Housing depth        | 11.2 mm                                       |
| Degree of protection | IP67                                          |
| Connection           | 200 mm fixed cable with 4-pin, M8x1 connector |
| Material             |                                               |
| Housing              | PC/ABS and TPU                                |
| Optical face         | glass                                         |
| Cable                | PUR                                           |

Release date: 2022-06-03 Date of issue: 2022-06-03 Filename: 225912\_eng.pdf

Technical Data

|              |  |                                                                 |
|--------------|--|-----------------------------------------------------------------|
| Installation |  | Fixing screws , 2 x M2 allen head screws included with delivery |
| Mass         |  | approx. 20 g                                                    |
| Cable length |  | 200 mm                                                          |

Connection



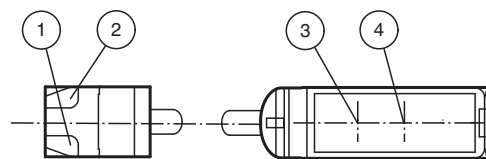
Connection Assignment



Wire colors in accordance with EN 60947-5-2

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

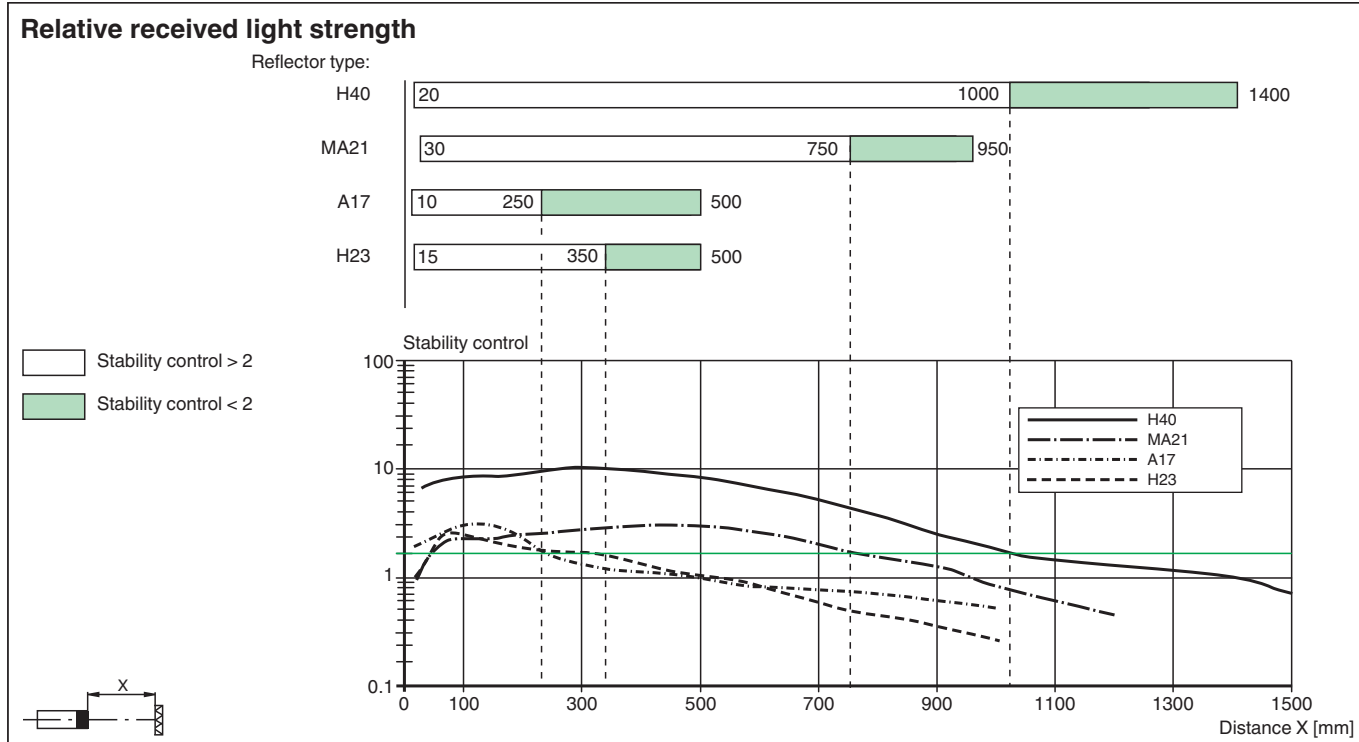
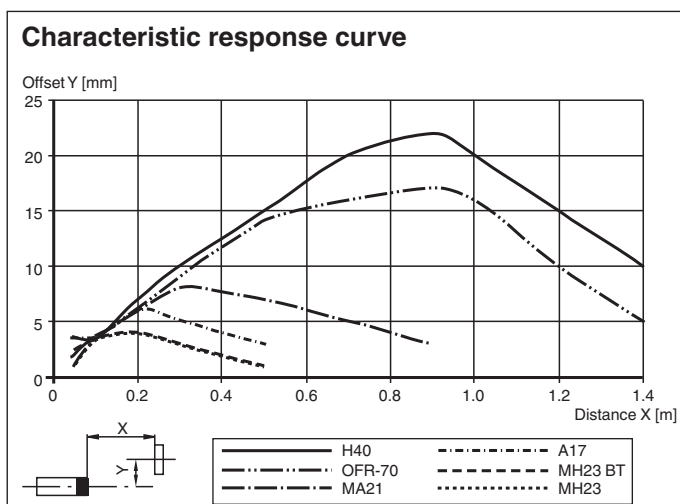
Assembly



|   |                   |        |
|---|-------------------|--------|
| 1 | Operating display | green  |
| 2 | Signal display    | yellow |
| 3 | Emitter           |        |
| 4 | Receiver          |        |

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## Characteristic Curve



## Accessories

|                                                                                     |                      |                                                                        |
|-------------------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------|
|  | <b>MH-R2-01</b>      | Mounting aid for R2 series, Mounting bracket                           |
|  | <b>MH-R2-02</b>      | Mounting aid for R2 series, Mounting bracket                           |
|  | <b>MH-R2-03</b>      | Mounting aid for R2 series, Mounting bracket                           |
|  | <b>MH-R2-04</b>      | Mounting aid for R2 series, Mounting bracket                           |
|  | <b>V31-GM-2M-PUR</b> | Female cordset single-ended M8 straight A-coded, 4-pin, PUR cable grey |

Accessories

|                                                                                   |                      |                                                                      |
|-----------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------|
|  | <b>V31-WM-2M-PUR</b> | Female cordset single-ended M8 angled A-coded, 4-pin, PUR cable grey |
|-----------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------|

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