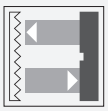
# Retroreflective sensor

## OBR2000-R2-E3-L

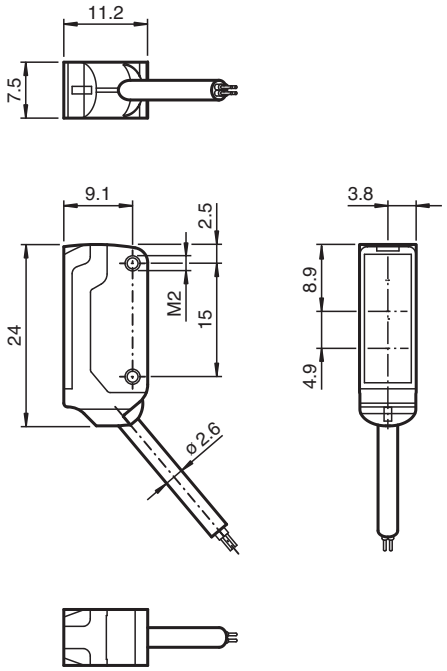


- Ultra-small housing design
- DuraBeam Laser Sensors - durable and employable like an LED
- 45° cable outlet for maximum mounting freedom under extremely tight space constraints
- Improvement in machine availability with abrasion-resistant, antistatic glass front

Laser retroreflective sensor, ultra-small design with M2 mounting, polarization filter, 2000 mm detection range, PNP output, 2 m fixed cable

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

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## Technical Data

| | | |
|---|---|---|
| **General specifications** | | |
| Effective detection range | | 0 ... 2 m |
| Reflector distance | | 40 ... 2000 mm |
| Threshold detection range | | 2.3 m |
| Reference target | | H40 reflector |
| Light source | | laser diode |
| Light type | | modulated visible red light , 680 nm |
| Polarization filter | | yes |
| Laser nominal ratings | | |
| Note | | LASER LIGHT , DO NOT STARE INTO BEAM |
| Laser class | | 1 |
| Wave length | | 680 nm |
| Beam divergence | | > 5 mrad |
| Pulse length | | approx. 3 µs |
| Repetition rate | | approx. 16.6 kHz |
| max. pulse energy | | 8 nJ |
| Diameter of the light spot | | approx. 35 mm at a distance of 2000 mm |
| Opening angle | | approx. 0.5 ° |
| Optical face | | frontal |
| Ambient light limit | | EN 60947-5-2 : 30000 Lux |
| **Functional safety related parameters** | | |
| $MTTF_d$ | | 800 a |
| Mission Time ($T_M$) | | 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 | $U_B$ | 12 ... 24 V |
| No-load supply current | $I_0$ | < 10 mA |
| Protection class | | III |
| **Output** | | |
| Switching type | | NC contact |
| Signal output | | 1 PNP output, short-circuit protected, reverse polarity protected, open collector |
| Switching voltage | | max. 30 V DC |
| Switching current | | max. 50 mA , resistive load |
| Voltage drop | $U_d$ | ≤ 1.5 V DC |
| Switching frequency | f | approx. 2 kHz |
| Response time | | 250 µs |
| **Conformity** | | |
| Product standard | | EN 60947-5-2 |
| Laser safety | | EN 60825-1:2007 |
| **Approvals and certificates** | | |
| EAC conformity | | TR CU 020/2011 |
| UL approval | | E87056 , cULus Recognized, Class 2 Power Source |
| CCC approval | | CCC approval / marking not required for products rated ≤36 V |
| FDA approval | | IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007 |
| **Ambient conditions** | | |
| Ambient temperature | | -20 ... 60 °C (-4 ... 140 °F) |
| Storage temperature | | -30 ... 70 °C (-22 ... 158 °F) |
| **Mechanical specifications** | | |
| Housing width | | 7.5 mm |

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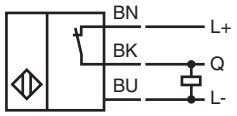
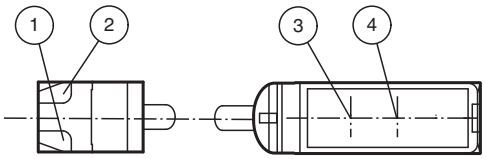
| | |
|---|---|
| Housing height | 24 mm |
| Housing depth | 11.2 mm |
| Degree of protection | IP67 |
| Connection | 2 m fixed cable |
| Material | |
| Housing | PC/ABS and TPU |
| Optical face | glass |
| Cable | PUR |
| Installation | Fixing screws , 2 x M2 allen head screws included with delivery |
| Mass | approx. 20 g |
| Cable length | 2 m |

## Connection

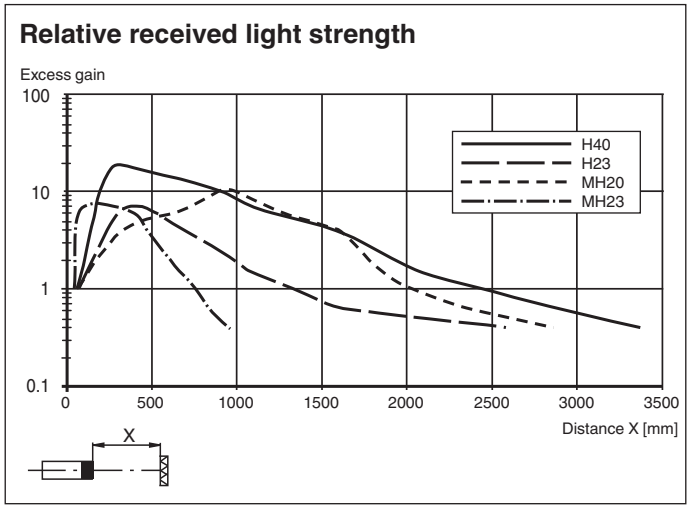



## Assembly




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

## Characteristic Curve

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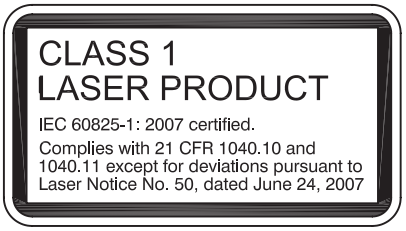
## Safety Information






## Accessories

| | | |
|---|---|---|
|  | **MH-R2-01** | Mounting aid for R2 series, Mounting bracket |
|  | **MH-R2-02** | Mounting aid for R2 series, Mounting bracket |
|  | **MH-R2-03** | Mounting aid for R2 series, Mounting bracket |
|  | **MH-R2-04** | Mounting aid for R2 series, Mounting bracket |
|  | **REF-H40** | Reflector, rectangular 47.5 mm x 23.5 mm, mounting holes, fixing strap |
|  | **REF-H23** | Reflector with mounting holes |
|  | **REF-MH20** | Reflector with Micro-structure, rectangular 32 mm x 20 mm, mounting holes |
|  | **REF-MH23** | Reflector with Micro-structure, rectangular 23 mm x 13.8 mm, diagonal mounting hole |

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