# Retroreflective sensor (glass)

## OBG3000-18GM40A-E2-V1

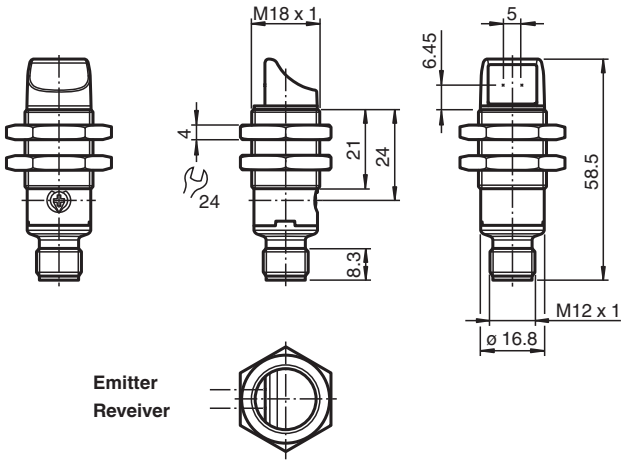
- Strong metallic housing in cylindrical shape M18 x 1
- Sensitivity adjuster for optimal adaptation to the application
- Not sensitive to ambient light
- Degree of protection IP67
- Very high detection range

Retroreflective sensor (glass)

## Function

The optical sensors of this series have an M18 threaded housing that is optionally available in plastic or metal.
The sensors are robust and versatile.
Focusing on the essential requirements simplifies selection and commissioning, saving time and costs.

## Dimensions




## Technical Data

| General specifications | |
|---|---|
| Effective detection range | 0 ... 3 m in glass mode; |
| Reflector distance | 0 ... 3 m in glass mode; |
| Threshold detection range | 3 m |
| Reference target | reflector C110-2 |
| Light source | LED |
| Light type | modulated visible red light |
| Polarization filter | yes |
| Diameter of the light spot | approx. 175 mm at a distance of 3 m |
| Angle of divergence | approx. 2.6 ° |

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## Technical Data

| | | |
|---|---|---|
| Optical face | | lateral |
| Ambient light limit | | EN 60947-5-2 20000 Lux |
| **Functional safety related parameters** | | |
| $MTTF_d$ | | 904 a |
| Mission Time ($T_M$) | | 20 a |
| Diagnostic Coverage (DC) | | 0 % |
| **Indicators/operating means** | | |
| Operation indicator | | LED green:<br>on - power on<br>flashing (4 Hz) - short circuit |
| Function indicator | | Yellow LED:<br>Permanently lit - light path clear<br>Permanently off - object detected<br>Flashing (4 Hz) - insufficient operating reserve |
| Control elements | | potentiometer for Teach-In |
| Contrast detection levels | | 18 % - clear glass bottles<br>40 % - colored glass or opaque materials |
| **Electrical specifications** | | |
| Operating voltage | $U_B$ | 10 ... 30 V DC |
| Ripple | | max. 10 % |
| No-load supply current | $I_0$ | < 25 mA |
| Protection class | | III |
| **Output** | | |
| Switching type | | Q - Pin4: PNP normally open / dark-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 | $U_d$ | ≤ 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 | | E87056 , cULus Listed , class 2 power supply , type rating 1 |
| **Ambient conditions** | | |
| Ambient temperature | | -40 ... 60 °C (-40 ... 140 °F) |
| Storage temperature | | -40 ... 70 °C (-40 ... 158 °F) |
| **Mechanical specifications** | | |
| Degree of protection | | IP67 |
| Connection | | 3-pin, M12 x 1 connector |
| Material | | |
| Housing | | brass, nickel-plated |
| Optical face | | PMMA |
| Connector | | Plastic |
| Mass | | approx. 16 g |

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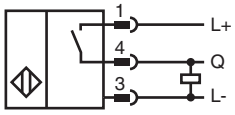
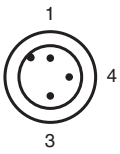
## Connection



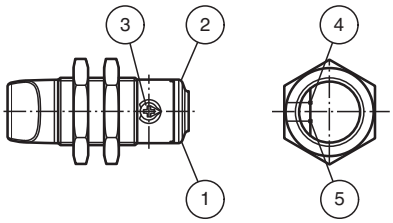

## Connection Assignment




Wire colors in accordance with EN 60947-5-2

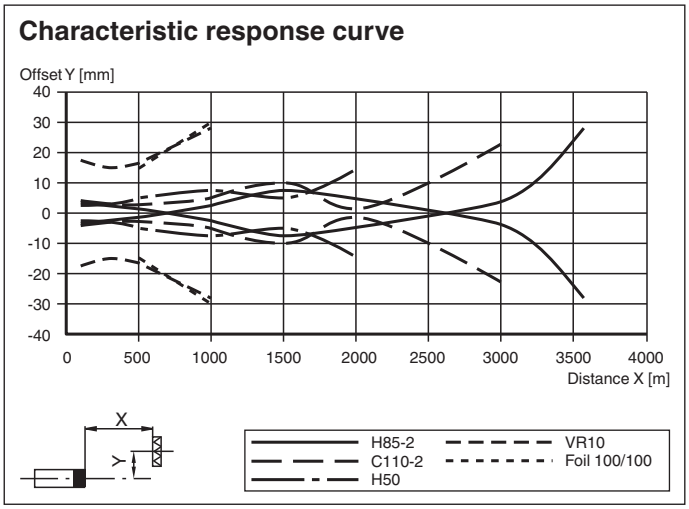
| | | |
|---|---|---|
| 1 | BN | (brown) |
| 3 | BU | (blue) |
| 4 | BK | (black) |

## Indication




| | | |
|---|---|---|
| 1 | Operating display | green |
| 2 | Signal display | yellow |
| 3 | Teach-In and Mode selection | |
| 4 | Emitter | |
| 5 | Receiver | |

## Characteristic Curve

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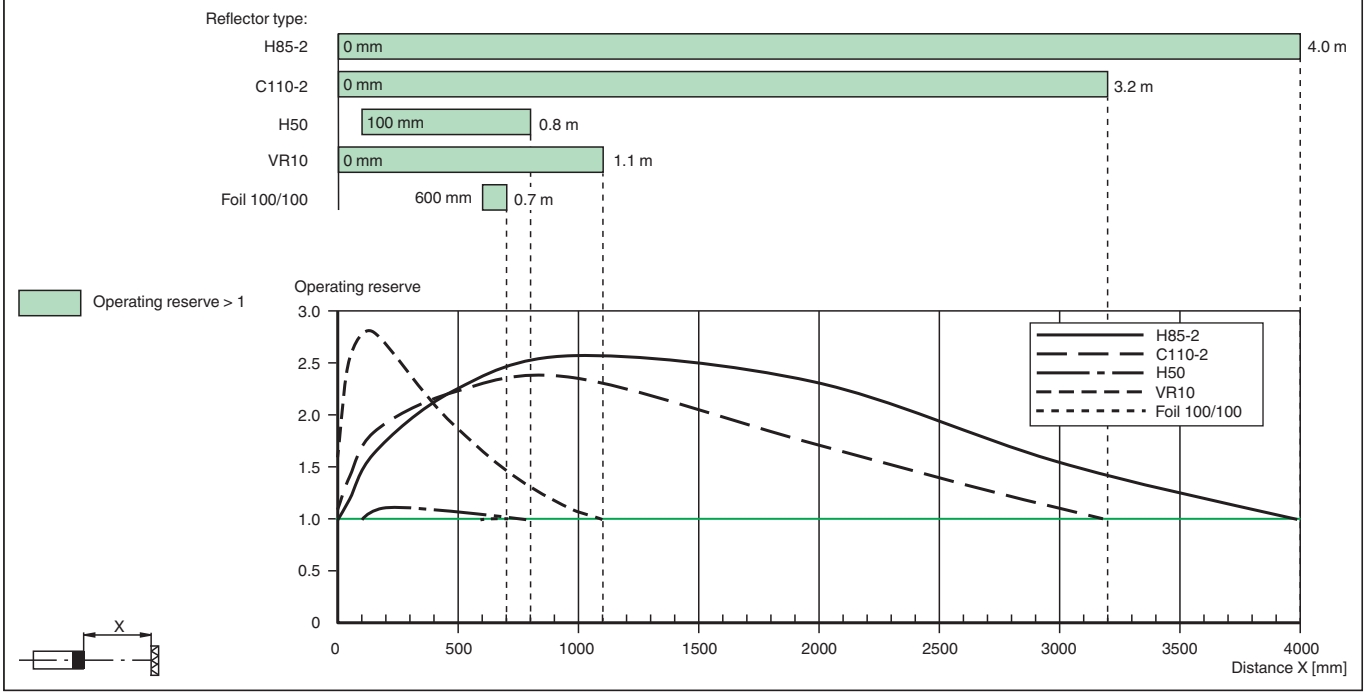
## Relative received light strength




## Teach-In

Apply the operating voltage to the sensor. The operating indicator lights up green. The sensor is automatically set to the last teach-in setting. Mount a suitable reflector opposite the sensor. The reflector can be taught-in in teach-in mode.

| Switch position | Description |
|---|---|
| T | Teach-in mode |
| CI | Contrast 1 |
| CII | Contrast 2 |

**Teach-in mode:**

- To start the teach-in mode, set the switch to the "T" position when light beam is free (no target).
- Wait approx. 3 seconds until the yellow and green signal indicators flash slowly and simultaneously (2.5 Hz).
- Turn the switch to contrast I or contrast II.

To indicate the end of the teach-in mode, the yellow and green signal indicators flash alternately for approx. 5 seconds.

- **Teach-in successful:** The green and yellow signal indicators flash slowly and alternately (2.5 Hz) for approximately 5 seconds. The contrast selected will be activated. The yellow signal indicator lights up permanently.
  The sensor is ready for operation.
- **Teach-in unsuccessful:** The green and yellow signal indicators flash quickly and alternately (8 Hz) for approx. 5 seconds. The contrast selected will be activated. The sensor is set to the previous valid teach-in setting.

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