# OD Mini

## COMPACT, LIGHTWEIGHT SENSOR FOR PRECISE MEASUREMENT

Short range distance sensors (displacement)

**SICK**
Sensor Intelligence.

# OD MINI – THE LIGHTWEIGHT SENSOR IN A COMPACT HOUSING



**The OD Mini in original size: 44.4 mm x 31 mm x 17 mm**

The new family of OD Mini short range distance sensors from SICK is one of the world's smallest distance sensors regarding display and control elements. Its measurement accuracy in the µm range, high-quality fittings, compact size and low weight are impressive. The OD Mini is available in two housing designs.

## OD Mini, stainless steel – The robust sensor

Stainless steel housing for use in harsh conditions



- 44.4 mm x 31 mm x 17 mm
- 70 g
- Connector M8, 4-pin or Cable with connector, M12, 5-pin
- High linearity: up to 10 µm

## OD Mini, aluminum – The lightweight sensor

For highly dynamic applications, e.g. robotic arms and grippers



- 44.4 mm x 31 mm x 17 mm
- 40 g
- Connector M8, 4-pin or Cable with connector, M12, 5-pin
- High linearity: up to 10 µm

# Small sensor – great performance



**Installation in limited space**
thanks to compact housing

**Simple commissioning**
using display with control elements

**Simple electrical integration**
with a variety of interfaces

**Saves on acquisition costs
and reduces the amount of cabling**
Sensor with integrated electronic
evaluation system

**Precise µm measurement and positioning**
regardless of brightness and color of the object surface

## Technology: Triangulation principle
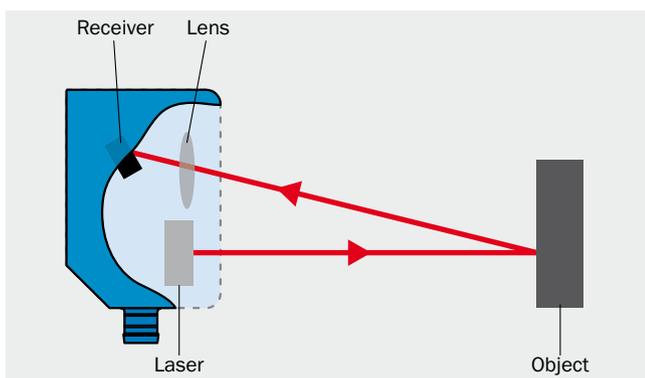


- A point of light is projected onto the object to be measured
- The light reflected is captured by a light-sensitive receiver at a specific angle
- Based on the angle between the send and receive direction, the position of the object is triangulated (lat. Triangulum: triangle)

## Typical industries and fields of application



- **Electronics and solar industry**
  - Measurement of electronic components for precise positioning
- **Machine tool and automobile industry**
  - Quality control of manufacturing tolerances
- **Handling and robotics industry**
  - Process control by robot positioning
- **Packaging machinery industry**
  - Classification and sorting (e. g. by length)

# COMPACT, LIGHTWEIGHT SENSOR FOR PRECISE MEASUREMENT
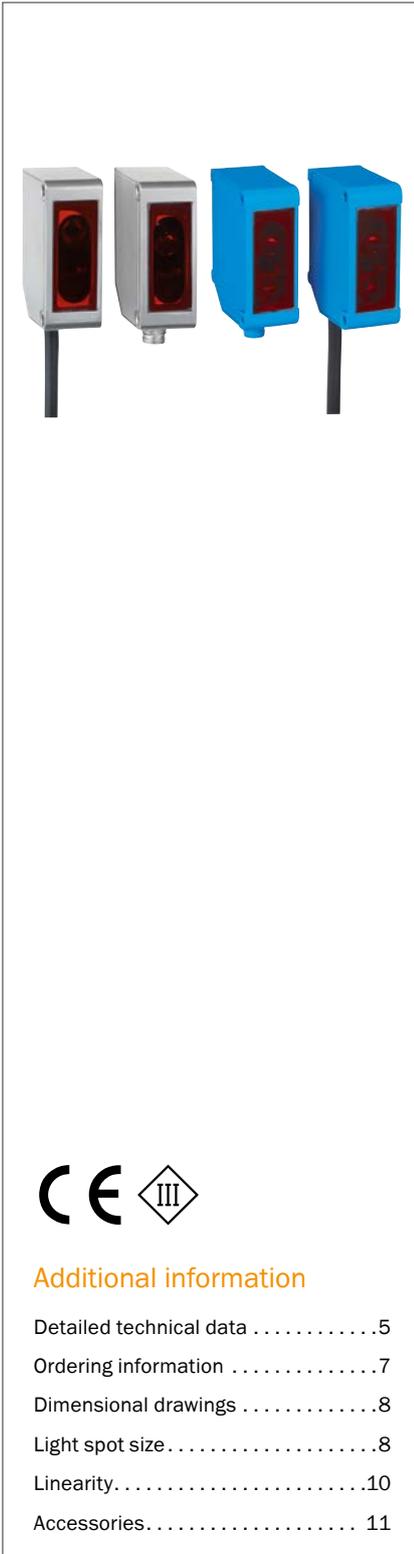
## Product description

Simple, precise, and economic solutions for measuring tasks; the OD Mini short range distance sensors (displacement) are impressive with their compact and rugged housing, which is available in a lightweight aluminum or a rugged stainless steel. These sensors are equipped with the latest CMOS receiver technology for precise measurement, regardless of the brightness and color of the surface material. The integrated amplifier unit enables the OD Mini to work on a stand-alone basis. Cabling to an external amplifier unit is no longer an issue. The OD Mini is simple to configure due to its intuitive design and display with four status LEDs. The OD Mini can also be remotely programmed via the external teaching input. The large number of available interfaces also simplifies integration into industrial networks. This ensures the highest possible reliability and precision when solving a wide range of measurement tasks.

## At a glance

- Compact, robust housing
- Integrated amplifier unit, no additional unit necessary
- Display and LEDs on device for visualization of current status
- Wide range of interfaces available
- Simple teach-in using display or external teaching input
- CMOS receiver unit for precise, fast measurement in the µm range
- Different measuring ranges enabling measurement from 10 mm up to 250 mm

## Your benefits

- Cost-saving commissioning through simple operating concept and display
- Small installation size and low weight also allow use in highly dynamic applications
- Reduction in cabling, as no additional amplifier unit is necessary
- High machine throughput thanks to reliable measurement, regardless of brightness and color of surface
- The wide range of available interfaces enables simple integration into industrial networks
- Optimum performance even at high production speeds

CE ⟨III⟩

## Additional information

➔ **www.mysick.com/en/OD_Mini**

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

## Detailed technical data

### Performance

| | OD Mini Core | OD Mini Prime |
|---|---|---|
| **Measuring range** | 20 mm ... 50 mm<br>50 mm ... 250 mm | 10 mm ... 20 mm<br>20 mm ... 50 mm<br>50 mm ... 150 mm |
| **Resolution** [1] | | |
| 10 mm ... 20 mm | – | 1 µm |
| 20 mm ... 50 mm | 0.02 mm [2] [3] [4] | 6 µm |
| 50 mm ... 150 mm | – | 20 µm |
| 50 mm ... 250 mm | 0.2 mm [2] [4] [5] | – |
| **Repeatability** [1] [6] | | |
| 10 mm ... 20 mm | – | 3 µm |
| 20 mm ... 50 mm | 0.06 mm [3] | 9 µm |
| 50 mm ... 150 mm | – | 30 µm |
| 50 mm ... 250 mm | 0.6 mm [5] | – |
| **Linearity** [2] [4] | | |
| 10 mm ... 20 mm | – | ± 10 µm |
| 20 mm ... 50 mm | – | ± 30 µm |
| 50 mm ... 150 mm | – | ± 100 µm |
| **Response time** [7] | 2 ms / 4 ms / 8 ms / 16 ms / auto | |
| **Measuring frequency** | 2 kHz / 1 kHz / 500 Hz / 250 Hz / auto | |
| **Light source** | Laser, red | |
| **Laser class** [8] | | |
| 10 mm ... 20 mm | – | 1 (EN 60825-1) |
| 20 mm ... 50 mm | 1 (EN 60825-1) | |
| 50 mm ... 150 mm | – | 1 (EN 60825-1) |
| 50 mm ... 250 mm | 2 (EN 60825-1) | – |
| **Additional function** | Averaging 1 ... 512x<br>Automatic or manual sensitivity adjustment<br>Teach-in of switching outputs<br>Switching output invertible<br>Switching mode: window (Wnd)<br>Switching mode: distance to object (DtO)<br>Switiching mode: object between sensor and background (ObSB)<br>Multifunctional input: laser-off / external teach-in / trigger | |
| | – | Teach-in of analog outputs |

[1] Averaging function set to: 512.

[2] Measurement on 90 % remission (ceramic, white).

[3] Hysteresis 0.08 mm.

[4] For best performance consider warm up time ≤ 5 minutes.

[5] Hysteresis 0.8 mm.

[6] Constant ambient conditions.

[7] At fixed sensitivity setting and averaging = 1. With automatic sensititvity setting and sample rating 500 µs: 2 ... 7.5 ms response time/sample rating 1,000 µs: 4 ... 15 ms response time.

[8] Wavelength: 655 nm, max. output: 390 µW (laser class 1) / < 1 mW (laser class 2)

## Interfaces

| Multifunctional input (MF) [1] | 1 x |
|---|---|

[1] MF can be used as laser-off, trigger, external teach-in or deactivated.

## Mechanics/electronics

|  | OD Mini Core | OD Mini Prime |
|---|---|---|
| Supply voltage $V_s$ | DC 12 V (–5 %) ... DC 24 V (+10 %) | |
| Power consumption [1] | ≤ 1.92 W | |
| Warm-up time | ≤ 5 min | |
| Indication | 4-digit 7-segment display (plus 4 LEDs for status display) | |
| Control elements | 4 buttons | |
| Weight | | |
| Aluminum housing with PPSU lens | 40 g | |
| Stainless steel housing with PPSU lens | – | 70 g |
| Dimensions | 44.4 mm x 31 mm x 17 mm | |

[1] Without load, with current output.

## Ambient data

| Enclosure rating | IP 67 |
|---|---|
| Protection class | III |
| Ambient temperature | Operation: –10 °C ... +40 °C<br>Storage: –20 °C ... +60 °C |
| Min. rel. humidity (not condensing) | 35 % |
| Max. rel. humidity (not condensing) | 95 % |
| Temperature drift | ± 0.08 % FS/K (FS = Full Scale = Measuring range of sensor) |
| Typ. ambient light safety | Artificial light: ≤ 3,000 lx<br>Sunlight: ≤ 10,000 lx |
| Vibration resistance | 10 Hz ... 55 Hz (amplitude 1.5 mm, x-, y-, z-axis 2 hours each) |
| Shock resistance | 50 G (x-, y-, z-axis 3 times each) |

## General notes

| Note | Not free of paint wetting impairment substances |
|---|---|

## Ordering information

| Sub product family | Housing material | Measurement range | Data interface | Connection type | Switching output | Model name | Part no. |
|---|---|---|---|---|---|---|---|
| OD Mini Core | Aluminum housing with PPSU lens | 20 mm ... 50 mm | – | Male connector M8, 4-pin | 1 x PNP/NPN, selectable | OD1-B035C15Q14 | 6052308 |
| | | | | Cable with connector M12, 5-pin, 30 cm | 1 x PNP/NPN, selectable | OD1-B035C15Q15 | 6052309 |
| | | 50 mm ... 250 mm | – | Male connector M8, 4-pin | 1 x PNP/NPN, selectable | OD1-B150F0AQ14 | 6052326 |
| | | | | Cable with connector M12, 5-pin, 30 cm | 1 x PNP/NPN, selectable | OD1-B150F0AQ15 | 6052327 |
| OD Mini Prime | Stainless steel housing with PPSU lens | 10 mm ... 20 mm | 1 x 4 mA ... 20 mA (< 300 Ω) | Male connector M8, 4-pin | – | OD1-B015H05I14 | 6050495 |
| | | | | Cable with connector M12, 5-pin, 30 cm | 1 x PNP/NPN, selectable | OD1-B015H05I25 | 6050496 |
| | | | 1 x 0 V ... 10 V (> 10 kΩ) | Male connector M8, 4-pin | – | OD1-B015H05U14 | 6050497 |
| | | | | Cable with connector M12, 5-pin, 30 cm | 1 x PNP/NPN, selectable | OD1-B015H05U25 | 6050498 |
| | | 20 mm ... 50 mm | 1 x 4 mA ... 20 mA (< 300 Ω) | Male connector M8, 4-pin | – | OD1-B035H15I14 | 6050503 |
| | | | | Cable with connector M12, 5-pin, 30 cm | 1 x PNP/NPN, selectable | OD1-B035H15I25 | 6050504 |
| | | | 1 x 0 V ... 10 V (> 10 kΩ) | Male connector M8, 4-pin | – | OD1-B035H15U14 | 6050505 |
| | | | | Cable with connector M12, 5-pin, 30 cm | 1 x PNP/NPN, selectable | OD1-B035H15U25 | 6050506 |
| | | 50 mm ... 150 mm | 1 x 4 mA ... 20 mA (< 300 Ω) | Male connector M8, 4-pin | – | OD1-B100H50I14 | 6050511 |
| | | | | Cable with connector M12, 5-pin, 30 cm | 1 x PNP/NPN, selectable | OD1-B100H50I25 | 6050512 |
| | | | 1 x 0 V ... 10 V (> 10 kΩ) | Male connector M8, 4-pin | – | OD1-B100H50U14 | 6050513 |
| | | | | Cable with connector M12, 5-pin, 30 cm | 1 x PNP/NPN, selectable | OD1-B100H50U25 | 6050514 |
| | Aluminum housing with PPSU lens | 10 mm ... 20 mm | 1 x 4 mA ... 20 mA (< 300 Ω) | Male connector M8, 4-pin | – | OD1-B015C05I14 | 6050519 |
| | | | | Cable with connector M12, 5-pin, 30 cm | 1 x PNP/NPN, selectable | OD1-B015C05I25 | 6050520 |
| | | 20 mm ... 50 mm | 1 x 4 mA ... 20 mA (< 300 Ω) | Male connector M8, 4-pin | – | OD1-B035C15I14 | 6050523 |
| | | | | Cable with connector M12, 5-pin, 30 cm | 1 x PNP/NPN, selectable | OD1-B035C15I25 | 6050524 |
| | | 50 mm ... 150 mm | 1 x 4 mA ... 20 mA (< 300 Ω) | Male connector M8, 4-pin | – | OD1-B100C50I14 | 6050527 |
| | | | | Cable with connector M12, 5-pin, 30 cm | 1 x PNP/NPN, selectable | OD1-B100C50I25 | 6050528 |

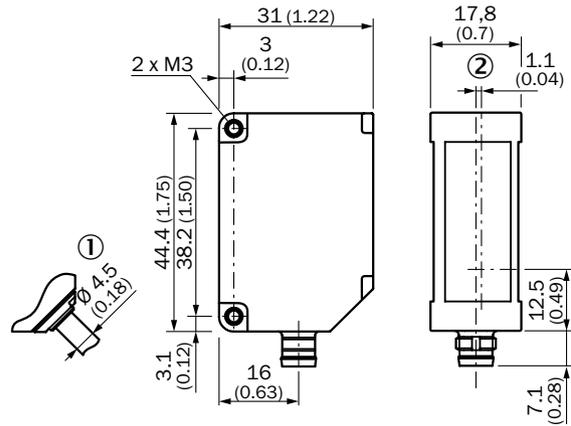## Dimensional drawings (Dimensions in mm (inch))

### Stainless steel housing
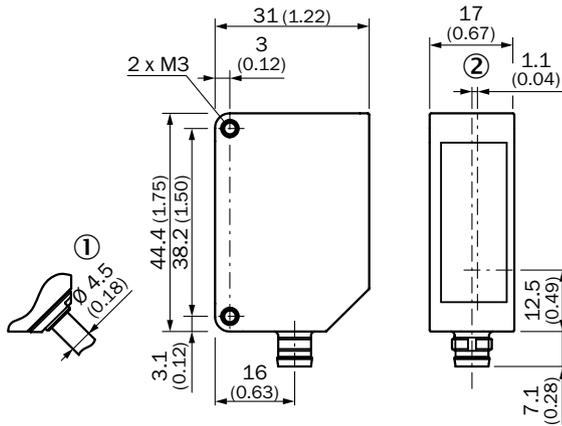


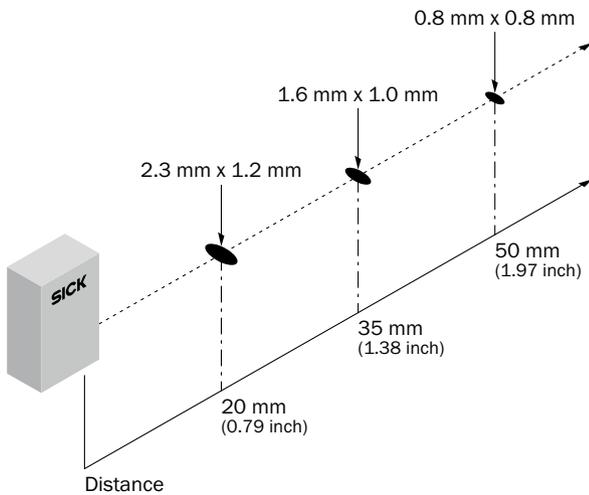① Variant with 30 cm cable with M12, 5-pin connector
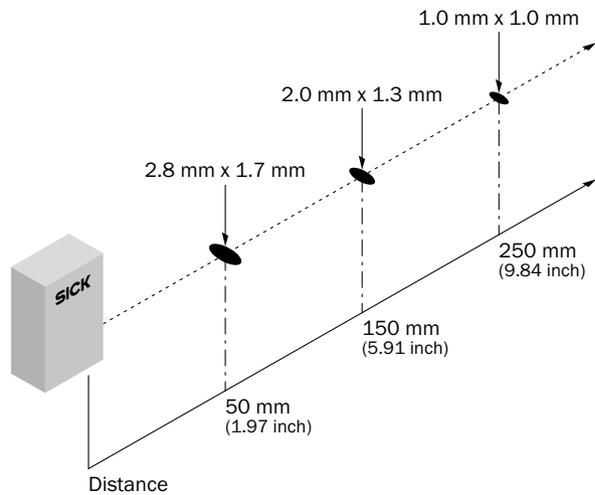② Optical axis

### Aluminum housing



① Variant with 30 cm cable with M12, 5-pin connector
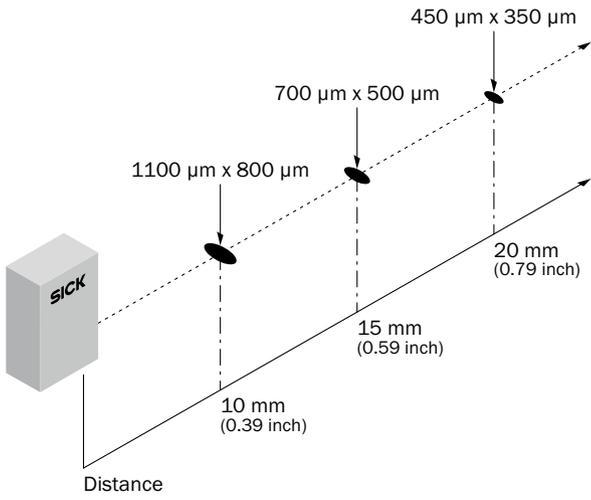② Optical axis

## Light spot size

### OD Mini Core
### 20 mm ... 50 mm



0.8 mm x 0.8 mm

1.6 mm x 1.0 mm

2.3 mm x 1.2 mm

50 mm (1.97 inch)

35 mm (1.38 inch)

20 mm (0.79 inch)

Distance

### OD Mini Core
### 50 mm ... 250 mm



1.0 mm x 1.0 mm

2.0 mm x 1.3 mm

2.8 mm x 1.7 mm

250 mm (9.84 inch)

150 mm (5.91 inch)

50 mm (1.97 inch)

Distance

OD Mini Prime
10 mm ... 20 mm

450 µm x 350 µm

700 µm x 500 µm

1100 µm x 800 µm

20 mm
(0.79 inch)

15 mm
(0.59 inch)

10 mm
(0.39 inch)

Distance

OD Mini Prime
20 mm ... 50 mm

400 µm x 250 µm

800 µm x 450 µm

1400 µm x 700 µm

50 mm
(1.97 inch)

35 mm
(1.38 inch)

20 mm
(0.79 inch)

Distance

OD Mini Prime
50 mm ... 150 mm

550 µm x 500 µm

700 µm x 600 µm

900 µm x 800 µm

150 mm
(5.91 inch)

100 mm
(3.94 inch)

50 mm
(1.97 inch)

Distance
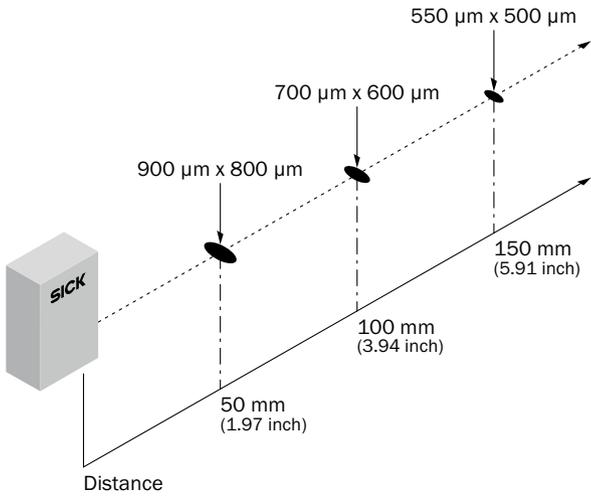
## Linearity

### OD Mini Prime
### 10 mm ... 20 mm

Linearity [% FS]
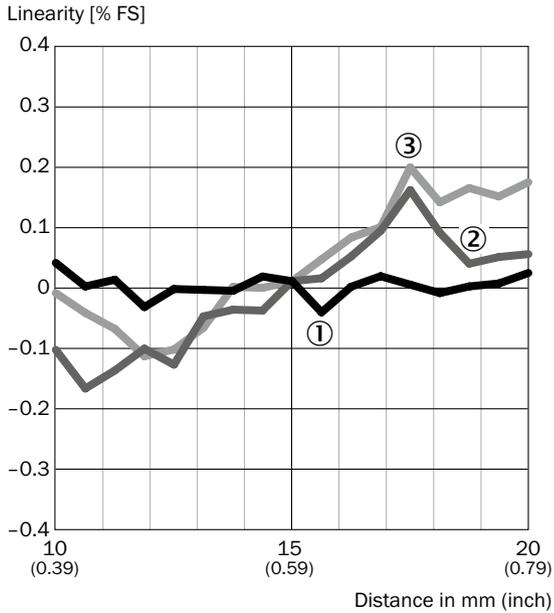


① White ceramic
② Stainless steel
③ Black rubber

### OD Mini Prime
### 20 mm ... 50 mm

Linearity [% FS]
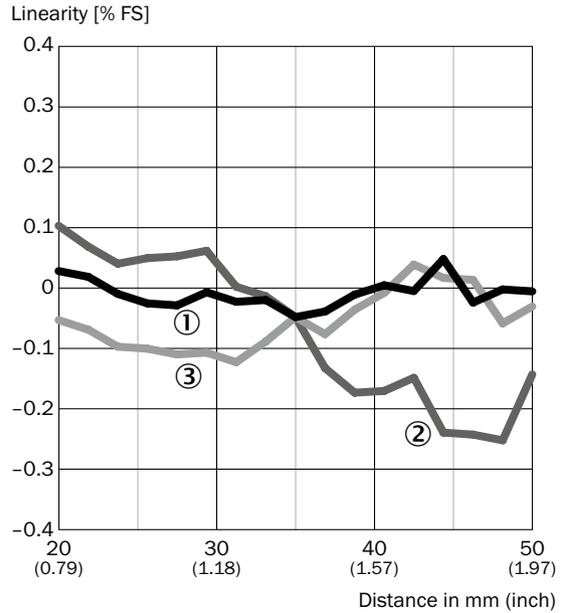


① White ceramic
② Stainless steel
③ Black rubber

### OD Mini Prime
### 50 mm ... 150 mm

Linearity [% FS]
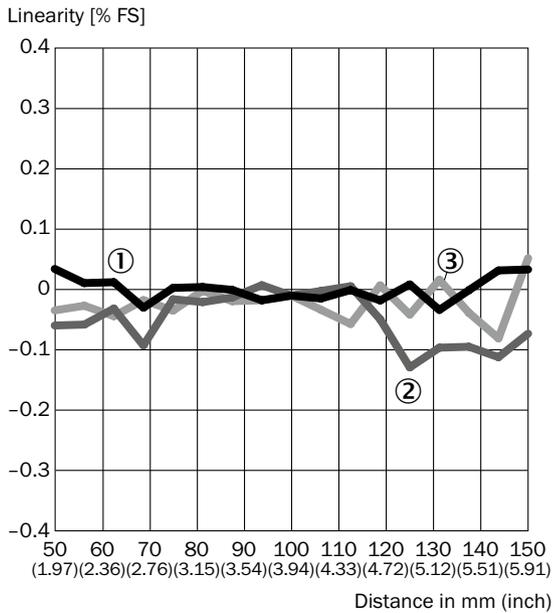


① White ceramic
② Stainless steel
③ Black rubber

## Accessories

### Mounting systems

#### Mounting brackets/plates

| | Brief description | Type | Part no. | OD Mini male connector | OD Mini cable with connector |
|---|---|---|---|---|---|
| | Mounting bracket, stainless steel, for wall installation, no alignment bracket | BEF-OD1-A | 5328343 | ● | ● |
| | Mounting bracket, stainless steel, no alignment bracket | BEF-OD1-B | 5328344 | – | ● |

### Connection systems

#### Plug connectors and cables

| | Connection type head A | Connection type head B | Cable | Cable length | Type | Part no. | OD Mini male connector | OD Mini cable with connector |
|---|---|---|---|---|---|---|---|---|
| | Female connector, M8, 4-pin, straight | Cable | PVC, unshielded | 1.5 m | DOL-0804-G1M5 | 6049343 | ● | – |
| | | | | 2 m | DOL-0804-G02M | 6009870 | ● | – |
| | | | | 2.5 m | DOL-0804-G2M5 | 6049344 | ● | – |
| | | | | 3 m | DOL-0804-G03M | 6049342 | ● | – |
| | | | | 5 m | DOL-0804-G05M | 6009872 | ● | – |
| | | | | 10 m | DOL-0804-G10M | 6010754 | ● | – |
| | | | | 15 m | DOL-0804-G15M | 6035232 | ● | – |
| | | | | 20 m | DOL-0804-G20M | 6029109 | ● | – |
| | | | | 30 m | DOL-0804-G30M | 6029110 | ● | – |
| | | | | 50 m | DOL-0804-G50M | 6029111 | ● | – |
| | | | PUR, halogen-free, drag chain use, unshielded | 2 m | DOL-0804-G02MC | 6025894 | ● | – |
| | | | | 5 m | DOL-0804-G05MC | 6025895 | ● | – |
| | | | | 10 m | DOL-0804-G10MC | 6025896 | ● | – |
| | | | | 15 m | DOL-0804-G15MC | 6038622 | ● | – |
| | | | | 20 m | DOL-0804-G20MC | 6051148 | ● | – |
| | Female connector, M8, 4-pin, angled | Cable | PVC, unshielded | 2 m | DOL-0804-W02M | 6009871 | ● | – |
| | | | | 5 m | DOL-0804-W05M | 6009873 | ● | – |
| | | | | 10 m | DOL-0804-W10M | 6010755 | ● | – |
| | | | PUR, halogen-free, drag chain use, unshielded | 2 m | DOL-0804-W02MC | 6025897 | ● | – |
| | | | | 5 m | DOL-0804-W05MC | 6025898 | ● | – |
| Illustration may differ | | | | 10 m | DOL-0804-W10MC | 6025899 | ● | – |

| | Connection type head A | Connection type head B | Cable | Cable length | Type | Part no. | OD Mini male connector | OD Mini cable with connector |
|---|---|---|---|---|---|---|---|---|
| Illustration may differ | Female connector, M12, 5-pin, straight | Cable | PVC, unshielded | 2 m | DOL-1205-G02M | 6008899 | – | ● |
| | | | | 5 m | DOL-1205-G05M | 6009868 | – | ● |
| | | | | 10 m | DOL-1205-G10M | 6010544 | – | ● |
| | | | PUR, halogen-free, unshielded | 2 m | DOL-1205-G02MC | 6025906 | – | ● |
| | | | | 5 m | DOL-1205-G05MC | 6025907 | – | ● |
| | | | | 10 m | DOL-1205-G10MC | 6025908 | – | ● |
| | | | PUR, halogen-free, shielded | 5 m | DOL-1205-G05MAC | 6036384 | – | ● |
| | | | | 10 m | DOL-1205-G10MAC | 6036385 | – | ● |
| | | | | 20 m | DOL-1205-G20MAC | 6036386 | – | ● |
| | Female connector, M8, 4-pin, straight | - | Unshielded | – | DOS-0804-G | 6009974 | ● | – |
| | Female connector, M8, 4-pin, angled | - | Unshielded | – | DOS-0804-W | 6009975 | ● | – |
| | Female connector, M12, 5-pin, straight | - | Unshielded | – | DOS-1205-G | 6009719 | – | ● |
| | Female connector, M12, 5-pin, angled | - | Unshielded | – | DOS-1205-W | 6009720 | – | ● |

# WWW.MYSICK.COM – SEARCH ONLINE AND ORDER

**Search online quickly and safely - with the SICK "Finders"**

Product ─────
Applications ─────
Literature ─────
Service ─────
Accessories ─────
Software ─────
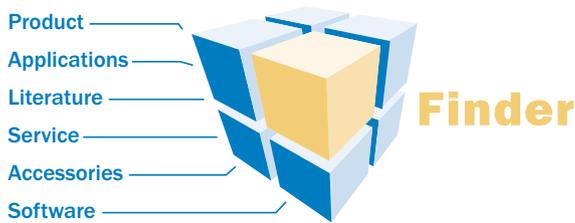
**Finder**

**Product Finder:** We can help you to quickly target the product that best matches your application.

**Applications Finder:** Select the application description on the basis of the challenge posed, industrial sector, or product group.

**Literature Finder:** Go directly to the operating instructions, technical information, and other literature on all aspects of SICK products.

**Efficiency – with the E-Commerce-Tools from SICK**
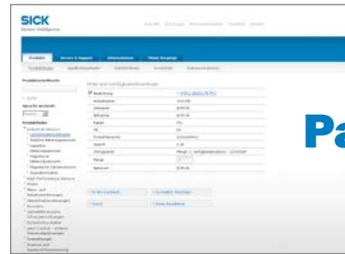
**Partner Portal**
www.mysick.com

**Find out prices and availability**
Determine the price and possible delivery date of your desired product simply and quickly at any time.

**Request or view a quote**
You can have a quote generated online here.
Every quote is confirmed to you via e-mail.

**Order online**
You can go through the ordering process in just a few steps.

# FOR SAFETY AND PRODUCTIVITY: SICK LIFETIME SERVICES

SICK LifeTime Services is a comprehensive set of high-quality services provided to support the entire life cycle of products and applications from system design all the way to upgrades. These services increase the safety of people, boost the productivity of machines and serve as the basis for our customers' sustainable business success.

CONSULT SUPPORT CHECK RETROFIT TRAIN

**SICK LifeTime Services**

**Consulting & Design**
Globally available experts for cost-effective solutions

**Product & System Support**
Fast and reliable, by telephone or on location

**Verification & Optimization**
Checks and recommendations for increased availability

**Upgrade & Retrofits**
Uncovers new potential for machines and systems

**Training & Education**
Employee qualification for increased competitiveness

# SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for factory, logistics, and process automation. With more than 6,000 employees and over 40 subsidiaries worldwide, we are always close to our customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in various industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services round out our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

**For us, that is "Sensor Intelligence."**

**Worldwide presence:**

Australia, Belgium/Luxembourg, Brasil, Česká republika, Canada, China, Danmark, Deutschland, España, France, Great Britain, India, Israel, Italia, Japan, México, Nederland, Norge, Österreich, Polska, România, Russia, Schweiz, Singapore, Slovenija, South Africa, South Korea, Suomi, Sverige, Taiwan, Türkiye, United Arab Emirates, USA.

Please find detailed addresses and additional representatives and agencies in all major industrial nations at: **www.sick.com**

**SICK**
Sensor Intelligence.