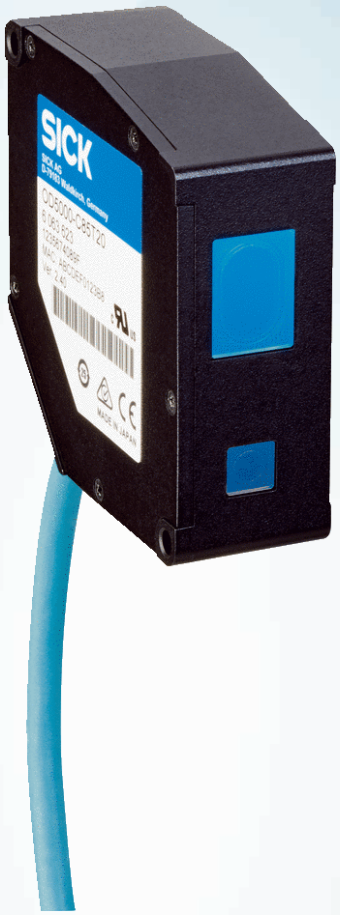
Data sheet




# OD5000-C85W20

## OD5000

DISPLACEMENT SENSORS

SICK
Sensor Intelligence.

## Ordering information

| Type | part no. |
|---|---|
| OD5000-C85W20 | 6063624 |

Other models and accessories ➜ www.sick.com/OD5000

## Detailed technical data

### Features

| | |
|---|---|
| **Measuring range** | 65 mm ... 105 mm [1] |
| **Repeatability** | 0.1 µm [2] [3] |
| **Linearity** | Diffuse ± 6 µm [2]<br>Specular ± 6 µm |
| **Response time** | ≥ 0.0125 ms [4] [5] |
| **Measuring frequency** | ≤ 80 kHz [6] |
| **Output time** | ≥ 0.0125 ms |
| **Emitted beam** | |
| Light source | Laser, red |
| Typ. light spot size (distance) | 70 µm x 2,000 µm |
| **Key laser figures** | |
| Normative reference | IEC 60825-1:2014, EN 60825-1:2014 |
| Laser class | 1 [7]<br>[8] |
| **Special task** | Thickness measurement of transparent material |
| **Thickness measurement of transparent material** | 0.5 mm ... 2 mm |
| **Safety-related parameters** | |

[1] If there are reflections, the measuring range is reduced to 71.5 ... 91.5 mm.
[2] Measurement on 60 % remission (ceramic, white).
[3] Set average: 65536, median: 31, response time: 50 µs, constant application parameters.
[4] At 0.0125 ms, measurement is only possible within a sub-range.
[5] Dependent on the set average or sensitivity.
[6] At 80 kHz, measurement is only possible in a sub-area.
[7] Visible, wavelength: 655 nm, max. power: 0.39 mW.
[8] Do not intentionally look into the laser beam. Never point the laser beam at people's eyes.

| | |
|---|---|
| $MTTF_D$ | 61 years |
| $DC_{avg}$ | 0% |

[1] If there are reflections, the measuring range is reduced to 71.5 ... 91.5 mm.
[2] Measurement on 60 % remission (ceramic, white).
[3] Set average: 65536, median: 31, response time: 50 µs, constant application parameters.
[4] At 0.0125 ms, measurement is only possible within a sub-range.
[5] Dependent on the set average or sensitivity.
[6] At 80 kHz, measurement is only possible in a sub-area.
[7] Visible, wavelength: 655 nm, max. power: 0.39 mW.
[8] Do not intentionally look into the laser beam. Never point the laser beam at people's eyes.

## Interfaces

| | |
|---|---|
| **Ethernet** | ✓ , TCP/IP, UDP |
| **Digital input** | $In_1$<br>Can be used as laser off, external teach-in, or deactivated |
| **Digital output** | |
| Number | 1 ... 3 [1] |
| Type | PNP/NPN, selectable |
| **Analog output** | |
| Number | 1 |
| Type | Current output |
| Function | Optional over evaluation unit AOD1 |
| Current | 4 mA ... 20 mA, ≤ 300 Ω |

[1] Optional over evaluation unit AOD1.

## Electronics

| | |
|---|---|
| **Supply voltage $U_B$** | DC 12 V ... 24 V, ± 10%, including residual ripple |
| **Power consumption** | 180 mA, at 24 V |
| **Warm-up time** | < 10 min |
| **Display** | Status LEDs |
| **Enclosure rating** | IP67 |
| **Protection class** | III (EN 50178) |
| **Connection type** | |
| | Cable with male connector, 50 cm |

## Mechanics

| | |
|---|---|
| **Dimensions (W x H x D)** | 25.9 mm x 71.5 mm x 53.2 mm |
| **Housing material** | Metal (Aluminum die cast) |
| **Window material** | Plastic (PMMA) |
| **Weight** | 280 g |

## Ambient data

| | |
|---|---|
| **Ambient temperature, operation** | –10 °C ... +50 °C, Operating temperature at $V_S$ = 24 V |
| **Ambient temperature, storage** | –20 °C ... +60 °C |
| **Relative air humidity (non-condensing)** | 35 % ... 85 % |

[1] With constant object movement in the measuring range.

| | |
|---|---|
| **Temperature drift** | ± 0.01 % FS/K at –10 °C ... +40 °C (FS = Full Scale = sensor measuring range)<br>± 0.03 % FS/K at +40 °C ... +50 °C (FS = Full Scale = sensor measuring range) |
| **Typ. Ambient light immunity** | Artificial light: ≤ 3,000 lx [1)]<br>Sunlight: ≤ 10,000 lx |
| **Vibration resistance** | EN 60068-2-6, EN 60068-2-64 |
| **Shock resistance** | EN 60068-2-27 |

[1)] With constant object movement in the measuring range.

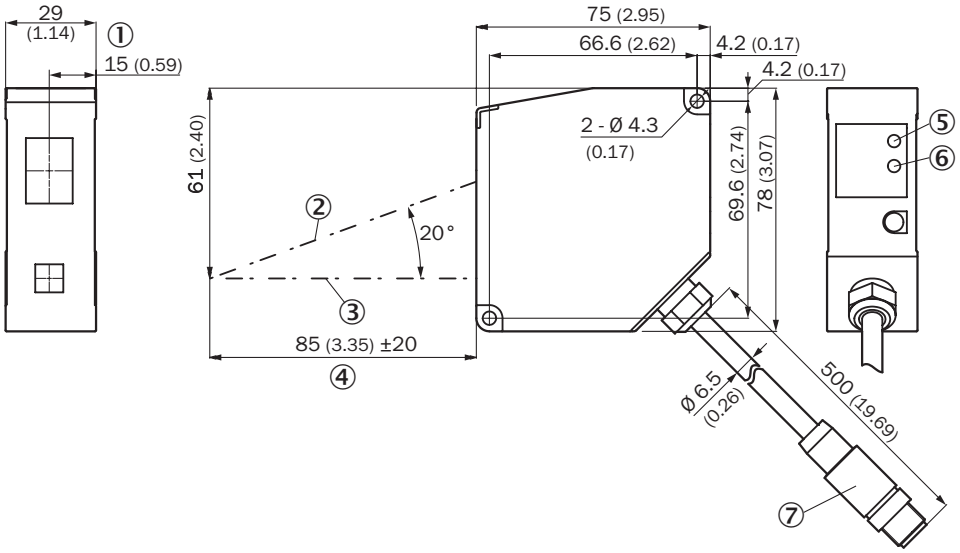
## Classifications

| | |
|---|---|
| **ECLASS 5.0** | 27270801 |
| **ECLASS 5.1.4** | 27270801 |
| **ECLASS 6.0** | 27270801 |
| **ECLASS 6.2** | 27270801 |
| **ECLASS 7.0** | 27270801 |
| **ECLASS 8.0** | 27270801 |
| **ECLASS 8.1** | 27270801 |
| **ECLASS 9.0** | 27270801 |
| **ECLASS 10.0** | 27270801 |
| **ECLASS 11.0** | 27270801 |
| **ECLASS 12.0** | 27270916 |
| **ETIM 5.0** | EC001825 |
| **ETIM 6.0** | EC001825 |
| **ETIM 7.0** | EC001825 |
| **ETIM 8.0** | EC001825 |
| **UNSPSC 16.0901** | 41111613 |

## Certificates

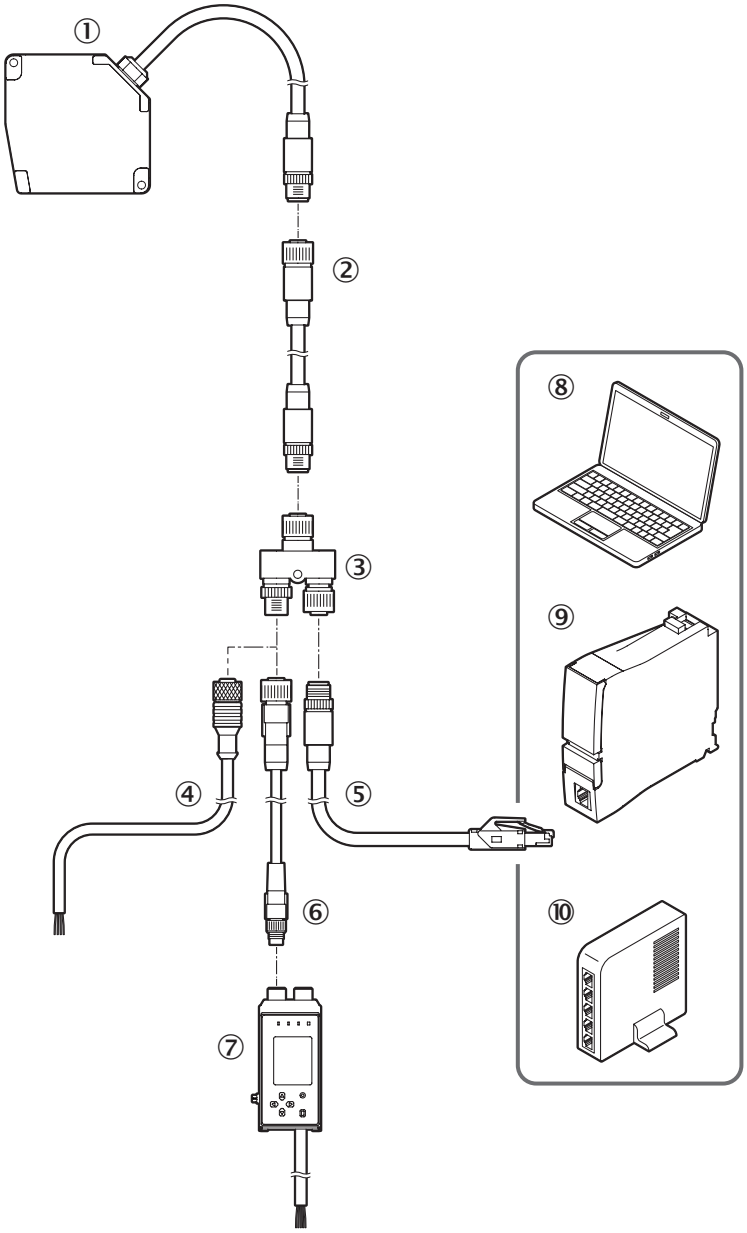
| | |
|---|---|
| **EU declaration of conformity** | ✓ |
| **UK declaration of conformity** | ✓ |
| **ACMA declaration of conformity** | ✓ |
| **Moroccan declaration of conformity** | ✓ |
| **China RoHS** | ✓ |
| **Information according to Art. 3 of Data Act (Regulation EU 2023/2854)** | ✓ |

## Dimensional drawing OD5000-C85x20



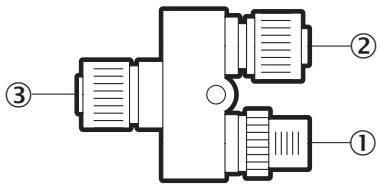

Dimensions in mm (inch)
① reference edge
② optical axis, receiver
③ optical axis, sender
④ measuring range
⑤ Link LED
⑥ status LED
⑦ male connector M12, 8-pin

## Connection diagram



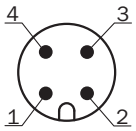

① OD5000
② Sensor head extension cable
③ Y-distribution (included with delivery)
④ Cable with open ends
⑤ Ethernet Connection cable
⑥ AOD1 connection cable, M12, 4-pin to M8, 4-pin
⑦ AOD1
⑧ PC
⑨ PLC
⑩ switch

## PIN assignment Y-junctions



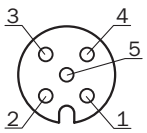

Y-distribution connections
① M12, 4-pin, A-coded
② M12, 5-pin, D-coded
③ M12, 8-pin, A-coded

## PIN assignment



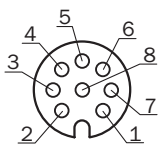

Connector M12, 4-pin, A-coded
① 24 V
② Input (MF) / RS485+
③ 0 V
④ Input (MF) / RS485-

## PIN assignment




female connector M12, 5-pin, D-coded
① TxD+
② RxD+
③ TxD-
④ RxD-
⑤ nc

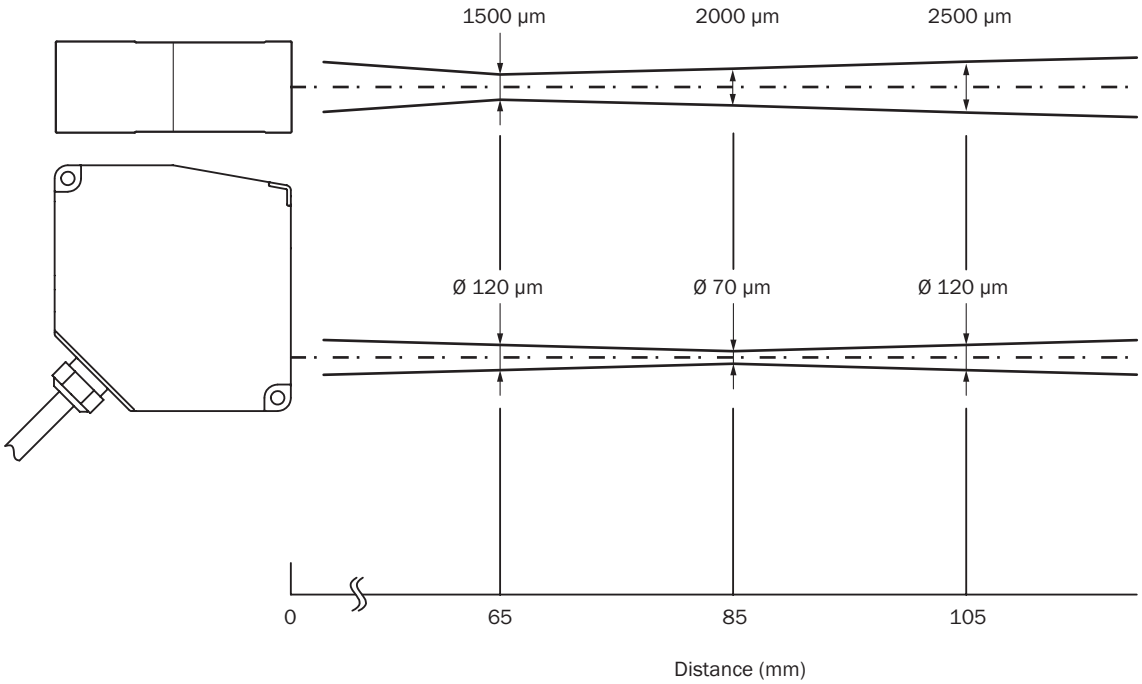
## PIN assignment



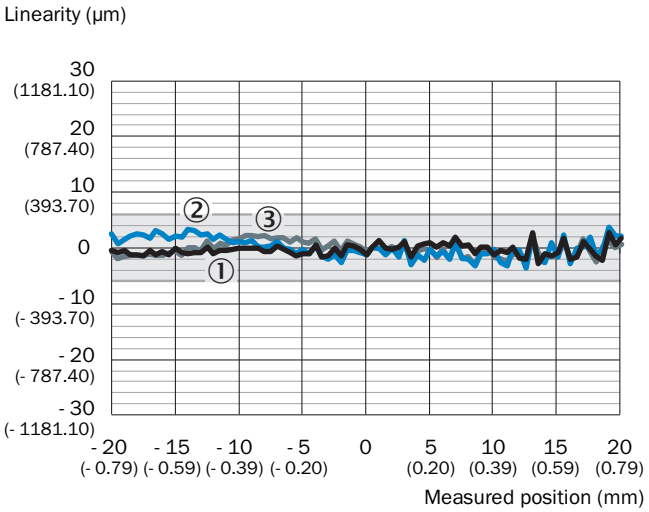

female connector M12, 8-pin, A-coded
① Input (MF) / RS485+
② 0 V
③ 24 V
④ TxD-
⑤ RxD+

⑥ TxD+
⑦ Input (MF) / RS485-
⑧ RxD-

## Light spot size



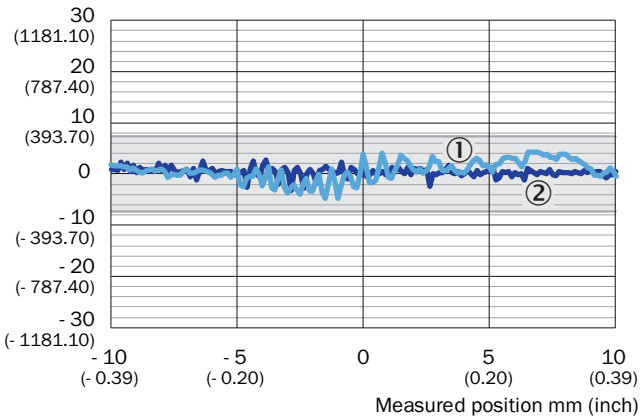

## Linearity OD5000-C85W20 (diffuse)




① white 60% remission factor
② black 9.5% remission factor
③ stainless steel

## Linearity OD5000-C85W20 (reflective)

Linearity µm (µin)




① Mirror
② Glass

## Recommended accessories

Other models and accessories ➜ www.sick.com/OD5000

| | Brief description | Type | part no. |
|---|---|---|---|
| connectors and cables | | | |
|  | • **Connection type head A:** Female connector, M12, 8-pin, straight<br>• **Connection type head B:** Male connector, M12, 8-pin, straight<br>• **Cable:** 2 m, PUR | DSC-1208-G02MA | 6064004 |
|  | • **Connection type head A:** Female connector, M12, 4-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 2 m, 4-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation | YF2A14-020UB3XLEAX | 2095607 |
|  | • **Connection type head A:** Male connector, M12, 4-pin, straight, D-coded<br>• **Connection type head B:** Male connector, RJ45, 4-pin, straight<br>• **Signal type:** Ethernet, PROFINET<br>• **Cable:** 2 m, 4-wire, PUR, halogen-free<br>• **Description:** Ethernet, shielded, PROFINET<br>• **Application:** Drag chain operation, Zones with oils and lubricants | YM2D24-020P-N1MRJA4 | 2106182 |
|  | • **Connection type head A:** Female connector, M12, 4-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 0.6 m, 4-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation | YF2A14-C60UB3XLEAX | 2145654 |
|  | • **Connection type head A:** Female connector, M12, 4-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 1 m, 4-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation | YF2A14-010UB3XLEAX | 2145655 |
|  | • **Connection type head A:** Female connector, M12, 4-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 3 m, 4-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation | YF2A14-030UB3XLEAX | 2145656 |

| | Brief description | Type | part no. |
|---|---|---|---|
| integration modules and adapters | | | |
|  | • **Description:** OD Mini evaluation unit, master, 1 x Q, M8 male connector, 4-pin | AOD1-MR24Q1 | 6054270 |
|  | • **Description:** OD Mini evaluation unit, slave, 1 x Q, M8 male connector, 4-pin | AOD1-SR24Q1 | 6054271 |
|  | • **Description:** OD Mini evaluation unit, master, 2 x Q, M12 male connector, 5-pin | AOD1-MR25Q2 | 6054272 |
|  | • **Description:** OD Mini evaluation unit, slave, 2 x Q, M12 male connector, 5-pin | AOD1-SR25Q2 | 6054273 |
|  | • **Description:** OD Mini evaluation unit, OD5000 and OL1, master, 3 x Q, 1 x analog, open end cable, 2 m | AOD1-MR27C4 | 6058195 |
|  | • **Description:** OD Mini evaluation unit, OD5000 and OL1, slave, 3 x Q, 1 x analog, open end cable, 2 m | AOD1-SR27C4 | 6058196 |

# SICK AT A GLANCE

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