

# OD5000-C85W20

OD5000

DISPLACEMENT MEASUREMENT SENSORS

**SICK**  
Sensor Intelligence.



## Ordering information

Type	Part no.
OD5000-C85W20	6063624

Other models and accessories → [www.sick.com/OD5000](http://www.sick.com/OD5000)



## Detailed technical data

### Mechanics/electronics

<b>Supply voltage <math>V_s</math></b>	DC 12 V ... 24 V, $\pm 10\%$ , including residual ripple
<b>Power consumption</b>	180 mA, at 24 V
<b>Warm-up time</b>	< 10 min
<b>Housing material</b>	Metal (Aluminum die cast)
<b>Window material</b>	Plastic (PMMA)
<b>Connection type</b>	Cable with male connector, M12, 8-pin, A-coded, 50 cm
<b>Indication</b>	Status LEDs
<b>Weight</b>	280 g
<b>Dimensions (W x H x D)</b>	25.9 mm x 71.5 mm x 53.2 mm
<b>Enclosure rating</b>	IP67
<b>Protection class</b>	III (EN 50178)

### Performance

<b>Measuring range</b>	65 mm ... 105 mm <sup>1)</sup>
<b>Target</b>	Natural objects
<b>Repeatability</b>	0.1 $\mu\text{m}$ <sup>2) 3)</sup>
<b>Linearity</b>	Diffuse $\pm 6 \mu\text{m}$ <sup>2)</sup> Specular $\pm 6 \mu\text{m}$
<b>Response time</b>	$\geq 12.5 \mu\text{s}$ <sup>4) 5)</sup>

<sup>1)</sup> If there are reflections, the measuring range is reduced to 71.5 ... 91.5 mm.

<sup>2)</sup> Measurement on 60 % remission (ceramic, white).

<sup>3)</sup> Set average: 65536, median: 31, response time: 50  $\mu\text{s}$ , constant application parameters.

<sup>4)</sup> At 0.0125 ms, measurement is only possible within a sub-range.

<sup>5)</sup> Dependent on the set average or sensitivity.

<sup>6)</sup> At 80 kHz, measurement is only possible in a sub-area.

<sup>7)</sup> Visible, wavelength: 655 nm, max. power: 0.39 mW.

<b>Measuring frequency</b>	≤ 80 kHz <sup>6)</sup>
<b>Output time</b>	≥ 0.0125 ms
<b>Light source</b>	Laser, red visible red light
<b>Laser class</b>	1 (IEC 60825-1:2014, EN 60825-1:2014) <sup>7)</sup>
<b>Typ. light spot size (distance)</b>	70 μm x 2,000 μm
<b>Special task</b>	Thickness measurement of transparent material
<b>Thickness measurement of transparent material</b>	0.5 mm ... 2 mm

- 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.

### Interfaces

<b>Ethernet</b>	✓, TCP/IP, UDP								
<b>Digital input</b>	In <sub>1</sub> Can be used as laser off, external teach-in, or deactivated								
<b>Digital output</b>	<table border="0"> <tr> <td style="padding-right: 20px;">Number</td> <td>1 ... 3 <sup>1)</sup></td> </tr> <tr> <td>Type</td> <td>PNP/NPN, selectable</td> </tr> </table>	Number	1 ... 3 <sup>1)</sup>	Type	PNP/NPN, selectable				
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<b>Analog output</b>	<table border="0"> <tr> <td style="padding-right: 20px;">Number</td> <td>1</td> </tr> <tr> <td>Type</td> <td>Current output</td> </tr> <tr> <td>Function</td> <td>Optional over evaluation unit AOD1</td> </tr> <tr> <td>Current</td> <td>4 mA ... 20 mA, ≤ 300 Ω</td> </tr> </table>	Number	1	Type	Current output	Function	Optional over evaluation unit AOD1	Current	4 mA ... 20 mA, ≤ 300 Ω
Number	1								
Type	Current output								
Function	Optional over evaluation unit AOD1								
Current	4 mA ... 20 mA, ≤ 300 Ω								

- 1) Optional over evaluation unit AOD1.

### Ambient data

<b>Ambient temperature, operation</b>	-10 °C ... +50 °C, Operating temperature at V <sub>S</sub> = 24 V
<b>Ambient temperature, storage</b>	-20 °C ... +60 °C
<b>Relative air humidity (non-condensing)</b>	35 % ... 85 %
<b>Temperature drift</b>	± 0.01 % FS/K at -10 °C ... +40 °C (FS = Full Scale = sensor measuring range) ± 0.03 % FS/K at +40 °C ... +50 °C (FS = Full Scale = sensor measuring range)
<b>Typ. Ambient light immunity</b>	Artificial light: ≤ 3,000 lx <sup>1)</sup> Sunlight: ≤ 10,000 lx
<b>Vibration resistance</b>	EN 60068-2-6, EN 60068-2-64
<b>Shock resistance</b>	EN 60068-2-27

- 1) With constant object movement in the measuring range.

### Classifications

<b>eCl@ss 5.0</b>	27270801
<b>eCl@ss 5.1.4</b>	27270801
<b>eCl@ss 6.0</b>	27270801

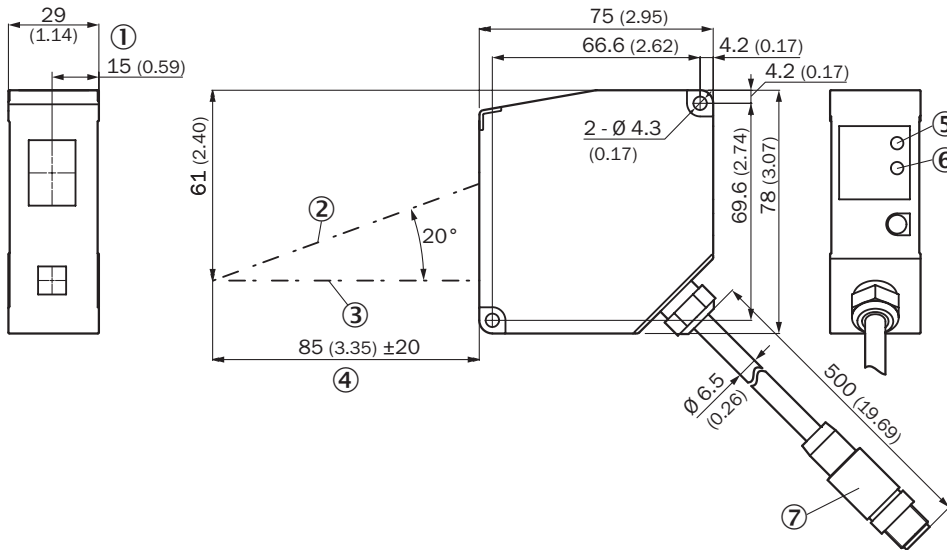
# OD5000-C85W20 | OD5000

## DISPLACEMENT MEASUREMENT SENSORS

<b>eCl@ss 6.2</b>	27270801
<b>eCl@ss 7.0</b>	27270801
<b>eCl@ss 8.0</b>	27270801
<b>eCl@ss 8.1</b>	27270801
<b>eCl@ss 9.0</b>	27270801
<b>eCl@ss 10.0</b>	27270801
<b>eCl@ss 11.0</b>	27270801
<b>eCl@ss 12.0</b>	27270916
<b>ETIM 5.0</b>	EC001825
<b>ETIM 6.0</b>	EC001825
<b>ETIM 7.0</b>	EC001825
<b>ETIM 8.0</b>	EC001825
<b>UNSPSC 16.0901</b>	41111613

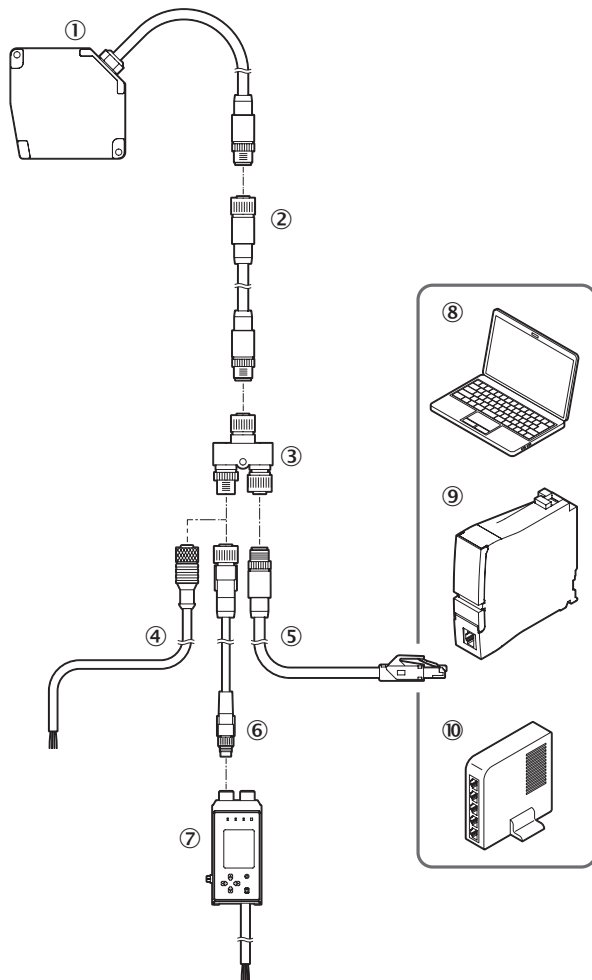
### Dimensional drawing (Dimensions in mm (inch))

OD5000-C85x20



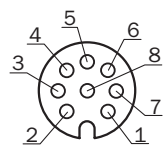
- ① Reference edge
- ② Optical axis, receiver
- ③ Optical axis, sender
- ④ Measuring range
- ⑤ Link LED
- ⑥ Status LED
- ⑦ Male connector M12, 8-pin

### Connection diagram



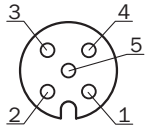
- ① OD5000
- ② Sensor head extension cable
- ③ Y-distribution (included with delivery)
- ④ Cable with open ends
- ⑤ Ethernet Connection cable
- ⑥ AOD1 connection cable, M12, 4-pin to M8, 4-pin
- ⑦ AOD1
- ⑧ PC
- ⑨ PLC
- ⑩ switch

### PIN assignment



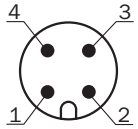
Female connector M12, 8-pin, A-coded

- ① Input (MF) / RS485+
- ② 0 V
- ③ 24 V
- ④ TxD-
- ⑤ RxD+
- ⑥ TxD+
- ⑦ Input (MF) / RS485-
- ⑧ RxD-



Female connector M12, 5-pin, D-coded

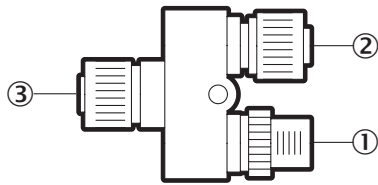
- ① TxD+
- ② RxD+
- ③ TxD-
- ④ RxD-
- ⑤ nc



Connector M12, 4-pin, A-coded

- ① 24 V
- ② Input (MF) / RS485+
- ③ 0 V
- ④ Input (MF) / RS485-

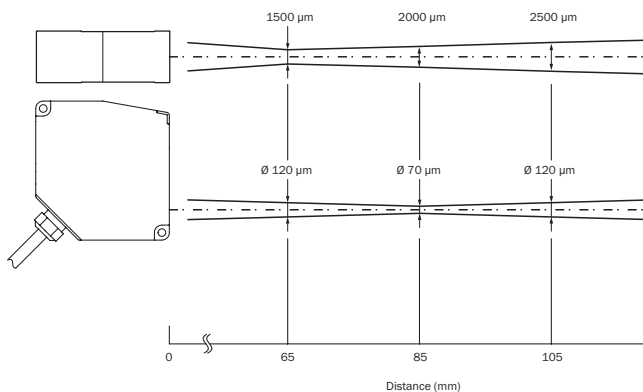
Y-junctions



Y-distribution connections

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

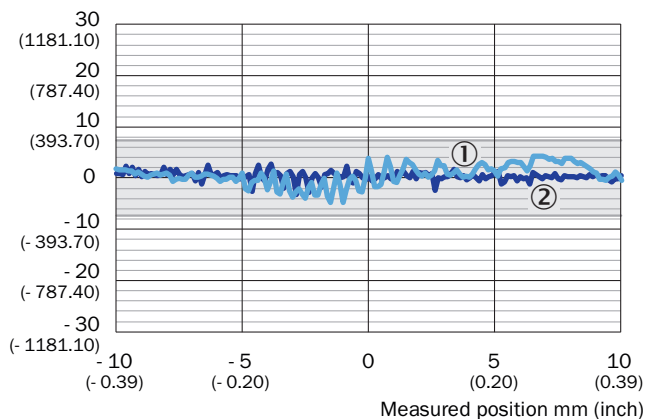
### Light spot size



## Linearity

OD5000-C85W20 (reflective)

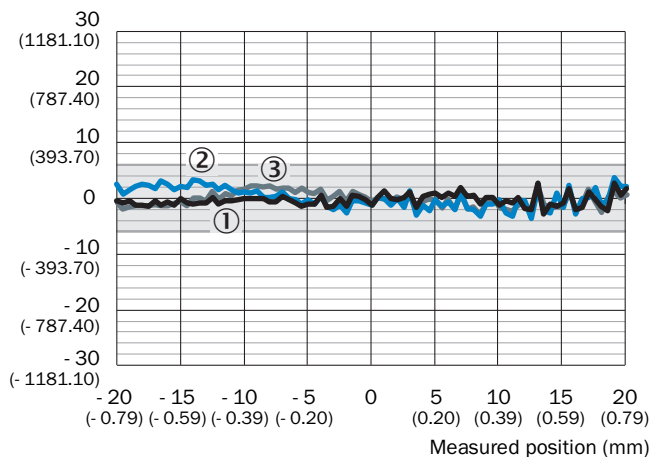
Linearity  $\mu\text{m}$  ( $\mu\text{in}$ )



- ① Mirror
- ② Glass

OD5000-C85W20 (diffuse)




Linearity ( $\mu\text{m}$ )



- ① White, 60% remission
- ② Black, 9.5% remission
- ③ Stainless steel

**Recommended accessories**

Other models and accessories → [www.sick.com/OD5000](http://www.sick.com/OD5000)

	<b>Brief description</b>	<b>Type</b>	<b>Part no.</b>
<b>Evaluation units</b>			
	OD Mini evaluation unit, master, 1 x Q, M8 male connector, 4-pin	AOD1-MR24Q1	6054270
	OD Mini evaluation unit, master, 2 x Q, M12 male connector, 5-pin	AOD1-MR25Q2	6054272
	OD Mini evaluation unit, OD5000 and OL1, master, 3 x Q, 1 x analog, open end cable, 2 m	AOD1-MR27C4	6058195
	OD Mini evaluation unit, slave, 1 x Q, M8 male connector, 4-pin	AOD1-SR24Q1	6054271
	OD Mini evaluation unit, slave, 2 x Q, M12 male connector, 5-pin	AOD1-SR25Q2	6054273
	OD Mini evaluation unit, OD5000 and OL1, slave, 3 x Q, 1 x analog, open end cable, 2 m	AOD1-SR27C4	6058196
<b>Plug connectors and cables</b>			
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, unshielded, 2 m	YF2A14-020UB3XLEAX	2095607
	Head A: female connector, M12, 8-pin, straight Head B: male connector, M12, 8-pin, straight Cable: PUR, 2 m	DSC-1208-G02MA	6064004
	Head A: male connector, M12, 4-pin, straight, D-coded Head B: male connector, RJ45, 4-pin, straight Cable: Ethernet, PROFINET, PUR, halogen-free, shielded, 2 m	YM2D24-020PN1MRJA4	2106182

**Recommended services**

Additional services → [www.sick.com/OD5000](http://www.sick.com/OD5000)

	<b>Type</b>	<b>Part no.</b>
<b>Warranty extensions</b>		
<ul style="list-style-type: none"> <li>• <b>Product area:</b> Identification solutions, machine vision, Distance sensors, Detection and ranging solutions</li> <li>• <b>Range of services:</b> The services correspond to the scope of the statutory manufacturer warranty (SICK general terms and conditions of purchase)</li> <li>• <b>Duration:</b> Five-year warranty from delivery date.</li> </ul>	Extended warranty for a total of five years from delivery date	1680671
<b>Commissioning</b>		
<ul style="list-style-type: none"> <li>• <b>Product area:</b> Displacement measurement sensors</li> <li>• <b>Range of services:</b> Inspection of connection and mounting, optimization of parameters of SICK product as well as tests, set-up of previously defined functions of the scaling of the analog measuring range, switching point position, hysteresis, measuring frequency, measured value filter, signal quality, evaluation function, or communication interface</li> <li>• <b>Travel expenses:</b> The prices do not include travel costs such as hotel, flight, travel time and expenses.</li> <li>• <b>Duration:</b> Additional work will be invoiced separately</li> </ul>	DT20 Hi/OD/OL commissioning	1612241

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. 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 a wide range of 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 complete 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:

Contacts and other locations –[www.sick.com](http://www.sick.com)