

# OD5-85W20

OD Precision

DISPLACEMENT MEASUREMENT SENSORS

**SICK**  
Sensor Intelligence.



### Ordering information

Type	Part no.
OD5-85W20	6035980

Other models and accessories → [www.sick.com/OD\\_Precision](http://www.sick.com/OD_Precision)



### Detailed technical data

#### Features

<b>System part</b>	Sensor head
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#### Mechanics/electronics

<b>Supply voltage <math>V_s</math></b>	DC 12 V ... 24 V <sup>1)</sup>
<b>Warm-up time</b>	≤ 5 min
<b>Housing material</b>	Metal (Aluminum)
<b>Window material</b>	Glass
<b>Connection type</b>	0.5 m cable with connector <sup>2)</sup>
<b>Indication</b>	LEDs, 4" color display on optional evaluation unit
<b>Weight</b>	250 g <sup>3)</sup>
<b>Dimensions (W x H x D)</b>	29 mm x 78 mm x 75 mm
<b>Enclosure rating</b>	IP67
<b>Protection class</b>	III

<sup>1)</sup> DC 12 V (-5 %) ... DC 24 V (+10 %).

<sup>2)</sup> Can be extended to up to 50 m with extension cable.

<sup>3)</sup> Includes 0.5 m cable.

#### Safety-related parameters

<b>MTTF<sub>D</sub></b>	101 years
<b>DC<sub>avg</sub></b>	0%

#### Performance

<b>Measurement range min ... max:</b>	65 mm ... 105 mm <sup>1) 2)</sup>
<b>Target</b>	Natural objects
<b>Repeatability</b>	1 μm <sup>3)</sup>
<b>Linearity</b>	Diffuse ± 20 μm <sup>3)</sup>

<sup>1)</sup> 6 % ... 90 % remission; at default settings.

<sup>2)</sup> If there are reflections, the measuring range is reduced to 72.3 mm ... 92.3 mm.

<sup>3)</sup> Measurement at 90% remission (ceramic, white), or mirror for OD5-25x; averaging set to: 256 or 4096 for OD5-25x; constant ambient conditions.

<sup>4)</sup> Time needed for automatic sensitivity adjustment is calculated as: sampling period x 20. At default setting 100 μs (10kHz) this is ≤ 2ms.

<sup>5)</sup> Default setting for OD5-350x100 and OD5-500x200 = 0.8 ms, or 1.25 kHz, all others = 0.1 ms/10 kHz.

<sup>6)</sup> Wavelength: 658 nm, max. output: 1 mW.

	Specular $\pm 16 \mu\text{m}$ <sup>3)</sup>
<b>Response time</b>	$\geq 0.1 \text{ ms}$ <sup>4) 5)</sup>
<b>Measuring frequency</b>	$\leq 10 \text{ kHz}$ <sup>1) 5)</sup>
<b>Output time</b>	$\geq 0.1 \text{ ms}$
<b>Light source</b>	Laser, red visible red light
<b>Laser class</b>	2 (IEC 60825-1:2014, EN 60825-1:2014) <sup>6)</sup>
<b>Typ. light spot size (distance)</b>	260 $\mu\text{m}$ x 1,200 $\mu\text{m}$ (85 mm)
<b>Special task</b>	Thickness measurement of transparent material
<b>Additional function</b>	Mean-value setting 1 ... 4,096x, selectable measuring frequency (automatic / 0.1 ms ... 3.2 ms), automatic sensitivity adjustment, manual sensitivity adjustment, Mutual interference, Glass thickness measurement
<b>Thickness measurement of transparent material</b>	2 mm ... 20 mm

<sup>1)</sup> 6 % ... 90 % remission; at default settings.

<sup>2)</sup> If there are reflections, the measuring range is reduced to 72.3 mm ... 92.3 mm.

<sup>3)</sup> Measurement at 90% remission (ceramic, white), or mirror for OD5-25x; averaging set to: 256 or 4096 for OD5-25x; constant ambient conditions.

<sup>4)</sup> Time needed for automatic sensitivity adjustment is calculated as: sampling period x 20. At default setting 100  $\mu\text{s}$  (10kHz) this is  $\leq 2\text{ms}$ .

<sup>5)</sup> Default setting for OD5-350x100 and OD5-500x200 = 0.8 ms, or 1.25 kHz, all others = 0.1 ms/10 kHz.

<sup>6)</sup> Wavelength: 658 nm, max. output: 1 mW.

## Interfaces

<b>Serial</b>	✓, RS-422
Remark	RS-232 optional via external evaluation unit AOD5
<b>Digital output</b>	
Number	5 <sup>1)</sup>
Type	PNP / NPN
Maximum output current $I_A$	$\leq 100 \text{ mA}$
<b>Analog output</b>	
Number	3 <sup>1) 2)</sup>
Type	Current output / voltage output
Current	4 mA ... 20 mA, $\leq 300 \Omega$
Voltage	0 V ... 10 V <sup>3)</sup>
<b>Laser-off input</b>	1 x laser-off

<sup>1)</sup> Optional over evaluation unit AOD5.

<sup>2)</sup> A maximum of three current and three voltage outputs are possible via the AOD5 evaluation unit.

<sup>3)</sup> Output resistance 100  $\Omega$ , min. load 10 k  $\Omega$ .

## Ambient data

<b>Ambient temperature, operation</b>	-10 °C ... +50 °C
<b>Ambient temperature, storage</b>	-20 °C ... +60 °C
<b>Relative air humidity (non-condensing)</b>	35 % ... 85 %
<b>Temperature drift</b>	$\pm 0.01 \text{ % FS/K}$ (FS = Full Scale = Measuring range of sensor)
<b>Typ. Ambient light immunity</b>	Artificial light: $\leq 3,000 \text{ lx}$ Sunlight: $\leq 10,000 \text{ lx}$
<b>Vibration resistance</b>	10 Hz ... 55 Hz (amplitude 1.5 mm, x-, y-, z-axis 2 hours each)

<b>Shock resistance</b>	50 G (x, y, z axis 3 times each)
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General notes

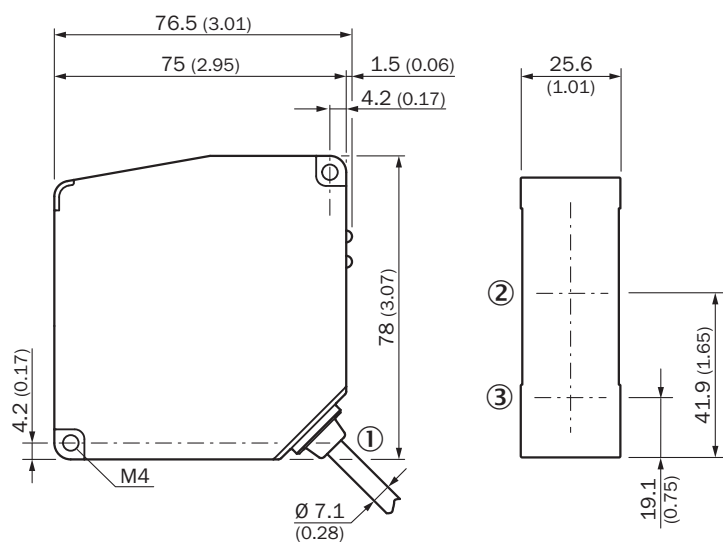
<b>Note on use</b>	OD Precision sensor head can be used in combination with AOD5-P/N1 or stand-alone via RS-422
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Classifications

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

OD5-85xxx



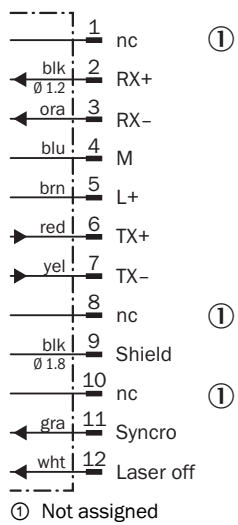
- ① Cable Ø 7.1 mm, 0.5 m with connector, 12-pin
- ② Optical axis, receiver
- ③ Optical axis, sender

### Connection type

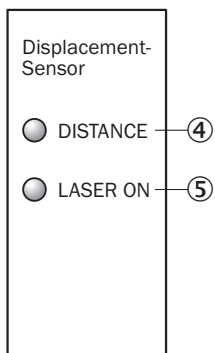
Hirose 12-pin male connector for sensor head



### Connection diagram



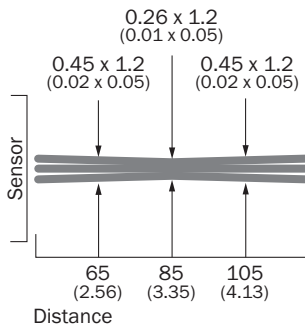
### Adjustment possible



- ④ Distance indicator
- ⑤ Status indicator laser (laser on)

### Light spot size

OD5-85W20

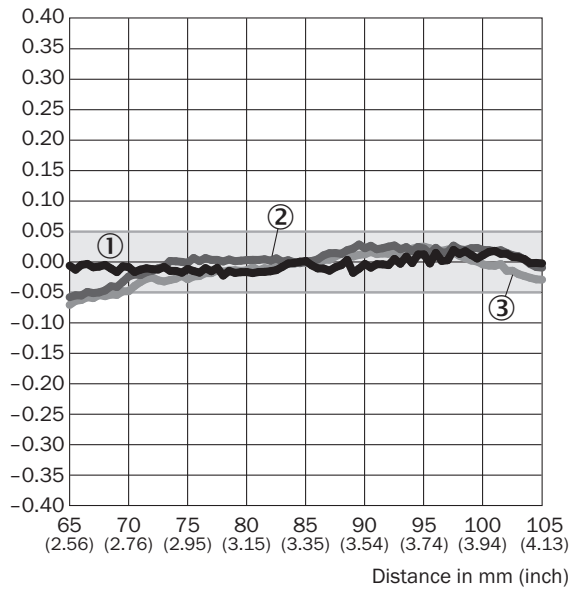


All dimensions in mm (inch)

### Linearity

OD5-85W20





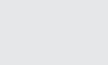

Linearity [%FS]



- ① White ceramic
- ② Stainless steel
- ③ Black rubber

## Recommended accessories

Other models and accessories → [www.sick.com/OD\\_Precision](http://www.sick.com/OD_Precision)

	Brief description	Type	Part no.
Evaluation units			
	Evaluation unit: OD Precision, 5 x NPN	AOD5-N1	6035984
	Evaluation unit: OD Precision, 5 x PNP	AOD5-P1	6035985
Plug connectors and cables			
	Head A: female connector, M12, 12-pin, straight Head B: Flying leads Cable: PVC, shielded, 5 m For stand-alone operation	DOL-1212-G05M	6035988
	Head A: male connector, 50-pin, straight Head B: Flying leads Cable: PVC, shielded, 3 m In- and output expansion cable for AOD5-P/N1 (OD Precision)	IO-EXP-AOD5	6035990
	Head A: female connector, M12, 12-pin, straight Head B: male connector, M12, 12-pin, straight Cable: RS-422, PVC, shielded, 2 m OD Precision specific	YFHRSB-020XXMHRSB	6035986
	Head A: female connector, M12, 12-pin, straight Head B: male connector, M12, 12-pin, straight Cable: RS-422, PVC, shielded, 5 m OD Precision specific	YFHRSB-050XXMHRSB	6035987
	Head A: male connector, 12-pin Head B: terminal connector, 12-pin Cable: unshielded Terminal strip for AOD5-P/N1 (OD Precision)	TERM.-AOD5	6035989

## Recommended services

Additional services → [www.sick.com/OD\\_Precision](http://www.sick.com/OD_Precision)

	Type	Part no.
Commissioning		
<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
Extended warranty		
<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 of delivery).</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

## 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)