



OD Mini, OD Value, OD Max, OD Precision, DT20 Hi, Profiler, OC Sharp

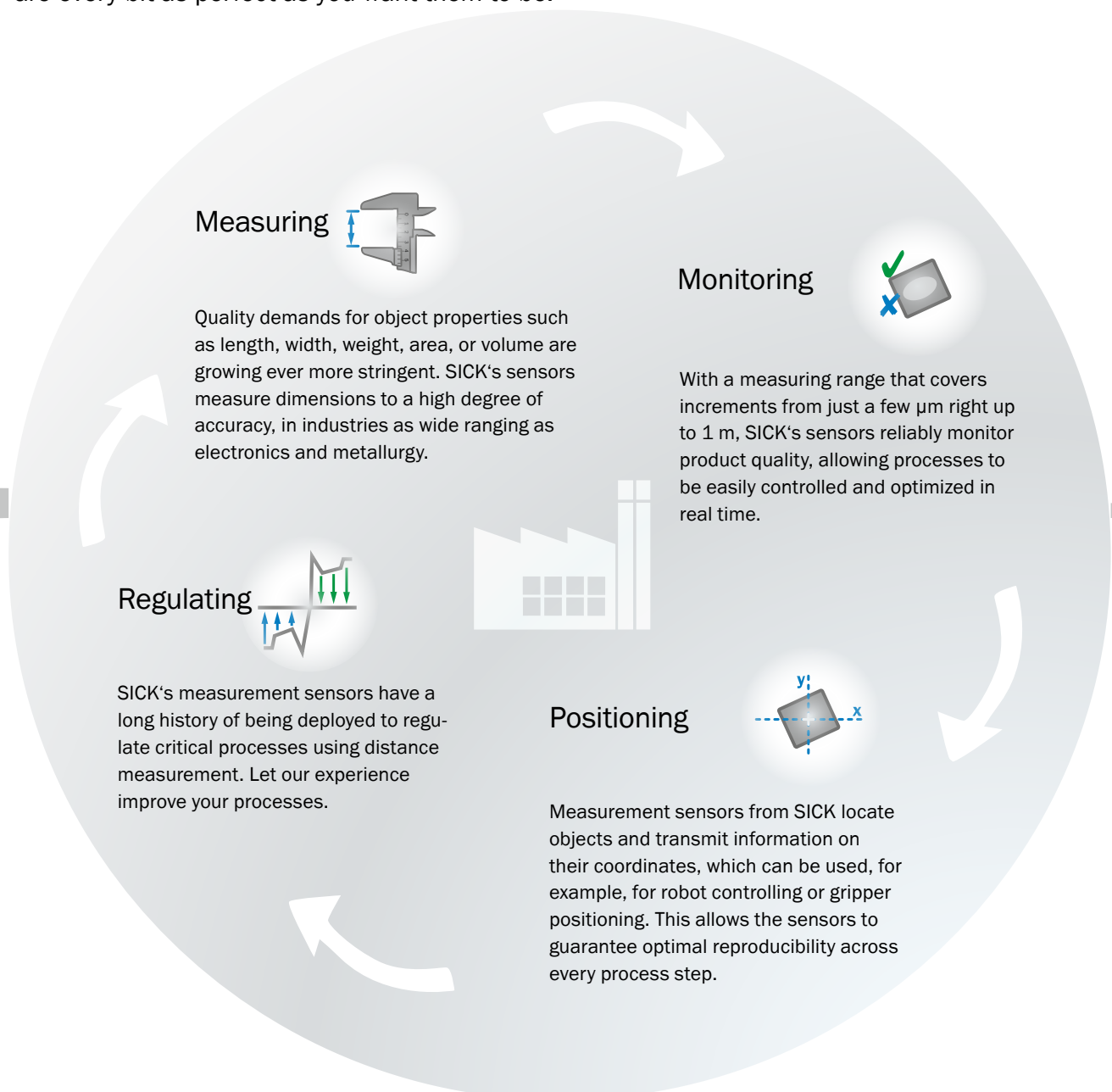
END-TO-END HIGH PRODUCT QUALITY WITH OPTICAL DISTANCE MEASUREMENT AND NANOMETER-PRECISION

Displacement measurement sensors

SICK
Sensor Intelligence.

PRECISION MEETS QUALITY

With intelligent measurement technology, SICK offers the solution to any challenge which demands maximum accuracy and quality, developed by the experts who founded the field: A pioneering spirit founded on our years of experience and our own innovations in optical sensor technology. We ensure efficient processes while also fulfilling the demands of complex measuring tasks – regardless of surface, diameter, thickness, or width, and regardless of whether a product is to be positioned or measured. This is how we ensure that your products are every bit as perfect as you want them to be.



PRECISION IN EACH DEVICE AND EACH PROCESS STEP

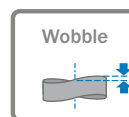
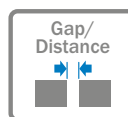
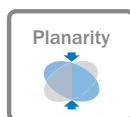
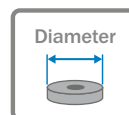
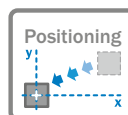
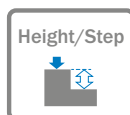
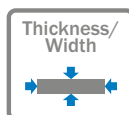
Perfect quality can only be guaranteed when each and every measurement and process step is controlled. Thanks to its wide range of optical sensors, SICK's intelligent measurement technology can offer highly accurate solutions for measuring even the smallest objects. We set new standards in measurement accuracy through the use of numerous technologies, such as 1D and 2D laser triangulation and chromatic confocal processes. This plays an important role in a whole host of different industries – particularly those with a strong emphasis on the measuring, regulation, positioning, or monitoring of products and processes. Moreover, SICK's measurement technology supports quality assurance processes and delivers cost saving benefits.

DAY IN, DAY OUT.
100% QUALITY.



Displacement measurement sensors detect:

- Depth and width
- Height and grade
- Position
- External and internal diameters
- Profile measurements
- Planarity
- Gap and distance measurements
- Axial runout



Whether standalone or as part of a system, SICK's intelligent measurement technology can supply the perfect solutions for the demands of your industry.

QUALITY IN PERFECTION THROUGH INTELLIGENT MEASURING TECHNOLOGY

Displacement measurement sensors from SICK make for a strong team. Based on different technologies and functions, they deliver high-precision results for measuring ranges up to 1,000 mm.

Each member of the displacement measurement sensors is a master in its field. The true potential of these sensors is demonstrated in particular by the possibility of combining them with other sensors. As a result of this, individual solutions can be realized for an extremely wide range of industries, including for highly demanding applications.

As well as measuring the width and height of objects, the fields of application for the sensors also include the specification and monitoring of their diameter or position. As displacement measurement sensors take precise measurements, they can also be used for positioning or surface monitoring. And this is possible in each and every production step.

OD Max → page 28

**Two sensors in one evaluation unit:
high-precision measurement and calculation**

Difference measurement is used to determine the thickness or height of an object, even if its absolute position is fluctuating.

OD Precision → page 32

Measuring each dimension with high precision

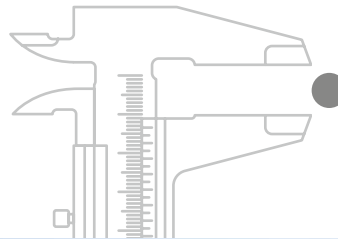
Evaluating the measurement results of up to three sensor heads enables the highly precise measurement of demanding object surfaces.

OD Value → page 22

Simply accurate measurements

The sensor can be used universally and efficiently, and detects even the smallest differences in the size, shape, and location of an object when machinery is in operation.





Technologies → page 6

Applications → page 8

Selection guide → page 10

DT20 Hi → page 36

Reliable, accurate quality control

Enables reliable quality control from a distance of up to 1 m.

Profiler → page 40

Cost-effective profile measurement

With just one laser line, surface profiles are measured extremely accurately.

OC Sharp → page 44

Chromatic confocal measuring technology for maximum precision

Precise measurement of thickness and distance, even in the case of surfaces with varying reflective properties, as well as slanted and rough surfaces.

OD Mini → page 16

Compact, lightweight sensor for precise measurement

One of the world's smallest product families of displacement measurement sensors with display and control elements. When measuring thickness, the OD Mini evaluation unit evaluates the measurement results from two sensors.

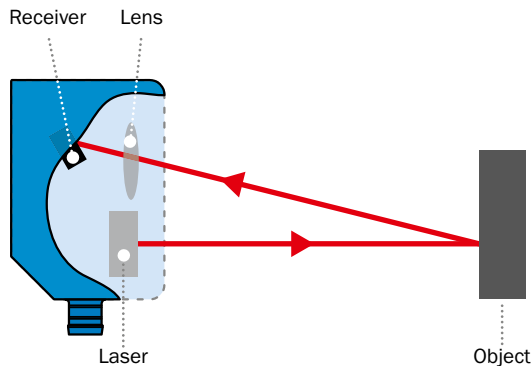


BRIEFLY EXPLAINED

A powerful product portfolio – three different technologies. Each is ingeniously simple in its own way, and is explained briefly and quickly here.

Laser triangulation sensors

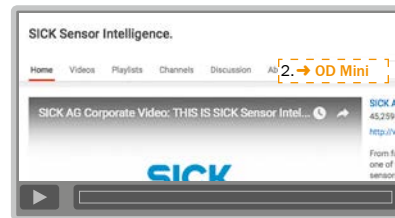
A point of light is projected onto the measuring object. The light reflected is captured by a light-sensitive receiver at a specific angle. Based on the angle between the send and



receive direction, the position of the object is then triangulated (lat. Triangulum: triangle).

Tutorial (00:02:52)

1. → <https://www.youtube.com/user/SICKSensors>



→ OD Mini

page 16

→ OD Precision

page 32

→ OD Value

page 22

→ DT20 Hi

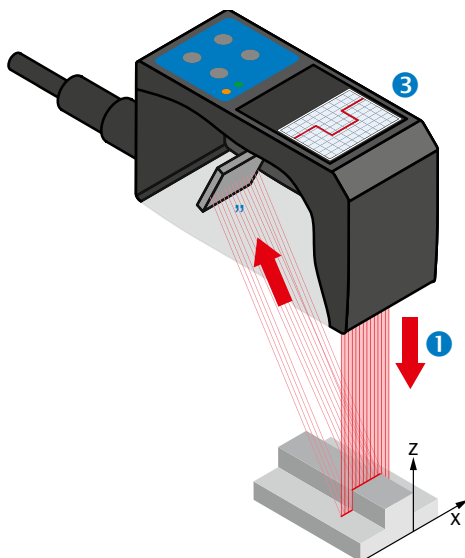
page 36

→ OD Max

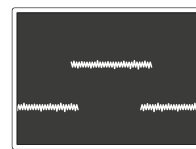
page 28

Laser profile sensors

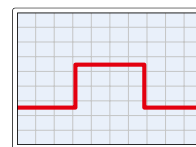
The sensor projects the laser light ❶ onto the measuring object in the form of a laser line. The lens projects the reflected light onto the receiver, allowing the profile to be determined. To identify the horizontal position of the object, the camera image is evaluated and transformed in the sensor, and then visualized as a generated profile on the integrated LC display ❸ or using the software supplied on the PC ❹.



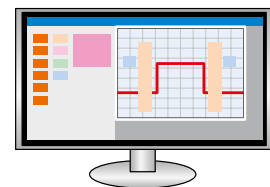
❷ Camera image



❸ Generated profile on the LC display

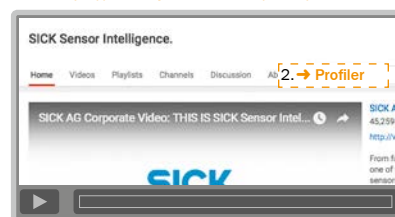


❹ Generated profile using software on the PC



Tutorial (00:08:37)

1. → <https://www.youtube.com/user/SICKSensors>



→ Profiler

page 40

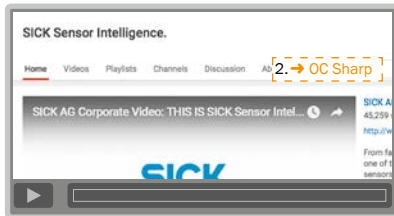
Confocal sensors

The confocal sensor uses a white light LED, the light from which is directed from the controller to the measurement head through an optical fiber. The layout of the lenses causes wavelength-dependent refraction to occur (chromatic aberration). In this way, light with varying wavelengths is focused differently, reflected off the surface, and projected into a light-sensitive sensor element.

The sensor element determines the reflected wavelength, and uses this to calculate the distance between itself and the object. Different sensor heads are available for numerous fields of application.

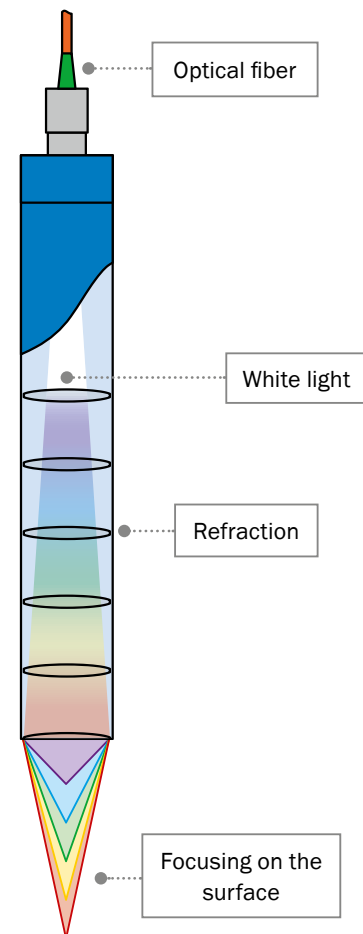
Tutorial (00:03:20)

1. → <https://www.youtube.com/user/SICKSensors>



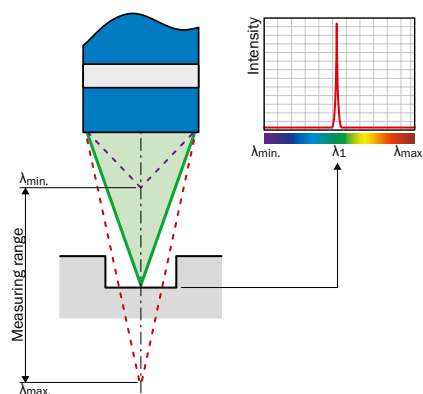
→ OC Sharp

page 44



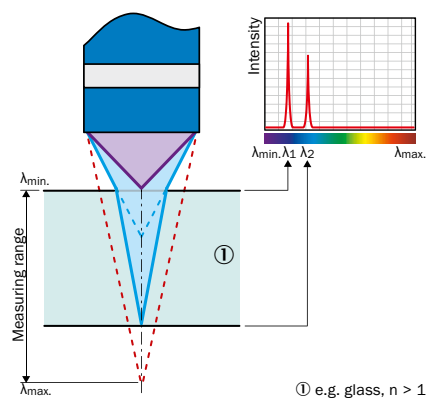
Operating modes of the chromatic confocal measurement principle

Chromatic distance measurement



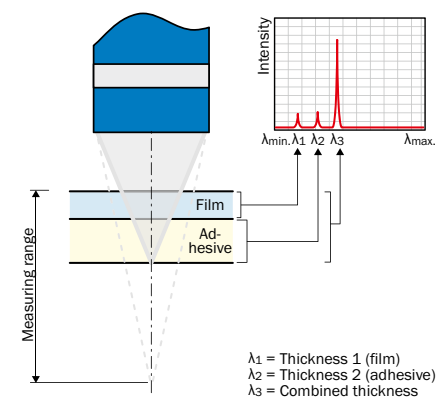
Topography, profile, and roughness measurements can be carried out using the chromatic distance measurement.

Chromatic thickness measurement



The thickness of transparent objects can be determined using this operating mode.

Interferometric coating thickness measurement

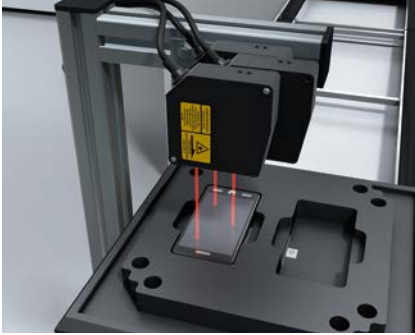


It is recommended to measure ultra-thin and multi-layered coatings using the interferometric coating thickness measurement.

LARGE SCOPE OVER SHORT DISTANCES

The application possibilities of SICK's displacement measurement sensors are as numerous and diverse as the distances are short. They fulfill the quality and precision requirements of numerous measuring tasks and applications.

Monitoring assembly processes



When checking if components have been installed in the correct alignment, connection errors, detached components, and other malfunctions can be prevented.

Typical applications

- Checking the surface quality or dimensional stability
- Detecting alignment and tilting

Typical industries

- Electronics
- Machine tools

Recommended products

OD Precision 32

Precise positioning



Always approach the right position and with the utmost accuracy. With displacement measurement sensors from SICK, grippers, for example, can be precisely positioned without contact and with maximum reproducibility.

Typical applications

- Robot guidance for windshield installation
- High-precision positioning of sliding carriages

Typical industries

- Robotics
- Handling and assembly technology
- Automotive and part suppliers

Recommended products

OD Mini 16

OD Value 22

Collision avoidance



When machining sheets, heat and tension can lead to unevenness. A laser-based distance sensor continuously checks the distance between the cutting head and the sheet panels to avoid collisions.

Typical applications

- Height positioning and collision avoidance on the cutting head
- Positioning of grippers

Typical industries

- Handling and assembly technology
- Machine tools

Recommended products

OD Max 28

OD Mini 16

Monitoring processes



Even within measuring ranges of up to 1,000 mm, the monitoring of processes requires the highest possible precision and measurement accuracy.

Typical applications

- Loop control in tire manufacturing
- Sheet coil uncoiling

Typical industries

- Rubber and plastics
- Machine tools

Recommended products

DT20 Hi 36

Quality assurance



When monitoring quality features during the manufacturing process, the displacement measurement sensors detect distances in the μm range, enabling the detection of incorrectly pressed blister packaging, for example.

Typical applications

- Quality control for devices
- Checking the shape of blister packaging

Typical industries

- Consumer goods
- Handling and assembly technology
- Pharma and cosmetics

Recommended products

OD Mini	16
OD Value	22

Regulating processes



Always at the right distance – result-relevant regulation of value-generating or critical processes with the aid of measurement based on 2D laser triangulation.

Typical applications

- Readjusting the distance between the dispenser and object
- Monitoring the glue quantity during the assembly process

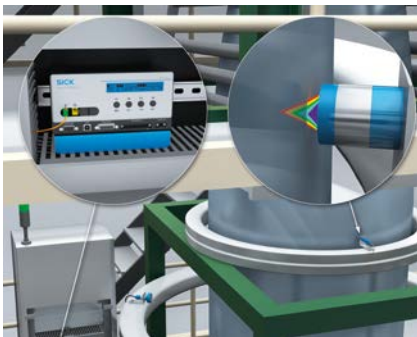
Typical industries

- Electronics
- Packaging
- Wood
- Handling and assembly technology

Recommended products

Profiler 2	40
------------------	----

Determining film and layer thickness with nanometer accuracy



The thickness of transparent materials is determined with the highest precision. Whether glass, plastic, or film – the measurement is always carried out with nanometer accuracy.

Typical applications

- Creating surface topographies of solar wafers
- Measuring glass wall thickness
- Measuring film thickness

Typical industries

- Solar
- Beverages
- Rubber and plastics


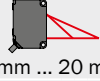





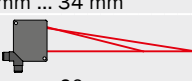
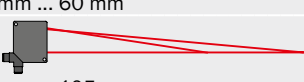
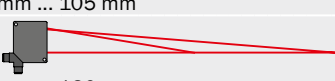




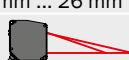
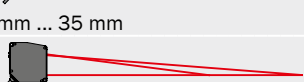

Recommended products

OC Sharp	44
----------------	----


The benefits at a glance

- End-to-end high product quality with optical and precise distance measurement
- High measurement accuracy to the nearest nanometer
- Reliable on any surface
- Wide portfolio for the most diverse of applications
- Various housing materials for different areas of application

Selection guide → page 10

Product		Technology				Measuring range (in mm)	Evaluation unit	
		Laser triangulation sensors	Laser profile sensors	Confocal sensors	Interferometric	0 25 50 75 100 ... 250 ... 500 750 1,000	With	Without/standalone
OD Mini								
	OD1-B015	■				 10 mm ... 20 mm	■	■
	OD1-B035	■				 20 mm ... 50 mm	■	■
	OD1-B100	■				 50 mm ... 150 mm	■	■
	OD1-B150	■				 50 mm ... 250 mm		■
OD Value								
	OD2-x30	■				 26 mm ... 34 mm		■
	OD2-x50	■				 40 mm ... 60 mm		■
	OD2-x85	■				 65 mm ... 105 mm		■
	OD2-x120	■				 60 mm ... 180 mm		■
	OD2-x250	■				 100 mm ... 400 mm		■
	OD2-x300	■				 100 mm ... 500 mm		■
OD Max								
	OD25	■				 24 mm ... 26 mm	■	
	OD30	■				 25 mm ... 35 mm	■	
	OD85	■				 65 mm ... 105 mm	■	
	OD350	■				 250 mm ... 450 mm	■	

	Specialized tasks	Light spot size	Linearity	Repeatability	Response time, measuring frequency	Laser class		Interfaces	Dimensions	Page
	Thickness measurement of transparent material					1	2			
										→ 16
	-	700 µm x 500 µm	± 10 µm	3 µm	2 ms, 2 kHz	■		Analog (mA), analog (V), RS-485	44.4 mm x 31 mm x 17 mm	
	-	1.6 mm x 1 mm	± 30 µm	9 µm	2 ms, 2 kHz	■		Analog (mA), analog (V), RS-485	44.4 mm x 31 mm x 17 mm	
	-	700 µm x 600 µm	± 100 µm	30 µm	2 ms, 2 kHz	■		Analog (mA), analog (V), RS-485	44.4 mm x 31 mm x 17 mm	
	-	2 mm x 1.3 mm	-	0.6 mm	2 ms, 2 kHz		■	-	44.4 mm x 31 mm x 17 mm	
										→ 22
	-	0.1 mm x 0.1 mm	± 8 µm	6 µm	1 ms, 2 kHz		■	Analog (mA), analog (V), RS-422	60 mm x 50 mm x 20.4 mm	
	-	0.8 mm x 1.3 mm	± 20 µm	15 µm	1 ms, 2 kHz		■	Analog (mA), analog (V), RS-422	60 mm x 50 mm x 20.4 mm	
	-	0.5 mm x 1 mm	± 40 µm	30 µm	1 ms, 2 kHz		■	Analog (mA), analog (V), RS-422	60 mm x 50 mm x 20.4 mm	
	-	1 mm x 1.5 mm	± 120 µm	90 µm	1 ms, 2 kHz		■	Analog (mA), analog (V), RS-422	60 mm x 50 mm x 20.4 mm	
	-	1.8 mm x 3.5 mm	± 750 µm	225 µm	2 ms, 1.3 kHz		■	Analog (mA), analog (V), RS-422	60 mm x 50 mm x 20.4 mm	
	-	1.9 mm x 3.9 mm	± 1.2 mm	300 µm	2 ms, 1.33 kHz		■	Analog (mA), RS-422	60 mm x 50 mm x 20.4 mm	
										→ 28
	-	25 µm x 35 µm	± 2 µm	0.3 µm	0.5 ms, 10 kHz	■		Analog (mA), analog (V), RS-232	78 mm x 76.5 mm x 25.6 mm	
	-	30 µm x 100 µm	± 10 µm	3 µm	0.5 ms, 10 kHz		■	Analog (mA), analog (V), RS-232	78 mm x 76.5 mm x 25.6 mm	
	-	70 µm x 290 µm	± 40 µm	15 µm	0.5 ms, 10 kHz		■	Analog (mA), analog (V), RS-232	78 mm x 76.5 mm x 25.6 mm	
	-	300 µm x 700 µm	± 200 µm	150 µm	0.5 ms, 10 kHz		■	Analog (mA), analog (V), RS-232	78 mm x 76.5 mm x 27 mm	

Product		Technology				Measuring range (in mm)	Evaluation unit	
		Laser triangulation sensors	Laser profile sensors	Confocal sensors	Interferometric	0 25 50 75 100 ... 250 ... 500 750 1,000	With	Without/standalone
OD Precision								
	OD5-25	■				 24 mm ... 26 mm	■	■
	OD5-30	■				 25 mm ... 35 mm	■	■
	OD5-85	■				 65 mm ... 105 mm	■	■
	OD5-150	■				 110 mm ... 190 mm	■	■
	OD5-350	■				 250 mm ... 450 mm	■	■
	OD5-500	■				 300 mm ... 700 mm	■	■
DT20 Hi								
	DT20-x25	■				 50 mm ... 150 mm		■
	DT20-x24	■				 100 mm ... 300 mm		■
	DT20-x21	■				 100 mm ... 600 mm		■
	DT20-x22	■				 100 mm ... 1,000 mm		■
Profiler								
	PR02		■			 75 mm ... 125 mm		■
OC Sharp								
	SOC-1A100103K			■		 6.2 mm ... 6.8 mm	■	
	SOC-1A100203K			■		 21 mm ... 24 mm	■	
	SOC-1A100303K			■		 48 mm ... 60 mm	■	
	SOC-1A100403K				■	 24 mm ... 30 mm	■	

	Specialized tasks	Light spot size	Linearity	Repeatability	Response time, measuring frequency	Laser class		Interfaces	Dimensions	Page
	Thickness measurement of transparent material					1	2			
										→ 32
	0.2 mm ... 2 mm	25 µm x 35 µm	± 1.6 µm	0.06 µm	0.1 ms, 10 kHz	■		Analog (mA), analog (V), RS-232, RS-422	78 mm x 76.5 mm x 25.6 mm	
	0.7 mm ... 5 mm	30 µm x 100 µm	± 8 µm	0.6 µm	0.1 ms, 10 kHz		■	Analog (mA), analog (V), RS-232, RS-422	78 mm x 76.5 mm x 25.6 mm	
	2 mm ... 20 mm	70 µm x 290 µm	± 20 µm	3 µm	0.1 ms, 10 kHz		■	Analog (mA), analog (V), RS-232, RS-422	78 mm x 76.5 mm x 25.6 mm	
	-	Ø 180 µm	± 40 µm	6 µm	0.1 ms, 10 kHz		■	Analog (mA), analog (V), RS-232, RS-422	78 mm x 76.5 mm x 27 mm	
	-	700 µm x 2,400 µm	± 160 µm	15 µm	0.8 ms, 1.25 kHz		■	Analog (mA), analog (V), RS-232, RS-422	78 mm x 76.5 mm x 27 mm	
	-	1,000 µm x 3,700 µm	± 400 µm	30 µm	0.8 ms, 1.25 kHz		■	Analog (mA), analog (V), RS-232, RS-422	78 mm x 76.5 mm x 27 mm	
										→ 36
	-	2 mm x 4 mm	± 0.5 mm	0.13 mm	2.5 ms, 400 Hz		■	Analog (mA)	50.2 mm x 54.1 mm x 24.3 mm	
	-	3 mm x 6 mm	± 1 mm	0.25 mm	2.5 ms, 400 Hz	■	■	Analog (mA)	50.2 mm x 54.1 mm x 24.3 mm	
	-	3 mm x 6 mm	± 2 mm	0.5 mm	2.5 ms, 400 Hz	■	■	Analog (mA)	50.2 mm x 54.1 mm x 24.3 mm	
	-	6 mm x 12 mm	± 6 mm	2.5 mm	2.5 ms, 400 Hz		■	Analog (mA)	50.2 mm x 54.1 mm x 24.3 mm	
										→ 40
	-	0.3 mm x 32 mm	X-axis = ± 170 µm ... 270 µm Z-axis = ± 50 µm	Resolution: x-axis = 25 µm z-axis = 5 µm	5 ms		■	Analog (mA), RS-485	94.5 mm x 60 mm x 40 mm	
										→ 44
	30 µm ... 900 µm	4 µm	± 200 nm	Resolution: 18 nm (15 bit)	550 µs, 32 Hz ... 4,000 Hz	LED		Analog (V), RS-232, RS-422	Length = 125 mm, Diameter = 19 mm	
	100 µm ... 4.5 mm	12 µm	± 1 µm	Resolution: 92 nm (15 bit)	550 µs, 32 Hz ... 4,000 Hz	LED		Analog (V), RS-232, RS-422	Length = 105.7 mm, Diameter = 49 mm	
	1 mm ... 18 mm	30 µm	± 4 µm	Resolution: 366 nm (15 bit)	550 µs, 32 Hz ... 4,000 Hz	LED		Analog (V), RS-232, RS-422	Length = 61.1 mm, Diameter = 36 mm	
	3 µm ... 180 µm	40 µm	60 nm	Resolution: 5.5 nm	550 µs, 32 Hz ... 4,000 Hz	LED		Analog (V), RS-232, RS-422	Length = 53.6 mm, Diameter = 15 mm	

PRODUCT FAMILY OVERVIEW

	 <p>OD Mini</p>	 <p>OD Value</p>	 <p>OD Max</p>	
	Compact, lightweight sensor for precise measurement	Simply accurate measurement	Two sensors in one controller for high accuracy measurement calculations	

Technical data overview

Measuring range	10 mm ... 250 mm	26 mm ... 500 mm	24 mm ... 450 mm	
Resolution	1 µm ... 200 µm	2 µm ... 100 µm	0.1 µm ... 50 µm	
Linearity	± 10 µm ... ± 100 µm	± 1,2 µm ... ± 1,200 µm	± 2 µm ... ± 200 µm	
Response time	2 ms / 4 ms / 8 ms / 16 ms / auto	1 ms / 10 ms / 35 ms / 2 ms / 15 ms / 50 ms	0.5 ms	
Measuring frequency	250 Hz / 500 Hz / 1 kHz / 2 kHz / auto	1.3 kHz ... 2 kHz	10 kHz	
Switching output	1 x PNP/NPN, selectable 2 x PNP/NPN 3 x PNP/NPN	1 x PNP 1 x NPN 2 x PNP 2 x NPN	5 x PNP 5 x NPN	
Ambient temperature	Operation -10 °C ... +40 °C Storage -20 °C ... +60 °C	Operation -10 °C ... +40 °C Storage -20 °C ... +60 °C	Operation -10 °C ... +45 °C Storage -20 °C ... +60 °C	
Data interface	1 x 4 mA ... 20 mA (< 300 Ω) 1 x 0 V ... 10 V (> 10 kΩ) RS-485	4 mA ... 20 mA (≤ 300 Ω) 0 V ... 10 V (≥ 10 kΩ) RS-422	RS-232	

At a glance

	<ul style="list-style-type: none"> • Compact, rugged housing • Stand-alone use or in combination with the OD Mini evaluation unit • Display and LEDs on device for visualization of current status • Different interfaces available • Simple teach-in using display or external teaching input • CMOS receiver unit for precise, fast measurement in the µm range • Various measuring ranges: Measuring from 10 mm to 250 mm possible 	<ul style="list-style-type: none"> • Several measurement ranges from 26 mm ... 34 mm to 100 mm ... 500 mm • Easy, LED-based user and teach-in concept • Wide range of models and a wide range of standard interfaces • Laser technology for precise measurement of very small objects • Compact stand-alone device 	<ul style="list-style-type: none"> • Several measurement ranges from 24 ... 26 mm up to 250 mm ... 450 mm • High measurement frequency and high linearity • Variety of selectable integrated calculations based on values from two sensors • Laser technology for precise measurement or detection of very small objects 	
Detailed information	→ 16	→ 22	→ 28	

			
OD Precision	DT20 Hi	Profiler	OC Sharp
Measuring each dimension with high precision	Reliable, accurate distance measurement up to 1 m	Cost-effective profile measurement	Chromatic confocal measuring technology offers maximum precision

24 mm ... 700 mm	50 mm ... 1,000 mm	100 mm, ± 25 mm	6.2 mm ... 6.8 mm (600 μ m) 21 mm ... 24 mm (3 mm) 48 mm ... 60 mm (12 mm) 24 mm ... 30 mm (6 mm)
0.02 μ m ... 10 μ m	100 μ m ... 1,000 μ m	X-direction 25 μ m Z-direction 2 μ m	0.018 μ m, 15 bit 0.092 μ m, 15 bit 0.336 μ m, 15 bit 5.5 nm
$\pm 1,6$ μ m ... ± 400 μ m	± 500 μ m ... $\pm 6,000$ μ m	X-direction ± 170 μ m ... ± 270 μ m Z-direction ± 50 μ m	± 60 nm ... ± 4 μ m
0.1 ms	2.5 ms / 10 ms / 40 ms / 5 ms / 20 ms / 80 ms	5 ms	500 μ s
1.25 kHz ... 10 kHz	400 Hz / 200 Hz	–	32 Hz ... 4,000 Hz
5 x PNP 5 x NPN	1 x PNP 1 x NPN	3 x PNP 3 x NPN	–
Operation -10 °C ... $+50$ °C Storage -20 °C ... $+60$ °C	Operation -20 °C ... $+55$ °C Storage -40 °C ... $+60$ °C	Operation -10 °C ... $+40$ °C Storage -20 °C ... $+60$ °C	Operation $+5$ °C ... $+50$ °C Storage -25 °C ... $+55$ °C
RS-232 RS-422 USB	1 x 4 mA ... 20 mA (< 300 Ω)	RS-485	RS-232 RS-422

<ul style="list-style-type: none"> Many measurement ranges from 24 mm ... 26 mm up to 300 mm ... 700 mm High measuring accuracy and frequency Glass thickness measurement with just one sensor head Different light spot sizes Integrated calculations for up to three sensors Stand alone use via RS-422 	<ul style="list-style-type: none"> Four measuring ranges from 50 mm up to 1,000 mm Very high linearity of up to ± 0.5 mm Red laser Scaleable analog and switching output Display with easy to use setup menu Advanced settings (e.g., averaging function, external laser-off, etc.) 	<ul style="list-style-type: none"> Measure complex profiles with just one laser line Analyze up to four areas at the same time More than 10 integrated measurement functions, e.g., height, width, and inclination Sensor head and evaluation unit in one device Commissioning via software or integrated display with operating elements 	<ul style="list-style-type: none"> Many measuring lengths from 600 μm up to 12 mm Chromatic confocal sensor technology for the highest reliability and precision Measures the thickness of transparent materials using just one sensor head Very small light spot is able to measure minuscule objects
→ 32	→ 36	→ 40	→ 44

COMPACT, LIGHTWEIGHT SENSOR FOR PRECISE MEASUREMENT



Product description

Simple, precise, and economic solutions for measuring tasks; the OD Mini displacement measurement sensors 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. For complex measurement

tasks up to two OD Mini Pro sensor heads can be connected to one OD Mini evaluation unit and calculate together. 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, rugged housing
- Stand-alone use or in combination with the OD Mini evaluation unit
- Display and LEDs on device for visualization of current status
- Different interfaces available
- Simple teach-in using display or external teaching input
- CMOS receiver unit for precise, fast measurement in the μm range
- Various measuring ranges: Measuring from 10 mm to 250 mm possible

Your benefits

- Cost-saving commissioning through simple operating concept and display
- Small installation size and low weight also allow use in highly dynamic applications
- Calculation of two sensorheads - easy possible over the external evaluation unit
- 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



Additional information

Detailed technical data	17
Ordering information	18
Adjustments	19
Recommended accessories	20

→ www.sick.com/OD_Mini

For more information, simply 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	OD Mini Pro
Resolution ^{1) 2) 4) 6)}			
10 mm ... 20 mm	–	1 µm	
20 mm ... 50 mm	20 µm ³⁾	6 µm	
50 mm ... 150 mm	–	20 µm	
50 mm ... 250 mm ⁵⁾	200 µm	–	
Repeatability ^{2) 6)}			
10 mm ... 20 mm	–	3 µm	
20 mm ... 50 mm	60 µm ³⁾	9 µm	
50 mm ... 150 mm	–	30 µm ¹⁾	
50 mm ... 250 mm ⁵⁾	600 µm	–	
Linearity			
10 mm ... 20 mm	–	± 10 µm ^{1) 4)}	
20 mm ... 50 mm	–	± 30 µm ^{1) 4)}	
50 mm ... 150 mm	–	± 100 µm ^{1) 4)}	
Response time ⁷⁾	2 ms / 4 ms / 8 ms / 16 ms / auto		
Measuring frequency	2 kHz / 1 kHz / 500 Hz / 250 Hz / automatic		
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)	–	
Typ. light spot size (distance)			
10 mm ... 20 mm	–	700 µm x 500 µm (15 mm)	
20 mm ... 50 mm	1,6 mm x 1 mm (35 mm)	800 µm x 450 µm (35 mm)	
50 mm ... 150 mm	–	700 µm x 600 µm (100 mm)	
50 mm ... 250 mm	2 mm x 1,3 mm (150 mm)	–	
Additional function	Averaging 1 ... 512x, automatic or manual sensitivity adjustment, Switching outputs can be taught in, Invertable switching output, switching mode: window (Wnd), switching mode: distance to object (DtO), switching mode: object between sensor and background (ObSB), multifunctional input: laser-off / external teach-in / trigger	Averaging 1 ... 512x, automatic or manual sensitivity adjustment, Analog outputs can be taught in, Switching outputs can be taught in, Invertable switching output, switching mode: window (Wnd), switching mode: distance to object (DtO), switching mode: object between sensor and background (ObSB), multifunctional input: laser-off / external teach-in / trigger	Averaging 1 ... 512x, automatic or manual sensitivity adjustment, switching mode: window (Wnd), switching mode: distance to object (DtO), switching mode: object between sensor and background (ObSB), multifunctional input: laser-off / external teach-in / trigger

¹⁾ Measurement on 90 % remission (ceramic, white)²⁾ Averaging function set to: 512.³⁾ Hysteresis 0.08 mm.⁴⁾ For best performance consider warm up time ≤ 5 minutes.⁵⁾ Hysteresis 0.8 mm.⁶⁾ Constant ambient conditions.⁷⁾ With fixed sensitivity adjustment and averaging setting = 1. With automatic sensitivity and measuring rate 500 µs: 2 ... 7.5 ms response time/measuring rate 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

	OD Mini Core	OD Mini Prime	OD Mini Pro
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	OD Mini Pro
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)		
Operating 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 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 immunity	Artificial light: ≤ 3,000 lx 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

	OD Mini Core	OD Mini Prime	OD Mini Pro
Note on use	–		The sensor head can be used with evaluation unit AOD1 or stand-alone via RS-485
Note	Not free of paint wetting impairment substances.		

Ordering information

Other models → www.sick.com/OD_Mini

- **Sub product family:** OD Mini Core
- **Housing material:** aluminum housing with PPSU lens
- **Switching output:** 1 x PNP/NPN

Measurement range	Connection type	Type	Part no.
20 mm ... 50 mm	Cable with male connector M12, 5-pin 30 cm	OD1-B035C15Q15	6052309
	Male connector M8, 4-pin	OD1-B035C15Q14	6052308
50 mm ... 250 mm	Cable with male connector M12, 5-pin 30 cm	OD1-B150F0AQ15	6052327
	Male connector M8, 4-pin	OD1-B150F0AQ14	6052326

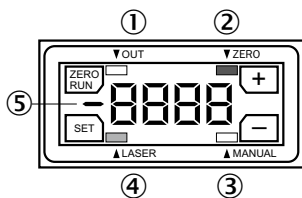
- **Sub product family:** OD Mini Prime

Housing material	Measurement range	Data interface	Connection type	Switching output	Type	Part no.
Aluminum housing with PPSU lens	10 mm ... 20 mm	1 x 4 mA ... 20 mA (< 300 Ω)	Cable with male connector M12, 5-pin 30 cm	1 x PNP/NPN	OD1-B015C05I25	6050520
			Male connector M8, 4-pin	-	OD1-B015C05I14	6050519
	20 mm ... 50 mm	1 x 4 mA ... 20 mA (< 300 Ω)	Cable with male connector M12, 5-pin 30 cm	1 x PNP/NPN	OD1-B035C15I25	6050524
			Male connector M8, 4-pin	-	OD1-B035C15I14	6050523
	50 mm ... 150 mm	1 x 4 mA ... 20 mA (< 300 Ω)	Cable with male connector M12, 5-pin 30 cm	1 x PNP/NPN	OD1-B100C50I25	6050528
			Male connector M8, 4-pin	-	OD1-B100C50I14	6050527
Stainless steel housing with PPSU lens	10 mm ... 20 mm	1 x 4 mA ... 20 mA (< 300 Ω)	Cable with male connector M12, 5-pin 30 cm	1 x PNP/NPN	OD1-B015H05I25	6050496
	20 mm ... 50 mm	1 x 0 V ... 10 V (> 10 kΩ)		1 x PNP/NPN	OD1-B035H15U25	6050506
		1 x 4 mA ... 20 mA (< 300 Ω)		1 x PNP/NPN	OD1-B035H15I25	6050504
	50 mm ... 150 mm	1 x 0 V ... 10 V (> 10 kΩ)		1 x PNP/NPN	OD1-B100H50U25	6050514
		1 x 4 mA ... 20 mA (< 300 Ω)	Male connector M8, 4-pin	-	OD1-B100H50U14	6050513
			Cable with male connector M12, 5-pin 30 cm	1 x PNP/NPN	OD1-B100H50I25	6050512
			Male connector M8, 4-pin	-	OD1-B100H50I14	6050511

- **Sub product family:** OD Mini Pro
- **Housing material:** stainless steel housing with PPSU lens
- **Data interface:** RS-485, PROFIBUS (optional via external evaluation unit AOD1 and gateway WI180C-PB)
- **Connection type:** Cable with male connector M12, 5-pin

Measurement range	Type	Part no.
10 mm ... 20 mm	OD1-B015H05A15	6054082
20 mm ... 50 mm	OD1-B035H15A15	6054083
50 mm ... 150 mm	OD1-B100H50A15	6054084

Adjustments





- ① Switching output status indicator
- ② Zero offset status indicator
- ③ Teach mode status indicator
- ④ Laser status indicator
- ⑤ Minus sign for measured value indicator

Recommended accessories

Mounting systems


Mounting brackets and mounting plates

	Brief description	Type	Part no.	OD Mini Core cable with male connector	OD Mini Core male connector	OD Mini Prime cable with male connector	OD Mini Prime male connector	OD Mini Pro cable with male connector
	Mounting bracket, for wall installation, no alignment bracket	BEF-OD1-A	5328343	●	-	●	-	●
	Mounting bracket, no alignment bracket	BEF-OD1-B	5328344	●	●	●	●	●








Connection systems

Modules and gateways

- **Housing material:** Polycarbonat

	Switching output	System part	Type	Part no.	OD Mini Core cable with male connector	OD Mini Core male connector	OD Mini Prime cable with male connector	OD Mini Prime male connector	OD Mini Pro cable with male connector
	1 x PNP/NPN, selectable	Master	AOD1-MR24Q1	6054270	-	-	-	-	●
	2 x PNP/NPN, selectable	Master	AOD1-MR25Q2	6054272	-	-	-	-	●
	3 x PNP/NPN, selectable	Master	AOD1-MR27C4	6058195	-	-	-	-	●
	1 x PNP/NPN, selectable	Slave	AOD1-SR24Q1	6054271	-	-	-	-	●
	2 x PNP/NPN, selectable	Slave	AOD1-SR25Q2	6054273	-	-	-	-	●
	3 x PNP/NPN, selectable	Slave	AOD1-SR27C4	6058196	-	-	-	-	●

Plug connectors and cables

	Connection type head A	Connection type head B	Cable	Cable length	Type	Part no.	OD Mini Core cable with male connector	OD Mini Core male connector	OD Mini Prime cable with male connector	OD Mini Prime male connector	OD Mini Pro cable with male connector
	Female connector, M8, 4-pin, straight	Cable	PUR, halogen-free, drag chain use, unshielded	2 m	DOL-0804-G02MC	6025894	-	●	-	●	-
 Illustration may differ	Female connector, M8, 4-pin, angled	Cable	PUR, halogen-free, drag chain use, unshielded	2 m	DOL-0804-W02MC	6025897	-	●	-	●	-
	Female connector, M12, 5-pin, straight	Cable	PUR, halogen-free, drag chain use, unshielded	2 m	DOL-1205-G02MC	6025906	●	-	●	-	●
	Female connector, M8, 4-pin, straight	Male connector, M8, 4-pin, straight	PUR, highly-flexible	2 m	DSL-0804-G02M	6059742	-	●	-	●	-
			PUR, halogen-free, drag chain use, unshielded	2 m	DSL-0804-G02MC	6036335	-	●	-	●	-
	Female connector, M12, 4-pin, straight	Male connector, M12, 4-pin	PUR, highly-flexible	2 m	DSL-1204-G02M	6059743	●	-	●	-	●
 Illustration may differ		Male connector, M8, 4-pin, straight	PUR, halogen-free, unshielded	2 m	DSL-2804-G02MC	6039180	●	-	●	-	●

For more accessories, see → www.sick.com/OD_Mini

SIMPLY ACCURATE MEASUREMENT



Product description

The OD Value allows for an easy, precise and economical solution of measuring-tasks. It detects even small deviations in dimension, shape, position or excentricity directly in the machine, contactless, precise and during running operation.

OD Value convinces with its main features: reliable, user-friendly, effective, universal and efficient. The ideal solution for everyone, who needs to check and verify quality regularly and directly in the process.

At a glance

- Several measurement ranges from 26 mm ... 34 mm to 100 mm ... 500 mm
- CMOS receiving element for measurement independent of surface
- Easy, LED-based user and teach-in concept
- Wide range of models and a wide range of standard interfaces
- Laser technology for precise measurement of very small objects
- Compact stand-alone device
- Excellent price-performance ratio

Your benefits

- Reliable measurement independent of surface, minimizes machine downtime
- Extremely simple sensor teach-in makes setup faster and more cost-effective
- Minimal space requirements and less wiring due to its compact, standalone design
- Many measurement ranges and output interfaces make it ideal for cost-effective integration into any production environment
- Low investment costs make consistent, regular quality inspection possible
- Non-contact measurement technology from a safe distance allows the inspection to be carried out directly during the production process
- Wear and damage-free inspection, due to non-contact measurement



Additional information

Detailed technical data	23
Ordering information	25
Adjustments	26
Recommended accessories	26

→ www.sick.com/OD_Value

For more information, simply 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

Resolution ¹⁾		
	26 mm ... 34 mm	2 µm
	40 mm ... 60 mm	5 µm
	65 mm ... 105 mm	10 µm
	60 mm ... 180 mm	30 µm
	60 mm ... 210 mm	60 µm
	100 mm ... 400 mm	75 µm
	100 mm ... 500 mm	100 µm
Repeatability ^{1) 2) 3) 4)}		
	26 mm ... 34 mm	6 µm
	40 mm ... 60 mm	15 µm
	65 mm ... 105 mm	30 µm
	60 mm ... 180 mm	90 µm
	60 mm ... 210 mm	180 µm
	100 mm ... 400 mm	225 µm
	100 mm ... 500 mm	300 µm
Linearity ^{1) 4) 5) 6)}		
	26 mm ... 34 mm	± 8 µm
	40 mm ... 60 mm	± 20 µm
	65 mm ... 105 mm	± 40 µm
	60 mm ... 180 mm	± 120 µm
	60 mm ... 210 mm	± 375 µm
	100 mm ... 400 mm	± 750 µm
	100 mm ... 500 mm	± 1,200 µm
Response time ^{2) 7)}		
	26 mm ... 34 mm	1 ms / 10 ms / 35 ms
	40 mm ... 60 mm	1 ms / 10 ms / 35 ms
	65 mm ... 105 mm	1 ms / 10 ms / 35 ms
	60 mm ... 180 mm	1 ms / 10 ms / 35 ms
	60 mm ... 210 mm	1 ms / 10 ms / 35 ms
	100 mm ... 400 mm	2 ms / 15 ms / 50 ms
	100 mm ... 500 mm	2 ms / 15 ms / 50 ms
Measuring frequency ²⁾		
	26 mm ... 34 mm	2 kHz
	40 mm ... 60 mm	2 kHz
	65 mm ... 105 mm	2 kHz
	60 mm ... 180 mm	2 kHz
	60 mm ... 210 mm	2 kHz
	100 mm ... 400 mm	1.3 kHz

¹⁾ At averaging function medium.²⁾ 6 % ... 90 % remission.³⁾ Constant ambient conditions.⁴⁾ For best performance consider warm up time ≤ 5 minutes.⁵⁾ Measurement on 90 % remission (ceramic, white)⁶⁾ When calibrated in the application regularly.⁷⁾ Automatic sensitivity adjustment ≤ 4 ms, 6 ms for the models with measuring range of 100 mm ... 400 mm.⁸⁾ Wavelength: 655 nm, max. output: 1 mW.

100 mm ... 500 mm	1.33 kHz
Light source	Laser, red
Laser class ⁸⁾	2 (EN 60825-1)
Typ. light spot size (distance)	
26 mm ... 34 mm	0.1 mm x 0.1 mm (30 mm)
40 mm ... 60 mm	0.5 mm x 1 mm (50 mm)
65 mm ... 105 mm	0.8 mm x 1.3 mm (85 mm)
60 mm ... 180 mm	1 mm x 1.5 mm (120 mm)
60 mm ... 210 mm	1 mm x 1.4 m (135 mm)
100 mm ... 400 mm	1.8 mm x 3.5 mm (250 mm)
100 mm ... 500 mm	1.9 mm x 3.9 m (300 mm)
Additional function	Mean-value setting 1 ... 64x / automatic sensitivity adjustment / Analog outputs can be taught in / Invertable analog output / Teach-in of switching output / Invertable switching output / multifunctional input: laser-off / external teach-in / trigger / switching mode: distance to object (DtO) / switching mode: window (Wnd) / Mean-value setting 1 ... 64x / automatic sensitivity adjustment / Teach-in of switching output / Invertable switching output / multifunctional input: laser-off / external teach-in / trigger / switching mode: distance to object (DtO) / switching mode: window (Wnd) (depending on type)

¹⁾ At averaging function medium.

²⁾ 6 % ... 90 % remission.

³⁾ Constant ambient conditions.

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

⁵⁾ Measurement on 90 % remission (ceramic, white)

⁶⁾ When calibrated in the application regularly.

⁷⁾ Automatic sensitivity adjustment ≤ 4 ms, 6 ms for the models with measuring range of 100 mm ... 400 mm.

⁸⁾ Wavelength: 655 nm, max. output: 1 mW.

Interfaces

Multifunctional input (MF) ¹⁾	1 x MF
---	--------

¹⁾ MF can be used as laser-off, trigger, external teach-in, or deactivated; response time ≤ 3 ms.

Mechanics/electronics

Supply voltage V_s ¹⁾	DC 12 V ... 24 V
Power consumption ²⁾	≤ 2.88 W
Warm-up time	≤ 30 min
Housing material	PBT housing with PMMA lens
Indication	Distance bar graph, up to 8 status LEDs
Weight	70 g

¹⁾ DC 12 V (-5 %) ... 24 V (+10 %); DC 18 V (-5 %) ... DC 24 V (+10 %) when using analog voltage output.

²⁾ Without load, with current output.

Ambient data

Enclosure rating	IP 67
Protection class	III
Ambient temperature	Operation: -10 °C ... +40 °C Storage: -20 °C ... +60 °C
Relative air humidity (non-condensing)	35 % ... 95 %
Temperature drift	± 0.08 % FS/K (FS = Full Scale = Measuring range of sensor)
Typ. Ambient light immunity	Artificial light: ≤ 3,000 lx 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)

Ordering information

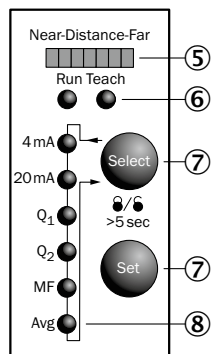
Other models → www.sick.com/OD_Value

Measuring range ¹⁾	Data interface ²⁾	Connection type	Switching output ³⁾	Type	Part no.
26 mm ... 34 mm	1 x 0 V ... 10 V (> 10 kΩ)	Male connector M12, 8-pin swivel connector unit	2 x PNP (100 mA)	OD2-P30W04U0	6036581
		Cable 2 m	2 x NPN (100 mA)	OD2-N30W04I2	6036568
	1 x 4 mA ... 20 mA (< 300 Ω)	Male connector M12, 8-pin swivel connector unit	2 x PNP (100 mA)	OD2-P30W04I0	6036580
		Cable 2 m	1 x NPN (100 mA)	OD2-N30W04A2	6036571
	RS-422	Male connector M12, 8-pin swivel connector unit	1 x PNP (100 mA)	OD2-P30W04A0	6036583
		Cable 2 m			
40 mm ... 60 mm	1 x 0 V ... 10 V (> 10 kΩ)	Male connector M12, 8-pin swivel connector unit	2 x PNP (100 mA)	OD2-P50W10U0	6036598
		Cable 2 m	2 x NPN (100 mA)	OD2-N50W10I2	6036584
	1 x 4 mA ... 20 mA (< 300 Ω)	Male connector M12, 8-pin swivel connector unit	2 x PNP (100 mA)	OD2-P50W10I0	6036597
		Cable 2 m	1 x NPN (100 mA)	OD2-N50W10A2	6036587
	RS-422	Male connector M12, 8-pin swivel connector unit	1 x PNP (100 mA)	OD2-P50W10A0	6036600
		Cable 2 m			
60 mm ... 180 mm	1 x 0 V ... 10 V (> 10 kΩ)	Male connector M12, 8-pin swivel connector unit	2 x PNP (100 mA)	OD2-P120W60U0	6036630
		Cable 2 m	2 x NPN (100 mA)	OD2-N120W60I2	6036617
	1 x 4 mA ... 20 mA (< 300 Ω)	Male connector M12, 8-pin swivel connector unit	2 x PNP (100 mA)	OD2-P120W60I2	6036625
		Cable 2 m	1 x NPN (100 mA)	OD2-N120W60A2	6036620
	RS-422	Male connector M12, 8-pin swivel connector unit	1 x PNP (100 mA)	OD2-P120W60A0	6036632
		Cable 2 m			
60 mm ... 210 mm	1 x 4 mA ... 20 mA (< 300 Ω)	Male connector M12, 8-pin swivel connector unit	2 x PNP (100 mA)	OD2-P135W75I0	6048894
65 mm ... 105 mm	1 x 4 mA ... 20 mA (< 300 Ω)	Cable 2 m	2 x NPN (100 mA)	OD2-N85W20I2	6036601
		Male connector M12, 8-pin swivel connector unit	2 x PNP (100 mA)	OD2-P85W20I0	6036613
	RS-422	Cable 2 m	1 x NPN (100 mA)	OD2-N85W20A2	6036604
		Male connector M12, 8-pin swivel connector unit	1 x PNP (100 mA)	OD2-P85W20A0	6036616
100 mm ... 400 mm	-	Male connector M12, 8-pin swivel connector unit	2 x PNP (100 mA)	OD2-P250W150C0	6036647
		Cable 2 m	2 x PNP (100 mA)	OD2-P250W150U2	6036642
	1 x 0 V ... 10 V (> 10 kΩ)	Male connector M12, 8-pin swivel connector unit	2 x PNP (100 mA)	OD2-P250W150U0	6036646
		Cable 2 m	2 x NPN (100 mA)	OD2-N250W150I2	6036633
	1 x 4 mA ... 20 mA (< 300 Ω)	Cable 2 m	2 x PNP (100 mA)	OD2-P250W150I2	6036641
		Male connector M12, 8-pin swivel connector unit	2 x NPN (100 mA)	OD2-N250W150I0	6036637
		Cable 2 m	2 x PNP (100 mA)	OD2-P250W150I0	6036645
		Male connector M12, 8-pin swivel connector unit	2 x PNP (100 mA)	OD2-P250W150I0	6036645
	RS-422	Cable 2 m	1 x NPN (100 mA)	OD2-N250W150A2	6036636
		Male connector M12, 8-pin swivel connector unit	1 x PNP (100 mA)	OD2-P250W150A0	6036648
100 mm ... 500 mm	1 x 4 mA ... 20 mA (< 300 Ω)	Male connector M12, 8-pin swivel connector unit	2 x PNP (100 mA)	OD2-P300W200I0	6048912

¹⁾ 6 % ... 90 % remission.²⁾ Resolution analog output 16 bit.³⁾ PNP: HIGH = V_s - (< 2 V) / LOW = < 2 V; NPN: HIGH = < 2 V / LOW = V_s.

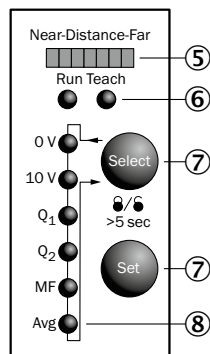
Adjustments

OD2-xxxxxxIx



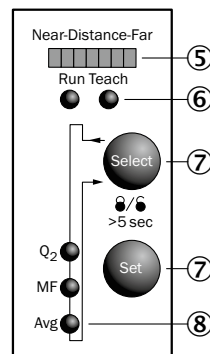
- ⑤ Distance indicator
- ⑥ Mode indicator (Run/Teach)
- ⑦ Operating elements
- ⑧ Status indicator in- and outputs (Run-mode)/menu indicator (Teach-mode)

OD2-xxxxxxUx



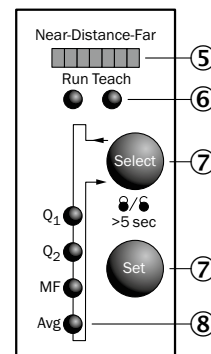
- ⑤ Distance indicator
- ⑥ Mode indicator (Run/Teach)
- ⑦ Operating elements
- ⑧ Status indicator in- and outputs (Run-mode)/menu indicator (Teach-mode)

OD2-xxxxxxAx



- ⑤ Distance indicator
- ⑥ Mode indicator (Run/Teach)
- ⑦ Operating elements
- ⑧ Status indicator in- and outputs (Run-mode)/menu indicator (Teach-mode)

OD2-xxxxxxCx



- ⑤ Distance indicator
- ⑥ Mode indicator (Run/Teach)
- ⑦ Operating elements
- ⑧ Status indicator in- and outputs (Run-mode)/menu indicator (Teach-mode)


Recommended accessories

Mounting systems

Mounting brackets and mounting plates

	Brief description	Type	Part no.
	Mounting bracket, stainless steel	BEF-WN-OD1000	4089813


Terminal and alignment brackets

	Brief description	Type	Part no.
	Alignment unit, zinc coated, incl. mounting material	BEF-AH-OD1000	2087355

Connection systems

Plug connectors and cables

- **Connection type head A:** female connector, M12, 8-pin, straight

	Connection type head B	Cable	Cable length	Type	Part no.
 Illustration may differ	Cable	PVC, special color code, shielded	2 m	DOL-1208-G02MF	6020663
			5 m	DOL-1208-G05MF	6020664

For more accessories, see → www.sick.com/OD_Value

TWO SENSORS IN ONE EVALUATION UNIT: VERY ACCURATE MEASURING AND CALCULATION



Product description

The OD Max is a highly accurate optical measuring system that is able to connect two separate sensors into one common controller. This sensing solution makes it possible to easily calculate two measurement results. Different measurements can be used to deter-

mine properties, such as the thickness or height difference of an object, even if its absolute position is fluctuating. With its high precision and speed, the OD Max is the ideal solution for challenging measurement applications.

At a glance

- Several measurement ranges from 24 mm ... 26 mm up to 250 mm ... 450 mm
- CMOS receiving element for measurement independent of surface
- High measurement frequency and high linearity
- Variety of selectable integrated calculations based on values from two sensors
- Laser technology for precise measurement or detection of very small objects
- Several output options

Your benefits

- Minimum machine downtimes due to the impressive reliability of the measuring system on any surface
- Highly accurate measurement, even during the production process, ensures high product quality
- High measuring frequency of 10 kHz increases processing speeds and reduces cycle times
- Reference measurement helps negate the need for cost-intensive adjustments to the production process
- Comparatively low investment costs for challenging measuring tasks
- Easy and cost-effective commissioning and servicing due to clear LCD display
- Reduced material costs due to the use of distance sensors to control production processes that have an impact on costs



Additional information

Detailed technical data	29
Ordering information	30
Adjustments	30
Recommended accessories	30

→ www.sick.com/OD_Max

For more information, simply 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

Features

System part	Sensor head
-------------	-------------

Performance

Resolution ¹⁾	
24 mm ... 26 mm	0.1 µm
25 mm ... 35 mm	1 µm
65 mm ... 105 mm	5 µm
250 mm ... 450 mm	50 µm
Repeatability ¹⁾	
24 mm ... 26 mm	0.3 µm
25 mm ... 35 mm	3 µm
65 mm ... 105 mm	15 µm
250 mm ... 450 mm	150 µm
Linearity ¹⁾	
24 mm ... 26 mm	± 2 µm
25 mm ... 35 mm	± 10 µm
65 mm ... 105 mm	± 40 µm
250 mm ... 450 mm	± 200 µm
Response time ²⁾	0.5 ms
Measuring frequency	10 kHz
Light source	Laser, red
Laser class ³⁾	
24 mm ... 26 mm	1 (EN 60825-1)
25 mm ... 35 mm	2 (EN 60825-1)
65 mm ... 105 mm	2 (EN 60825-1)
250 mm ... 450 mm	2 (EN 60825-1)

¹⁾ Measurement on 90 % remission (ceramic, white), for OD25-x measurement on mirror; averaging set to: 256; constant ambient conditions.

²⁾ Automatic sensitivity adjustment ≤ 2 ms.

³⁾ Wavelength: 650 nm, max. output: 390 µW (laser class 1) / 1 mW (laser class 2)

Mechanics/electronics

Warm-up time	≤ 5 min
Housing material	Aluminum housing with glass lens
Connection type ^{1) 2)}	0.5 m cable with connector
Indication	LEDs, 1.4" color display on evaluation unit
Weight ³⁾	250 g

¹⁾ Can be extended to up to 10 m with extension cable.

²⁾ Sensor must be connected to controller unit.

³⁾ Includes 0.5 m cable.

Ambient data

Enclosure rating	IP 67
Protection class	III
Ambient temperature	Operation: -10 °C ... +45 °C Storage: -20 °C ... +60 °C
Relative air humidity (non-condensing)	35 % ... 85 %
Temperature drift	± 0.01 % FS/K (FS = Full Scale = Measuring range of sensor)

Typ. Ambient light immunity	Artificial light: ≤ 3,000 lx 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 on use	OD Max sensor head OD25-x is only to be used with AODG-P/N1; All other types (OD350-x, OD85-x, OD30-x) are to be used with AOD-P/N1
--------------------	---

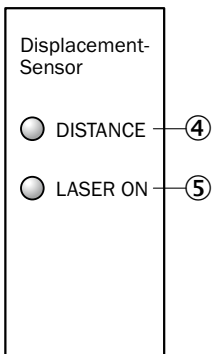
Ordering information

Other models → www.sick.com/OD_Max

Measuring range ¹⁾	Typ. light spot size (distance)	Type	Part no.
24 mm ... 26 mm	25 µm x 35 µm (25 mm)	OD-25-01T1	6030977
25 mm ... 35 mm	30 µm x 100 µm (30 mm)	OD30-05T1	6028959
65 mm ... 105 mm	70 µm x 290 µm (85 mm)	OD85-20T1	6028958
250 mm ... 450 mm	300 µm x 700 µm (350 mm)	OD350-100T1	6028957

¹⁾ 6 % ... 90 % remission.

Adjustments




④ Distance indicator

⑤ Status indicator laser (laser on)


Recommended accessories

Connection systems

Adapters and distributors

	Cable	Type	Part no.	OD-25-01T1	OD30-05T1	OD85-20T1	OD350-100T1
	Terminal block for AOD (1x R-coded & 1x L-coded)	TERM.-AOD/AODG	6033129	●	●	●	●


Modules and gateways

	Housing material	Data interface	Switching output ¹⁾	Type	Part no.	OD25-01T1	OD30-05T1	OD85-20T1	OD350-100T1
	Polycarbonat and nylon 66	RS-232	5 x NPN (100 mA)	AOD-N1	6028961	-	●	●	●
			5 x PNP (100 mA)	AOD-P1	6028960	-	●	●	●
			5 x NPN (100 mA)	AODG-N1	6030979	●	-	-	-
			5 x PNP (100 mA)	AODG-P1	6030978	●	-	-	-

¹⁾ PNP: HIGH = $V_s - (< 2 \text{ V})$ / LOW = $< 2 \text{ V}$; NPN: HIGH = $< 2 \text{ V}$ / LOW = V_s .

Plug connectors and cables

- **Connection type head A:** female connector, M12, 10-pin, straight

	Connection type head B	Cable	Cable length	Type	Part no.	OD25-01T1	OD30-05T1	OD85-20T1	OD350-100T1
	Male connector, M12, 10-pin, straight	Unshielded	2 m	DSL-1210-G02M	6028943	●	●	●	●
			5 m	DSL-1210-G05M	6028944	●	●	●	●

For more accessories, see → www.sick.com/OD_Max

MEASURING EACH DIMENSION WITH HIGH PRECISION



Product description

The OD Precision is a high accuracy, optical measuring system for measuring difficult object surfaces. In addition to glossy and dark black surfaces, it can also measure transparent and semi-transparent materials. The OD Precision is the only displacement measurement sensor that can connect three sen-

sors to one controller, which reduces the amount of hardware required and makes it easier to measure the x-, y- and z-axes., e.g. for measuring the evenness of surfaces. In order to reduce investment costs, the sensor can also be operated via RS-422, thus eliminating the need for a controller unit.

At a glance

- Numerous measuring ranges from 24 mm ... 26 mm to 300 mm ... 700 mm
- CMOS receiving element for measurement independent of surface
- Maximum measurement accuracy and frequency
- Glass thickness measurement with just one sensor head
- Various light spot sizes
- Integrated calculations for up to three sensors
- Stand-alone use via RS-422

Your benefits

- Non-contact measurement improves quality inspection during production
- Surface-independent measurement algorithms ensure minimum machine downtime, regardless of surface gloss or color
- Reduced processing times as a result of the high measuring frequency of up to 10 kHz
- Simple, cost-effective solution for challenging measuring tasks due to a variety of sensor models
- Optional stand-alone operation via RS-422 means the OD Precision offers maximum performance at lower investment costs
- High visibility LC display enables simple, cost-effective setup
- Many interfaces for simple integration into an existing production environment



Additional information

Detailed technical data	33
Ordering information	34
Adjustments	35
Recommended accessories	35

→ www.sick.com/OD_Precision

For more information, simply 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

Features

System part	Sensor head
-------------	-------------

Performance

Resolution ¹⁾	
24 mm ... 26 mm	0.02 µm
25 mm ... 35 mm	0.2 µm
65 mm ... 105 mm	1 µm
110 mm ... 190 mm	2 µm
250 mm ... 450 mm	5 µm
300 mm ... 700 mm	10 µm
Repeatability ¹⁾	
24 mm ... 26 mm	0.06 µm
25 mm ... 35 mm	0.6 µm
65 mm ... 105 mm	3 µm
110 mm ... 190 mm	6 µm
250 mm ... 450 mm	15 µm
300 mm ... 700 mm	30 µm
Linearity ¹⁾	
24 mm ... 26 mm	± 1.6 µm
25 mm ... 35 mm	± 8 µm
65 mm ... 105 mm	± 20 µm
110 mm ... 190 mm	± 40 µm
250 mm ... 450 mm	± 160 µm
300 mm ... 700 mm	± 400 µm
Response time ^{2) 3)}	0.1 ms
Measuring frequency ^{3) 4)}	
24 mm ... 26 mm	10 kHz
25 mm ... 35 mm	10 kHz
65 mm ... 105 mm	10 kHz
110 mm ... 190 mm	10 kHz
250 mm ... 450 mm	10 kHz
300 mm ... 700 mm	1.25 kHz
Light source	Laser, red
Laser class	
24 mm ... 26 mm ⁵⁾	1 (EN 60825-1)
25 mm ... 35 mm ⁶⁾	2 (EN 60825-1)
65 mm ... 105 mm ⁶⁾	2 (EN 60825-1)
110 mm ... 190 mm ⁶⁾	2 (EN 60825-1)
250 mm ... 450 mm ⁶⁾	2 (EN 60825-1)
300 mm ... 700 mm ⁶⁾	2 (EN 60825-1)
Specialized task	Thickness measurement of transparent material
Additional function	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

¹⁾ Measurement at 90% remission (ceramic, white), or mirror for OD5-25x; averaging set to: 256 or 4096 for OD5-25x; constant ambient conditions.

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

³⁾ Default setting for OD5-350x100 and OD5-500x200 = 0.8 ms, or 1.25 kHz, all others = 0.1 ms/10 kHz.

⁴⁾ 6 % ... 90 % remission; at default settings.

⁵⁾ Wavelength: 650 nm, max. output: 390 µW.

⁶⁾ Wavelength: 658 nm, max. output: 1 mW.

Interfaces

Laser-off input	1 x laser-off
Data interface	RS-422

Mechanics/electronics

Supply voltage V_s ¹⁾	DC 12 V ... 24 V
Warm-up time	≤ 5 min
Housing material	Aluminum housing with glass lens
Connection type ²⁾	0.5 m cable with connector
Indication	LEDs, 4" color display on optional evaluation unit
Weight ³⁾	250 g

¹⁾ DC 12 V (–5 %) ... DC 24 V (+10 %)

²⁾ Can be extended to up to 50 m with extension cable.

³⁾ Includes 0.5 m cable.

Ambient data

Enclosure rating	IP 67
Protection class	III
Ambient temperature	Operation: –10 °C ... +50 °C Storage: –20 °C ... +60 °C
Relative air humidity (non-condensing)	35 % ... 85 %
Temperature drift	± 0.01 % FS/K (FS = Full Scale = Measuring range of sensor)
Typ. Ambient light immunity	Artificial light: ≤ 3,000 lx 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 on use	OD Precision sensor head can be used in combination with AOD5-P/N1 or stand-alone via RS-422 / OD5-150xxx is compatible with AOD5 hardware version 1.7. and software version 4.3 (correspond with production date from Lot 1338)
--------------------	--

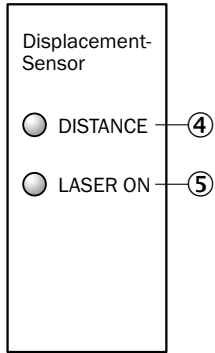
Ordering information

Other models → www.sick.com/OD_Precision

Measuring range ¹⁾	Typ. light spot size (distance)	Thickness measurement of transparent material	Type	Part no.
24 mm ... 26 mm	25 µm x 35 µm (25 mm)	0,2 mm ... 2 mm	OD5-25T01	6035975
	100 µm x 700 µm (25 mm)	0,3 mm ... 2 mm	OD5-25W01	6035976
25 mm ... 35 mm	30 µm x 100 µm (30 mm)	0,7 mm ... 5 mm	OD5-30T05	6035977
	260 µm x 1,000 µm (30 mm)	0,9 mm ... 5 mm	OD5-30W05	6035978
65 mm ... 105 mm	70 µm x 290 µm (85 mm)	2 mm ... 20 mm	OD5-85T20	6035979
	260 µm x 1,200 µm (85 mm)	2 mm ... 20 mm	OD5-85W20	6035980
110 mm ... 190 mm	Ø 180 µm (150 mm)	–	OD5-150T40	6049579
	0.33 mm x 1.6 mm (150 mm)	–	OD5-150W40	6049580
250 mm ... 450 mm	700 µm x 2,400 µm (350 mm)	–	OD5-350W100	6035981
300 mm ... 700 mm	1,000 µm x 3,700 µm (500 mm)	–	OD5-500W200	6035982

¹⁾ 6 % ... 90 % remission; at default settings.

Adjustments



④ Distance indicator

⑤ Status indicator laser (laser on)

Recommended accessories

Connection systems

Modules and gateways

	Housing material	Data interface	Switching output ^{1) 2)}	Type	Part no.
	Polycarbonat and nylon 66	RS-232, USB	5 x NPN (100 mA)	AOD5-N1	6035984
			5 x PNP (100 mA)	AOD5-P1	6035985

¹⁾ PNP: HIGH = $V_s - (< 2 \text{ V})$ / LOW = $< 2 \text{ V}$; NPN: HIGH = $< 2 \text{ V}$ / LOW = V_s .

²⁾ With use of 50-pin I/O extension terminal (accessory)

Plug connectors and cables

	Connection type head A	Connection type head B	Cable	Cable length	Type	Part no.
	Female connector, M12, 12-pin, straight	Cable	PVC, shielded	5 m	DOL-1212-G05M	6035988
		Male connector, M12, 12-pin, straight	PVC, RS-422, shielded	2 m	DSL-1212-G02M	6035986
	Male connector, 50-pin, straight	Cable	PVC, shielded	3 m	IO-EXP-AOD5	6035990
	Male connector, 12-pin	Terminal connector, 12-pin	Unshielded	–	TERM.-AOD5	6035989

For more accessories, see → www.sick.com/OD_Precision

RELIABLE, ACCURATE DISTANCE MEASUREMENT UP TO 1 M



Product description

DT20 Hi distance sensor is the ideal choice for quality control tasks from a distance of up to 1 m. The reliable and precise distance measurement independent of any color, enables consistent check of any component. In addition, a

precise red laser makes it possible to accurately detect very small objects. The DT20 Hi's exceptional measurement performance and advanced settings are ideal for solving nearly any demanding measurement task.

At a glance

- Four measuring ranges from 50 mm up to 1,000 mm
- Very high linearity of up to ± 0.5 mm
- CMOS receiving element enables accurate distance measurement independent of color or shininess
- Red laser
- Scaleable analog and switching output
- Display with easy to use setup menu
- Advanced settings (e.g., averaging function, external laser-off, etc.)

Your benefits

- Reliable, precise measurement, independent of surface, increases production quality
- Reliable and consistent measurements, regardless of color, reduce changeover time
- Advanced settings provide increased application flexibility to easily solve customer-specific applications
- Fast commissioning via button, remote or numerical teach
- Easy, precise alignment and verification based on red laser light and LC display, decreasing commissioning time
- Tough metal housing permits operation in harsh environments



Additional information

Detailed technical data	37
Ordering information	38
Recommended accessories	38

→ www.sick.com/DT20_Hi

For more information, simply 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

Resolution ¹⁾	
50 mm ... 150 mm	100 µm
100 mm ... 300 mm	200 µm
100 mm ... 600 mm	500 µm
100 mm ... 1,000 mm ²⁾	1,000 µm
Repeatability ^{1) 3) 4)}	
50 mm ... 150 mm	0.5 mm / 0.25 mm / 0.125 mm
100 mm ... 300 mm	1 mm / 0.5 mm / 0.25 mm
100 mm ... 600 mm	2 mm / 1 mm / 0.5 mm
100 mm ... 1,000 mm ²⁾	10 mm / 5 mm / 2.5 mm
Linearity ^{4) 5)}	
50 mm ... 150 mm	± 0.5 mm
100 mm ... 300 mm	± 1 mm
100 mm ... 600 mm	± 2 mm
100 mm ... 1,000 mm ²⁾	± 6 mm
Response time ³⁾	2,5 ms / 10 ms / 40 ms
Measuring frequency	400 Hz
Light source	Laser, red
Laser class	2 (EN 60825-1)
Typ. light spot size (distance)	
50 mm ... 150 mm	2 mm x 4 mm (150 mm)
100 mm ... 300 mm	3 mm x 6 mm (300 mm)
100 mm ... 600 mm	3 mm x 6 mm (600 mm)
100 mm ... 1,000 mm	6 mm x 12 mm (1000 mm)
Additional function	Set moving average fast/medium/slow, switching mode: distance to object (DtO), teach-in of switching output, Invertable switching output, teach-in of analog output, Invertable analog output, Multifunctional input: laser off / external teach-in / deactivated, switch-off display, lock user interface

¹⁾ 6 % ... 90 % remission.

²⁾ The models with measuring range of 100 mm ... 1,000 mm meets the specification of the models with measuring range of 100 mm ... 1,000 mm for distances < 600 mm.

³⁾ Dependent on the averaging setting: fast/medium/slow.

⁴⁾ When calibrated in the application regularly.

⁵⁾ 90 % remission.

Interfaces

Analog output	1 x 4 mA ... 20 mA ($\leq 300 \Omega$)
Resolution analog output	12 bit
Multifunctional input (MF) ¹⁾	1 x MF
Data interface	1 x 4 mA ... 20 mA ($< 300 \Omega$)

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

Mechanics/electronics

Supply voltage V_s ¹⁾	DC 10 V ... 30 V
Ripple ²⁾	$\leq 5 V_{pp}$

¹⁾ Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.

²⁾ May not fall short of or exceed V_s tolerances.

³⁾ Without load.

Power consumption ³⁾	≤ 1.8 W
Warm-up time	≤ 10 min
Housing material	Metal housing with PMMA lens
Connection type	Male connector, M12, 5-pin, swivel connector unit
Indication	LC display, 2 x LED
Weight	135 g

¹⁾ Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.

²⁾ May not fall short of or exceed V_s tolerances.

³⁾ Without load.

Ambient data

Enclosure rating	IP 65
Protection class	II
Ambient temperature	Operation: -20 °C ... +55 °C ¹⁾ Storage: -40 °C ... +60 °C
Temperature drift ²⁾	0.25 mm/K
Typ. Ambient light immunity	Artificial light: ≤ 3,000 lx Sunlight: ≤ 10,000 lx
Vibration resistance	EN 60068-2-6 / EN 60068-2-64
Shock resistance	EN 60068-2-27

¹⁾ Operating temperature at $V_s = 24$ V.

²⁾ 0,5 mm/K; for distances > 600 mm.

Ordering information

Other models → www.sick.com/DT20_Hi

Measuring range ¹⁾	Switching output ²⁾	Type	Part no.
50 mm ... 150 mm	1 x PNP (100 mA)	DT20-P254B	1041278
	1 x NPN (100 mA)	DT20-N254B	1041279
100 mm ... 300 mm	1 x PNP (100 mA)	DT20-P244B	1040406
	1 x NPN (100 mA)	DT20-N244B	1040713
100 mm ... 600 mm	1 x PNP (100 mA)	DT20-P214B	1040012
	1 x NPN (100 mA)	DT20-N214B	1040140
100 mm ... 1,000 mm	1 x PNP (100 mA)	DT20-P224B	1040405
	1 x NPN (100 mA)	DT20-N224B	1044216



¹⁾ 6 % ... 90 % remission.

²⁾ PNP: HIGH = $V_s - (< 2 \text{ V})$ / LOW = $< 2 \text{ V}$; NPN: HIGH = $< 2 \text{ V}$ / LOW = V_s .

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

	Brief description	Type	Part no.
	Mounting bracket, stainless steel, without mounting material, for DT20 Hi	BEF-WN-DT20	4043524
	Mounting bracket: horizontal sending axis for ceiling or floor installation or vertical sending axis for wall installation, steel, zinc coated, incl. mounting material	BEF-WN-OD1000	4089813




Terminal and alignment brackets

	Brief description	Type	Part no.
	Alignment unit	BEF-AH-OD1000	2087355

Connection systems

Plug connectors and cables

- **Connection type head B:** cable

	Connection type head A	Cable	Cable length	Type	Part no.
 Illustration may differ	Female connector, M12, 5-pin, straight	PVC, unshielded	2 m	DOL-1205-G02M	6008899
 Illustration may differ			5 m	DOL-1205-G05M	6009868
 Illustration may differ	Female connector, M12, 5-pin, angled	PVC, unshielded	2 m	DOL-1205-W02M	6008900
			5 m	DOL-1205-W05M	6009869

For more accessories, see → www.sick.com/DT20_Hi

COST-EFFECTIVE PROFILE MEASUREMENT



Product description

The Profiler 2 displacement measurement sensor performs highly accurate measurements on the x and z axes and can also measure the surface of more complex objects. Up to four areas can be analyzed at the same time with a single measurement. One of the 10 integrated measurement functions, e.g., height or width, can be selected for each area. The integrated evaluation unit of the Profiler 2 saves you time and money

when it comes to installation – making the sensor one of the most cost-effective solutions for profile measurement. While the integrated CMOS receiver unit guarantees precise measuring, the supplied software makes commissioning simple and provides exceptional visualization of the measurement process. The integrated LC display offers real-time visualization.

At a glance

- Measure complex profiles with just one laser line
- Analyze up to four areas at the same time
- More than 10 integrated measurement functions, e.g., height, width, and inclination
- Sensor head and evaluation unit in one device
- Commissioning via software or integrated display with operating elements
- High-quality CMOS receiver unit

Your benefits

- Measuring a 2D profile with just one sensor saves on hardware and installation costs
- Cost-effective solution for 2D profile measurement
- Real-time visualization of the measurement results via the integrated LC display
- Intuitive and quick commissioning via the software or display reduces installation time
- Thanks to the stand-alone concept of the Profiler 2, there is no need for cabling or to mount an additional evaluation unit
- Reliable measuring regardless of color, material, or shape
- More than 10 integrated measurement functions allow profiles to be measured and analyzed quickly



Additional information

Detailed technical data	41
Ordering information	42
Field of view	42
Recommended accessories	42

→ www.sick.com/Profiler

For more information, simply 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

Measuring width (at measuring distance)	17 mm (75 mm) 22 mm (100 mm) 27 mm (125 mm)
Resolution	X-direction 25 µm ^{1) 2)} Z-direction 2 µm
Linearity	X-direction ± 170 µm ... ± 270 µm ^{2) 3)} Z-direction ± 50 µm
Accuracy	X-direction ± 850 µm ... 1.350 µm Z-direction ± 500 µm
Response time ⁴⁾	5 ms
Light source	Laser, red
Laser class ⁵⁾	2 (EN 60825-1 / 21 CFR 1040.10)
Typ. light spot size (distance)	0.3 mm x 32 mm
Additional function	Timer (ON-OFF delay, one shot, off), averaging 1 ... 1,023, sensitivity (adjustable), Measurement functions (average, peak height, bottom height, width, peak height position, bottom height position, edge position, edge count, tilt, area, length, diameter)

¹⁾ Typical value; actual value depends on settings and environmental conditions. For details see field of view.

²⁾ Measurement on 90 % remission (ceramic, white)

³⁾ Constant ambient conditions.

⁴⁾ Typical value, high-res mode.

⁵⁾ Wavelength: 655 nm, max. output: 1 mW.

Interfaces

Analog output	1 x 4 mA ... 20 mA (< 300 Ω)
Data interface ²⁾	RS-485
External input	Selectable from bank, trigger, hold, reset, laser off and offset

¹⁾ 24 mA for measuring out of range.

²⁾ Half-duplex (9.6 kbit/s ... 4 Mbit/s)

Mechanics/electronics

Supply voltage V_s ¹⁾	DC 12 V (–5 %) ... DC 24 V (+10 %)
Power consumption	≤ 180 mA
Warm-up time	≤ 30 min
Housing material	Die-cast zinc, Polycarbonat
Connection type	Female connector, HRS, 12-pin (I/O, power supply)
Indication	2 LEDs (operational status, Laser on/off) Dot matrix display
Weight	Approx. 300 g
Dimensions	40 mm x 60 mm x 94.5 mm

¹⁾ When using analog voltage output reduced to 18 V DC (–5%) ... 24 V DC (+10%)

Ambient data

Enclosure rating	IP 67
Protection class	III
Ambient temperature	Operation: –10 °C ... +40 °C Storage: –20 °C ... +60 °C
Max. rel. humidity (not condensing)	85 %
Temperature drift	± 0.05 % FS/K (FS = Full Scale = Measuring range of sensor)
Typ. Ambient light immunity	Artificial light: ≤ 3,000 lx 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)

Ordering information

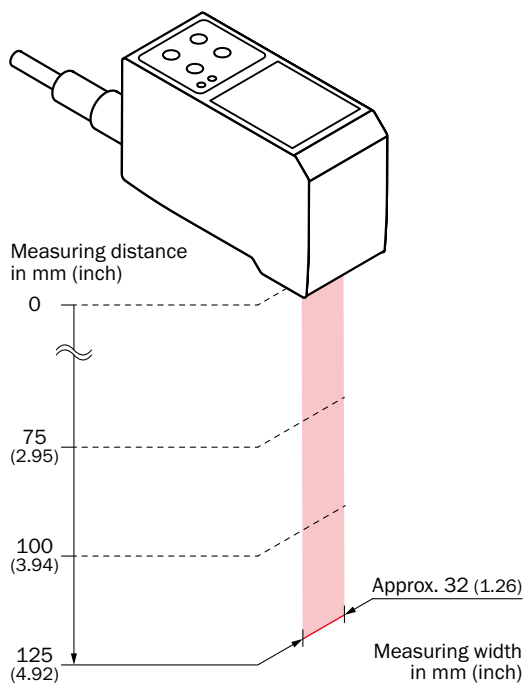
- **Measuring range:** 100 mm, ± 25 mm

Switching output ¹⁾	Type	Part no.
3 x PNP	PRO2-P100B25A1	6052873
3 x NPN	PRO2-N100B25A1	6052874

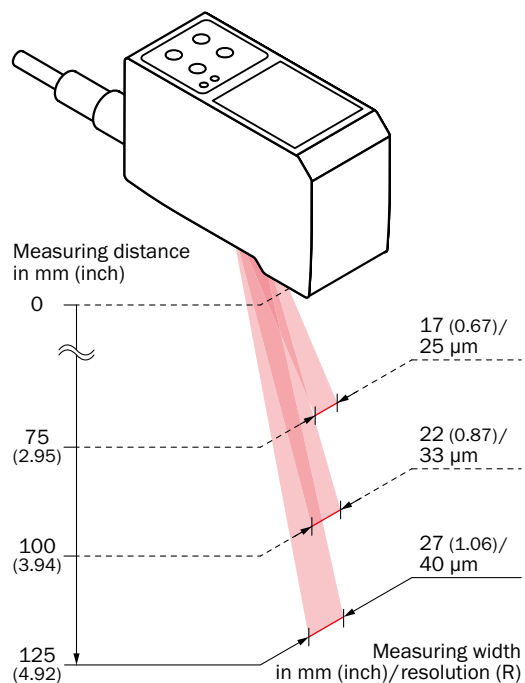
¹⁾ Maximum current output 100 mA.

Field of view

Sending area



Receiving area



Recommended accessories

Connection systems

Plug connectors and cables

	Connection type head A	Connection type head B	Cable	Cable length	Type	Part no.
	Female connector, HRS, 6-pin	Male connector, USB	PVC, RS-485	1.8 m	DSL-DH06-G1M8	6053020
	Male connector, HRS, 12-pin	-	PVC, digital I/Os, Power, unshielded	2 m	STL-OH12-G02M	6053017

For more accessories, see → www.sick.com/Profiler

CHROMATIC CONFOCAL MEASURING TECHNOLOGY OFFERS MAXIMUM PRECISION



Product description

The OC Sharp is a highly precise optical distance sensor based on chromatic confocal measuring technology. This measuring technology allows for precise measurements to the nearest nanometer on a wide range of materials, from pitch black to transparent materials. It is

also possible to measure the thickness of materials and films. The measuring technology features a passive sensor head without electronic components. This ensures measurements are not affected by interference (e.g., EMC).

At a glance

- Many measuring lengths from 600 μm up to 12 mm
- Chromatic confocal sensor technology for the highest reliability and precision
- High measuring frequency of up to 4,000 Hz
- Reliably measures a wide range of materials and colors
- Measures the thickness of transparent materials using just one sensor head (chromatic confocal for thicknesses from 30 μm and interferometric for thicknesses from 3 μm)
- Very small light spot is able to measure minuscule objects
- Easy-to-use programming with OC Sharp software

Your benefits

- Thanks to its non-contact operation and measuring speeds of up to 4,000 Hz, this sensor optimizes the production process and ensures top quality
- Reliable measurement results, regardless of object material and brightness, ensure maximum availability
- Cost-effective solution for measuring the thickness of transparent materials, as only one sensor head is necessary
- Thanks to its small light spot, this sensor can deliver precise measurements of very small objects and cavities (e. g., VIA) which are currently not possible with laser triangulation sensors or tactile systems
- Non-contact, wear-free, and calibration-free measuring technology means low maintenance costs
- Using OC Sharp software makes configuring the sensor easy and saves time and money



Additional information

Detailed technical data 45

Ordering information47

→ www.sick.com/OC_Sharp

For more information, simply 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

	Evaluation unit
Light source	LED, white
Response time	550 µs
Measuring frequency	32 Hz ... 4,000 Hz
Additional functions	Averaging, distance measurement (DtO), thickness measurement, automatic configuration of light intensity

Interfaces

Analog output	2 x 0 V ... 10 V
Resolution, analog output	16 bit
Serial (RS-232, RS-422)	1
Resolution, serial output	15 bit
USB	1 (921600 Baud)

Mechanics/electronics

Connection type	Connection terminal for supply voltage (2-pin), connection terminal for inputs/outputs (12-pin), 9-pin Sub-D RS-232/422, USB 2.0 connection, connection for fiber optic male connector for E2000 type (push-pull with automatic safeguard mechanism)
Supply voltage U_v	15 ... 30 V DC
Weight	1,100 g
Housing material	Polystyrene (front plate: Aluminum)
Display	Dot matrix display

Ambient data

Enclosure rating	IP 20
Ambient temperature	Operation: +5 °C ... +50 °C / Storage: -25 °C ... +55 °C
Max relative air humidity (non-condensing)	5 % ... 80 %
Protection class	III

Performance

	Sensor head 600 µm	Sensor head 3 mm	Sensor head 12 mm	Sensor head Interf. 27 mm
Measurement principle	Chromatic confocal			Interferometric
Measuring range	6.2 mm ... 6.8 mm (600 µm) ¹⁾	21 mm ... 24 mm (3 mm)	48 mm ... 60 mm (12 mm)	24 mm ... 30 mm ²⁾ (6 mm) ³⁾
Thickness measurement of transparent material	30 µm ... 900 µm ⁴⁾	100 µm ... 4.5 mm ⁴⁾	1 mm ... 18 mm ⁴⁾	3 µm ... 180 µm
Middle of the measuring range	6.5 mm	22.5 mm	54 mm	27 mm
Resolution	18 nm (15 bit)	92 nm (15 bit)	366 nm (15 bit)	5.5 nm
Linearity ⁵⁾	< 200 nm	< 1 µm	< 4 µm	60 nm
Typical light beam diameter	Ø 4 µm	Ø 12 µm	Ø 30 µm	Ø 40 µm
Maximum tilt angle ^{6), 7)}	90° ± 30°		90° ± 15°	90° ± 5°

¹⁾ Suitable for roughness measurement.

²⁾ Typical values, material and surface-dependent.

³⁾ Maximum measurable layer thickness (with refraction index $n = 1$): 3 µm–180 µm.

⁴⁾ Refraction index $n = 1.5$.

⁵⁾ Calibration protocols available upon request.

⁶⁾ In the case of reflective surfaces.

Mechanics/electronics

Connection type	Connection for fiber optic cables			
Weight	71 g	501 g	281 g	21 g
Housing material	Aluminum with glass lens			

Ambient data

Ambient temperature	Operation: +5 °C ... +50 °C / Storage: -25 °C ... +55 °C
Max relative air humidity (non-condensing)	5 % ... 80 %

Ordering information

The OC Sharp displacement measurement sensor always comes as a set. This set contains the following components: one or two sensor heads, one evaluation unit, and one three-meter fiber optic cable. Also included with the delivery: one plug-in power supply unit, one USB cable, one set of cleaning swabs, CD with operating instructions, driver and software for the OC Sharp. Other combinations available upon request.



Sets with one sensor head

Description		Model name	Part no.
Set 1	Evaluation unit, fiber optic cable, 600 µm sensor head	SOC-1A100103K	6054506
Set 2	Evaluation unit, fiber optic cable, 3 mm sensor head	SOC-1A100203K	6054507
Set 3	Evaluation unit, fiber optic cable, 12 mm sensor head	SOC-1A100303K	6054508
Set 4	Evaluation unit, fiber optic cable, sensor head interf. 27 mm	SOC-1A100403K	6054509

Sets with two sensor heads

Description		Model name	Part no.
Set 5	Evaluation unit, fiber optic cable, 600 µm sensor head, 3 mm sensor head	SOC-1A200103K	6054510
Set 6	Evaluation unit, fiber optic cable, 600 µm sensor head, 12 mm sensor head	SOC-1A200203K	6054511
Set 7	Evaluation unit, fiber optic cable, 600 µm sensor head, sensor head interf. 27 mm	SOC-1A200303K	6054512
Set 8	Evaluation unit, fiber optic cable, 3 mm sensor head, 12 mm sensor head	SOC-1A200403K	6054513
Set 9	Evaluation unit, fiber optic cable, 3 mm sensor head, sensor head interf. 27 mm	SOC-1A200503K	6054514
Set 10	Evaluation unit, fiber optic cable, 12 mm sensor head, sensor head interf. 27 mm	SOC-1A200603K	6054515

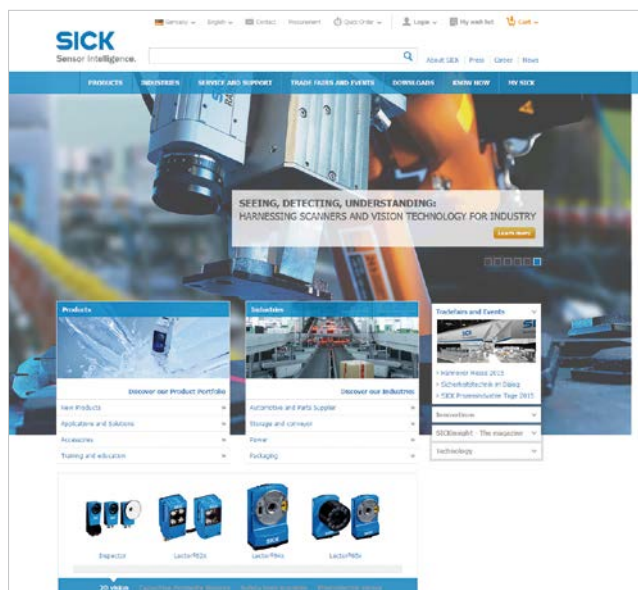
Individual fiber optic cables

Description	Model name	Part no.
3-meter fiber optic cable ¹⁾	FOC03-AM1K	5328669
5-meter fiber optic cable ¹⁾	FOC05-AM1K	5328670
10-meter fiber optic cable ¹⁾	FOC10-AM1K	5328671
3-meter fiber optic cable with metal sheath ¹⁾	FOC03-AM1M	5328672
5-meter fiber optic cable with metal sheath ¹⁾	FOC05-AM1M	5328673

¹⁾ Bend radius of max. 30 mm.

REGISTER AT WWW.SICK.COM TODAY AND ENJOY ALL THE BENEFITS

- ✓ Select products, accessories, documentation and software quickly and easily.
- ✓ Create, save and share personalized wish lists.
- ✓ View the net price and date of delivery for every product.
- ✓ Requests for quotation, ordering and delivery tracking made easy.
- ✓ Overview of all quotations and orders.
- ✓ Direct ordering: submit even very complex orders in moments.
- ✓ View the status of quotations and orders at any time. Receive e-mail notifications of status changes.
- ✓ Easily repeat previous orders.
- ✓ Conveniently export quotations and orders to work with your systems.



SERVICES FOR MACHINES AND SYSTEMS: SICK LifeTime Services

Our comprehensive and versatile LifeTime Services are the perfect addition to the comprehensive range of products from SICK. The services range from product-independent consulting to traditional product services.



Consulting and design
Safe and professional



Product and system support
Reliable, fast and on-site



Verification and optimization
Safe and regularly inspected



Upgrade and retrofits
Easy, safe and economical



Training and education
Practical, focused and professional

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 7,400 employees and over 50 subsidiaries and equity investments as well as numerous agencies 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, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

Detailed addresses and further locations → www.sick.com