

Precise distance, spacing and position measurements

Optical distance sensors





Powerful distance, spacing and position measurements

Optical distance sensors by Baumer measure accurately to the micrometer and deliver reliable results even on demanding surfaces. The extremely compact sensors with fully integrated electronics are ready to use quickly and with minimal effort.

Long-lasting, robust solutions

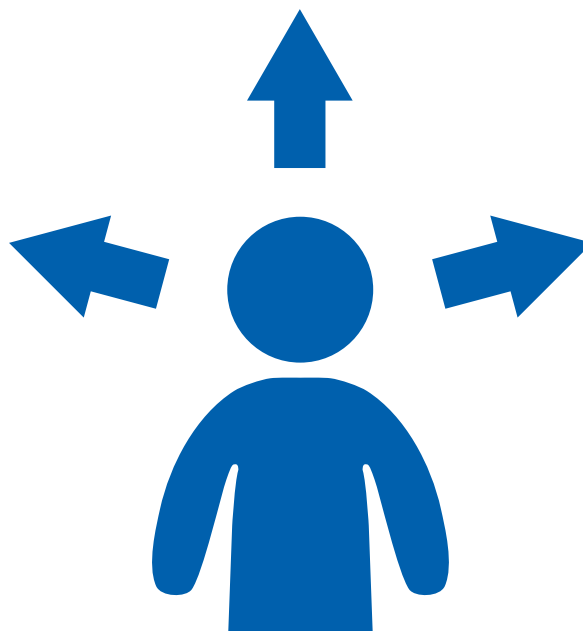
- Robust housings made of stainless steel, metal and plastic for different applications
- High ambient light immunity
- Vibration-resistant sensors and sensors in IP 69K washdown design
- Low temperature drift in the event of ambient temperature fluctuations

Reliable and efficient processes

- Point, line or multi-spot beam shapes for the most demanding object surfaces
- Selectable focus ranges for high reliability of measurements even on challenging surfaces
- Precise positioning of objects with a linearity error of $\pm 0.06\%$
- Intelligent signal processing in the sensor
- Fast measurements thanks to short measuring cycles

Simple operation and integration

- Fast, economical omit start-up thanks to Plug & Play
- Fast and simple adjustment of the measuring range using the teach-in button
- Innovative touch display with a simple operating concept
- Factory-calibrated sensors with measuring values displayed in millimeters



From miniature to high-performance – always the optimum solution for your application

Miniature sensors – extremely small and lightweight designs with high precision

- World's smallest laser triangulation distance sensor with integrated electronics
- High precision with a low linearity error of up to $\pm 0.15\%$ of the measuring range even in strong ambient light



From Page 6

Performance sensors – powerful sensors for factory automation

- Reliable system operation with high accuracy at distances of up to 1000 mm
- Highly flexible, reliable solution portfolio thanks to different measuring ranges and steel molds
- Use in demanding environments using sensors with high vibration endurance or washdown housing



From Page 10

High-performance sensors – sensors with measuring accuracy in the sub-micrometer range

- High-precision distance measurements with a very low linearity error of up to $\pm 0.06\%$ of the measuring range and extreme immunity to ambient light
- Reliable measurements on inhomogeneously shiny, very rough or extremely dark surfaces
- Simple parameterization of the calibrated sensors by touch display



From Page 14

Standard distance sensors – entry-level models with attractive price / performance ratio

From Page 20

Long-range sensors for distances of up to 13 meters

From Page 22

The choice is yours.

Size	Measuring range

Miniature sensors

Extremely small and light sensors with high precision	OADM 12	 (Width 12.4 mm)	
	OADM 13	 (Width 13.4 mm)	

Performance sensors

Powerful sensors for factory automation	OADM 20 Series 2000	 (Width 20.6 mm)	
	OADM 20 Series 6000	 (Width 20.6 mm)	

High-performance sensors

Sensors with measuring accuracy in the sub-micrometer range	Short range OM70	 (Width 26.0 mm)	
	Mid-range OM70		
	OM70 multi-spot		

Standard distance sensors*	FADx 14	14.8 × 43 × 31 mm	
	OADK 25	23.4 × 63 × 45 mm	
Long-range sensors	OADM 250	25.4 × 66 × 51 mm	
	OADM 260		

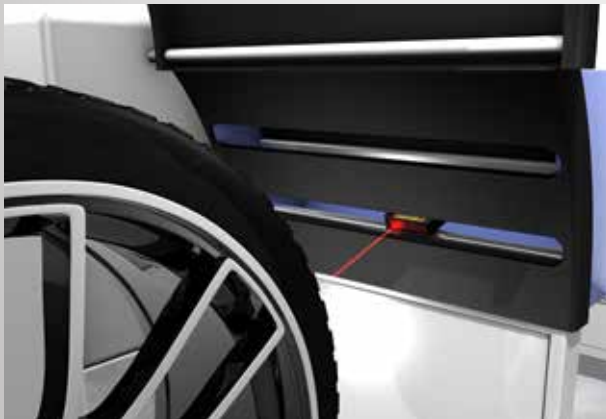
*New: O300 / O500 sensors with IO-Link (p. 20–21)

Accuracy (linearity error of the measuring range)	Measuring rate	Beam shape			Inputs / Outputs				Special features	Page
		Point	Line	multi-spot	Analog	Dig. interface	Input	Output		
<ul style="list-style-type: none"> ± 0.15% ± 0.39% ± 0.33% 	2.2 kHz	■			Analog	RS 485	Teach-in	-	<ul style="list-style-type: none"> ■ Smallest distance-measuring sensor with integrated electronics ■ Rugged metal housing 	6–7
<ul style="list-style-type: none"> ± 0.45% ± 0.30% ± 0.45% ± 0.4% ± 0.7% 	2.2 kHz	■	■		Analog	RS 484, RS 232	Teach-in	Alarm	<ul style="list-style-type: none"> ■ Miniature sensor with measuring ranges up to 500 mm ■ Rugged metal housing 	8–9
<ul style="list-style-type: none"> ± 0.15% ± 0.2% ± 0.4% ± 0.4% 	2.2 kHz	■			Analog	-	Teach-in	Alarm	<ul style="list-style-type: none"> ■ Automatic power, voltage detection ■ Stainless steel variants in washdown and hygienic design 	10–11
<ul style="list-style-type: none"> ± 0.15% ± 0.2% ± 0.4% ± 0.4% ± 1.25% 	2.2 kHz	■	■		Analog	-	Teach-in Synch			12–13
<ul style="list-style-type: none"> ± 0,06% ± 0,07% ± 0,09% 	2.5 kHz	■	■		Analog	RS 485	Synch	Alarm and digital output	<ul style="list-style-type: none"> ■ Resolution up to 0.7 µm, linearity deviation up to 0.06% ■ Measuring distances up to 1500 mm ■ Focus ranges for maximum reliability with demanding measurement objects ■ Excellent ambient light immunity ■ Dimensional accuracy test with ± tolerances ■ Selectable filtering ■ Multi-spot sensors with Ethernet interface and web server 	14–19
<ul style="list-style-type: none"> ± 0,12% ± 0,19% ± 0,32% 	2,5 kHz	■	■							
<ul style="list-style-type: none"> ± 0.08% ± 0.11% 	1.5 kHz			■						
± 1.14%	0.66 kHz	■			Analog	IO-Link	Teach-in	Alarm	<ul style="list-style-type: none"> ■ Stainless steel variants in washdown and hygienic design ■ IO-Link 	20–21
± 1.6%	0.15 kHz	■				-			<ul style="list-style-type: none"> ■ Lightweight plastic housing ■ Measuring ranges up to 1000 mm 	
<ul style="list-style-type: none"> ± 0.4% ± 0.11% 	0.1 kHz	■				-			<ul style="list-style-type: none"> ■ Time-of-flight sensors for measuring ranges of up to 13 meters 	22–23

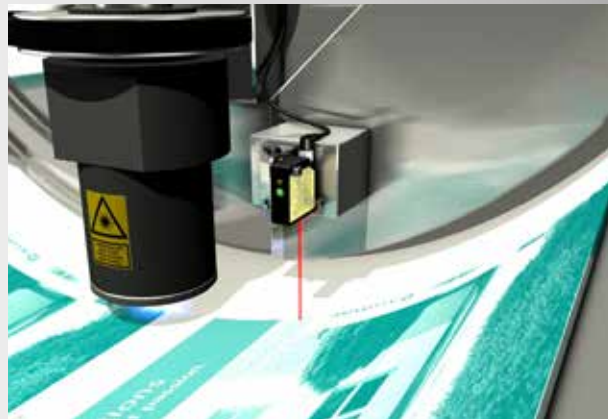
Miniature sensors – the world's smallest triangulation sensors with integrated electronics

OADM 12

- Easy integration in extremely confined spaces
- Use in robot applications thanks to their low weight
- Precise positioning of small parts thanks to a linearity error of up to $\pm 0.15\%$ of the measuring range
- Reliable operation thanks to high ambient light immunity
- Reliable detection of very small parts
- Dirt indicator for optimum maintenance processes
- Excellent performance thanks to high-speed measurements even at high production speeds



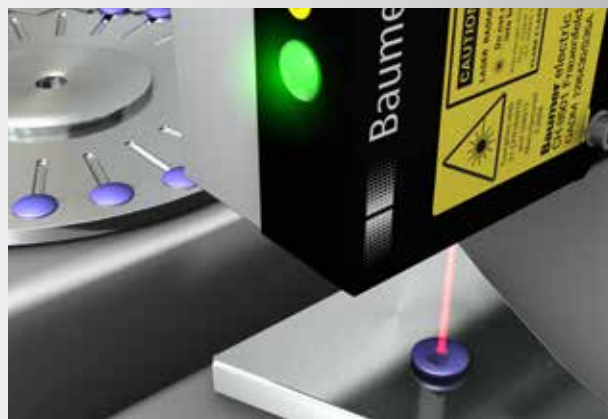
Reduction of imbalance with a balancing machine
The surface of a tire is scanned in a longitudinal direction and balance weights attached to the rim in order to reduce or eliminate the imbalance.



Measuring distances on printing plates
By measuring the distance to the printing plate, the laser head is ideally positioned, thus guaranteeing the necessary print quality.



Precise positioning in watch manufacture
Before the watch hand is mounted on the mandrel, a measurement of the distance to the hand shaft is carried out to prevent damage.



Quality inspection of tablets
Thanks to its extremely small size, the OADM 12, when installed in compact desk-top units, measures the thickness of small tablets in the pharmaceutical industry.

OADM 12 product data



OADM 12

Measurement technology	Measuring distance (Sd)	16 ... 26 mm			30 ... 50 mm	16 ... 120 mm		
	Measuring range (MR)	10 mm			20 mm	104 mm		
	Resolution	2 ... 5 μm		4 ... 8 μm	10 ... 26 μm	2 ... 120 μm		
	Linearity error	$\pm 6 \dots \pm 15 \mu\text{m}$	$\pm 13 \dots \pm 25 \mu\text{m}$		$\pm 32 \dots \pm 78 \mu\text{m}$	$\pm 15 \dots \pm 350 \mu\text{m}$		
		$\pm 0.15\%$	$\pm 0.25\%$		$\pm 0.39\%$	$\pm 0.33\%$		
	Response time / release time	0.9 ms	2 ms	1.8 ms	1.8 ms	0.9 ms	2 ms	3 ms
	Laser class	2	1			2	1	
	Temperature drift	$\pm 0.04\% \text{ Sde/K}$				$\pm 0.06\% \text{ Sde/K}$		
Beam shape	Point							
Housing	Housing material	Die-cast zinc						
	Dimension	12.4 × 37 × 34.5 mm						
	Connection types	M8, 4-pin						
Ambient condition	Operating temperature	0 ... +50 °C						
	Safety class	IP 67						
	Ambient light immunity	100 kLux	50 kLux			30 kLux	50 kLux	
Inputs / Outputs	Analog output	Current / voltage output						
	Digital interface	–	–	RS485	RS485	–	–	RS485
	Digital input	Teach-in		–	–	Teach-in		–
Additional functions	Parameterization using teach-in button or externally							
Order numbers for OADM 12								
laser point	Current output	10147121	11136815	–	–	10147122	11090598	–
	Voltage output	10152993	11136813	–	–	10152994	11090596	–
	RS485	–	–	11147975	11177259	–	–	11159058

Miniature sensors for measuring ranges of up to 500 mm

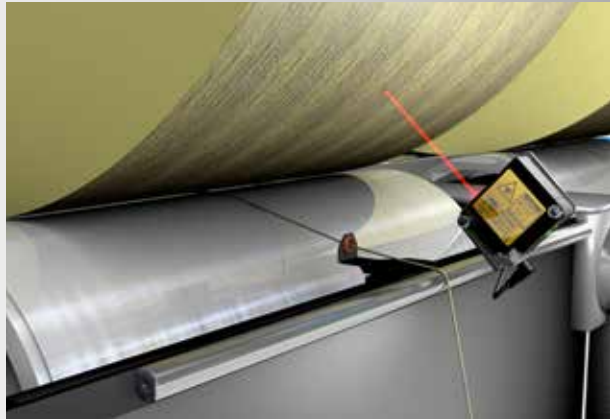
OADM 13

- Measuring ranges of up to 500 mm in a very small housing for very confined spaces
- Measurements also possible on extremely dark objects even with high ambient light
- Application security even in harsh or colored structured surfaces thanks to the laser-line beam shape
- Reliable operation in harsh environments thanks to the rugged IP 67 aluminum housing
- Can be used flexibly for different requirements and applications thanks to selectable measuring ranges and accuracy levels



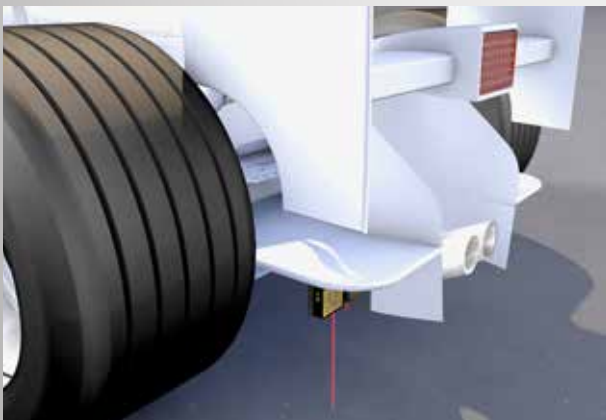
Quality inspection of sewage pipes

The inside of a narrow sewage pipe is scanned all round by means of eccentricity measurement and inspected for fractures and damage.



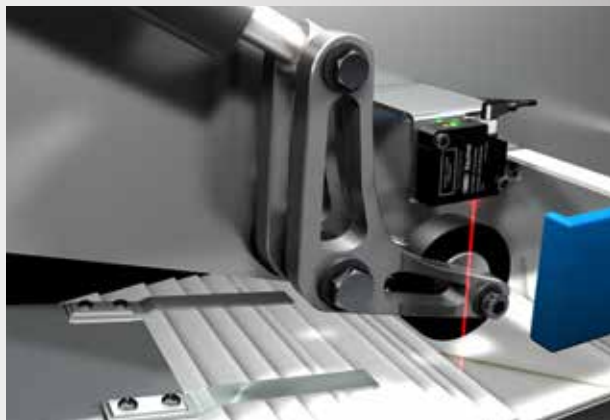
Yarn length measurement

The exact yarn length that is to be wound onto a yarn reel is determined by means of distance measurement with an OADM 13 with laser line beam principle.



Vibration-resistant distance measurement in racing cars

Thanks to various measurement results, the OADM 12 sensors ensure the best possible suspension tuning for the racing car, even in the case of changing ambient light conditions.



Material infeed in the printing industry

The material infeed of envelopes is regulated by accurate height measurement in order to guarantee a smooth process.

OADM 13 product data



OADM 13

Measurement technology	Measuring distance (Sd)	50 ... 60 mm	60 ... 100 mm	100 ... 200 mm	50 ... 350 mm	50 ... 350 mm	50 ... 550 mm	50 ... 550 mm	
	Measuring range (MR)	10 mm	40 mm	100 mm	300 mm	300 mm	500 mm	500 mm	
	Resolution	15 μ m	15 ... 38 μ m	39 ... 150 μ m	10 ... 400 μ m	50 ... 400 μ m	10 ... 1150 μ m	9 ... 1150 μ m	
	Linearity error	$\pm 45 \mu$ m	$\pm 47 \dots \pm 118 \mu$ m	$\pm 123 \dots \pm 457 \mu$ m	$\pm 50 \dots \pm 1200 \mu$ m	$\pm 180 \dots \pm 1200 \mu$ m	$\pm 800 \dots \pm 3500 \mu$ m	$\pm 300 \dots \pm 3500 \mu$ m	
		$\pm 0.45\%$	$\pm 0.30\%$	$\pm 0.45\%$	$\pm 0.40\%$	$\pm 0.40\%$	$\pm 0.70\%$	$\pm 0.70\%$	
	Response time / release time	2 ms			0.9 ms	2 ms			
	Laser class	1			2				
	Temperature drift	$\pm 0.07\%$ Sde/K			$\pm 0.04\%$ Sde/K		$\pm 0.07\%$ Sde/K		
	Beam shape	Point or line							
Housing	Housing material	Aluminum							
	Dimension	13.4 x 48.2 x 40 mm							
	Connection types	M8, 4-pin							
Ambient condition	Operating temperature	0 ... +50 °C							
	Safety class	IP 67							
	Ambient light immunity	100 kLux			20 kLux		100 kLux		
Inputs / Outputs	Analog output	Current / voltage output							
	Digital interface	RS485 oder RS232							
	Digital output	-							
	Digital input	Teach-in							
Additional functions	Parameterization using teach-in button or externally								
Part numbers for OADM 13 with laser point beam shape									
laser point	Current	11017045	11017068	11017069	10155373	-	11017093	-	
	Voltage	11017090	11017091	11017092	10159643	-	11017095	-	
	RS485	-	-	-	-	11002550	-	11043128	
	RS 232	-	-	-	-	11003205	-	11043072	
Part numbers for OADM 13 with laser line beam shape									
laser line	Current	-	-	-	10157485	-	11017094	-	
	Voltage	-	-	-	10159644	-	11017096	-	
	RS485	-	-	-	-	11003203	-	11043129	
	RS 232	-	-	-	-	11003208	-	11043127	

Performance sensors – reliable solutions for factory automation

OADM 20

- High process safety and flexibility thanks to the availability of different measuring ranges and accuracy levels
 - Very short set-up times and easy installation of the compact standard housings
 - Precise laser-point beam for the measurement / positioning of small objects
 - High-precision measurements with excellent repeat accuracy
- on rough or textured color surfaces with the laser-line beam shape
 - Fast commissioning and easy adaptation to different applications thanks to teach-in measuring ranges
 - Interference-free operation through the synchronization of multiple sensors in one system



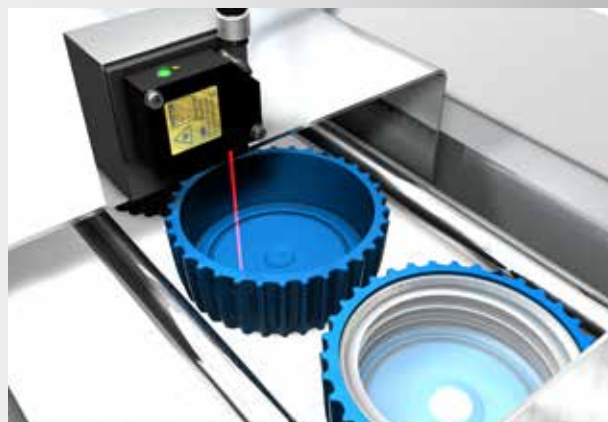
Measurement of the sag of metal sheets
Through the distance measurement of the sag, a uniform velocity of the metal sheet can be achieved.



Quality inspection of seats
The functional inspection of the seats is carried out using automated, mechanical adjustment of the seat and a downstream measurement of the positions using the OADM 20 sensors.



Measurement of tire profiles
The tire profiles are checked on a brake test stand in order to ensure that the vehicle is suitable for use on public roads.



Presence check in the beverage industry
Thanks to its small laser spot, the OADM 20 can detect whether the thin plastic insert is present in a cap.

OADM 20 product data



OADM 20 Series 2000

OADM 20 Series 6000

		OADM 20 Series 2000				OADM 20 Series 6000				
Measurement technology	Measuring distance (Sd)	30 ... 70 mm	30 ... 130 mm	50 ... 300 mm	100 ... 600 mm	30 ... 70 mm	30 ... 130 mm	50 ... 300 mm	100 ... 600 mm	200 ... 1000 mm
	Measuring range (MR)	40 mm	100 mm	250 mm	500 mm	40 mm	100 mm	250 mm	500 mm	800 mm
	Resolution	4 ... 20 µm	5 ... 60 µm	10 ... 330 µm	15 ... 670 µm	4 ... 20 µm	5 ... 60 µm	10 ... 330 µm	15 ... 670 µm	120 ... 2500 µm
	Linearity error	± 12 ... ± 60 µm	± 15 ... ± 200 µm	± 30 ... ± 1000 µm	± 50 ... ± 2000 µm	± 12 ... ± 60 µm	± 15 ... ± 200 µm	± 30 ... ± 1000 µm	± 50 ... ± 2000 µm	± 480 ... ± 10000 µm
		± 0.15%	± 0.20%	± 0.40%	± 0.40%	± 0.15%	± 0.20%	± 0.40%	± 0.40%	± 1.25%
	Response time / release time	0.9 ms				0.9 ms				
	Laser class	2				2				
	Temperature drift	–				± 0.015% Sde/K	± 0.03% Sde/K			± 0.06% Sde/K
Beam shape	Point				Point or line					
Housing	Housing material	Die-cast zinc				Die-cast zinc				
	Dimension	20.6 × 65 × 50 mm				20.6 × 65 × 50 mm				
	Connection types	M12, 5-pin				M12, 8-pin				
Ambient condition	Operating temperature	0 ... +50 °C				0 ... +50 °C				
	Safety class	IP 67				IP 67				
	Ambient light immunity					50 kLux	40 kLux	8 kLux	10 kLux	5 kLux
Inputs / Outputs	Analog output	Current / voltage output				Current / voltage output				
	Digital output	–				Alarm				
	Digital input	Teach-in				Teach-in and Sync				
Additional functions	<ul style="list-style-type: none"> ■ Parameterization using teach-in button or externally ■ Automatic power and voltage detection 									

Part numbers for OADM 20 with laser point beam shape

laser point	Current	11077730	11077731	11077732	11077733	–	–	–	–	–
	Voltage	11077734	11077735	11077736	11077737	–	–	–	–	–
	Current / voltage	–	–	–	–	10144598	10144599	10144600	10144601	10144602

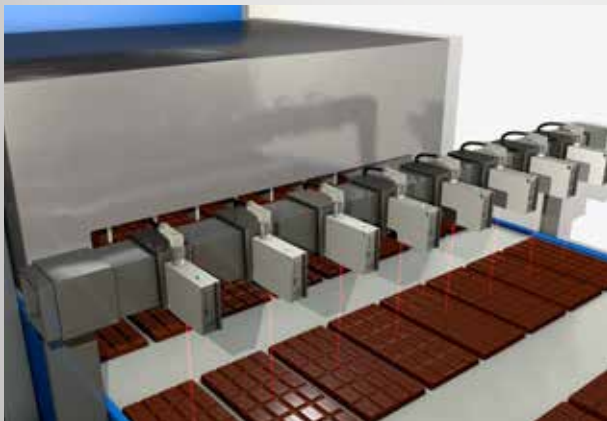
Part numbers for OADM 20 with laser line beam shape

laser line	Current / voltage	–	–	–	–	10144603	10144604	10144605	10144077	10144606
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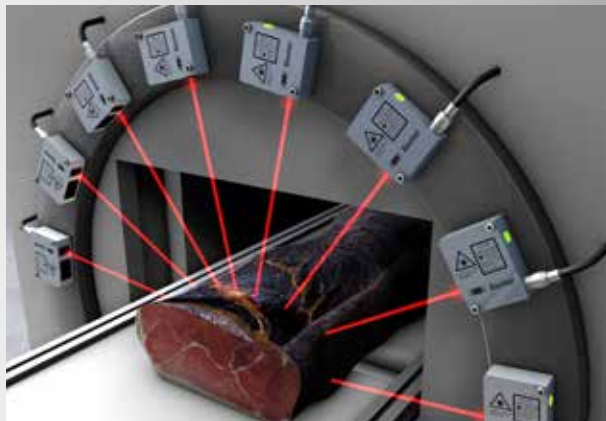
Performance sensors for demanding environments

OADR 20 stainless steel / OADM 20 vibration-resistant

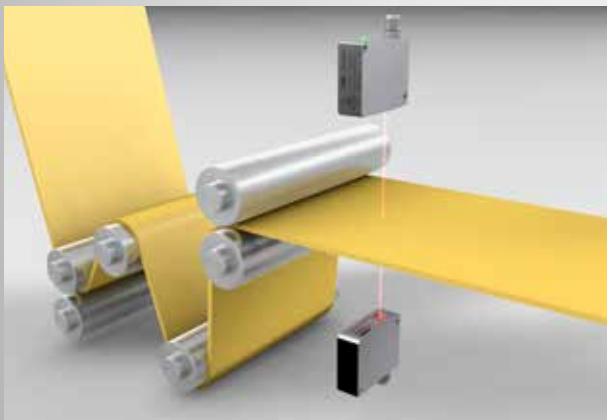
- Stainless steel sensors in a robust IP 69K washdown design with *proTect+* impermeability concept, the increase in reliability for use in the food industry
- Vibration-resistant sensors with extended temperature range and high immunity to ambient light for outdoor applications
- Reliable measurements with high repeat accuracy in the event of fluctuations in the ambient temperature
- Interference-free operation through the synchronization of multiple sensors in one system



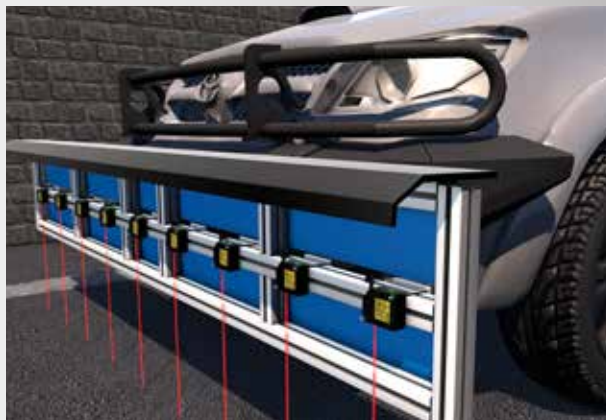
Quality inspection in the production of chocolate
The thickness and length of the chocolate bars is measured with OADR sensors, and this information is fed back to the upstream process to ensure consistent quality.



Volume measurement
Through the ring-shaped arrangement of several OADR 20 stainless steel sensors, the volume of ham can be measured and the downstream cutting process controlled.



Measuring the thickness of pasta dough
The thickness of pasta dough is a decisive quality criterion. Deviations from the nominal values are incorporated into the process control. FDA-compliant OADR 20 washdown sensors ensure the consistent quality of the food.



Measurement of road levelness
Vibration-resistant OADM 20 sensors measure the levelness of roads and ensure long-term safety in road traffic.

Product data OADM 20 vibration-resistant / OADR 20



		OADM 20 vibration-proof			OADR 20 washdown design		
Measurement technology	Measuring distance (Sd)	50 ... 300 mm	100 ... 600 mm	200 ... 1000 mm	30 ... 130 mm	50 ... 300 mm	100 ... 600 mm
	Measuring range (MR)	250 mm	500 mm	800 mm	100 mm	250 mm	500 mm
	Resolution	10 ... 400 µm	15 ... 800 µm	120 ... 3000 µm	5 ... 60 µm	10 ... 330 µm	15 ... 670 µm
	Linearity error	± 200 ... ± 1500 µm	± 500 ... ± 3400 µm	± 360 ... ± 9000 µm	± 15 ... ± 200 µm	± 30 ... ± 1000 µm	± 50 ... ± 2000 µm
		± 0.60%	± 0.68%	± 1.13%	± 0.20%	± 0.40%	± 0.40%
	Response time / release time	2 ms	2.5 ms	3.5 ms	0.9 ms		
	Laser class	2			2		
	Temperature drift	± 0.04% Sde/K			± 0.03% Sde/K		
Beam shape	Line			Point or line			
Housing	Housing material	Die-cast zinc			Stainless steel V4A		
	Dimension	20.6 × 65 × 50 mm			20.25 × 65 × 51 mm		
	Connection types	cable, 8-pin			M12, 8-pin		
Ambient condition	Operating temperature	-20 ... +60 °C			0 ... +50 °C		
	Safety class	IP 67			IP 69K & <i>proTect+</i>		
	Ambient light immunity	100 kLux	100 kLux	60 kLux	40 kLux	8 kLux	10 kLux
Inputs / Outputs	Analog output	Current / voltage output			Current / voltage output		
	Digital output	Alarm			Alarm		
	Digital input	Teach-in and Sync			Teach-in and Sync		
Additional functions	<ul style="list-style-type: none"> ■ Parameterization using teach-in button or externally ■ Automatic current and voltage detection 			<ul style="list-style-type: none"> ■ Parameterization externally ■ Automatic current and voltage detection 			
Part numbers for OADR / OADM 20 with laser point beam shape							
laser point	Current and voltage output	–	–	–	11040826	11017788	11040827
Part numbers for OADR / OADM 20 with laser line beam shape							
laser line	Current and voltage output	10165976	10165977	11012177	11040828	11040829	11040830

High-performance sensors with excellent measuring accuracy

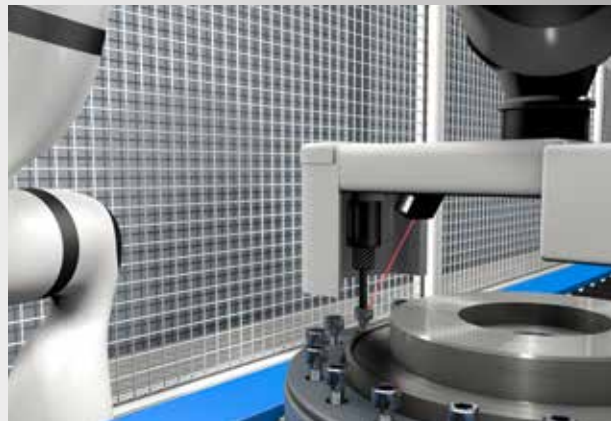
OM70 laser point / OM70 laser line

- High-precision quality inspections through repeat accuracy in the sub-micrometer range
- Highly accurate positioning thanks to a very low linearity error of 0.06% of the measuring range
- Extremely high process safety even in the event of fluctuations in the ambient temperature
- Direct examination of the dimensional stability of objects through variants with tolerance function
- High operating safety thanks to extreme immunity to ambient light
- Easy parameterization thanks to a clear touch display with integrated live monitor



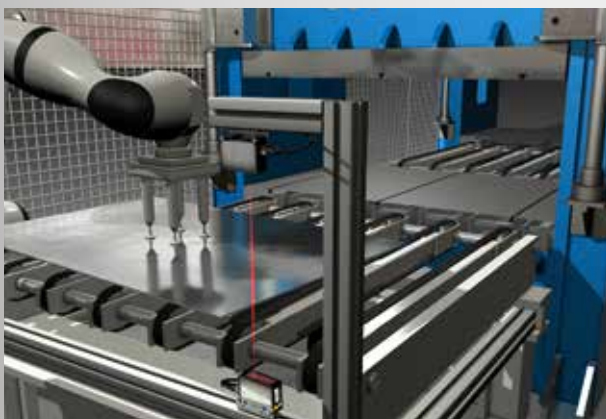
Double chip control in the infeed

The OM70 laser point checks whether there is exactly one chip on the conveyor belt. This guarantees a high level of process safety even at high conveyor speeds.



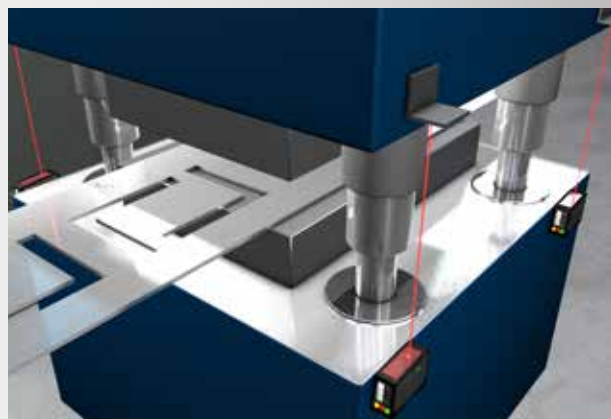
Exact robot positioning in production

Thanks to the automatic exposure time control and the small laser spot of the OM70 laser point, the robot can be positioned very precisely, for example to install small screws.



Thickness measurement of brushed metal

The OM70 laser line sensors reliably check compliance with the tolerances of the sheet thickness of brushed metal and at the same time perform a double sheet check to prevent machine damage and loss of production.



Stroke monitoring in a metal press

Thanks to the large measuring range, the OM70 laser line sensors allow the prevention of stroke defects through the continuous monitoring of the press stroke and of the bottom dead center of the press.

Product data OM70 with measuring distances up to 250 mm



OM70 Short-range

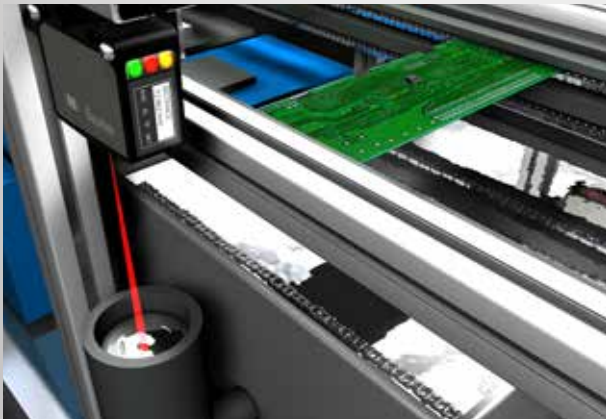
Measurement technology	Measuring distance (Sd)	30 ... 70 mm	40 ... 140 mm	50 ... 250 mm
	Measuring range (MR)	40 mm	100 mm	200 mm
	Focus range	55 ... 70 mm	110 ... 140 mm	200 ... 250 mm
	Sweet spot	65 mm	130 mm	240 mm
	Resolution	0.7 ... 1 μ m	1.2 ... 2.5 μ m	1.4 ... 6.3 μ m
	Repeat accuracy	0.1 ... 0.3 μ m	0.3 ... 0.7 μ m	0.3 ... 2 μ m
	Linearity error	$\pm 24 \mu$ m	$\pm 70 \mu$ m	$\pm 180 \mu$ m
		$\pm 0.06\%$	$\pm 0.07\%$	$\pm 0.09\%$
	Response time / release time	0.8 ms		
	Measuring rate	2.5 kHz		
	Laser class	1		
	Temperature drift	$\pm 0.009\%$ Sde/K	$\pm 0.014\%$ Sde/K	$\pm 0.025\%$ Sde/K
	Beam shape	Point or line		
	Housing	Housing material	Aluminium	
Dimension		26 x 74 x 55 mm		
Connection types		M12, 8-pin		
Ambient conditiong	Operating temperature	-10 ... +50 °C		
	Safety class	IP 67		
	Ambient light immunity	28 kLux	35 kLux	< 170 kLux
Inputs / Outputs	Analog output	Current / voltage output		
	Digital interface	RS485		
	Digital output	Alarm and switching output		
	Digital input	Sync und RS485		
Ancillary functions	Distance or tolerance function <ul style="list-style-type: none"> ■ Selectable filtering ■ Configurable, digital switching output with adjustable hysteresis in millimeters ■ Various trigger modes ■ Touch display ■ Changeover between current or voltage output ■ 3 memory slots for parameter settings 			
Bestellnummern für OM70-P mit Strahlform laser point				
laser point	Function: Distance	11195785	11112018	11112060
	Function: Tolerance	11195786	11175099	11175097
Part numbers for OM70-L with laser line beam shape				
laser line	Function: Distance	11112017	11112019	11112061
	Function: Tolerance	11175113	11175110	11175094

Please find further focus ranges here: www.baumer.com/OM70

High-performance sensors with large measuring distances up to 1500 mm

OM70 laser point / OM70 laser line

- Position and height inspections of small components and objects thanks to its very small spot size
- Very fine laser line for high precision even with changing surface finishes
- Reliable measurements on very dark, light-absorbing objects (e.g. rubber) with only 2% reflectivity
- Extremely high process safety even in the event of fluctuations in the ambient temperature
- Easy parameterization thanks to a clear touch display with integrated live monitor
- High operating safety thanks to extreme immunity to ambient light



Level measurement in soldering systems

The OM70 laser line measures distances on surfaces with only 2% reflectivity and thus allows the level of liquid solder to be reliably determined.



Dimensional control of wooden beams

In timber processing, the OM70 laser line checks the dimensional accuracy of glued laminated timber in order to ensure the required structural load-carrying capacity of the beam.



Inspection of tires during production

The inspection of the tire geometry, i.e. measurement of the radial and lateral imbalance, as well as inspection of the side walls for bulges, constrictions, indentations etc. takes place at the end of the manufacturing process.



Detection of distortions in steel beams

Through the analysis of simultaneous measurements on a steel beam, distortions can be reliably detected. Thanks to the large measuring range, different sizes and shapes can be measured.

Product data OM70 with measuring distances up to 1500 mm



OM70 Mid-Range

Measurement technology	Measuring distance (Sd)	100 ... 600 mm		100 ... 1000 mm		150 ... 1500 mm	
	Measuring range (MR)	500 mm		900 mm		1350 mm	
	Focus range	400 ... 600 mm		750 ... 1000 mm		1000 ... 1500 mm	
	Sweet spot	500 mm		1000 mm		1500 mm	
	Resolution	3 ... 24 µm		3 ... 63 µm		13 ... 125 µm	
	Repeat accuracy	1 ... 9 µm		1 ... 32 µm		3 ... 63 µm	
	Linearity error	± 600 µm				± 4320 µm	
		± 0.12%		± 0.19%		± 0.32%	
	Response time / release time	0.8 ms					
	Measuring rate	2.5 kHz					
	Laser class	1	2	1	2	1	2
	Temperature drift	± 0.038% Sde/K		± 0.065% Sde/K		± 0.1% Sde/K	
Beam shape	Point or line						
Housing	Housing material	Aluminium					
	Dimension	26 × 74 × 55 mm					
	Connection types	M12, 8-pin					
Ambient condition	Operating temperature	-10 ... +50 °C					
	Safety class	IP 67					
	Ambient light immunity	170 kLux	300 kLux	< 100 kLux		35 kLux	
Inputs / Outputs	Analog output	Current / voltage output					
	Digital interface	RS485					
	Digital output	Alarm and switching output					
	Digital input	Sync und RS485					
Ancillary functions	Distance or tolerance function <ul style="list-style-type: none"> ■ Selectable filtering ■ Configurable, digital switching output with adjustable hysteresis in millimeters ■ Various trigger modes ■ Touch display ■ Changeover between current or voltage output ■ 3 memory slots for parameter settings 						
Part numbers for OM70-P mid-range sensors with laser point beam shape							
laser point	Function: Distance	11112064	11112066	11195787	11199089	11112013	
Part numbers for OM70-L mid-range sensors with laser line beam shape							
laser line	Function: Distance	11112065	11112067	11195788	11199100	11112012	11112015

Please find further focus ranges here: www.baumer.com/OM70

Multi-spot laser distance sensors for distance measurement with wide line and Ethernet interface

OM70 multi-spot

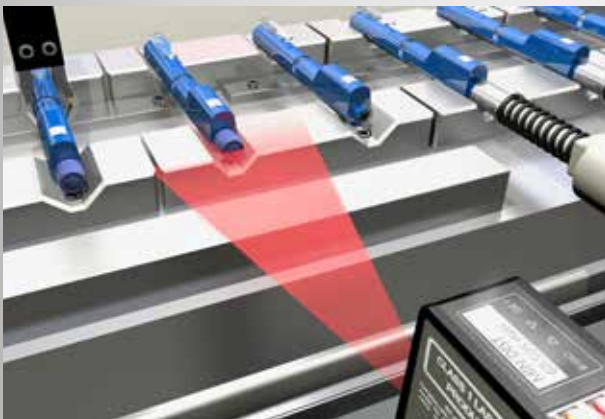
- Precise measurements on inhomogeneously shiny and very rough surfaces thanks to its innovative multi-spot measuring principle
- Exact and reproducible measuring results without any complicated conversion or external software
- High measuring accuracy under varying ambient light conditions
- Fast installation and setup of the calibrated sensor
- Flexible in use thanks to three measuring modes integrated in the sensor (average, maximum, minimum)



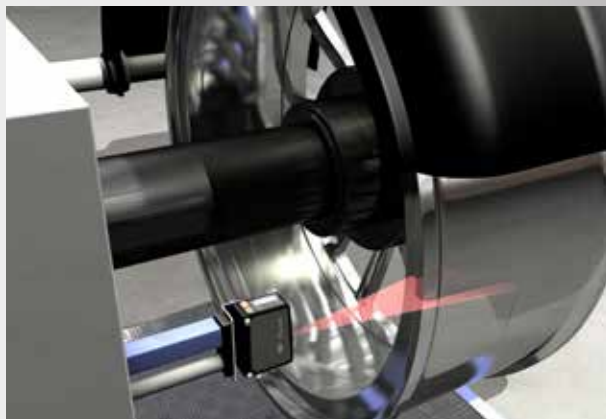
Measurement of the diameter of a grinding disk
Thanks to the automatic calculation of the average, OM70 multi-spot sensors allow the optimum positioning of very rough grinding wheels in relation to a workpiece.



Form control of shiny metal parts
The wide laser line of the OM70 multi-spot allows form control through precise measuring results on shiny metal parts such as automobile parts.



Quality control of insulin pumps
The wide multi-spot laser beam reliably detects whether the 12 to 16 millimeter small caps of the insulin pumps are present.



Eccentricity control for rims
The OM70 multi-spot allows optimum quality control with shiny aluminum rims. The smooth running of the wheels is checked by measuring the rim profile.

Product data of the OM70 multi-spot



OM70 multi-spot

Measurement technology	Measuring distance (Sd)	100 ... 150 mm
	Measuring range (MR)	50 mm
	Resolution	48 ... 72 mm
	Repeat accuracy	2 ... 4 μm
	Linearity error	$\pm 30 \mu\text{m} \dots \pm 90 \mu\text{m}$
	Response time / release time	3.5 ms
	Measuring rate	570 Hz
	Laser class	1
	Temperature drift	$\pm 0.04\% \text{ Sde/K}$
	Beam shape	multi-spot
Housing	Housing material	Aluminium
	Dimension	26 x 74 x 55 mm
	Connection types	M12, 8-pin
Ambient condition	Operating temperature	-10 ... +50 °C
	Safety class	IP 67
	Ambient light immunity	< 35 kLux
Inputs / Outputs	Analog output	Push-pull
	Digital input	Ethernet TCP/IP
	Protocol	Modbus TCP, OPC UA
Ancillary functions	Webserver	<ul style="list-style-type: none"> ■ 3 measuring modes can be selected (min, max, average) ■ Selectable filtering ■ Configurable, digital switching output with adjustable hysteresis in millimeters ■ Various trigger modes ■ Touch display ■ Changeover between current or voltage output ■ 3 memory slots for parameter settings

The multi-spot measuring principle – a new standard in precise distance measurement

The innovative Baumer multi-spot measuring principle is based on the light section method. In the sensor, up to 600 measured values of an object are recorded per measurement along the max. 72 mm long laser line and the resulting distance is then calculated on the basis of intelligent analysis. Thanks to its resolution of up to 2 μm and measuring frequencies of up to 1540 Hz, the sensor offers unusually stable and precise measurement results.



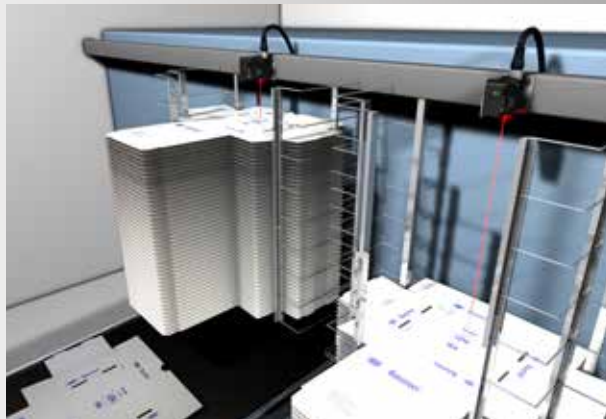
Analog sensors for economical solutions

OADK 25 / FADx 14 / O300 / O500

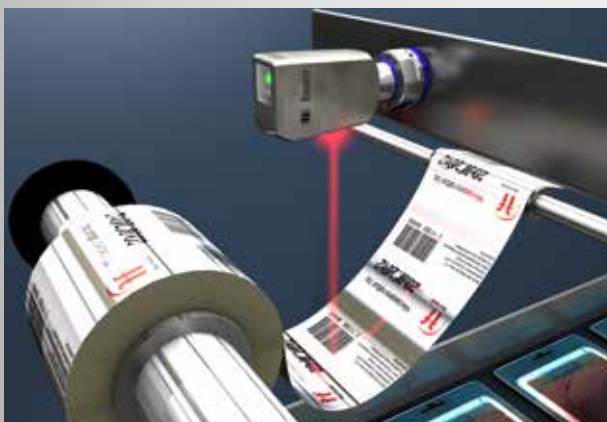
- Cost-effective distance measurements up to 1000 mm
- Can also be used in demanding environments thanks to FDA-compliant stainless steel sensors
- EHEDG-compliant stainless steel sensors in hygienic design for use in the pharmaceutical and food industries
- Automated parameterization with IO-Link
- Simple and safe manual parameterization directly at the sensor through the tamper-proof *qTeach*® method



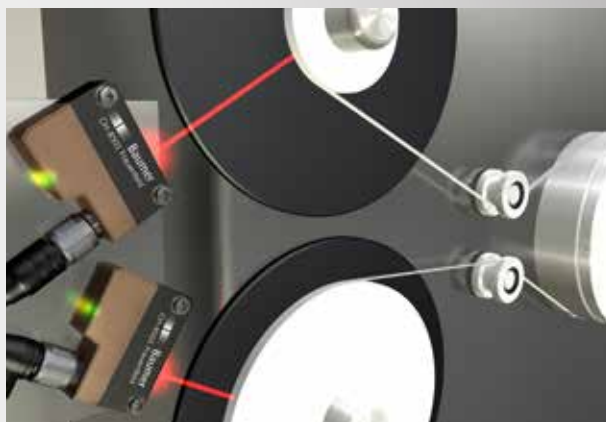
Checking the filling of a high-bay storage system
By means of measurements even over distances of up to 1000 mm, the OADK 25 controls automatic filling systems in the logistics sector, thus reducing handling and material costs.



Monitoring stack height
During production, the OADK 25 monitors the stack height of folding cardboard boxes to ensure continuous material infeed.



Controlling the sag in label feed systems
The feed speed of the labels is controlled by measuring the sag. Thanks to its EHEDG-compliant hygienic design, the FADR is also suitable for use in the food industry.



Early detection of an unwound reel
The automatic or manual change of a reel is controlled at an early stage by the FADK 14 unit monitoring the degree to which the reel is unwound.

Product data of analog sensors



	O300.DI O300.DP	O300.DL	O500.DI O500.DP	OADK 25	FADK 14	FADR 14	FADH 14	
Measurement technology	Measuring distance (Sd)	30 ... 300 mm	30 ... 250 mm	60 ... 550 mm 60 ... 400 mm	100 ... 1000 mm	50 ... 400 mm		
	Measuring range (MR)	270 mm	220 mm	490 mm 340 mm	900 mm	350 mm		
	Resolution	0.5 ... 5 mm	0.5 ... 10 mm	0.5 ... 5 mm	0.3 ... 4 mm	0.1 ... 1 mm		
	Linearity error	± 1.5 ... ±15 mm	± 1.5 ... ± 12.5 mm	± 3 ... ± 27.5 mm ± 3 ... ± 20 mm	± 1.1 ... ± 15 mm	± 1.5 ... ± 4 mm		
		± 5%	± 5%	± 5%	± 1.60%	± 1.14%		
	Response time / release time	< 0.49 ms	< 0.25 ms	< 0.49 ms	12.8 ms	3 ms		
	Laser class	Infrared LED PinPoint LED	1	Infrared LED PinPoint LED	1	Red light LED		
Beam shape	Point							
Housing	Housing material	Plastic					Stainless steel 1.4404	
	Dimension	12.9 × 32.3 × 23 mm		18 × 45 × 32 mm	23.4 × 63 × 45 mm	14.8 × 43 × 31 mm	19.6 × 62.4 × 33.8 mm	
	Connection types	Cable 4-Pol, 2 m Connector M8 4-Pol		Cable 4-Pol, 2 m Connector M12 4-Pol	Cable, 5-pin Connectorr M12, 5-pin	Cable, 4-pin Connector M8, 4-pin Connector M12, 4-pin	Connector M12, 4-pin Cable, 4-pin Mating connector M12, 4-pin	
Ambient condition	Operating temperature	-10 ... +60 °C		-25 ... +60 °C	0 ... +50 °C			
	Safety class	IP 67					IP 68 / IP 69k & proTect+	
	Ambient light immunity	k.A.	k.A.	k.A.	20 kLux	50 kLux		
Inputs / Outputs	Analog output	-			Current / voltage output			
	Digital interface	IO-Link			-	IO-Link		
	Digital output	Switching output			Alarm			
	Digital input	Teach-in			Teach-in	Teach-in and IO-Link		
Additional functions	Parameterization using <i>qTeach</i> ®, IO-link or externally			Parameterization using <i>qTeach</i> ® or externally	Parameterization using IO-link or externally			

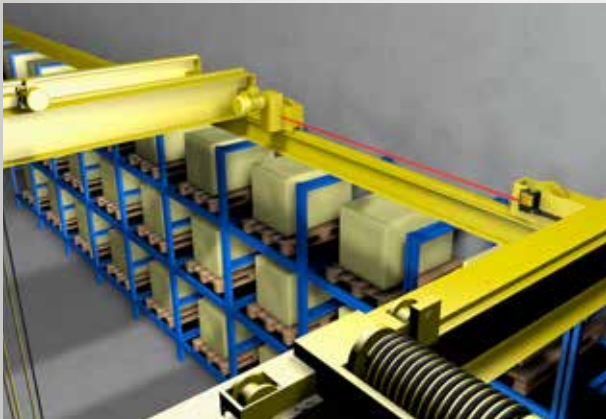
Part numbers for analog sensors

Current output	O300.DI 11199080 (Cable) 11199081 (Connector) O300.DP 11199076 (Cable) 11199076 (Connector)	11199078 (Cable) 11199079 (Connector)	O500.DI 11199084 (Cable) 11199085 (Connector) O500.DP 11199082 (Cable) 11199083 (Connector)	11080140 (Cable) 11080142 (Connector)	11014494 11014495 11014496	11096628	11096630 11096631
Voltage output				11080141 (Cable) 11080143 (Connector)	11014497 11014498 11014499	11096629	11096632 11096633

Long-distance sensors for large measuring ranges up to 13 meters

OADM 250 / 260

- Highly accurate distance measurement over large distances with a linearity error of up to $\pm 0.1\%$ of the measuring range (MR)
- For universal use thanks to color-independent distance measurement
- High level of reliability even in outdoor applications thanks to a rugged, compact aluminum housing



Avoidance of collisions with indoor cranes

The long range OADM 250 and 260 sensors are used to avoid collisions with gantry cranes. If a collision is detected, the speed is reduced and the crane is stopped.



Prevention of damage to property in the logistics sector

The OADM 250 sensors check the distance between the two arms on special fork lift trucks. This must be large enough not to damage the packages to be transported.



Position verification of assembly parts

At hard-to-reach measuring points, time-of-flight sensors are used to verify the position of assembly parts. The small laser spot and the high accuracy over long distances are extremely advantageous.



Positioning a storage and retrieval machine

In order to avoid collisions, the fork, particularly in the case of heavy loads, must be ideally positioned in relation to the high-bay warehouse.

Product data OADM 250 / 260

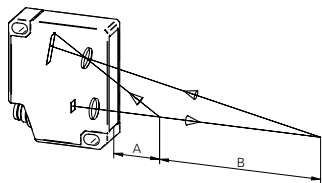


OADM 250 / 260

Measurement technology	Measuring distance (Sd)	200 ... 4000 mm	200 ... 13 000 mm
	Measuring range (MR)	3800	12 800
	Resolution	1.3 mm	5 mm
	Repeat accuracy	± 5 mm	± 15 mm
	Linearity error	± 15 mm	
		± 0.49%	± 0.11%
	Response time / release time	20 ms	
	Laser class	2	
	Temperature drift	± 0.005% Sde/K	± 0.003% Sde/K
Beam shape	Point		
Housing	Housing material	Aluminum	
	Dimension	25.4 × 66 × 51 mm	
	Connection types	M12, 5-pin	
Ambient condition	Operating temperature	−25 ... +50 °C	
	Safety class	IP 67	
	Ambient light immunity	40 kLux	
Inputs / Outputs	Analog output	Current / voltage output	
	Digital output	Alarm	
	Digital input	Teach-in	
Additional functions	Parameterization using teach-in button or externally		
Bestellnummern für OADM 250 / 260 mit Strahlform laser point			
laser point	Current output	11007211	11044710
	Voltage output	11007212	–

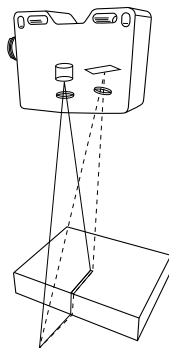
More possibilities – the right features for your application

Three operating principles for more performance



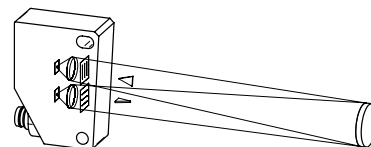
Triangulation

According to the principle of triangulation, the distance of an object is measured by means of the angle of incidence of the reflected light.



Light section

Based on the principle of triangulation. In conjunction with an emitted laser line and a matrix receiver, up to 600 items of distance information are determined and evaluated in the sensor.

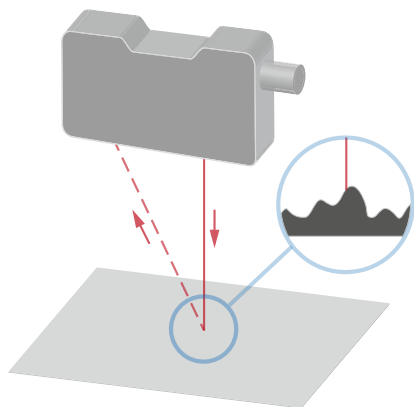


Time-of-flight (TOF)

Time-of-flight (or also propagation time measurement) is a process for indirect distance measurement by measuring the amount of time that a signal requires to cover the measuring distance.

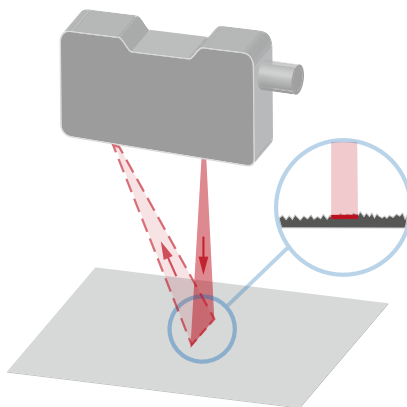
Three beam shapes

Besides different dimensions and ranges, the beam shape plays a particularly important role. Thanks to continuous further development, Baumer can now offer three different beam forms in its portfolio with the new "multi-spot" measuring principle:



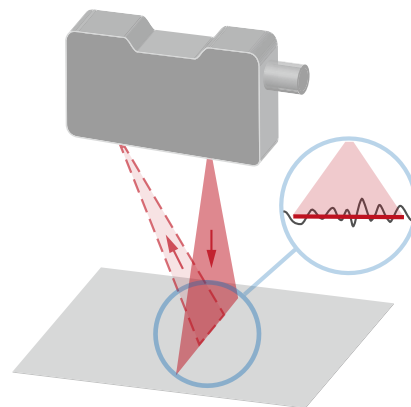
Laser point

Precise measurements on small objects thanks to a focused laser spot $< 0.4 \text{ mm}$



Laser line

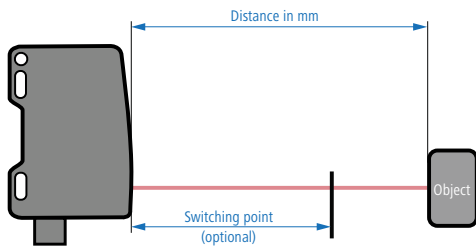
Stable measurements on rough surfaces and textured color surfaces thanks to a fine laser line $< 10 \text{ mm}$



Multi-spot

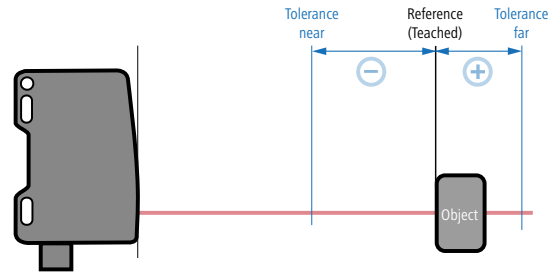
Stable measurements on inhomogeneously shiny and very rough surfaces from over 600 measurements with an extra-wide laser line $< 72 \text{ mm}$

Two measuring functions



Distance measurement

In the case of distance measurement, the sensor is ready to use immediately and gives the distance from the sensor to the object. The measured value can, for example, be used for the precise positioning of objects or for controlling a system. Optionally, a digital output can be parameterized.



Tolerance measurements

If, for example, the dimensional accuracy of objects is to be checked, a direct tolerance measurement can be made by teaching-in a reference, thus allowing the deviation from the nominal dimension to be determined directly. Here too, a digital output can be parameterized accordingly.

Efficient parameterization for optimum adaptation to your applications

Baumer's optical distance sensors have not only analog but also digital interfaces, through which the sensors are parameterized and directly integrated into the existing production environment.

Teach-Button / *qTeach*[®]

Depending on the application, optical distance sensors which only have one analog output can be restricted in their range and thus re-taught or taught in. This may result in greater accuracy, and thus increased process safety can also be achieved. This is done either using a teach-in button or by means of the contactless *qTeach*[®] function.

Parameterization by means of the display

An innovative touch display offers the option of setting functions and parameters directly on the display. Depending on the arrangement, this ensures a quick and easy start-up.

- Measuring type
- Light / dark object
- Filter values
- Analog / digital output



RS 485

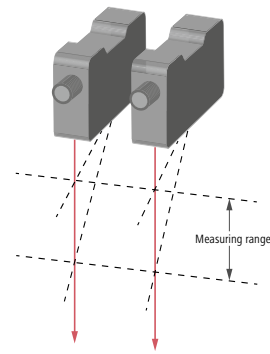
The RS 485 serial interface as a bidirectional bus system allows the connection and parameterization of up to 31 sensors. RS 485 also allows fast data transfer of up to 3 Mbit/s, even over longer distances; in the application, measured rates of up to 2.5 kHz can be supported.

IO-Link

IO-Link allows the simple and cost-effective parameterization of optical distance sensors by the PLC. The connection is established by means of a conventional 3-pole M12 cable. Thanks to the standardized interface, IO-Link offers an efficient way to integrate the distance sensors quickly by means of a master at field bus level.

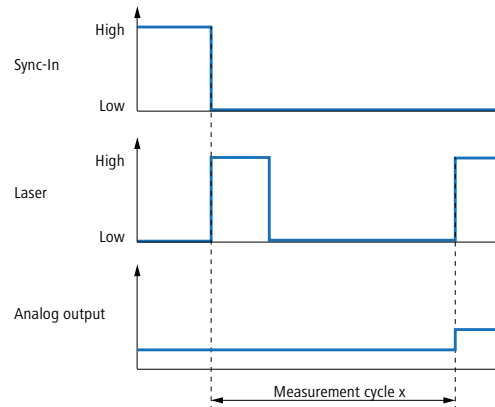
Sensor arrangement without mutual interference

For numerous applications, several sensors have to be mounted close together. Baumer distance sensors can be arranged side by side without interfering with one another. If mutual interference caused by the installation cannot be avoided, then the sensors can be operated asynchronously using the synchronized input.



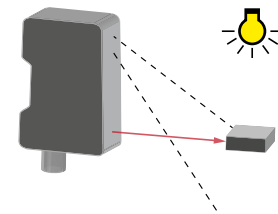
Sync-in / triggering

The measurements of several sensors can be synchronized through the sync-in input. For thickness measurements, two sensors can be triggered simultaneously in synchronous mode through the sync input. In asynchronous mode, on the other hand, several sensors that interfere with each other in an application can deliberately be operated one after the other.



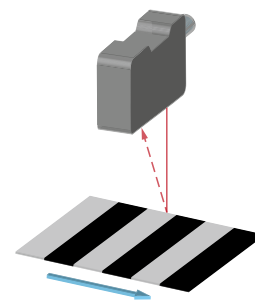
High ambient light immunity

Powerful algorithms integrated in the sensor make laser distance sensors very insensitive to external light sources. This guarantees reliable, robust operation.



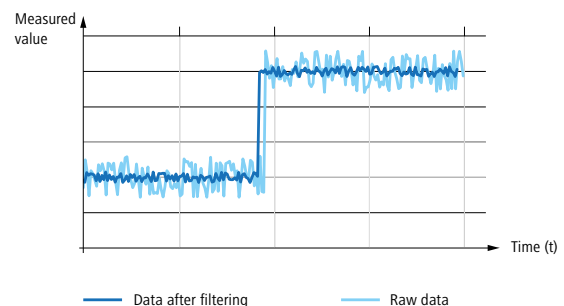
Automatic exposure control

The optical distance sensors by Baumer automatically adapt to different object colors and brightness levels by varying their transmission intensity and optimizing their exposure time. This makes them independent in terms of the reflectivity of an object. Measurements on objects with a reflectivity of up to 2% are also possible.



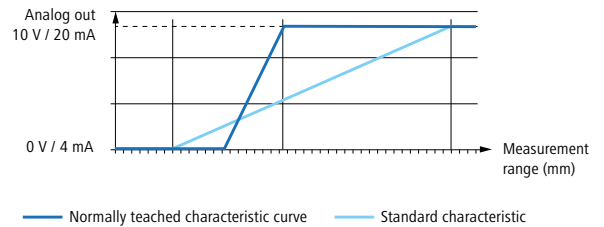
Programmable filter functions

The noise of the output signal can be reduced by activating filtering, thus increasing the resolution. A filter is also used to suppress measurement errors. The output changes only after a defined number of measured values. The measuring frequency is not affected by this filter, but the response time is. The filter function can be parameterized through the selection of predefined precision modes.



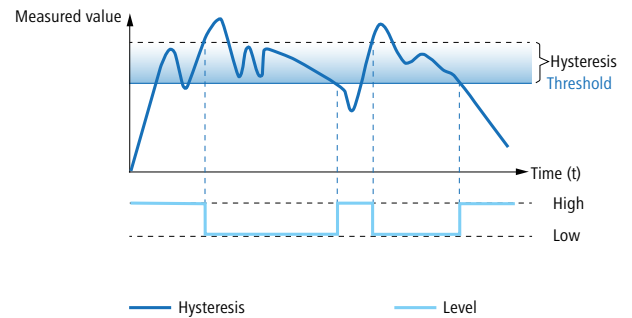
Programmable measuring ranges

The measuring range can be adjusted by the user within the maximum measuring range with the teach-in button, the teach-in line or through the display. The analog output has its full stroke within this taught-in area and thus higher measuring accuracy. The factory setting is the maximum measuring range.



Configurable switching output

A switching output should switch as soon as a defined measured value exceeds or falls below the set level. For a reliable switching signal, the hysteresis (difference between the switching point and the return switching point) can be parameterized in millimeters in absolute terms. The safe operation of your system is guaranteed, regardless of the position of the object in the field of view.



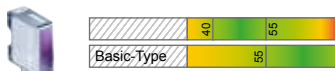
Optimal focus ranges

Reliable and reproducible measurements

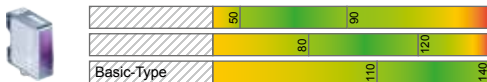
In practice, object surfaces are rarely ideal for optical distance measurement. This often leads to unreliable, unstable measurements. Being the only laser distance sensors on the market, the OM70 sensors therefore offer different focus ranges for the measuring ranges 70, 140, 250, 600 and 1000 mm. This ensures maximum reliability exactly where it is needed in the application.

You are not sure where you want to set the focus range or need the whole measuring range? Then we recommend the basic-type.

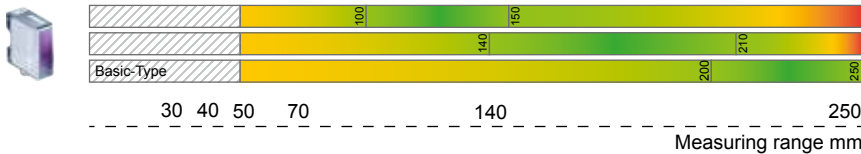
OM70-P/L0070



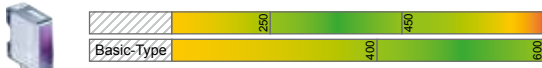
OM70-P/L0140



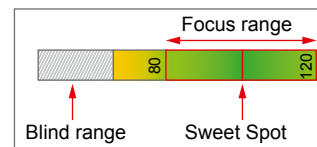
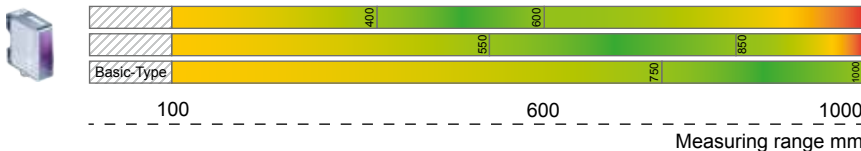
OM70-P/L0250



OM70-P/L0600



OM70-P/L1000



Photoelectric sensors by Baumer – always the best choice.



PosCon smart profile sensors

Compact measuring devices with preconfigured functions for the smart measurement of object heights, edge positions and diameters.



Optical distance sensors

Wide portfolio of distance sensors for precise and reliable measurements even on challenging surfaces.



ParCon light-band sensors

Distance-independent measurement of edge positions and object widths even in the case of round and fast objects.



VeriSens[®] vision sensors

The compact image processing system in sensor format for automation technology.



For more information about our optical distance sensors, visit www.baumer.com/opto-distance



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