Baumer
Passion for Sensors

A new definition of reliability

O200 miniature sensors – reliable, precise, simple and digital.

O200 – Reliability beyond the standard.

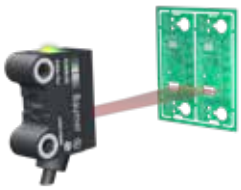
Outstanding reliability in every application

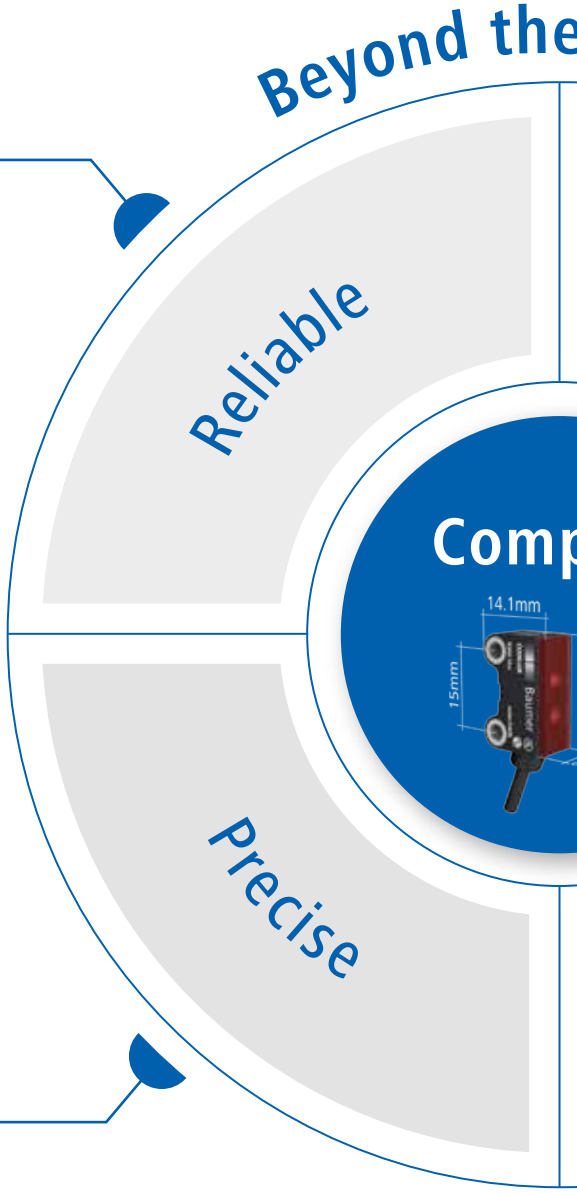
High-performant sensing principles:

- *SmartReflect*® – the light barrier without reflector
- Best-in-Class diffuse sensor with background suppression and up to 180 mm sensing range even towards black objects
- Retro-reflective and through-beam light barriers for long ranges of up to 6 meters

For complex tasks in object detection:

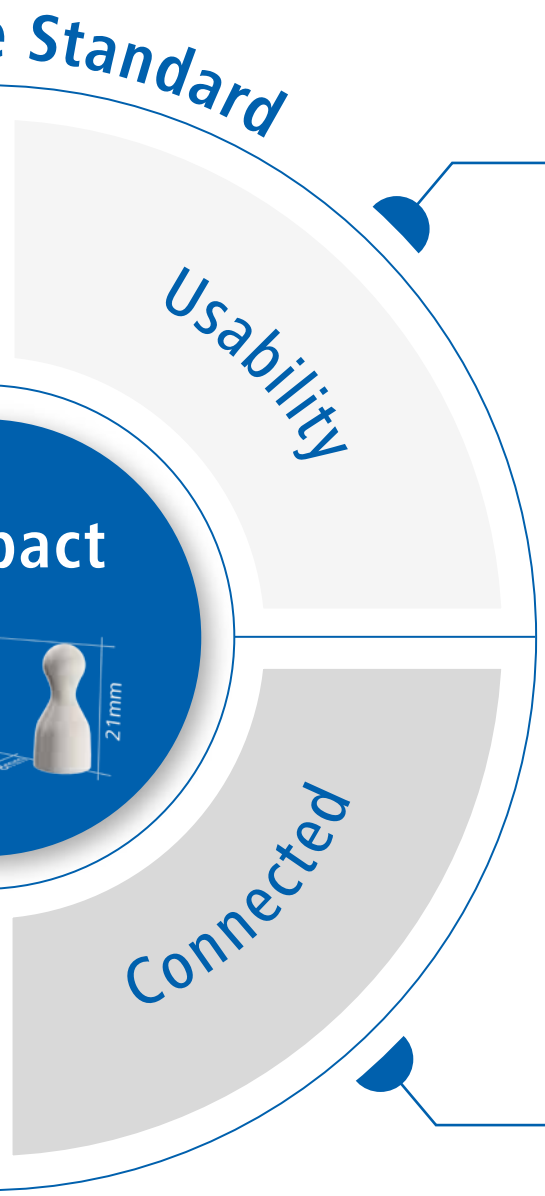
- Outstanding reliability even with transparent, shiny and reflecting objects
- Line beam for the detection of irregular, perforated objects
- Reproducible and color-independent sensing distances
- Long-term stability and resistant to changes in the background or reflector
- Unrivalled immunity against ambient light (e.g. LED lighting)





Excellent precision and reproducibility

- Very precise object positioning up to 0.05 mm accuracy
- Detection of smallest objects up to 0.05 mm thanks to focused laser spot
- Highest reproducibility thanks to very low jitter < 20 µs
- Detection through very narrow openings (keyholes) thanks to single-lens optics
- Precise control of fast processes thanks to response times < 0.1 ms



So simple

Design-in, installation & setup:

- 3D CAD with integrated beam path
- Aligned light beam (*qTarget*®) for reproducible sensor behavior throughout the entire series

- Easy and secure installation using spacers or robust stainless steel insert nut with M3 thread
- Variants with versatile teaching features (*qTeach*®, line-teach, IO-Link) or default settings

qTeach® – reproducible, reliable and wear-free

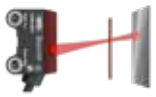
More digital information

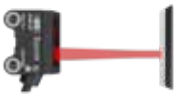
IO-Link

- Smart Sensor Profile with fastest data transfer rate (COM3)
- Extended setting options: 1-point and window teach, high-speed or high power mode auto-teach and slide mode for transparent objects
- Additional analysis data like signal quality and device temperature
- In applications with very high speed requirements, IO-Link Dual Channel offers the advantage of using the second independent binary output to directly control an actuator without additional latency from the controller. Parallel IO-Link communication such as parameterization or status monitoring can be performed via the first output

Find the right sensor easily.

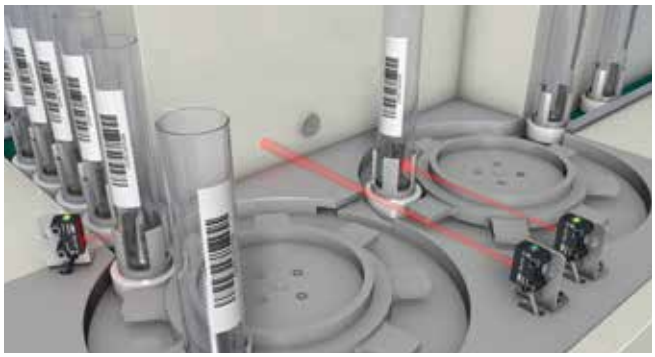
O200 GR.F Diffuse sensor with background suppression and V-optic for transparent detection	Distance mm	0	5	10	15		
	Beam diameter mm	4	2.1	1.2	2.8		
O200.GR/GP/GL Diffuse sensor with background suppression GR = Red light LED GP = *PinPoint* LED GL = Laser	Distance mm	0	40	60	80	120	180
	GR Beam diameter mm	5	2.8	4.4	7		
	GP 120 Beam diameter mm	4.3	2.6	2.6	4	7	
	GP 180 Beam diameter mm	4.3	4.2	4.3	4.5	6	8.5
	GL 120 Beam diameter mm	2	0.2	1	2	4	
	GL 180 Beam diameter mm	2.3	1.8	1.5	1.3	0.9	0.8
O200.GP/GL E022 Diffuse sensor with background suppression and line beam GP = *PinPoint* LED GL = Laser	Distance mm	0	30	60	90	120	
	GP Beam height	4.3	3	2.6	4.5	7	
	GP Beam width	4.3	14	28	41	56	
	GL Beam height	2	1	0.3	1	2.1	
	GL Beam width	2.5	13	26	39	54	
O200.ZR Diffuse sensors with intensity difference ZR = Red light LED	Distance mm	0	40	80	120	200	
	ZR Beam diameter mm	4.3	5	6.5	9	15	
O200.SP/SL, SP.T/SL.T *SmartReflect*® – Light barrier without reflector SP = *PinPoint* LED SL = Laser .T = Transparent object detection	Distance mm	0	40	80	120	180	
	SP/SP.T Beam diameter mm	4.3	4.2	4.5	6	8.5	
	SL/SL.T Beam diameter mm	2.3	1.8	1.3	0.9	0.8	
O200.RR/RP/RL, RP.T/RL.T Retro-reflective sensors RR = Red light LED RP = *PinPoint* LED RL = Laser (single lens optics) .T = Transparent object detection	Distance mm	0	50	500	2000	4000	
	RR Beam diameter mm	4	5	40	150	300	
	RP Beam diameter mm	4	5	24	90	180	
	RP.T Beam diameter mm	2.8	5	22	90		
	RL/RL.T Beam diameter mm	2.3	2.3	3.5	12		
O200.ER/TR, EL/TL Through-beam sensor ER/TR = Red light LED EL/TL = Laser	Distance mm	0	50	500	5000		
	TR Beam diameter mm	5	6.5	40	370		
	TL Beam diameter mm	2.3	2.3	3	23		





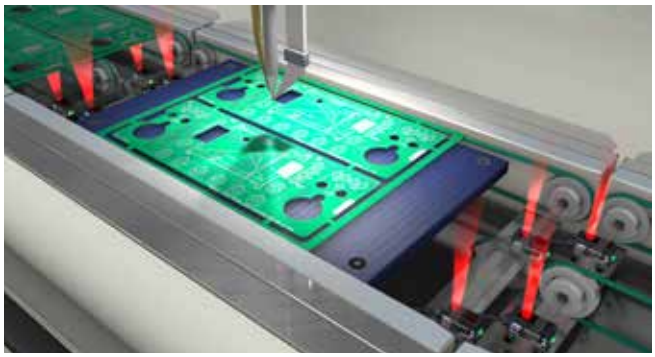
Sensing range	Light source			Minimum object size	Objects						Response time	Configurability				
	Red light LED	*PinPoint* LED	Laser 1		Perforated objects	Glossy objects	Differences in intensity	Transparent objects	Ultra-black objects	Inclined objects		Preset sensing range	*qTeach*®	IO-Link	Dual Channel	Line teach
15 mm				0.05 mm		■		■	■	■	< 1 ms	■				
											< 0.25 ms		■	■		■
30 mm 50 mm 80 mm				GR: 0.25 mm GP 120: 0.25 mm GP 180: 1 mm GL 120: 0.05 mm GL 180: 0.5 mm		■			■	■	< 1 ms	■				■
80 mm 120 mm 180 mm											< 0.25 ms		■	■	■	■
120 mm				8 mm	■	■			■	■	< 0.25 ms		■	■		■
200 mm				2 mm			■				< 0.25 ms		■	■	■	■
180 mm				SP: 2.5 mm SL: 0.5 mm		■			■	■	< 0.25 ms		■	■	■	■
				SP.T: 5% attenuation SL.T: 5% attenuation		■		■	■	■			■	■		■
RP/RR: 4 m RP.T: 1 m RL/RL.T: 1.2 m				RR: 5 mm		■			■	■	< 0.5 ms	■				■
				RP: 4 mm RL: 3 mm		■			■	■	RP: < 0.25 ms RL: < 0.05 ms		■	■	■	■
				RP.T: 5% attenuation RL.T: 5% attenuation		■		■	■	■	< 0.25 ms		■	■		■
6 m				TR/ER: 5 mm (0.5 mm with aperture) TL/EL: 3 mm (0.5 mm with aperture)		■			■	■	< 0.5 ms	■				■
											< 0.1 ms		■	■	■	■

We have the right sensor for your application.

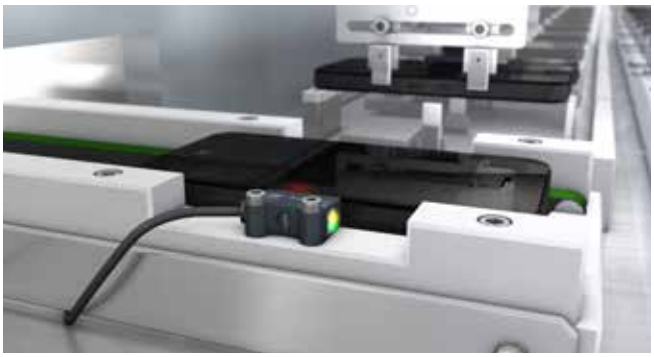


Laboratory automation
Whether with or without reflector – O200 sensors offer unique reliability in detecting transparent objects such as bottles, foils, ampoules or pipettes.

Robotics – gripper arms
The lightweight, compact O200 sensors are ideally suited for positioning tasks in grippers. Variants with laser light beam enable high-precision positioning tasks.



Semicon & Electronics
O200 sensors are protected against the influence of ambient light such as camera or LED lighting as well as interfering reflections from objects or machine components. Variants with a fine line beam provide a secure switching signal for irregular objects such as circuit boards.



Assembly & Handling
Extended functional reserve capacities ensure reliable detection of extremely dark and high-gloss objects without any loss of sensing range.

Assembly & Handling – Feeding systems
O200 sensors with V-optics allow the reliable detection of small shiny or transparent objects with ultimate accuracy.

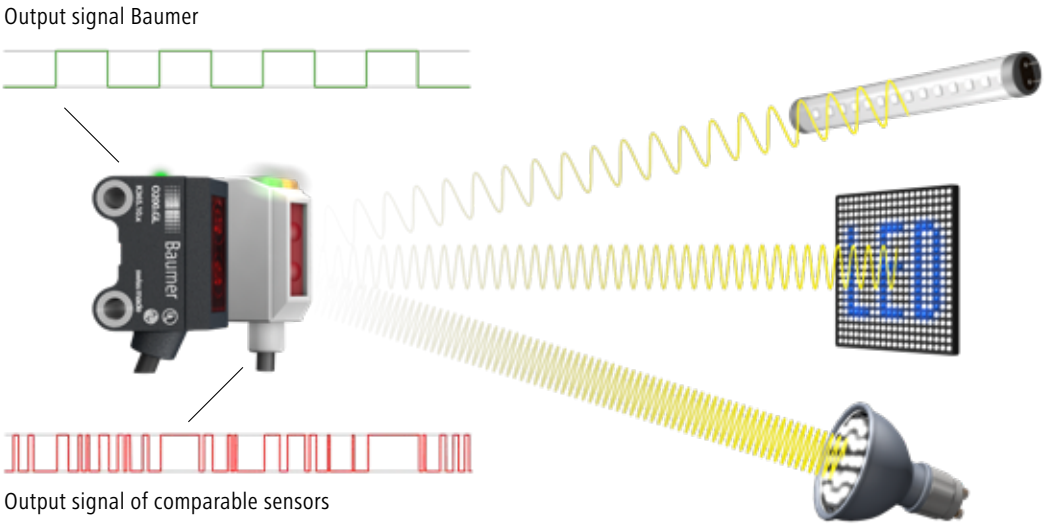
Intralogistics – Shuttle systems
Thanks to their compact design and extended range of 180 mm, O200 sensors with background suppression are ideally suited for the fine positioning of transport robots and offer stable detection of different goods or workpieces on transport robot systems.

Extreme ambient light immunity.

Unaffected by LED light and reflections

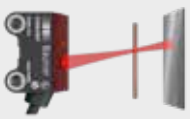
Typically, LED light is modulated at high frequencies up to 150 kHz. Depending on the upstream device, LED light has different properties (ripple, center frequency, frequency fluctuations and signal pattern) and therefore is a potential source of interference for light barriers and optical sensors.

The O200 sensors with innovative ambient light algorithm ensure maximum detection reliability in any lighting situation. The interfering sources identified by the algorithm are suppressed and a consistently high measurement speed is ensured.



The specialists for transparent objects

O200 miniature sensors offer three solutions for long-term stable detection of transparent objects such as glass or PET bottles, ampoules, foils or trays.

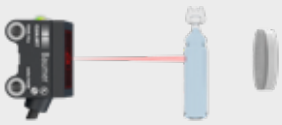


V-optics for short distances

- Detection of shiny and transparent objects with background suppression
- Distances up to 15 mm
- Maximum luminous efficacy thanks to V-shaped, extremely narrow LED light beam

***SmartReflect* Transparent for detection without reflector**

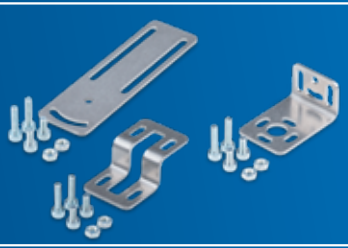
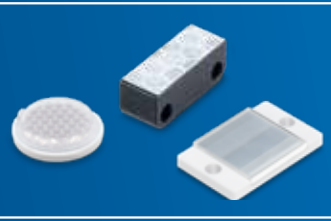
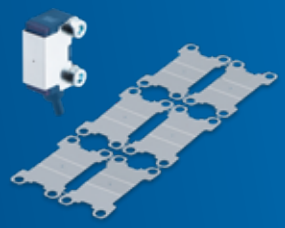
- *PinPoint* LED or laser light source
- Ranges up to 180 mm without reflector
- Contamination or changes in the reference surface are compensated for a consistently stable application



Retro-reflective photoelectric sensors with single lens optics

- *PinPoint* LED or laser light source
- Ranges up to 1.2 m
- Transmitting and receiving beam on the same axis for fully reliable object detection
- Compensation for soiling of the reflector
- Additional mode for the detection of tears in transparent films

O200 Accessories*

		Description	Order No.
Mounting accessories		ZADAP-200.STRAIGHT Mounting bracket O200 (straight)	11206601
		ZADAP-200.ANGLE_L Mounting bracket O200 (L design)	11206602
		ZADAP-200.ANGLE_S Mounting bracket O200 (S design)	11206603
		Sensofix series 10/20 Flexible mounting system for series 10, 20 und O200	10150326
Reflectors for retro-reflective sensors		FTAR 013A000 Reflector round ø 15 mm, self-adhesive, micro structure	10145963
		ZREFL-200.STANDARD Reflector rectangular, screw mounting, with attached reflective tape, compatible to series 200	11206604
		FTDR 020U020 Reflector rectangular 32 × 20 mm, ultra-fine microstructure for laser sensors and detection of transparent objects, screw mounting	11229662
Slot aperture stickers through beam sensors		Made of stainless steel, in different sizes between 0.5 mm and 2 mm for detection of smallest objects	
		ZBLEN-200.R_0.5MM, Aperture: ø 0.5 mm	11206587
		ZBLEN-200.R_2M, Aperture: ø 2 mm	11206611
		ZBLEN-200.SLIT_HOR, Aperture: 0.5 mm × 3 mm horizontal	11206613
		ZBLEN-200.SLIT_VER, Aperture: 0.5 mm × 3 mm vertical	11206612
Peripherals		*SensControl* – wireless IO-Link Master with integrated battery for on-site parameterization and monitoring via Bluetooth or WLAN	11214576
		USB IO-Link Master for parameterization of IO-Link sensors via USB	11048016
		8-fold master, IP 20 with PROFINET 8-fold master, IP 20 with Ethernet/IP interface	11215445 11215448
		8-fold master, IP 67 with PROFINET 8-fold master, IP 67 with Ethernet/IP interface	11215447 11215460

*Please find the complete accessories at www.baumer.com

More information about our O200 miniature sensors can be found at:
www.baumer.com/O200

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