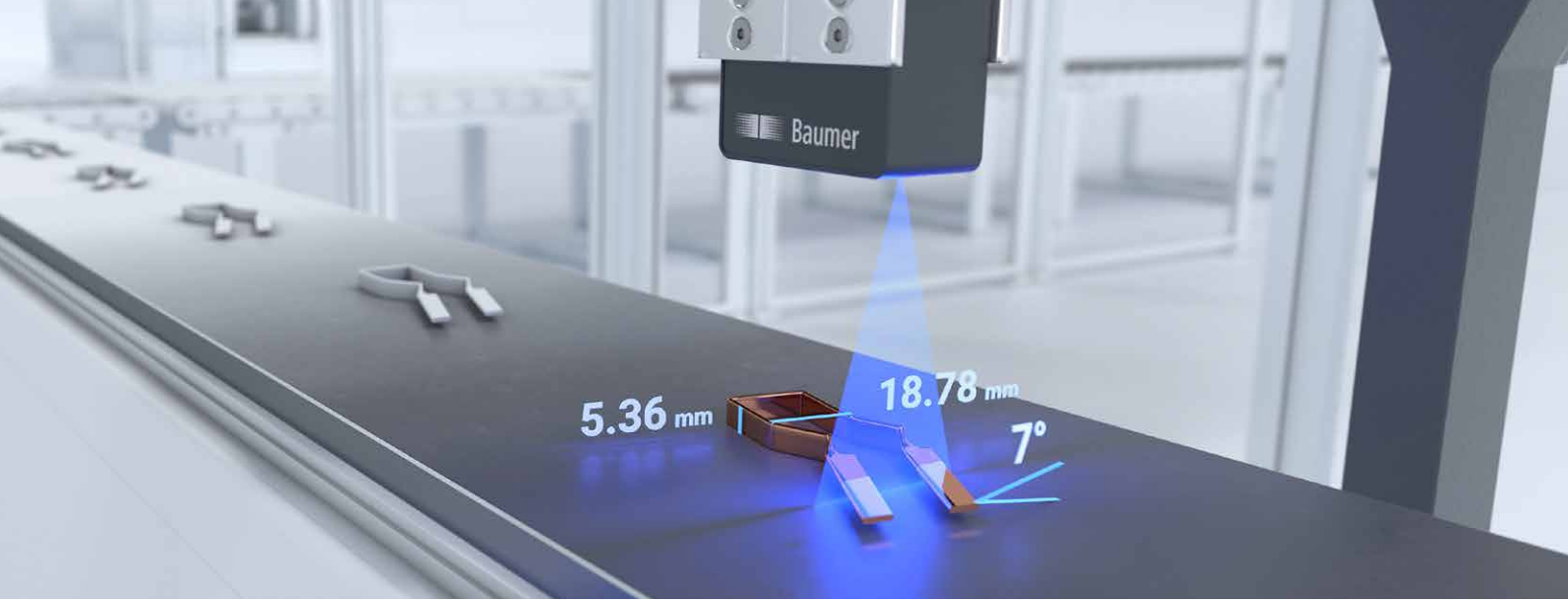
Baumer
Passion for Sensors

Fine robot positioning and efficient inline inspections

Smart profile sensors – OX



Profile analysis easier than ever before

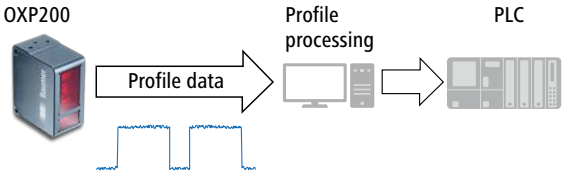
The smart profile sensors of the OX family ensure efficient profile analysis for many robot positioning and quality control applications.

- Compact, easy-to-use 2D multi-tool profile measuring device
- Integrated, powerful measurement functions including "Profile Matcher"
- Profile sensor with ambient light immunity and IO-Link and Ethernet interfaces
- Simple cabling thanks to Power over Ethernet (PoE)

One sensor, two variants

OXP profile sensors

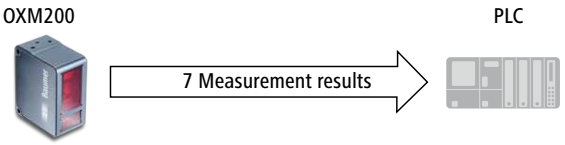
Profile raw data for individual evaluation



- Output of a calibrated 2D profile for further external processing
- Parameterization of the sensor via an intuitive web interface
- Creation of 3D scatter plots using encoder and trigger input
- Freely available Software Development Kit (SDK) with sample code

OXM multi-tool profile sensors

Smart functions for direct output of measured values



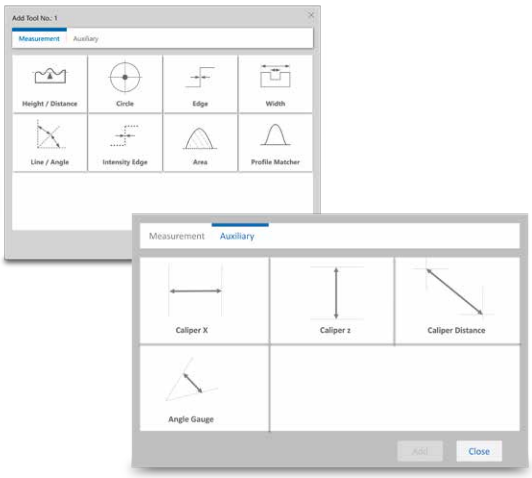
- Easy-to-use and intuitive integrated measurement functions for efficient inline or offline inspections
- Linking of measuring tools and layer tracking for versatile analyses
- Direct target/actual comparison (OK/NOK checks)
- Free configuration in the intuitive web interface

Your benefits at a glance

Smart & compact: All-in-one tool for individual measurement tasks

Complete functionality in the sensor

- All measurement functions including the powerful "Profile Matcher" for inline contour comparisons are directly integrated into the sensor itself
- Free configuration of up to 7 measurement values in the web browser
- Linking of the measurement tools facilitates a wide range of analyses
- Position tracking in the evaluation windows allows checking varying positions on a measured part



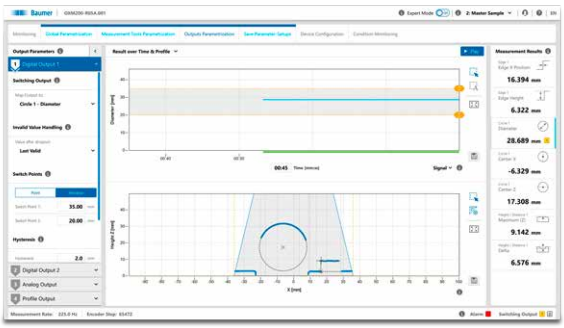
Compact measuring instrument

- Compact, lightweight design with IP 65 housing and simple wiring for installation on robot arms
- No external illumination required
- Thanks to Power over Ethernet (PoE) functionality, the sensor can be used with a single cable

Best-in-class usability and live analysis

Easy commissioning and handling

- Setup of measuring tasks is supported by graphics in the intuitive Baumer web interface
- Storage of up to 32 parameter setups (jobs) in the sensor
- Fast commissioning of the calibrated sensors without software installation



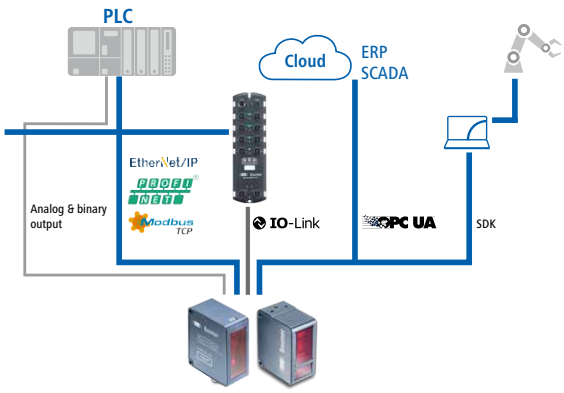
Live analysis and monitoring

- Quick analysis thanks to intuitive visual feedback
- See what the sensor is seeing – in real time

IIoT-Ready - Quick integration into any level of the automation pyramid

Connected smart sensor

- Straightforward integration into automation environments owing to a large selection of interfaces and protocols
- Direct connection to IT and cloud systems with OPC UA
- Integration into image processing systems with free SDK (profile data via UDP streaming)
- Encoder input for synchronization of the recorded measurement data and profiles with external processes

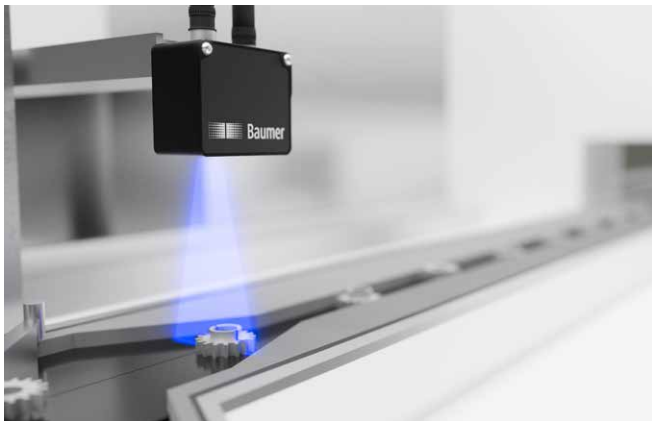


Secondary data

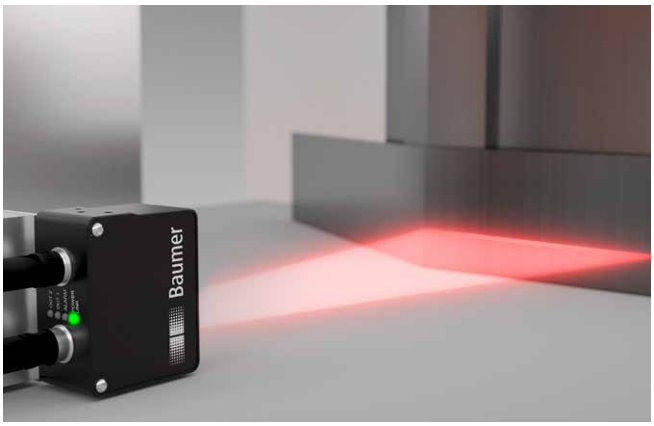
- Straightforward access to a wide range of digital secondary data such as temperature and operating hours

Measurement and positioning made easy

Inline quality control through height-based laser line measurement



Gearwheel position checks
The blue laser beam of the OXM200 provides for precise, height-based position control of metal gearwheels during the production process. This ensures the gearwheels are fed in the correct orientation for optimum subsequent processing. The sensor sends a direct signal to the machine to reject the bad part.



Measurement of the bending angle on a metal object
Immediately after the bending process, the OXM200 measures whether the bending angle is within the specified tolerance threshold. Simplified data exchange allows for the measurement results being transferred directly to the controller.

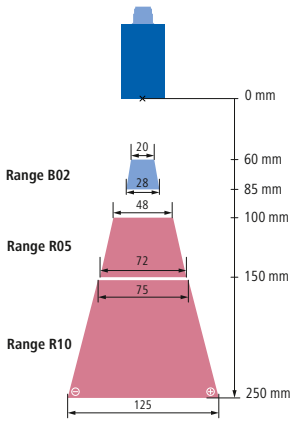
Fine robot positioning accurate to 0.1 mm

Robot control in container systems
The OX200 profile sensors enable rapid and precise positioning of the robot in a container system for shelf-less storage and handling. The special challenge here lies in the high speed. The sensor is connected directly to the robot without external software and transmission to the controller takes place via IO-Link.

Automated placement of injection-molded parts
An OXM200 sensor measures the position of the hooks on a rack and then navigates the robot arm with pinpoint accuracy to the correct position for attaching injection-molded parts. The compact, lightweight housing and the simple cabling (current supply via Ethernet / PoE) ensure the necessary flexibility required on the moving robot arm. Easy integration allows for quick commissioning.

Measuring ranges and accuracies at a glance

	Area B02	Area R05	Area R10
Measuring range (MR)	25 mm	50 mm	100 mm
Clearance distance (CD)	60 mm	100 mm	150 mm
Width Field of view (FoV)	20-28 mm	48-72 mm	75-125 mm
Resolution X (Point-to-point distance)	30-40 µm	80-120 µm	125-210 µm
Wavelength	Blue (405 nm)	Red (660 nm)	



	OXM200/ OXP200			OXM100	
	B02	R05	R10	R05	R10
Resolution Z_{ave}	5 µm	8-15 µm	12-18 µm	16-30 µm	24-36 µm
Repeatability Z	2 µm	4 µm	10 µm	8 µm	20 µm
Laser class	2			1	
Measurement rate (Hz)	100-400	200-800		200-500	

Interfaces and protocols

The OX profile sensors offer extensive interfaces and protocols for direct communication between sensor and controller.

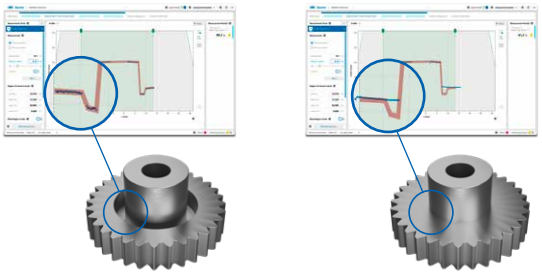
	OXM100	OXM200	OXP200
PROFINET	–	■	–
EtherNet/IP	–	■	–
OPC UA	–	■	–
Modbus TCP	–	■	–
Modbus RTU	■	–	–
IO-Link	■	■	–
Analog and switching output	■	■	–
UDP streaming	–	■	■
SDK, C#, C++	–	■	■
Power-over-Ethernet (PoE)	–	■	■
Web interface	■	■	■

Small housing, strong performance

Extensive features for even more reliability

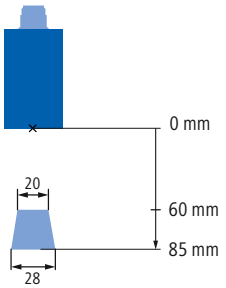
Fast inline profile matching - "Profile Matcher" tool

- Simple and reliable inline contour matching to identify good and bad parts in the production process
- Convenient and quick teaching of good parts at the push of a button
- Selection of the optimal Region of Interest (ROI) by drag & drop and tolerance setup supported by graphics
- Simple alignment and positioning of the sensor (distance-independent measurements, flexible mounting options and independence from ambient light)
- The sensor directly converts the measurement result into a switching signal for transmission to the machine



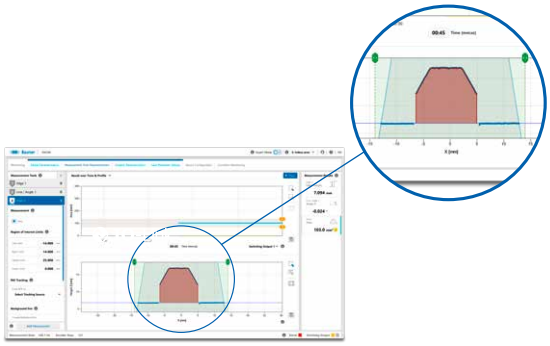
High precision in a compact housing - OX with blue laser beam

- The short wavelength of the blue laser (405 nm) provides for stable and precise measurement on plastic and semi-transparent surfaces
- With a measuring range of 25 mm, the blue laser can achieve a resolution in z of up to 5 µm



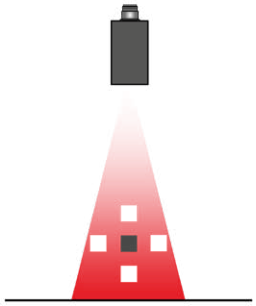
Optimal measurement result - individually adjustable region of interest (ROI)

- Easy adjustment of the relevant evaluation area (ROI) via drag and drop
- The suppression of interfering signals increases the stability of the measurement result
- Only the relevant part of the target is measured
- For each tool (measuring task) a separate ROI can be defined



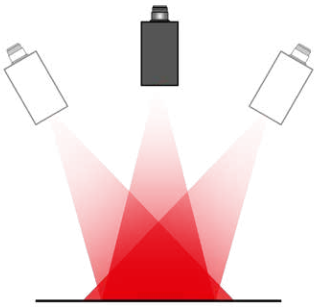
Simple sensor setup - distance-independent measurements

- The object to be measured can move within the measuring range
- The distance from the object to the sensor (e.g. due to movements of the conveyor belt) can change without affecting the measurement result
- This insensitivity facilitates alignment and positioning of the sensor and contributes significantly to its reliability in the application



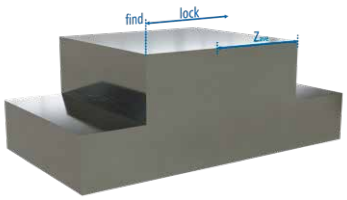
Flexible mounting option - for optimal machine integration

- Mounting of the sensors is possible up to an angle of ± 30°. The measurement result is automatically corrected as if the sensor was mounted vertically
- Measurements are updated with dynamic position changes thanks to autocorrection in the sensor



Measurement of unguided objects - efficient position tracking

- Edge-based position tracking guarantees that features are inspected at the correct position in production processes
- It enables reliable measurement of objects on a conveyor belt even with dynamic movements of the object or the sensor



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For more information on our profile sensors, please visit: www.baumer.com/OX

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