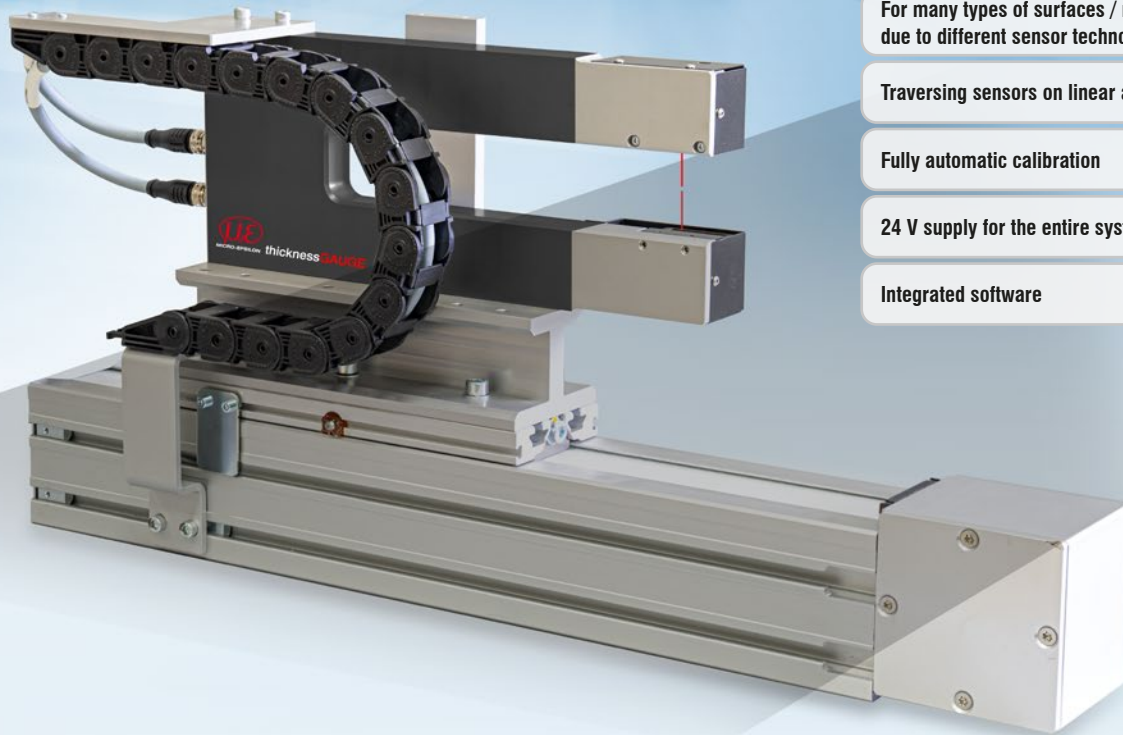




More Precision.

thicknessGAUGE // Sensor system for inline thickness measurements





Compact complete solution for precise inline thickness measurements up to 25 mm

For many types of surfaces / materials due to different sensor technologies

Traversing sensors on linear axis

Fully automatic calibration

24 V supply for the entire system

Integrated software

Thickness measurement with high precision

thicknessGAUGE sensor systems are used for precise thickness measurements of strip materials, plates and sheets up to 25 mm. Several models with different sensor types, measuring ranges and measuring widths enable inline thickness measurements of different materials and surfaces based on an unmatched price/performance ratio.

This fully assembled system comprises a stable frame on which two optical distance sensors are fixed, that detect the thickness of the measuring object according to the difference principle. The sensors are perfectly aligned to each other and calibrated during the assembly. Furthermore, thickness calibration at the factory ensures high precision.

A linear axis moves the sensor system from the parking position to the measuring position. A measurement standard for fully automatic calibration is in the parking position.

Thickness measurement principle

The principle of dimensional, geometric thickness measurement is based on one optical distance sensor on each side of the material. The distance (=operating range) of both sensors is determined in a calibration process based on a measurement standard certified by DAkkS (German Accreditation Body) of which the thickness is added to the sum of the sensor signals in order to determine the current operating range.



Fully automatic calibration enables reliable measurements (here: thicknessGAUGE.laser profile)

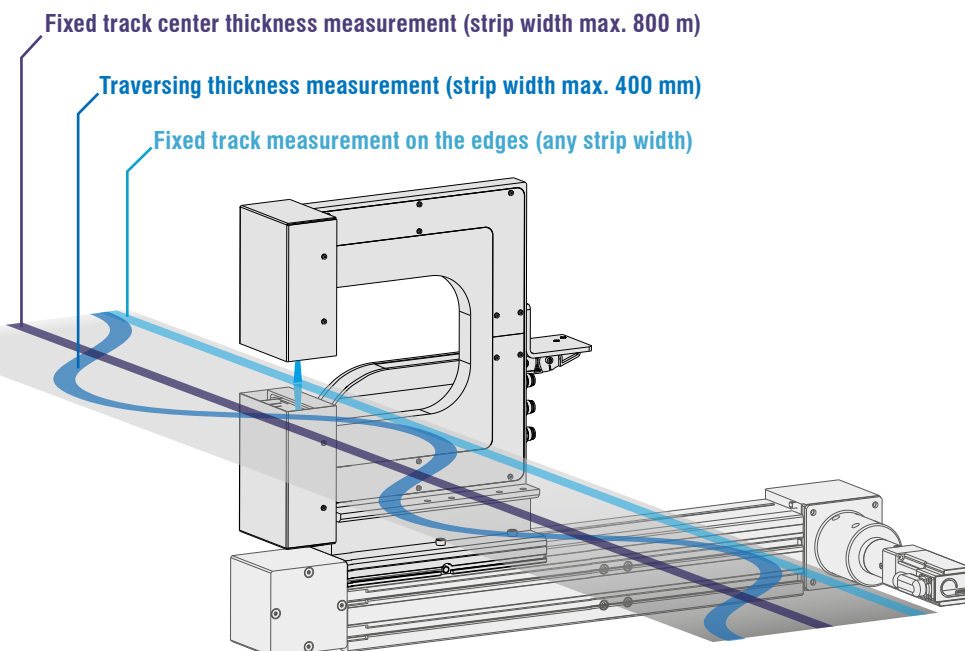
Automatic calibration and temperature compensation

thicknessGAUGE systems are equipped with in-situ calibration in order to compensate, e.g., for the effects of fluctuating temperatures. A linear axis moves the thicknessGAUGE to the parking position. The calibration cycles are individually adjustable. In addition to temperature compensation, in-situ calibration enables proper functioning of the system to be verified cyclically and at any time.

The new class for inline thickness measurements

thicknessGAUGE sensor systems are used in industrial environments for precise thickness measurements of strip and plate materials. A linear unit with electromechanical drive enables thickness measurements in traversing mode. Alternatively, fixed track measurements are possible for center-line measurements (center thickness) or for thickness measurements on the edges.

These compact systems are comprised of an integrated linear unit including motor control, a compact bus terminal box, an automatic calibration unit as well as a multi-touch PC with pre-installed software. The entire system is powered via a 24 V source.



100% quality control during production

The thicknessGAUGE sensor systems are used in strip processes and plate production in order to measure the thickness continuously at individual measuring points. These systems are designed in such a way that they can be used as both initial equipment and for retrofitting of existing facilities. Based on high precision and equipped with intelligent sensor technology, these sensor systems are used in various industries.



Metal production

Thickness measurement of metal film, metal strips and metal plates



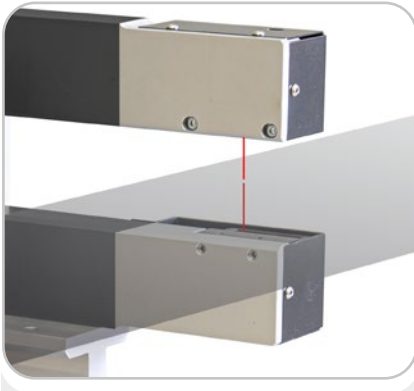
Energy industry

Thickness measurement of fuel cells and battery film (coated and uncoated)



Material engineering

Thickness measurement of film, plastic plates, woven materials, wood and ceramics



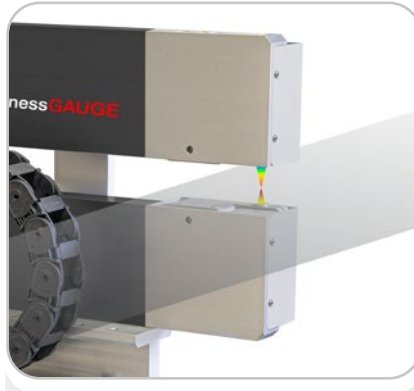
thicknessGAUGE.laser

Sensor technology used:
Laser triangulation displacement sensors

- Measuring range (thickness): 10 / 25 mm
- Accuracy: $\pm 4 / \pm 20 \mu\text{m}$
- Measuring rate: up to 4 kHz

Reasonably priced sensor system for common surfaces from plastics to metals

Compact design meets high performance & excellent price/performance ratio



thicknessGAUGE.confocal

Sensor technology used:
Confocal chromatic displacement sensors

- Measuring range (thickness): 2 mm
- Accuracy: $\pm 0.25 \mu\text{m}$
- Measuring rate: up to 5 kHz

Ideal for high resolution measurements of highly reflective and shiny surfaces

Also for transparent and semi-transparent film



thicknessGAUGE.laser profile

Sensor technology used:
Blue Laser profile sensors

- Measuring range (thickness): 8 mm
- Accuracy: $\pm 0.5 \mu\text{m}$
- Measuring rate: up to 100 Hz

For structured materials, e.g., perforated and embossed plates

Best-fit line possible

Compensation for tilted strips

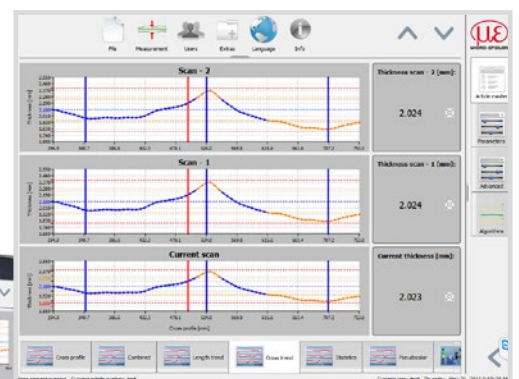
Powerful analysis and control software

thicknessGAUGE systems are equipped with a multi-touch capable software package for analysis, presentation and archiving of monitored production data. This software enables different measurement modes such as fixed track thickness measurement at any position, measurement of the thickness profile, measurement of several longitudinal trends, an SPC package and automated verification of the measuring system's capability. It ensures easy and fast verification of the measuring system capability which is individually adjustable.

Features for documentation and process control

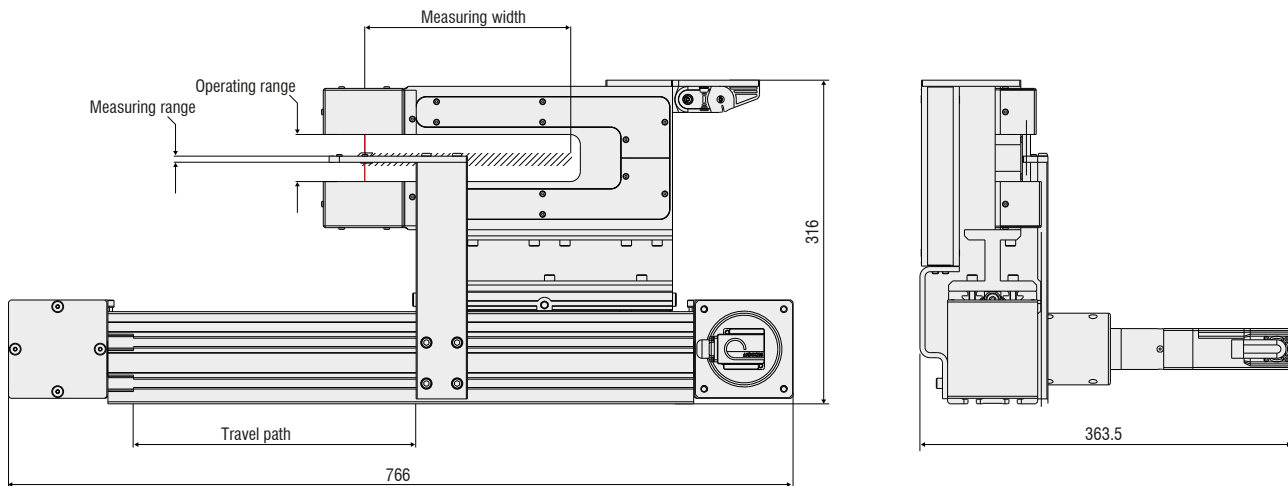
- Article database
- Production archive
- Statistical evaluations
- Limit value monitoring with return back to production (optional fieldbus interfaces)
- Verification of measuring system capability

Interfaces



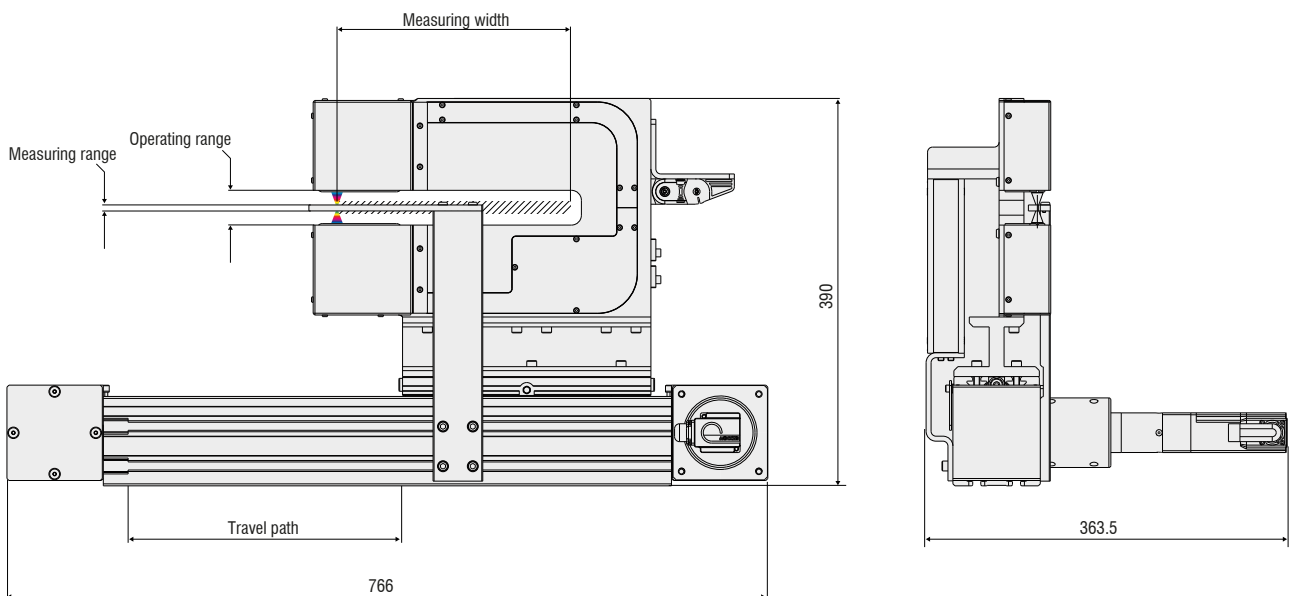
Model	thicknessGAUGE.laser				
Description	-10/200	-10/400	-25/200	-25/400	
Article no.	4350127.800	4350127.801	4350127.802	4350127.803	
Measuring width	200 mm	400 mm	200 mm	400 mm	
Operating range	46 mm		71 mm		
Measuring range	10 mm		25 mm		
Max. travel path	280 mm as standard, other lengths on request	480 mm as standard, other lengths on request	280 mm as standard, other lengths on request	480 mm as standard, other lengths on request	
Accuracy ¹⁾	< ±4 μm		< ±20 μm		
Resolution	0.7 μm		3.2 μm		
Measuring rate	up to 4 kHz				
Calibration	automatic				
Weight	Axis, drive and C-frame	23 kg	30 kg	23 kg	30 kg
	Bus terminal box and panel IPC	22 kg			
Dimensions of bus terminal box	300 mm x 300 mm x 210 mm				
Power supply	24 V				
Ambient temperature	up to 45 °C				

¹⁾ 2 sigma



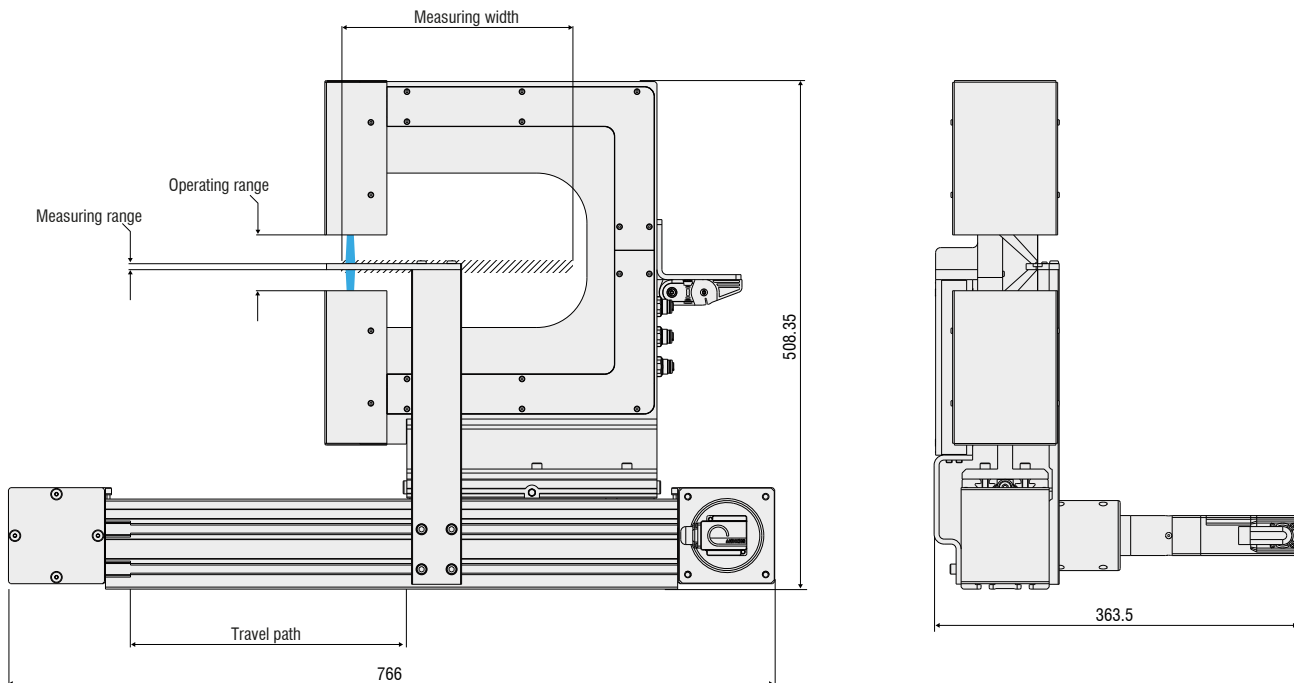
Model	thicknessGAUGE.confocal	
Description	-2/200	-2/400
Article no.	4350127.900	4350127.901
Measuring width	200 mm	400 mm
Operating range	32 mm	
Measuring range	2 mm	
Max. travel path	280 mm as standard, other lengths on request	480 mm as standard, other lengths on request
Accuracy ¹⁾	< $\pm 0.25 \mu\text{m}$	
Resolution	40 nm	
Measuring rate	up to 5 kHz	
Calibration	automatic	
Weight	Axis, drive and C-frame	23 kg
	Bus terminal box and panel IPC	30 kg
Dimensions of bus terminal box	24 kg	
Dimensions of bus terminal box	300 mm x 400 mm x 210 mm	
Power supply	24 V	
Ambient temperature	up to 45 °C	

¹⁾ 2 sigma



Model	thicknessGAUGE.laser profile	
Description	-8/200	-8/400
Article no.	4350127.700	4350127.701
Measuring width	200 mm	400 mm
Operating range	55.8 mm	
Measuring range	8 mm	
Max. travel path	280 mm as standard, other lengths on request	480 mm as standard, other lengths on request
Accuracy ¹⁾	< $\pm 0.5 \mu\text{m}$	
Resolution	0.2 μm	
Measuring rate	up to 100 Hz	
Calibration	automatic	
Weight	Axis, drive and C-frame	23 kg
	Control cabinet and panel IPC	22 kg
Dimensions of bus terminal box	300 mm x 300 mm x 210 mm	
Power supply	24 V	
Ambient temperature	up to 45 °C	

¹⁾ 2 sigma



Sensors and Systems from Micro-Epsilon



Sensors and systems for displacement, distance and position



Sensors and measurement devices for non-contact temperature measurement



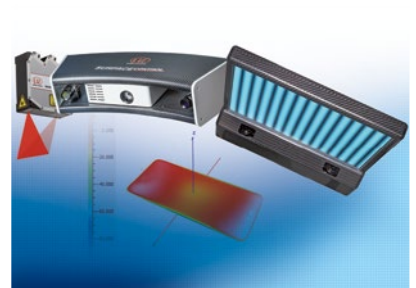
Measuring and inspection systems for metal strips, plastics and rubber



Optical micrometers and fiber optics, measuring and test amplifiers



Color recognition sensors, LED analyzers and inline color spectrometers



3D measurement technology for dimensional testing and surface inspection