



More Precision.

Mounting frame for two-sided thickness measurements using capaNCDT sensors



Mounting frame for two-sided thickness measurements using capaNCDT sensors

Multi-track thickness measurement at up to three different points at the same time

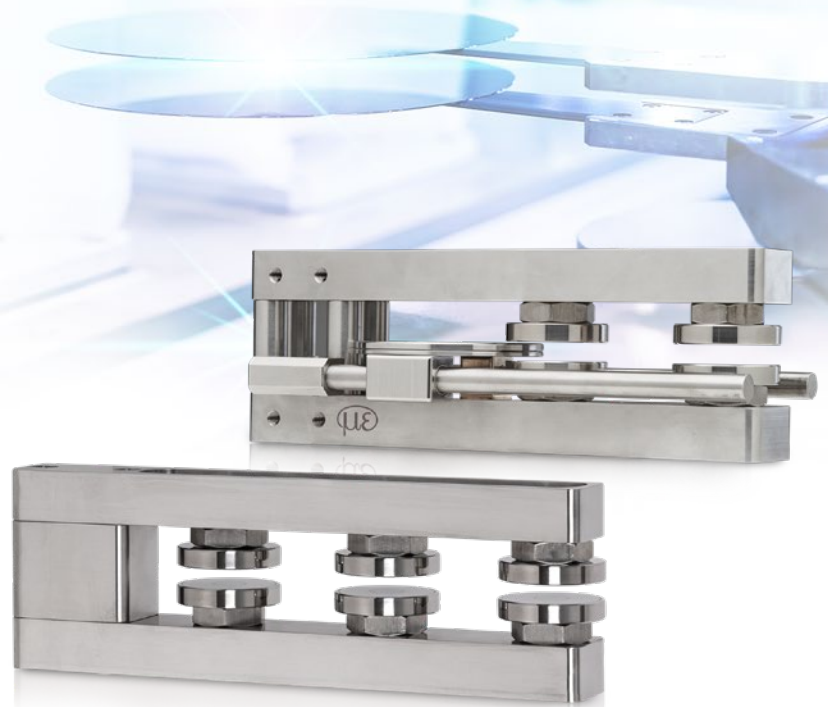
High temperature stability for precise measurements at temperatures of up to 100 °C

Compatible with vacuums and extremely compact design

Easy integration and retrofitting in existing systems

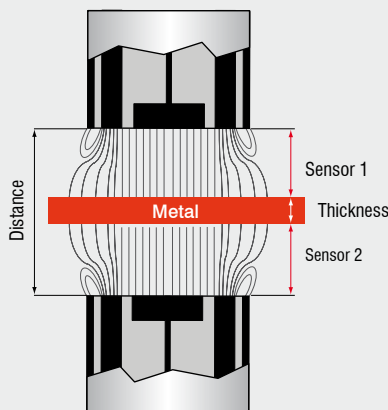
Compatible with all capaNCDT sensor models

Calibratable design allows for high precision in thickness measurements



The mounting frame is designed for use with capacitive sensors for two-sided thickness measurements and helps to align the measuring points with one another. The frame allows for the sensors to lie exactly on one axis, meaning that the measuring points are arranged congruently. This prevents measurements at an offset and a reliable measurement result is achieved with the highest possible precision. The small and compact mounting frame is designed such that various sensors can be used. This enables different configurations or combinations depending on the requirements.

The mounting frame provides space for up to six sensors, whereby a measuring point is formed by two sensors in each case. They can be operated using the controllers of the DT6200 and DT6500 series. The controllers have multi-channel capability and offer integrated thickness calculation. Their compact design, their vacuum compatibility and their high temperature stability allow for seamless integration in a wide variety of existing systems and machines. The mounting frame is especially suitable for measuring and testing battery films and battery separator films.



$$\text{Thickness} = \text{Distance} - (\text{Sensor 1} + \text{Sensor 2})$$

Thickness measurement of electrically conductive materials

Two-sided thickness measurement of electrically conductive materials such as metals is made possible by installing the sensors opposite each other. Strip thicknesses in the μm range can be measured using this method. Each sensor generates a linear output signal depending on the sensor surface and target surface. If the sensor distance is known, the thickness of the target can be determined easily. Due to the capacitive principle, the measurement is only performed against the surface without penetrating the target. If the measuring points are synchronized, measurement against non-grounded targets is possible, albeit with a lower resolution.

Model	MA-CS-3		MA-CS-2-C
Article no.	2501030		2501033
Spacer	large	small	large
Measurement channels	3		2
Measuring width	180 mm		156 mm
Temperature stability	0.7 $\mu\text{m}/\text{K}$		
Calibration	cannot be calibrated		can be calibrated ¹⁾
Weight	without sensors	approx. 2.08 kg	approx. 1.84 kg
Temperature range	Storage	20 ... +100°C	
	Operation	20 ... +100°C	
Humidity	0 ... 95 % r.H.		
Material	Steel 1.4301		
Sensor mounting	Inner clamping screw		
Mounting	2x through-holes		
Compatibility	capaNCDT controllers: DT6230; DT6530 capaNCDT sensors: CS2; CS5; CSH2FL-CRm1,4		
Special features	made from stainless steel		

Specified values only valid with vertical alignment of the mounting frame
¹⁾ Calibration target with article no. 2501034

Compatible sensors



CSH2FL-CRm1,4	
Measuring range	2 mm
Linearity	$\leq 0.32 \mu\text{m}$
Resolution	1.5 nm
Temperature range	-50 ... +200°C



CS2	
Measuring range	2 mm
Linearity	$\leq 1 \mu\text{m}$
Resolution	1.5 nm
Temperature range	-50 ... +200°C



CS5	
Measuring range	5 mm
Linearity	$\leq 2.5 \mu\text{m}$
Resolution	3.75 nm
Temperature range	-50 ... +200°C

Compatible controllers



capaNCDT 6200

- High-resolution controller with modular design, expandable to 4 channels (2 pairs of sensors)
- Ethernet / EtherCAT interface
- Integrated thickness calculation
- Simple configuration via web interface



capaNCDT 6500

- High-performance controller with maximum resolution
- Modular design, expandable to 8 channels (4 pairs of sensors)
- Integrated thickness calculation
- Simple configuration via web interface
- Virtually independent of temperature
- Numerous filters, averaging, trigger functions, storage of measurement values, digital linearization

Mounting frame for two-sided thickness measurements using capaNCDT sensors

Application examples



Battery films/separator films

Capacitive sensors are used for the two-sided thickness measurement of battery films with a high degree of accuracy. The measuring spot compensates for irregularities on the surface. Due to the high temperature stability of the mounting frame, it can be used at ambient temperatures of up to 100 °C.



Metal plates/metal strips

These capacitive sensors offer numerous advantages when it comes to measuring the thickness of thin metal plates and metal strips. They provide non-contact, wear-free measurement on all alloys. The mounting frame enables easy set up of multi-track measurements.



Wafers

Capacitive displacement sensors are used for precise wafer thickness measurements. The two opposing sensors detect the thickness and also determine other parameters, such as the deflection. It is possible to vary the position of the wafer in the measurement gap without impairing the accuracy of the measurement.

Certified precision: calibration target

The calibratable MA-CS-2-C mounting frame provides supreme performance thanks to the plane-parallel calibration target (optionally available). The attachment with the calibration target is placed on the guide rails and pushed between the two pairs of sensors. The calibration target prevents the pairs of sensors from influencing one another. In this way, the exact single distance between the sensor and the calibration target is determined. The sum of both single distances and the thickness of the calibration target gives the exact distance between the two sensors.

A calibration log for documenting the level of precision achieved is included with each calibration target. The calibration of the flatness of the calibration target (plane-parallel hard metal standard) is also recorded in the log.

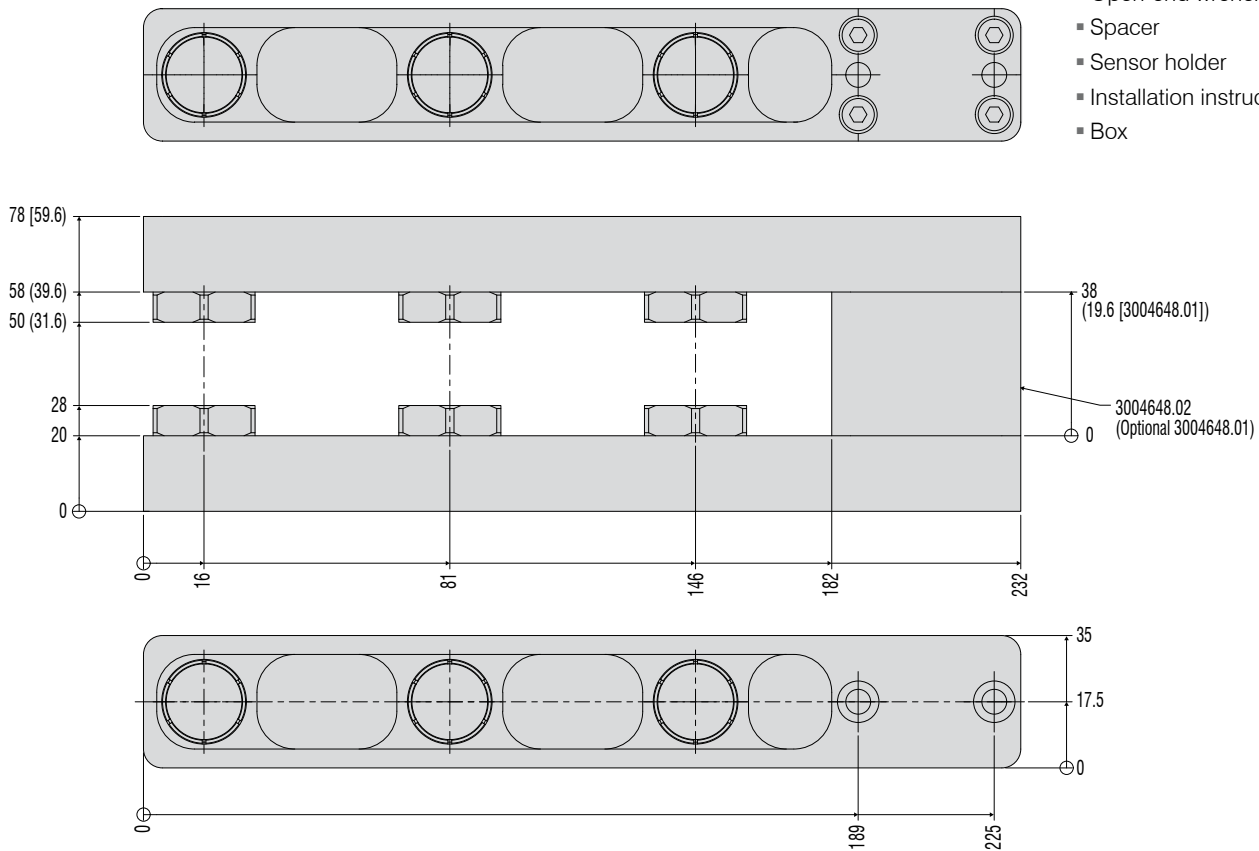


Dimensions

Dimensions of MA-CS-3

Scope of delivery

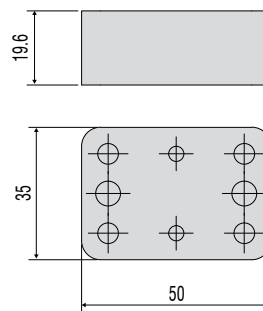
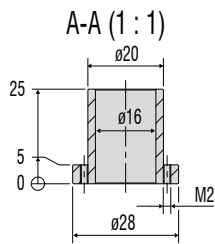
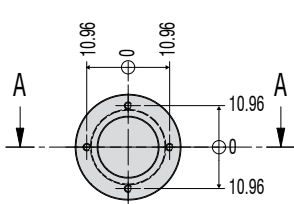
- Mounting frame
- Open-end wrench for locking
- Spacer
- Sensor holder
- Installation instructions
- Box



Sensor holder for flat sensors

Sensor holder for CSH2FL-CRm1.4 sensor

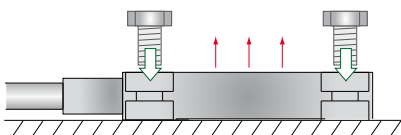
Small spacer



All dimensions in mm, not to scale

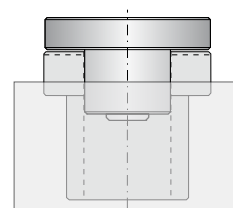
Installing flat sensors

The flat sensors are mounted using a through-hole for M2 bolts. The sensors are screwed on from above.



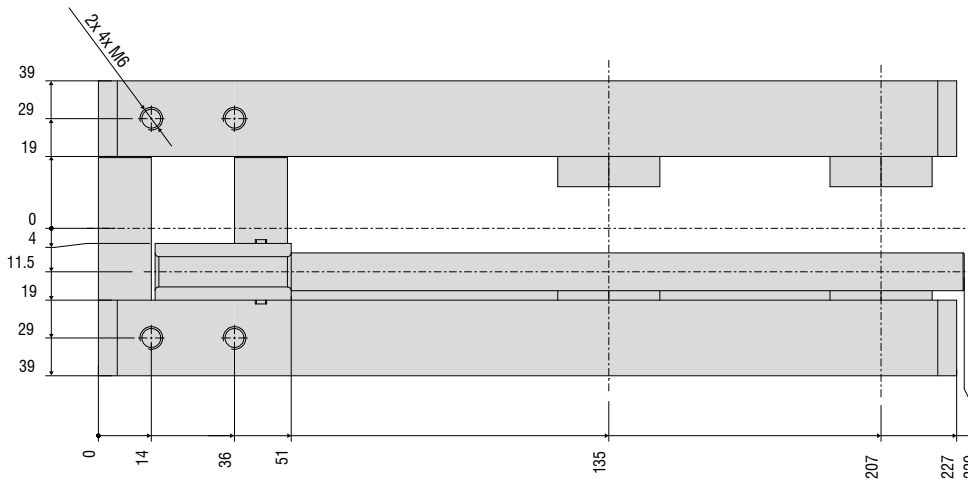
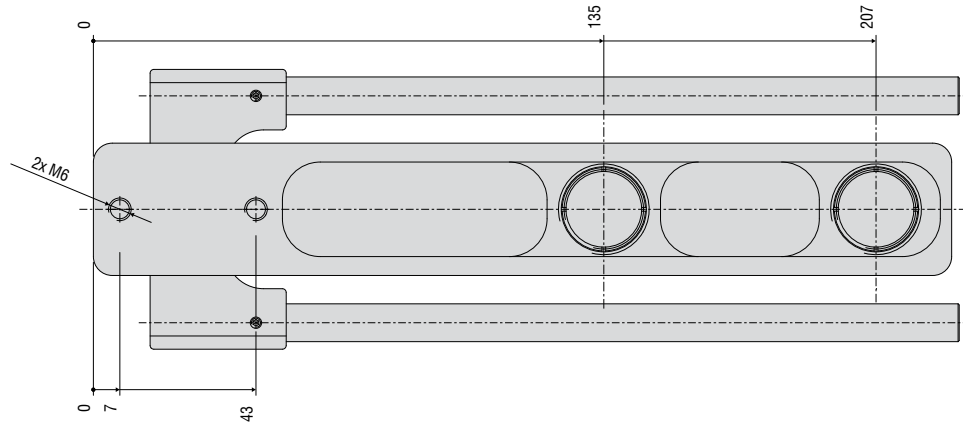
Installing cylindrical sensors

All sensors can be installed as both freestanding and flush units. They are secured by the clamping effect of the internal clamping screw. See installation instructions for the tightening torque.



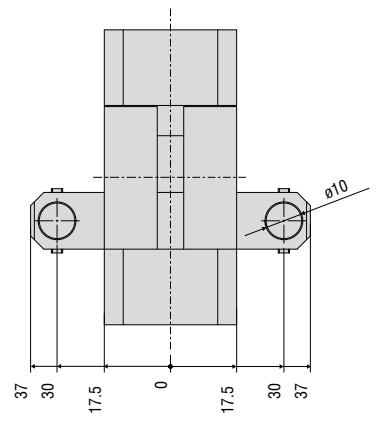
Dimensions

Dimensions of MA-CS-2-C



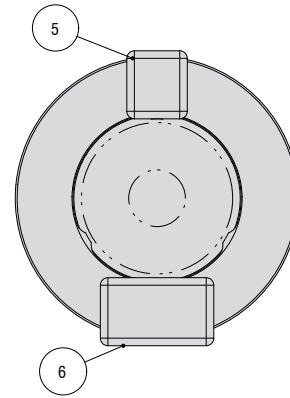
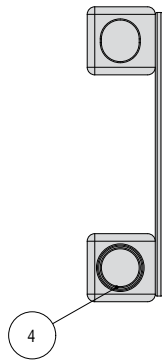
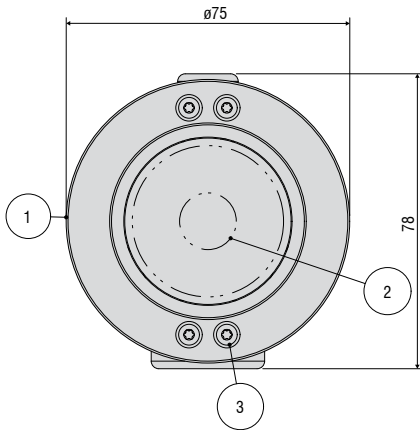
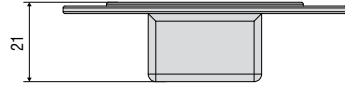
Scope of delivery

- Mounting frame
- Open-end wrench for locking
- Sensor holder
- Installation instructions
- Box



All dimensions in mm, not to scale

**Dimensions of calibration target attachment
(optionally available)**



All dimensions in mm, not to scale

1	Target holder mounting frame
2	Target Dual-Quad-C-C frame
3	Countersunk screw ISO 14581 M3x5 - A2-70 - Torx
4	Plain bearing bush PG101208
5	Bearing bush 1 guide shaft target mounting frame
6	Bearing bush guide shaft target mounting frame

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