

Coordinate measuring machine

Coordinate measurement machines from Zeiss have for decades been a byword for the highest quality, precision and reliability. Also the mobile measurement machine, ScanMax® fulfills these criteria, in part due to the application of inductive displacement sensors from Micro-Epsilon.

The accuracy of the measurement result depends decisively on extensive compensation of disturbing influences. When probing the work piece, for example, a force is exerted on the probe tip, causing a slight bending. The displacement sensors measure the bending of the probe and provide correction values for the compensation. To achieve a high scanning speed and simple operation, the articulated arms are of light construction (GRP).

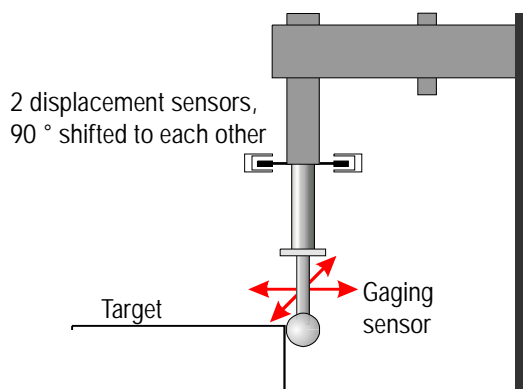
This provides a smooth probe guidance, optimized inertially, with a high mechanical cut-off frequency. However, this demands a sensor electrical cut-off frequency which is 100 times higher. For this reason the displacement sensors are supplied with 50 kHz alternating voltage and deliver a resolution of a few tenths of a micrometer. The low transverse sensitivity is also decisive: Two sensors measure the probe deflection in the x and y directions, whereby a pure x deflection must not influence the y component. Inductive displacement sensors from Micro-Epsilon were able to fulfill these high requirements and also contribute significantly to the considerable success of the ScanMax® due to a favorable price/performance ratio.

Reasons for choosing the system

- No crosstalk in sensor during lateral movement
- High dynamic, high resolution
- small sensor design

Measuring system requirements

- non-contact and wear-free measuring principle
- measuring range ± 0.2 mm
- accuracy $< \pm 0.15$ % FSO
- Bandwidth 5 kHz (oscillator 50 kHz)



ScanMax® is a registered trademark of Carl Zeiss Corporation.