

Veeco Uses Galil's Modular Ability to "See" Sub-Nano Flaws

An increasing number of modern technologies require more and more sophisticated metrology to measure ever-finer details and tighter tolerances. Veeco's new Wyko® Optical Profilers, directed by a series of Galil motion controllers, provide non-contact, three-dimensional measurement of surface roughness and topography, with sub-nanometer resolution. The measurements are accurate, repeatable and high speed.

Veeco chose Galil's Ethernet-based DMC-3425 motion controllers for its profilers because they provide a highly versatile and powerful form of distributed control where many controllers can be linked together in modular fashion.

"With Galil, we need stock only one model controller. We simply use more of them depending on how many axes of control are required. With other controllers, we had to stock 2-axis, 4-axis and 6-axis boards," according to Veeco's Colin Farrell.

When linked, one DMC-3425 controller is designated as the master, which acts as a virtual multi-axis controller. Up to four DMC-3425 controllers can be linked together allowing up to 8 axes to be commanded by a single communication link from the host computer.

Ethernet capability was also important to Veeco. "Galil's Ethernet connection gives us fast communication. With Ethernet, we also don't need to use a slot on the motherboard of the system computer," said Farrell.

Galil also has enough digital and analog I/O to handle Veeco's needs. The DMC-3425 accepts inputs from a joystick and can be used with stepper motors, both important to Veeco.

Veeco uses Galil controllers to direct measurements in all of its optical profilers. The Wyko NT1100, which offers sub-nanometer resolution in a small footprint, uses one Galil DMC-3425. It enables cost-effective metrology for R&D as well as in producing MEMS, thick films, optics, and ceramics.

The industry-standard Wyko NT3300 offers the flexibility, gage capability and reliability to support 24-7 production by using two DMC-3425's. The NT3300 is used primarily for process development and quality control.

Veeco's Wyko NT8000, with three DMC-3425's, is simply the most powerful profiler available anywhere. It combines 100 micrometer/second scan speeds, an 8-millimeter scan



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range and full automation for rapid measurement of step heights, roughness and surface topography. This eighth generation profiler provides three-dimensional measurement from 0.1 nanometer to 8 millimeters, with sub-nanometer resolution.

Because Veeco profilers are non-contact, the measurement does not damage the material that is being measured. The user can select either phase shifting interferometry (PSI), a fast method for measuring flat surfaces, or vertical scanning interferometry (VSI), for measuring complex surfaces. All Veeco optical profilers can switch between VSI and PSI. ■

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