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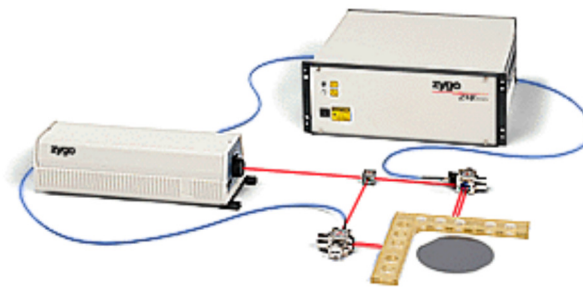
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# ZMI-1000

## Displacement Measuring Interferometer System

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The ZMI-1000 Displacement Measuring Interferometer provides both the tools and the performance needed to improve accuracy in precision motion systems.

([Download](#) high-res photo, 75k)

### Key Features

- \* Displacement resolutions up to 0.6 nm for excellent overlay and alignment capability.
- \* Measure motion at speeds up to 1.1 meter/second for increased throughput.
- \* Position measurements are time stamped for increased dynamic accuracy.
- \* Fiber optic system reduces the cost of remote receivers and eliminates heat in the measurement area.
- \* Cost-saving VME-based system electronics allow use of boards in standard VME backplanes.

### High Resolution

Nano-technology applications in semiconductor production, data storage manufacturing, and precision machinery make high-resolution demands on motion measuring equipment. The ZMI-1000 responds with 0.6 nm resolution, made possible by a new electronic architecture and improved phase detection.

### Precision at High Velocity

The patented 20-MHz heterodyne laser and ASIC-based phase detector allow the ZMI to maintain its 0.6 nm resolution at velocities up to 1.1 m/sec. And position measurements are time stamped for increased dynamic accuracy. Now, even the swiftest machines can be accurately controlled and characterized.



### Six Axes, One Laser

Sub-micron positioning often requires simultaneous measurement of several degrees of freedom. Because an axis of the ZMI-1000 requires less than 1/30 of the laser's optical power, simultaneous measurement of six axes requires only one laser head.

### High Reliability Heterodyne

The ZMI overcomes the alignment difficulty and environmental sensitivity typical of single-frequency (DC) systems. Our patented, AOM-generated, two-frequency design provides the high reliability and ease of use

required in precision motion applications. The ZMI's 20 MHz frequency difference has **ten times** the bandwidth of older Zeeman systems, providing fast target speeds and precision time stamps lacking in other designs.

### **Solutions for the Real World**

Measurement applications aren't always in the controlled environment of a lab or limited to linear motions. With the ZMI-1000, you can measure linear displacements as small as 0.6 nm and as much as 20 meters, and angular rotations up to 60 degrees with 0.1  $\mu$ rad resolution.

### **Simple Dynamic Analysis with Position Oscilloscope Tools**

To simplify the process of dynamic analysis, the ZMI contains internal functions designed to aid the process of dynamic motion characterization. Internal storage and trigger options allow the user to acquire a stream of position and time data up to 133 kHz. This data can then be analyzed with the assurance that each data point is accurate to nanometers, with time of the position known to 16 ns.

### **Need More Information?**

If you have an application in mind and have some questions you would like answered by one of our applications engineers, or if you would simply like more information sent to you, click the "Talk to Zygo" link (below) and send us a note.

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