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Find the *Zygo Daisy Chain* at our website: *Click HERE*

Better Technology. Better Metrology.

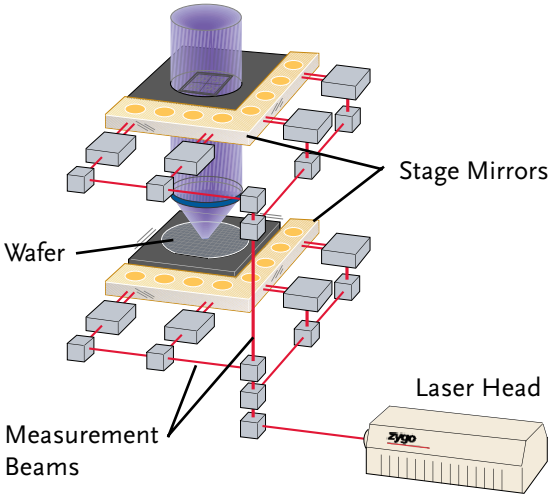
OEM

Zygo's ZMI 2000 System Displacement Measuring Interferometer Systems

Displacement Measuring Interferometry improves positioning accuracy. Zygo's ZMI 2000 is the industry's top performing Displacement Measuring Interferometer (DMI) System offering the highest resolution, the highest velocity, and lowest data age uncertainty for real time position control. Zygo, a world-class interferometric metrology company, supports you at all levels of design, engineering and manufacturing. Zygo works as an extension of your research, engineering and manufacturing teams in providing metrology solutions.

Performance Benefits of the ZMI 2000

- **Positioning accuracy** – Velocity and time dependent errors are eliminated. All axes of motion are synchronized to an uncertainty of ≤1.7 ns.
- **Overlay accuracy** – λ/2048 resolution (0.31 nm) with 2 pass interferometers for excellent overlay and alignment capability.
- **System throughput** – Slew rates of 2.1 m/s with 2 pass interferometers enabled by the 20 MHz heterodyne split frequency.



ZMI 2000 Systems are found in the most demanding feedback control applications:

- Lithography tools: optical steppers and scanners, e-beam and laser mask writers.
- Mask, wafer and LCD inspection and measurement tools, CD-SEM's.
- Process equipment, memory repair tools.

Integration Benefits of the ZMI 2000 for real-time position control

- **Reduce heat, cost and ESD sensitivity, improved electrical isolation, and minimal package size –** Fiber optic cables are used on both the reference and measurement legs.
- **Reduce cost in backplane space requirements –** The ZMI 2002 offers two axes of interferometry on a single 6U VME board.
- **Reduced design costs with simplified integration time –** The measurement boards are fully programmable through the interface bus (VME or ISA), or the P2 interface.
- **Reduced cost of integration –** Standard hardware interfaces for up to 7.7 MHz P2 data rates for up to 16 axes. Easily expanded to accommodate more axes at the same rates.

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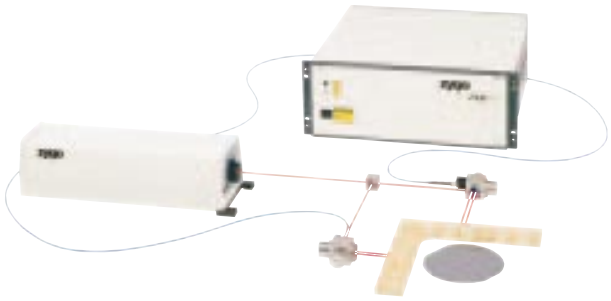
The ZMI 2000 as a Metrology System

Unparalleled performance and flexibility. All of the performance benefits of the ZMI 2000 with the following integration options:

- ZMI Systems Chassis with PCI-VME for processor speed real-time data,
- ZMI Systems Chassis with serial or GPIB interface for more cost effective solutions,
- ZMI PC for integration into an ISA slot.

ZMI 2000 Systems are in use in Standards Labs worldwide for applications in measurement and calibration of high resolution and high frequency mechanical motions:

- Piezo transducer calibration,
- Linear Scale calibration,
- Rotary Scale calibration,
- AFM stage calibration.



The ZMI 2000 System Laser Head

The laser source may be the single most critical component of the Displacement Measuring Interferometer. To control and assure laser head quality, Zygo manufactures our own laser tubes. The proprietary tube design, combined with a state-of-the-art assembly and test facility, provides for a highly reliable laser head with:

- > 50,000 hour lifetime,
- Longest basic warranty at 18 months,
- Extended warranties of up to 5 years,
- Up to 8 axes of interferometry on a single head,
- Multiple head synchronization.

ZMI 2000 System Integration Features

- Optical power monitor for the laser head output, and measurement board input.
- Built in laser head diagnostics.
- Position, time, and velocity, all available independently on the P2, or VMEbus.
- Programmable synchronization signal.
- Measurement boards can be used in any standard 6U VME or ISA backplane.

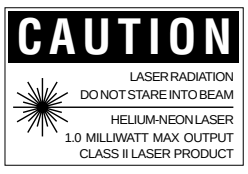
The ZMI 2000 System technology combined with our world-class opto-mechanical design and manufacturing center in Middlefield, CT makes Zygo Corporation a key partner in the successful design, manufacture, and integration of your real-time position control systems.

Covered by one or more of the following US Patents:

4,688,940	4,684,828	4,693,605
4,717,250	4,752,133	4,746,216
4,787,747	4,807,997	4,881,815
5,767,972		

Other US and foreign patents pending.
Data subject to change.

Laser Radiation Safety
This product conforms with NCDRH radiation performance standard 21 CFR, chapter 1, subchapter J.



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ISO 9001 Registered KPMG Quality Registrar
The Quality Advantage

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Displacement Measuring Interferometer Systems

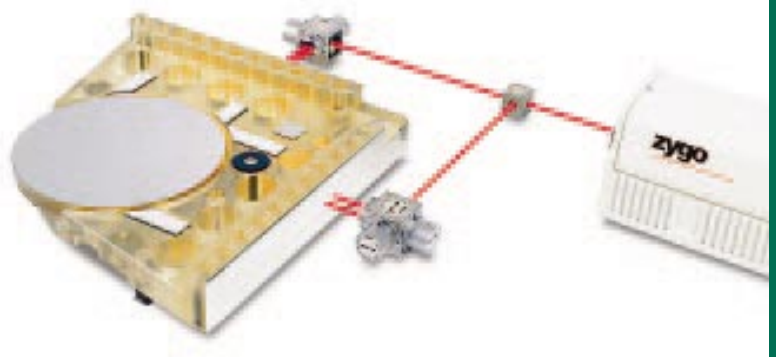
ZMI 2000 System Performance

	4 Pass PMI*	2 Pass PMI	1 Pass LI**
Position Resolution	λ/4096 (0.15 nm)	λ/2048 (0.31 nm)	λ/1024 (0.62 nm)
Position Range	± 5.3 m	±10.6 m	± 21.2 m
Velocity Limit	1.05 m/s	2.1 m/s	4.2 m/s

Maximum Acceleration	980 m/s², (100 g)
Data Age	335 ns
Data Age Uncertainty	
Two Axes	Uncompensated, ±15 ns (ZMI 2001) / ±12 ns (ZMI 2002) / ± 16 ns (ZMI PC)
	Compensated, ±1.2 ns (ZMI 2001, ZMI 2002)
	Compensated, ±1.5 ns (ZMI PC)
Three Axes	Uncompensated, ±19 ns (ZMI PC)
	Compensated, ±1.7 ns (ZMI PC)
Eight Axes	Uncompensated, ±36 ns (ZMI 2001) / 22 ns (ZMI 2002)
	Compensated, ±1.4 ns (ZMI 2001, ZMI 2002)

ZMI 2000 System Laser Head

Type	HeNe, cw, two frequency
Power Minimum / Typical	425 µW / 600 µW
	Will support up to 8 axes
Lifetime	>50,000 hrs, 18 month warranty
Frequency split	20 MHz ± 1600 Hz
Vacuum Wavelength Accuracy	±0.1 ppm (lifetime)
Vacuum Wavelength Stability	±0.01 ppm (24 hrs)
Reference Signal	Fiber Optic



* Plane Mirror Interferometer
** Linear Interferometer

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ZMI 2000 System Measurement Boards

# of Axes per Board	1 (ZMI 2001, ZMI PC) / 2 (ZMI 2002)
Power Requirement	+5V ± 5% @ 3.5A (ZMI 2001, ZMI 2002, ZMI PC) +12V ± 10% @ 0.1A (ZMI PC)
Position Format	36 bit - 2's complement
Velocity Format	32 bit - 2's complement
Time Range	107.4 seconds
Time Format	32 bit - 2's complement
Time Resolution	25 ns
Fiber Optic Signals	Reference and Measurement
Error Status	Reference (signal, PLL, DLL) Measure (Missing, Dropout, Glitch) Velocity (Board, User Defined) Acceleration Overflow (32 bit, 36 bit)
System Synchronization	Clock in or Clock out
ZMI VME Compliance	VMEBus specification revision C.1 6U size A16 or A24 addressing D16 or D32 data transfer D08 (o) interrupt acknowledge cycle
ZMI PC Compliance	UL94V0 Full length ISA card 16 bit ISA bus 32 bit P2 bus



ZMI 2001
Single Axis 6U VME



ZMI PC
Single Axis ISA Bus



ZMI 2002
Dual Axis 6U VME

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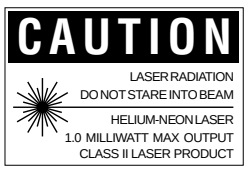
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