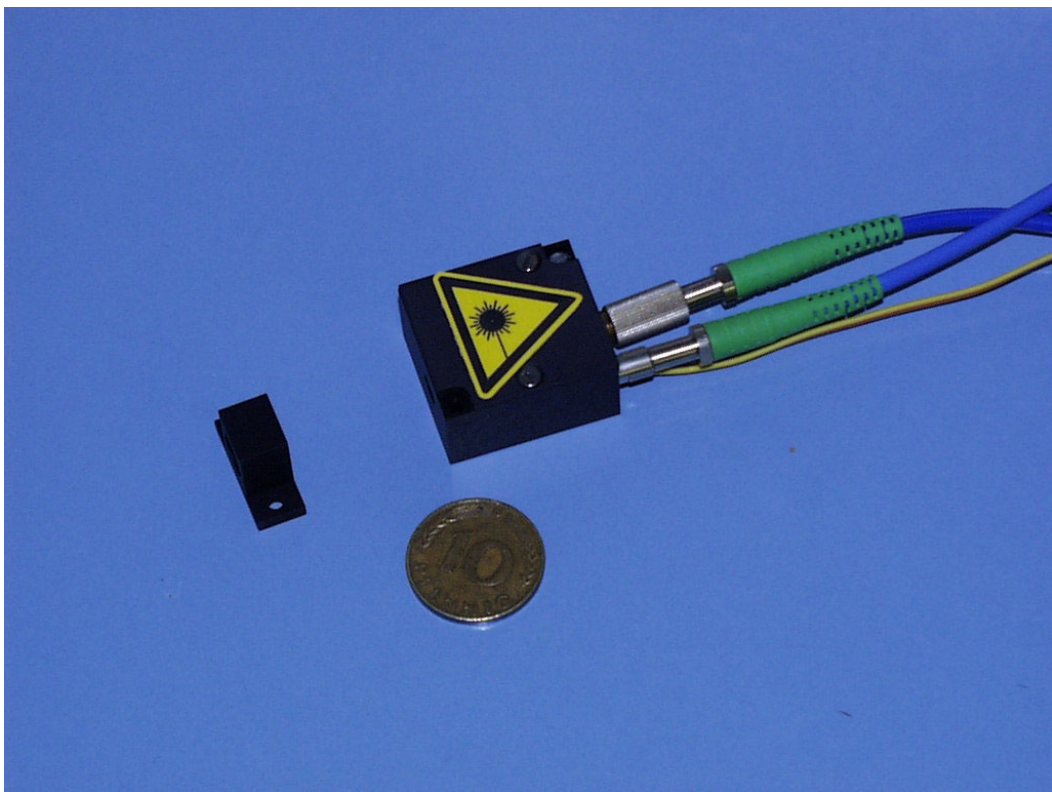

Microinterferometer



MC-Series

Design and Operation

Our MC-Series microinterferometers are designed for incorporation into customer-supplied systems and are used for making precision length measurements. Fiberoptic-coupled sensor heads, employment of discrete micro-optical components and miniaturized structural members, fasteners, and connectors allow arriving at extremely compact sensor-head dimensions of just 28 mm x 25 mm x 15.5 mm and a sensor-head weight of just 35 g. Employment of the wavelength of a frequency-stabilized He-Ne-laser as length reference and incorporating correction for variations in the refractive index of ambient air as standard equipment guarantee excellent metrological precisions. Standard units have a dynamic range of 5 m at length resolutions of 1.24 nm. The maximum tolerated translation rate of their moving mirror is 0.6 m/s.

These three-part, modular, systems consist of a compact sensor head, complete with its associated moving mirror, an optoelectronic power-supply/signal-analyzer unit incorporated into a 19"-rack-mounting tabletop housing, and a keypad/display unit. Their keypad/display unit may be replaced by a personal computer running high-performance measurement and data-analysis software. An RS-232 serial interface is standard equipment. Their frequency-stabilized He-Ne-laser is incorporated into their optoelectronic power-supply/signal-analyzer unit.

Applications

- Fast-acting positioning and length-measurement systems for use in, e.g., linear positioning applications
- Use on precision machining and assembly systems and in quality assurance

Special Features and Benefits

- Extremely compactly designed, ultraprecision, length-measurement systems
- Flexible systems designed for incorporation into customer-supplied systems, readily adaptable to suit special customer requirements
- Easy to align
- Capable of performing measurements at high moving-mirror translation rates
- Fiberoptic-coupled sensor head
- No heat rejection to the ambient
- Employ signal acquisition/transmission hardware immune to electromagnetic interference
- Employ an ultrastable, frequency-stabilized, He-Ne-laser as length reference
- Laser wavelength corrected for air temperature and barometric pressure

Microinterferometer with Electronics Unit



Technical Data		Model MC 60	Model MC 5000
Measuring range	mm	60	5,000
Metric resolution	nm	0.1	0.1
Nominal laser wavelength	nm	632.8	632.8
Laser frequency stability (after warmup)		$3 \cdot 10^{-7}$	$2 \cdot 10^{-8}$
Laser warmup period	min	1	10...20
Operating temperature range	°C	15...30	15...30
Maximum retroreflector translation rate	mm/s	600	600
Dimensions:	Sensor head	28 x 25 x 15.5	28 x 25 x 15.5
	Retroreflector	20 x 14.5 x 8	20 x 14.5 x 8
	Optoelectronic signal-processing/ power-supply unit (OPU)	150 x 450 x 400	150 x 450 x 400
Weights:	Keypad/display unit	48 x 190 x 138	48 x 190 x 138
	Sensor head	35	35
	Retroreflector	4	4
	OPU	9,500	9,500
Interface:	Keypad/display unit	630	630
	serial	RS 232 C	RS 232 C
	serial (optionally) parallel (optionally)	USB IEEE 488	USB IEEE 488
Fiberoptic cable length from sensor head to OPU	m	3, optionally up to 25	3, optionally up to 25
Supply-line voltage	VAC	100...240	100...240
Supply-line frequency	Hz	47...60	47...60

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