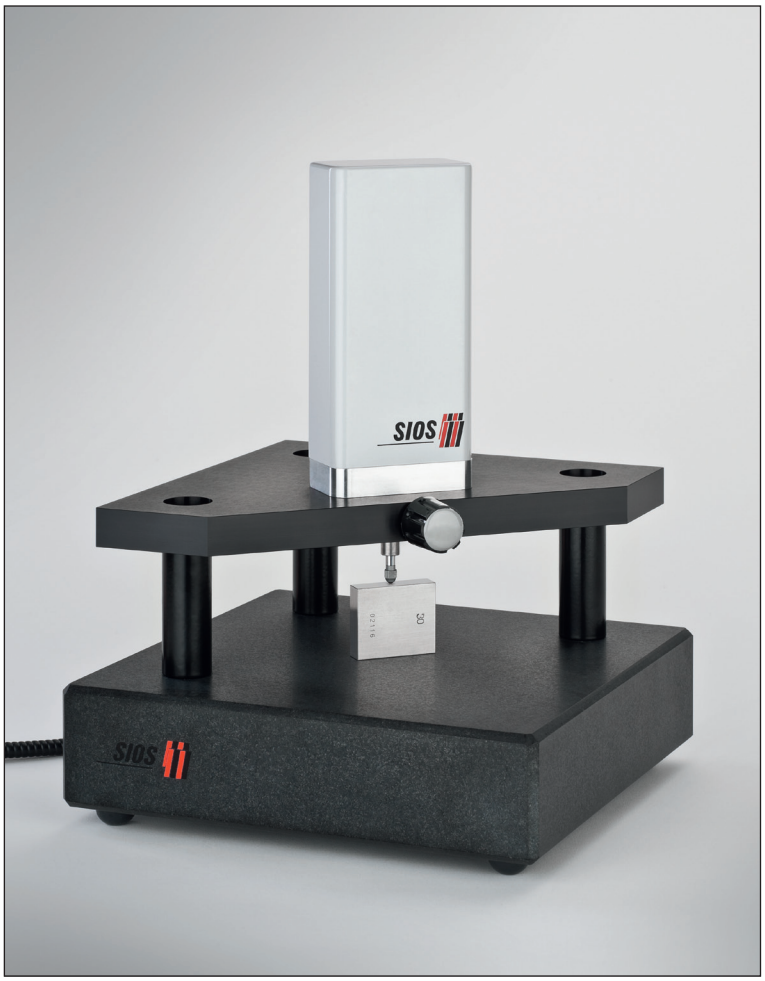
Laser-Interferometric Gauging Probe



LM-Series

SIOS Meßtechnik GmbH

Design and Operation

Series LM laser-interferometric gauging probes are precision length measuring instruments. These probes can make tactile measurements over ranges of 20 and 50 mm with nanometric precision. The compact design and 8h6 mm diameter clamp shaft of the gauging probes enable them to be used with conventional measuring systems.

The integrated miniature interferometer converts the displacement of the motor-driven measuring shaft into an optical interference signal. This optical measuring signal is transmitted through a fiber-optic cable to an optoelectronic supply and evaluation unit, and is output as a length value.

The high accuracy of measurement is ensured by a stable HeNe laser, whose light is transmitted to the miniature interferometer through a fiber-optic cable, and by correcting the environmental effects on the laser wavelength. Operation and display take place optionally on a separate display unit or on a PC with optional data acquisition and display software.

Major Performance Features

- Laser-interferometric measurement process achieves ultrahigh precision and accuracy
- HeNe laser with high frequency stability as the metrological standard
- Constant measuring force throughout the entire measuring range
- Excellent linearity throughout the entire measuring range
- Gauging probe coupled by fiber-optic cable
- Not sensitive to electromagnetic fields
- No thermal effects on the measurement environment
- Correction of environmental influences on the wavelength of the laser light
- Motor-driven measuring shaft
- Variable mounting orientation
- Traceable to national standards
- Data acquisition and display software
- Open interfaces for OEM software under Windows and Linux

Applications

- Precision length gauging probe
- Especially suitable for gauge block calibration
- Calibration of measuring styluses, mandrel gauges, measuring rules, dial gauges and other dimensional standards
- Precision thickness measurement achieved by using two gauging probes for measuring the thicknesses of, for example, lenses, wafers and foils

Technical Data		Model LM 20	Model LM 50
Measurement range	mm	20	50
Resolution	nm	0.1	0.1
Linearity throughout entire measuring range	nm	≤ ± 2	
Clamp shaft diameter	mm	8h6	
Measuring force, permanently factory preset*	N	0.5...1.5	
Operating temperature range	°C	15...30	
Dimensions (L x W x H): Gauging probe (without measuring shaft) Gauging probe (including measuring shaft) Optoelectronic supply an evaluation unit	 mm mm mm	 60 x 36 x 137 60 x 36 x 170 450 x 400 x 150	 60 x 36 x 170 60 x 36 x 220 450 x 400 x 150
Mass: Gauging probe Optoelectronic supply an evaluation unit	 g kg	 370 ca 8	 420 ca 8
Interfaces standard optional		RS232C, USB Digital 32-bit parallel interface Digital incremental signals (TTL level) Analog incremental signals ($1V_{PP}$)	
Cable length between sensor head and electronics unit	m	3, optionally up to 10	
Line voltage / frequency	VAC/Hz	100...240 /47...60	
Laser safety class according to EN 60825-1:2014 and ANSI Z136.1 (CDRH)		1	

* Please note the installation position!

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