Laser-Interferometric Gauging Probes

LM-Series

SIOS Meßtechnik GmbH

Design and Operation

Our LM-Series laser-interferometric gauging probes are precision length-measurement instruments, the first of their kind to allow making contacting length measurements over ranges of 0 - 20 mm to 0 - 50 mm with nanometer precisions.

Their compactly designed gauging heads and 8h6-mm diameter probe shafts allow their use with conventional length-measurement systems.

Their integral miniature interferometer converts displacements of their motor-driven probe shaft into optical-interference signals that are transmitted on a fiberoptic cable to their optoelectronic signal-processing/power-supply unit for processing and output as lengths.

Their frequency-stabilized He-Ne-Laser, which serves as the light source for their miniature interferometer, and their correction of laser wavelength to allow for environmental influences form the basis for their high metric precisions.

Instrument operation and display of measurement results may be via either a separate keypad/display unit or a PC running the software package supplied.

Major Performance Features

- Ultrahigh precision and accuracy due to their employment of a laser-interferometric measurement technique
- Employ a frequency-stabilized He-Ne-laser as length standard
- Excellent linearity in the whole measurement coverage
- Force exerted by gauging probe remains constant over their full dynamic range
- Employ a fiberoptic-coupled gauging probe
- Employ signal acquisition/transmission hardware immune to electromagnetic interference
- Cause no thermal interference with other metrological equipment experimental setups
- Correct for variations in laser wavelength caused by ambient conditions
- Motor-driven probe shafts
- Usable in any orientation

Applications

- Precision length measurements
- Final dimensional checks
- Calibrating gauge blocks/pins/plugs, rules, dial gauges, and other measuring devices
- Measuring thicknesses of, e.g., plastic films
- Measuring depths of indentations produced by hardness testers
- Contacting surface profiling
- Measuring deformations
- Gauging tasks in research and development work at near-reference-standard precision

Technical Data		Model LM 20	Model LM 50
Measuring range	mm	20	50
Metric resolution	nm	1	1
Nominal laser wavelength	nm	632.8	632.8
Operating temperature range	°C	10 - 30	10 - 30
Probe-shaft diameter	mm	8h6	8h6
Force exerted by probe shaft (permanently factory preset)	N	0.5 - 1.5	0.5 - 1.5
Dimensions (H x W x D):			
Gauging head (less probe shaft)	mm	137 x 60 x 36	170 x 60 x 36
Gauging head (including probe shaft)	mm	170 x 60 x 36	220 x 60 x 36
Optoelectronic signal-processing/power-supply unit	mm	150 x 450 x 400	150 x 450 x 400
Keypad/display unit	mm	48 x 190 x 138	48 x 190 x 138
Weights:			
Gauging head	g	370	420
Optoelectronic signal-processing/power-supply unit	g	9,500	9,500
Keypad/display unit	g	630	630
Interface: serial		RS 232 C	RS 232 C
parallel (optionally)		IEEE 488	IEEE 488
PC plug-in circuit board (optionally)		ISA-bus	ISA-bus
Fiberoptic cable length	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

SIOS Meßtechnik GmbH
Am Vogelherd 46 Tel: +49-(0)3677-64470
D-98693 Ilmenau FAX: +49-(0)3677-64478
e-mail: info@sios.de
URL: http://www.SIOS.de

Authorized distributor to contact for further information: