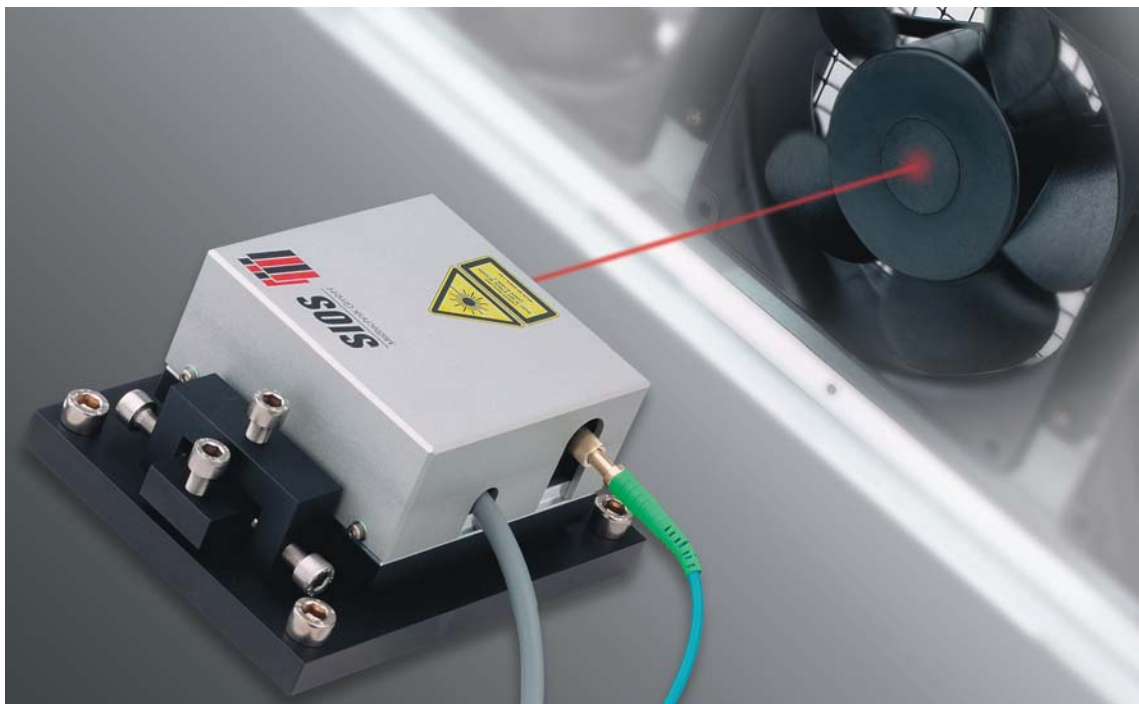

Laserinterferometric Vibrometer



SP-S Series

Design and Operation

Our laserinterferometric vibrometers are ideal instruments for accurate, noncontacting, determinations of temporal changes in the positions of objects or surfaces and allow detecting mechanical vibrations at frequencies ranging from 0 to 500 kHz.

These instruments have been designed based on the proven concept of our SP-Series miniature plane-mirror interferometers. The sensor heads of Series SP-S interferometers are equipped with additional optics that allow making measurements on surfaces having arbitrary roughnesses.

The complete system consists of a modularly designed electronics unit incorporating a laser, a compactly designed sensor head, and various interfaces.

Their fiberoptic-coupled interferometer converts motions along their optical axes into interference fringes that are transmitted to their fast, high-resolution, demodulation electronics for processing. Operation and display of results employs a PC running specialized data-analysis software.

Technical Data SP-S 120 Standard

Working distance: (Permanently factory set per customer specification.)	30...70mm, 240 mm
Laser-spot diameter: (Varies with distance)	12...30 μm , 100 μm
Measurement range: (Varies with the characteristics of the surface involved.)	$\leq \pm 20$ mm
Resolution:	0.3 nm
Sampling frequency range:	1...1000 kHz
Frequency range:	0...500 kHz
Wavelength:	632.8 nm
Surface roughness:	arbitrary
Surface reflectivity:	$\geq 5 \times 10^{-4}$
Translation rate:	1.5 m/s
Dimensions (H x W x D)	
• Sensor head:	36 x 72 x 72 mm
• Sensor head with alignment fixture:	54 x 115 x 90 mm
• Electronic signal-processing/ power-supply unit:	150 x 450 x 400 mm
Length of the cable inter- connecting the sensor head and electronics unit :	3 m; optionally available in lengths ranging up to 10 m

Software for Windows

- Spectrum analysis
- Digital filtering
- Record lengths ranging from 256 to 32,768 data points
- Computation of the speeds and accelerations of vibrational motions
- Spectral averaging
- Settings for external trigger

Features

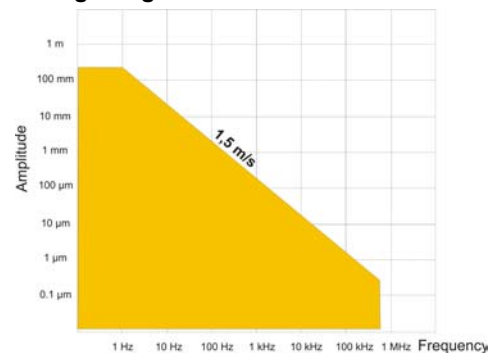
- A high-precision vibration-analysis and length-measurement system
- Noncontacting measurements
- Flexible installation
- Adaptable to suit customers' needs
- Fiberoptic coupling of the laser beam (eliminates thermal influences on measurement results)
- Corrects for ambient conditions
- Easy to align and use
- Lateral motions of objects being measured are disallowed if the objects involved have rough surfaces.
- Includes FFT spectrum-analysis software

Standard signal processor

Incremental signal-processing board equipped with vibrometer option:

- High-speed signal-processing board
- Cyclic data acquisition
- External triggering input
- Wavelength-correction electronics
- RS-232 C serial interface
- USB interface

Working Range:



Optional signal processor

Analog data output:

- 8 length ranges
- 16-bit resolution for output amplitudes up to ± 3 V
- Cutoff frequency 150 kHz
- Continuous data output

Applications

- Making noncontacting vibration measurements on surfaces of arbitrary roughness
- Determining the vibrational modes of plates and shells
- Determining the resonant frequencies of microscopic objects
- Making multi-coordinate measurements employing several systems
- Performing high-precision length measurements

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