# Nano Vibration Analyzer

NA-Series

SIOS

Meßtechnik GmbH

Design and Operation

The Nano Vibration Analyzer is a fiber-coupled laserinter-ferometric vibrometer integrated in a precision technical microscope. It is excellently suitable for measurements of dynamic properties and static displacements of micro structures, MEMS and cantilevers.

The flexible sample positioning in a wide range of 50 mm x 50 mm is achieved by the specific microscope set-up. The vibrating object can be watched on PC by means of an USB camera. Different objectives with magnifications of 10x and 50x are changeable. DC deflection measurements as well as spectral analysis up to a frequency of 5 MHz are possible. Amplitudes can be measured with sub-nanometer resolution.

Operation and display of results employs a PC running specially developed data analysis software. This software allows the frequency analysis of vibrations, the triggered data acquisition and a script-controlled scanning of surface structures.
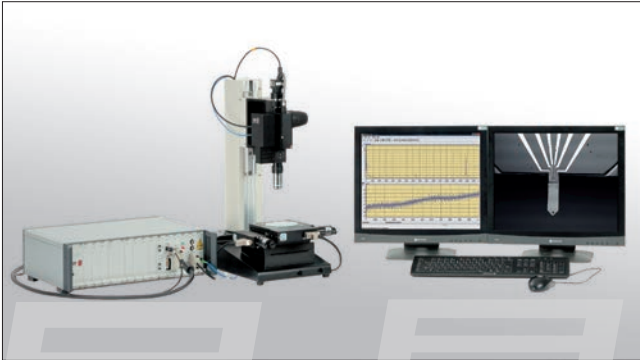
Applications

- Noncontacting vibration measurements on micro objects, MEMS and cantilevers
- Determining the vibrational spectrum
- Determining the vibrational shapes (planar vibrations)
- Determining the resonance frequencies
- Measurement of the static deflection of membrane and other microstructures

Major Performance Features

- High precision, noncontact vibration measurements on micro objects
- Flexible sample positioning
- Different changeable objectives (10x, 50x)
- USB camera for observation of measuring objects
- Fiberoptic coupling of the laser beam (eliminates thermal influence on measurement results)
- Application-specific configur ion
- Includes FFT spectrum-analysis software
- Open interfaces for OEM software under Windows and Linux

Software for Windows - INFAS Vibro

- 3D display of planar vibrations
- Script-controlled measurement procedure
- Integrability into customized systems by TCP/IP
- Calculation of velocity and acceleration of vibrational motion
- Spectrum analysis
- Averaging of spectra

Digital data output – RE 10

High-speed evaluation card with buffered data output

- Measurable frequency range: 0 to 5 MHz
- Sampling frequency: up to 12.5 MHz
- Data record length: 256...65.536 values
- External trigger input
- RS 232C interface
- USB interface

Digital data output – DP 10

Fast data recording in conjunction with a PC plug-in card

- Sampling frequency: up to 12.5 MHz
- Data width: 36 Bit
- High-resolution FFT analysis is possible
- Support for the INFAS Vibro software for NI-PCI 6534 and NI-PCIe 6535 PC cards

Technical Data		Model NA	
Amplitude resolution	pm	5	
Wavelength	nm	632.8	
Scan field rang	mm	50 x 50	
Microscope magnificatio		10x	50x
Visual field siz	µm	650 x 500	130 x 100
Laser spot diameter	µm	< 10	< 2
Working distance	mm	~ 35	~ 10

Dimensions (L x W x H)
  Microscope system incl. vibrometer
  Electronic supply and evaluation unit
	mm
	mm
		400 x 500 x 700
		450 x 400 x 150
			60 x 36 x 170
			450 x 400 x 150

Mass
  Microscope system incl. vibrometer
  Electronic supply and evaluation unit
	kg
	kg
		23
		8	

Line voltage / frequency	VAC/Hz	100...240 /47...60	
Laser safety class according to EN 60825-1:2007 and ANSI Z136.1 (CDRH)		2M II	