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# Laser Interferometer



## SP-NG Series

## Design and Operation

The laser interferometers of the SP-NG series are precision length measuring instruments with a wide range of applications in research and industry. They can be adapted to specific tasks and are characterized by easy handling and beam adjustment. The compact design enables them to be used even in confined spaces.

In addition to small ball reflectors with screw and magnet attachments also plane mirrors, other tilt-invariant reflectors and surfaces with optical quality are used.

The long-range laser interferometer SP 15000 NG is available in different versions for measuring ranges up to 40 m, 60 m and 80 m.

By further additional components such as a 90° beam deflection in four spatial directions or a highly stable beam direction alignment for very compact designs expands the range of applications of laser interferometers.

Depending on the application, powerful software solutions for measurement and calibration are available.



## Major Performance Features

- Flexible, ultraprecise length measuring system
- Robust design with splash-proof housing and sheathed fiber cable for industrial use
- Minimization of alignment errors
- Tilt-invariant reflectors and plane mirrors usable
- By measuring on plane mirrors also suitable for x-y-positioning
- Sensor head available of aluminum, stainless steel or invar version
- Open interfaces for OEM software under Windows and Linux
- Compact electronics unit for mobil calibration tasks available



Sensor head SP 15000 NG

## Applications

- Precision length measuring system as a measuring or calibration instrument for installing in measuring tables, microscope stages, positioning tables, measuring machines, machine tools, hardness and material testing instruments
- Multiple coordinate measurements, e.g. on planar tables, by processing the output signals from two sensor heads simultaneously in one supply and evaluation unit
- Calibration of length measuring instruments
- Non-contact surface measurements

Technical Data	SP 5000 NG	SP 15000 NG
Measuring range (Max. distance reflector - sensor head)	5 m	≤80 m
Resolution	5 pm	5 pm
Maximum tilting angle (Center of rotation in centre of reflector) for Plane mirror reflector	±12.5° ±1.5 arcmin	±22.5° -
Laser wavelength	632.8 nm	
Frequency stability of the HeNe laser (after warm-up time)	2·10 <sup>-8</sup>	
Warm-up time of the HeNe laser	10...20 min	
Operating temperature range	15...30°C	
Maximum displacement speed of the measuring reflector	800 mm/s	
Dimensions (L x W x H): Sensor head with alignment base Reflector Optoelectronic supply and evaluation unit (standard) Optoelectronic supply and evaluation unit (compact)	[130 x 90 x 58] mm Ø 15 mm x 15 mm	max. [227 x 90 x 67] mm [45 x 45 x 50] mm [450 x 400 x 150] mm [250 x 400 x 150] mm
Mass: Sensor head with alignment base Reflector Optoelectronic supply and evaluation unit (standard) Optoelectronic supply and evaluation unit (compact)	650 g 8 g	max. 820 g 105 g ca. 8 kg ca. 5.7 kg
Interfaces standard optional	RS232C, USB Digital 32-bit parallel interface Digital incremental signals (TTL level) Analog incremental signals (1V <sub>pp</sub> )	
Cable length between sensor head and electronic unit	3 m, optionally up to 10	
Line voltage / frequency	100...240 VAC / 47...60 Hz	
Laser safety class according to EN 60825-1:2007 and ANSI Z136.1 (CDRH)	2M II	

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