
Differential Plane-Mirror Interferometer



SP-DI Series

Design and Operation

SP-DI Series differential interferometers are used for highly precise differential length and angle measurement.

The strictly symmetrical optical structure of the interferometer achieves extremely high long-term stability of the length measurement.

Two parallel beams detect the relative motion between a reference point and the measuring point with the highest resolution and precision. The beam distance calibrated in the factory enables angles to be measured with high precision.

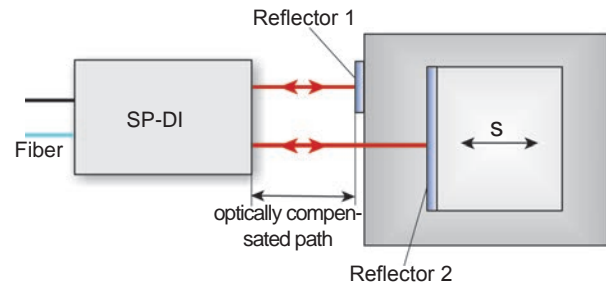
The measured values are recorded and displayed on a PC with optional data acquisition and display software.



Major Performance Features

- Differential length and angle measurement with the highest accuracy
- Sensor head is made of stainless steel as standard
- High long-term stability
- Differential measurement minimizes environmental effects
- Easy adjustment and handling
- HeNe laser with high frequency stability as the metrological standard
- Fiber-optic coupling of the sensor head
- Correction of environmental influences on the wavelength of the laser light
- Open interfaces for OEM software under Windows and Linux
- Other beam distances are possible

Operating Principle



Applications

- Highly precise differential length measurements, for example on positioning systems, for long-term material investigations and in dilatometry
- Angles and tilts are measured with the greatest accuracy by calibrating the beam distance
- Optional vacuum-compatible designs

Technical Data		Model SP 120 DI*	Model SP 2000 DI
Measurement range	mm	70	2000
Resolution	pm	20	20
Laser wavelength	nm	632.8	632.8
Frequency stability of the HeNe laser (after warm-up time)		$\leq 3 \cdot 10^{-7}$	$\leq 2 \cdot 10^{-8}$
Warm-up time of the HeNe laser	min	1	10...20
Beam distance (standard)	mm	21	
Angular measurement range	arcmin	± 1.5	
Angular resolution at 0.1 nm length resolution	arcsec	0.001	
Operating temperature range	°C	15...30	
Maximum displacement speed of the measuring reflector	mm/s	800	
Dimensions (L x W x H)			
Sensor head with base plate	mm	180 x 140 x 43	
Electronic supply and evaluation unit	mm	450 x 400 x 150	
Mass			
Sensor head with base plate	kg	3.3	
Electronic supply and evaluation unit	kg	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 60825-1:2007 and ANSI Z136.1 (CDRH)		2M II	

*For ultra-stable measurements we recommend the model SP 2000 DI due to higher frequency stability of the HeNe laser.

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Warning:

