

Data Sheet

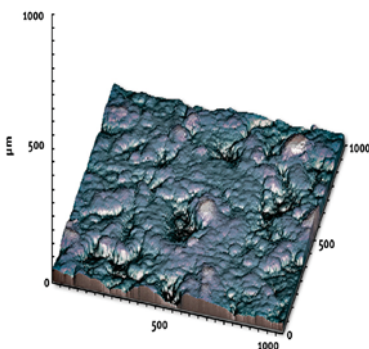
FRT WLI FL - Sensor for White Light Interferometry

Used in
many
sectors

- Medical Technology
- Semiconductors
- Photovoltaics
- MEMS
- Optics
- Automotive

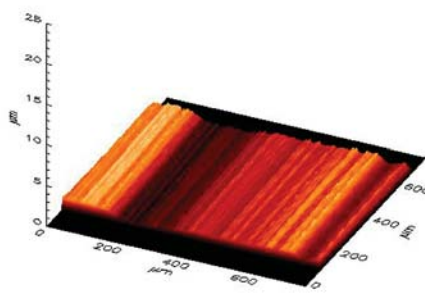


The FRT WLI FL is an optical 3D field-of-view sensor based on the measuring principle of white light interferometry. It features fast, large area topography measurements with excellent height resolution in the sub-nanometer range. In Phase-Shift-Mode (PSI), the sensor is ideal for roughness measurements on flat surfaces. Topography measurements are conducted with high resolution in Vertical-Scanning-Mode (VSI). Typical applications are the investigation of micro-mirrors, lenses, MEMS, microfluidics and microelectronics.



Polished chromium surface, measured with the FRT WLI FL

This 3D image shows a polished chromium surface. The FRT WLI FL characterizes its very smooth surface reliably with high resolution.



Roughness standard by PTB, measured with the FRT WLI FL

This 3D measurement illustrates the excellent vertical resolution of the FRT WLI FL. With its interferometric measuring principle, surface roughness with sub-nm resolution can be achieved.

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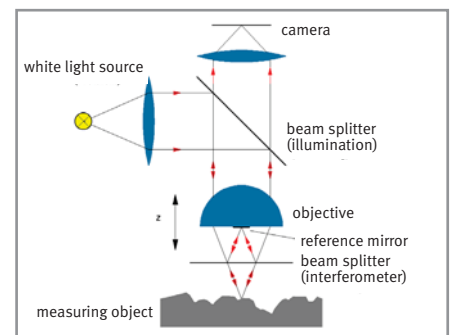
Typical Measurement Tasks

- 3D topography
- Roughness

Measuring Features

- Non-contact, non-destructive measurement
- Very fast 3D measurement of large areas with one shot
- Sub-nanometer height resolution
- Nanometer vertical resolution independent from objective type
- Especially suited for the measurement of very smooth or polished surfaces

Measuring Principle



In white light interferometry, a camera captures interference images that result from the superposition of two light beams that are reflected from the surface of an object and a reference mirror.

For a topography measurement, the objective is gradually moved in small steps into z-direction. At each position an interference image is taken. All images are compiled into an image stack, which is used to calculate the 3D topography. As with all interferometric measuring principles and due to the small coherence length of white light, surfaces can be measured with very good height resolution.

Technical Data

FRT WLI FL - Sensor for White Light Interferometry

Objective (Mirau)	10x	20x	50x
Measuring range z ¹⁾		96 µm	
Working distance	3.6 mm	3.6 mm	1.7 mm
Resolution z		0.1 nm	
Resolution x,y	2.5 µm	1.25 µm	0.5 µm
Field of view	1.6 mm x 1.2 mm	0.8 mm x 0.6 mm	0.32 mm x 0.24 mm
1) Optional up to 396 µm Operating temperature: 5°C – 40°C			
Scope of Delivery			
Measuring head, 10x and 20x objective, sensor electronics, operating manual			



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