

MicroSpy® Topo DT

The **MicroSpy® Topo DT** is a 3D measuring instrument that brings together the benefits of confocal and interferometric measuring techniques in one system. Depending on the measuring task, MicroSpy® Topo DT can be used as a confocal microscope or white light interferometer. As a result, this FRT surface measuring instrument makes it possible to equally distinguish both very smooth and highly textured samples, which can be either highly or poorly reflective, quickly and without destroying the sample. In both modes, the variable measuring field size with a high resolution as well as the high measuring speed are very impressive.

The 6-fold turret of the MicroSpy® Topo DT makes it possible to hold different objectives at the same time, which can be changed quickly by simply rotating. This surface measuring instrument is particularly employed by researchers, in product development and in the accompanying production control process.

MEASURING TASKS

Roughness Step Height Wear Defect Inspection
3D Map Flatness Waviness Surface Structure
Membran Bow Bumps Topography ...

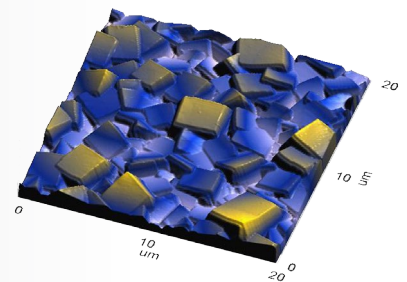


SYSTEM CHARACTERISTICS

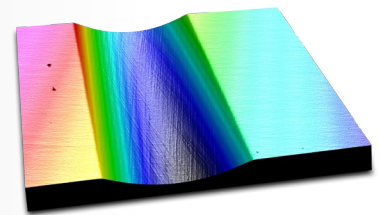
- Motorized sensor approach with high-precision axis
- 6-fold turret to change objectives quickly and easily
- Control and measurement computer with TTF monitor
- Stitching function to expand the measuring field
- Vertical scanning interferometry (VSI mode) for quick, artifact-free measurements
- Phase shift interferometry (PSI mode) for the highest resolution
- Confocal measuring mode with excellent depth of field
- User-friendly FRT Mark III evaluation software with numerous evaluation and display options according to DIN-ISO and SEMI standards

BENEFITS

- Surface measuring instrument for the highest demands in industry and research
- Attractive price-performance ratio
- Professional quality assurance based on precise optical metrology
- High performance and economical measuring tool
- Durable, minimal servicing and low maintenance
- 3D measurements with micro and nanometer resolution
- Intuitive handling with fast evaluation of results



Diamond structure, measured in confocal mode



Groove calibration standard, measured in interferometric mode

MicroSpy® Topo DT

Measuring Principle Confocal Microscope

Visible light gets focused punctually by a movable lens on a surface of an object, then reflected, and finally captured by a detector. Only, if the surface of the object is in the focus of the light beam, a maximum signal is received in this focus point. Very precise information on the height can be obtained by gradually moving the focal point (lens) in z-direction. This punctiform principle can be extended into a field of view method by the use of a rotating Nipkow disc to measure 3D topography, structure, and roughness of a complete area.

Measuring Principle Mirau White Light Interferometer

With the white light interferometer a camera captures pictures of interference patterns from a reference beam (reflected at a reference mirror) and an object beam that strikes the surface to be measured. The use of the light with short coherence length and the gradual movement of the objective in z-direction in small steps allow to obtain a high resolution in z. Topography, roughness and structure of a complete area are measured.

System				
Assembly	Granite Stand			
Sensor	CFM DT Field of View Sensor			
Scanning Stage				
Travel	100 mm x 100 mm			
Drive Type	Ball Screw			
Bearing Type	Ball Bearing			
Encoder Resolution	0.078 µm (micro steps)			
Flatness	< 4 µm / 100 mm			
Max. Speed	25 mm / s			
Load Capacity	10 kg			
z-Axis	Motorized Axis			
z-Axis Travel	50 mm			
System Requirements				
Environmental Requirements	Clean, Vibration Free, Stable Temperature			
Input Voltage	110 V / 220 V AC, 1 Phase			
Footprint (L x W x H)	510 mm x 530 mm x 760 mm			
Weight	approx. 115 kg (Measurement Device 100 kg)			
Measuring Characteristics (Confocal Microscope)	10x CFM	20x CFM	50x CFM	100x CFM
Measuring Range xy	1920 µm x 1440 µm	960 µm x 720 µm	384 µm x 288 µm	192 µm x 144 µm
Measuring Range z ¹	1 mm	1 mm	1 mm	1 mm
Resolution (lateral)	2.46 µm	1.23 µm	0.49 µm / 0.42 µm ²	0.25 µm / 0.37 µm ²
Resolution (vertical)	10 nm	3nm	2nm	1nm
Numerical Aperture	0.5	0.75	0.8	0.9
Measuring Characteristics (Mirau White Light Interferometer)	5x WLI	10x WLI	20x WLI	50x WLI
Measuring Range xy	3840 µm x 2880 µm	1920 µm x 1440 µm	960 µm x 720 µm	384 µm x 288 µm
Measuring Range z	4 mm	4 mm	4 mm	4 mm
Resolution (lateral)	4.92 µm	2.46 µm	1.23 µm	0.49 µm / 0.61 µm ²
Resolution (vertical)	1 nm	1 nm	0.1 nm	0.1 nm
Numerical Aperture	0.13	0.3	0.4	0.55

¹ optional: 10 mm ²geometric / optical

Questions? Talk to an expert!

Germany

FRT GmbH
Phone +49 2204 84-2430
Fax +49 2204 84-2431
E-Mail: info@firt-gmbh.com

Asia / Pacific

FRT Shanghai Co., Ltd.
Phone +86 21 - 3876 0907
Fax +86 21 - 3876 0917
E-Mail: info@firt-china.cn

America

FRT of America, LLC (West)
Phone +1 408 - 261 2632
Fax +1 408 - 261 1173
E-Mail: info@firtofamerica.com

FRT Distributors: <http://www.firt-gmbh.com/en/locations-and-distributors.aspx>

FRT is associated with these partners:

