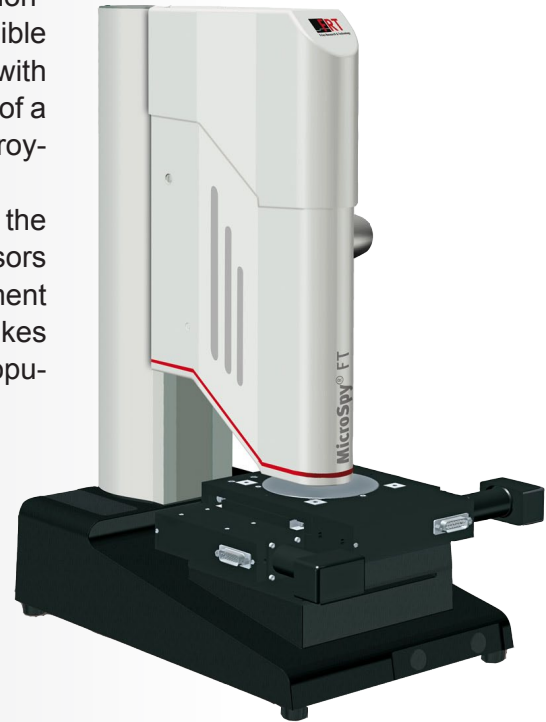


The **MicroSpy® FT** is an optical measuring instrument for the simple, non-contact measurement of films that are transparent in the visible and invisible spectral range. Optical film thickness sensors, for instance, are used with interferometric or reflectometric techniques, allowing for film thicknesses of a few millimeters to less than a nanometer to be determined without destroying the sample.

Using the FTR thin film sensor, it is specifically possible to measure the thickness of transparent thin films and film systems. A wide range of sensors with various light sources, measuring spot sizes and thickness measurement ranges makes it possible to optimally cater to your application. This makes this high-performance FRT surface measuring instrument particularly popular among developers and in quality assurance in the high-tech sector.



MEASURING TASKS

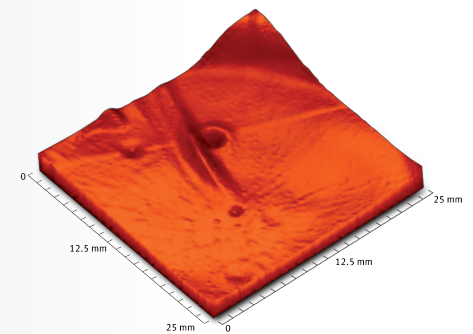
Film Thickness *Layer Stacks* *Mapping*
Transparent Layers *Thin Films* *ITO*
Voids *Semi-transparent Layers* *TCO* ...

SYSTEM CHARACTERISTICS

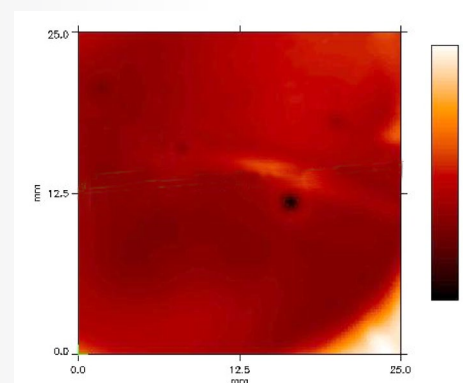
- Small installation space
- Integrated CCD camera with add-on illumination
- Manual sensor approach with high-precision axis
- Control and measurement computer with TFT monitor
- Simple and efficient control with FRT Acquire software
- User-friendly FRT Mark III evaluation software with numerous evaluation and display options according to DIN-ISO and SEMI standards

BENEFITS

- Attractive price-performance ratio
- Professional quality assurance based on precise optical metrology
- Durable, minimal servicing and low maintenance
- Intuitive handling with fast evaluation of results
- Resolution down to the nanometer range while easy to use
- Application specific consulting and service from skilled FRT experts



3D mapping of film thickness



Mapping of surface coating

Interferometric Measuring Principle

Light from a light source (white LED, IR-LED) is focused onto the film. The incident light is partially reflected at each boundary of a transparent film. The recorded spectrum of the reflected light is evaluated to determine film thickness. Due to the interference of the light reflected at the boundaries of the layer, the spectrum shows a typical waviness from which the sensor calculates the film thickness. As the evaluated spectrum depends not only on the thickness, but also on the refractive index of the material, the parameter is included in the calculation of the thickness value.

Reflectometric Measuring Principle

The optical reflectometric measurement principle bases on a superimposition of light beams reflected at the boundaries of a thin film.

In contrast to the interferometric measurement, the measured reflectance spectrum is compared with a calculated one, where the unknown thickness is systematically varied until both spectra match. This allows to determine the thickness of very thin films of a few nanometers.

System				
Assembly	Adjustable Stand			
Sensor	Point Sensor			
Scanning Stage				
Travel	50 mm x 50 mm			
Drive Type	Ball Screw			
Bearing Type	Crossed Roller Bearing			
Encoder Resolution	0.25 µm			
Flatness	< 2 µm / 50 mm			
Max. Speed	50 mm / s			
Load Capacity	1 kg			
z-Axis	Manual Axis			
z-Axis Travel	80 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)	300 mm x 400 mm x 600 mm			
Weight	approx. 64 kg (Measurement Device 24 kg)			
Measuring Characteristics (interferometric)		CWL FT	IRT 80	IRT 800
Measuring Range xy		50 mm x 50 mm	50 mm x 50 mm	50 mm x 50 mm
Measuring Range z (Film Thickness) ¹		3 µm - 180 µm	4 µm - 200 µm	18 µm - 3000 µm
Resolution (lateral)		5 µm	25 µm	6.5 µm
Resolution (Film Thickness) ¹		10 nm	15 nm	105 nm
Measuring Characteristics (reflectometric)		FTR UV / VIS / NIR Thin Film Sensor		
Measuring Range xy		50 mm x 50 mm		
Measuring Range z (Film Thickness) ¹		20 nm - 130 µm		
Resolution (lateral)		100 µm - 400 µm		
Resolution (Film Thickness) ¹		better than 1%, min. 1 nm		

¹at refractive index of n=1

Questions? Talk to an expert!

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