

Optical Broad Band Monitor (BBM)

Precise in situ coating thickness monitoring for production of optical thin-film filters

PRINCIPLE

- ▶ Fast, in situ broadband measurement of transmittance or reflectance spectra in the ultraviolet, visible, and near infrared spectral range
- ▶ Calibrated measurements in the wavelength range from 240 nm to 1700 nm
- ▶ Direct measurement of moving substrates on rotating substrate holders

APPLICATION AND ADVANTAGES

- ▶ Precise deposition control
- ▶ Online characterization
- ▶ Automated process control
- ▶ Rapid manufacturing of complex optical designs
- ▶ Faster development of new coating processes
- ▶ Quality control and documentation of production processes
- ▶ Increased process yield using advanced simulation, re-optimization and error handling tools

PERFORMANCE AND OPTIONS

- ▶ Software algorithms for data acquisition, thickness determination and process control
- ▶ BBM simulation module, including a virtual deposition unit: advanced design stability analysis
- ▶ Re-optimization module: online error analysis and automated design refinement for increased yield
- ▶ Modular system: options for uniformity measurements on multiple radii, combined transmittance and reflectance measurements, spectral resolution below 1 nm (High Resolution/HR BBM)
- ▶ In addition to the standard configuration, customized adaptations, e.g. for spectral range and resolution, are available



TECHNICAL DATA

	BBM	HR BBM
Wavelength range	240 – 1000 nm optional IR: 240 – 1700 nm	
Spectral resolution	1 – 1.5 nm IR: 1 – 5 nm	0.1 – 0.2 nm IR: 0.1 – 3 nm
Measurement time	10 μ s – 30 ms	
Wavelength accuracy	< 0.5 nm	
Reproducibility of 100%-measurement	better \pm 0.04 %	
Noise of 100%-measurement	< 1 % RMS	

APPLICABILITY

- ▶ System compatibility to nearly all deposition chambers and customer specified instrumentation
- ▶ Best applicability to IAD and sputter deposition processes

▶ Contact

Dipl.-Phys. Florian Carstens
Optical Components Department
Smart Optical Devices Group
Tel.: +49 511 2788-245
E-Mail: f.carstens@lzh.de