

# Cary Universal Measurement Accessory

## Applications

The Cary UMA is a truly universal measurement accessory capable of performing a wide range of measurements. It is ideally suited to a wide range of applications such as those listed below.

Optics, thin films and coatings	Academic and industrial research	Glass	Solar
QA/QC coating quality	Optical constant measurements (refractive index, n and k)	QA/QC optical performance testing	QA/QC and development of parabolic trough and Fresnel reflectors
Film thickness control	Film thickness modeling/measurement	Conformance to regulatory standards such as EN410, ISO9050 and EN13837	Photovoltaics — optimizing raw material and module efficiency at various stages of construction
Bulk optic performance and characterization	Nanocomposite bandgap measurements	Coated/composite properties (construction quality)	Coated silicon homogeneity
Coating uniformity	Characterizing fundamental scattering from Bragg grating surface plasmon polaritons	Optical robustness/longevity under environmental testing including temperature, light exposure, aging and physical abuse	Performance longevity and lowering PM costs under environmental exposure
Color/visual appearance	Diffuse scattering	Confirmation of final design intent	Optical constant confirmation; purity and surface finish

## Specifications

Instrument	Cary 4000/5000/6000i/7000 UV-Vis and UV-Vis-NIR spectrophotometers	
Measurement modes	Absolute specular reflection at variable angle from 5–85° in 0.02° intervals Direct transmission and variable angle transmission from 0–90° in 0.02° intervals Diffuse scattering, reflection or transmission through independent sample rotation (360°) and detector positioning between 10–350° at 0.02° in intervals Absorbance, A where $A = 1 - R - T$ at variable angle without moving the sample or beam onto the sample for improved productivity and greater accuracy. Reflection/Transmission at single wavelength (read) or wavelength range (scan)	
Wavelength range	190–2800 nm	
Auto polarizer wavelength range	250–2500 nm	
Sample size	Diameter: 5 mm minimum–275 mm maximum 255 mm if detector slide mount is installed 235 mm if a depolarizer is mounted in detector slide mount  Maximum physical thickness: 30 mm using standard supplied sample holder	
Apertures	Incident beam: 1, 2 and 3 degrees Detector: 1, 1.8, 2, 3, 4, 4.4, 5 and 6°	
Dimensions and weight	<b>UMA unit</b>	<b>UMA cover</b>
Packed (LxHxW) mm	1000 x 600 x 510	600 x 445 x 530
Unpacked (LxHxW) mm	882 x 412 x 404	520 x 365 x 450
Weight, packed	21.6 kg	14 kg
Weight, unpacked	14.2 kg	10 kg