BIREFRINGENCE MEASUREMENT

EXICOR® GEN6-TW

HINDS™ INSTRUMENTS

PRODUCT BULLETIN

RETARDATION, THICKNESS AND WARPAGE ANALYSIS OF LCD AND OTHER GLASS MATERIALS

The Exicor GEN6-TW birefringence measurement system is an easy-to-use and highly sensitive instrument for measuring linear birefringence, thickness and warpage in flat, parallel-surface optical materials. The system includes a motion control system that enables the user to scan an area of a flat transmissive sample and create a birefringence/thickness/warpage map.

Quick Specifications:

Retardation Resolution/Repeatability:

0.001nm / ±0.01 nm (Retardation < 1 nm) or ± 1% (Retardation > 1 nm)

Thickness Senor Resolution/Repeatability:

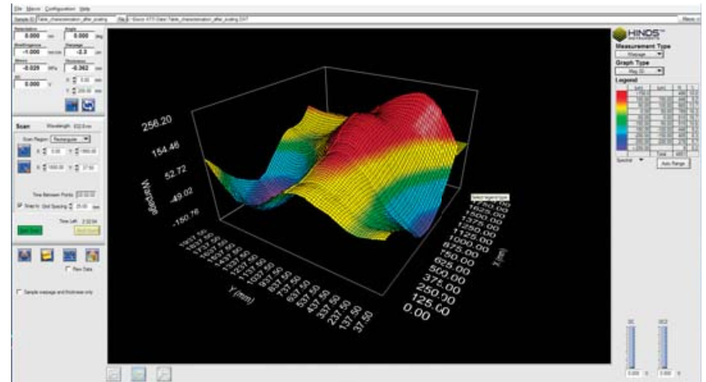
0.1 μm / ± 2 µm

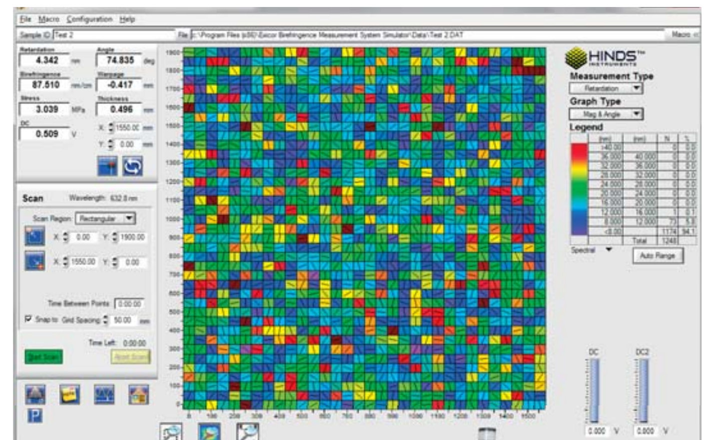
Warpage Repeatability:

±5 µm

Important Features

- Small footprint – Minimizes the factory floor space required for the equipment
- Robust Automation – Quality stages and hardware maximize uptime
- Solid Service Support – Support and spare parts centers throughout the world
- Flexible Software – Optimized GUI software. Custom features and DLL interface available
- Low Maintenance Design - Easy access to components for service





Top: Warpage map; Bottom: Magnitude and Angle map

EXICOR®
Birefringence Measurement Systems

SPECIFICATIONS

GENERAL	
System Footprint	214 cm x 281 cm
Service Access Footprint	335 cm x 400 cm (60 cm access on all sides)
Console Footprint	53 cm x 62 cm
SAMPLE TABLE	
Table Dimensions	210 cm x 190 cm
Measurement Hole Dimensions	Circular, 12 mm diameter
Measurement Hole Spacing	50 mm between holes
Layout	32 columns x 40 rows, 1280 holes total
MEASUREMENT CAPABILITY - RETARDATION	
Retardation Range	0.005nm to 120 nm
Resolution[1]	0.001 nm
Repeatability[1]	±0.01 nm (Retardation < 1 nm) or ± 1% (Retardation > 1 nm)
Angular Resolution/Repeatability[1]	0.01° / ± 0.1° (Retardation > 1nm)
Background Noise Level	0.1nm (without sample)
Maximum Sample Size	1600 mm x 2000 mm
Maximum Scan Area	1550 mm x 1950mm
Measurement Time	up to 100 pps, retardation only ≈4 seconds with Thickness and Warpage active
Modulation Frequency	50 kHz
Wavelength	633 nm
Spot size	~1 mm nominal
Demodulation Analysis Technique	Hinds Instruments Signaloc™ Lock-in Amplifiers
Measurement Units	nm (retardation), ° (angle)
Differential Stress Units	Psi or MPa (not concurrently)
MEASUREMENT CAPABILITY - THICKNESS AND WARPAGE	
Thickness Senor Resolution/Repeatability	0.1 μm / ± 2 μm
Warpage Repeatability	±5 μm
Thickness Sensor Range	0 ~ 3 mm
Measurement Time[2]	≈ 4 seconds

[1] Typical performance at 5nm retardation

[2] Measurement time: Based on the standard operating mode that measures both the retardation and the thickness/warpage in the same scan. Based on 50mm grid setting, which is the spacing between measurement holes on the Sample Table.