Axo Series

As the industry leader in full Mueller matrix polarization testing, the core measurement technologies measure all possible polarization properties (the full Mueller matrix) of a sample, and key polarization parameters (polarizer properties, retarder properties, depolarization properties) are reported to the operator.

The AxoScan™ is the fastest, most powerful polarization measurement tool available as it measures all of the polarization properties (full Mueller matrix) of a sample in 30 ms. Measurements are made in a single location, typically in a 3 mm diameter beam. With beam shaping optics, the measurement area can be reduced to a few microns, or expanded to 10 mm or larger.

The AxoStep™ is the industry's first Mueller Matrix imaging microscope. A breakthrough new instrument for polarization testing, The AxoStep measures all possible polarization properties (the complete Mueller Matrix) for every pixel in an image in as little as 14 seconds. Different microscope objectives are available for measuring different sample areas.

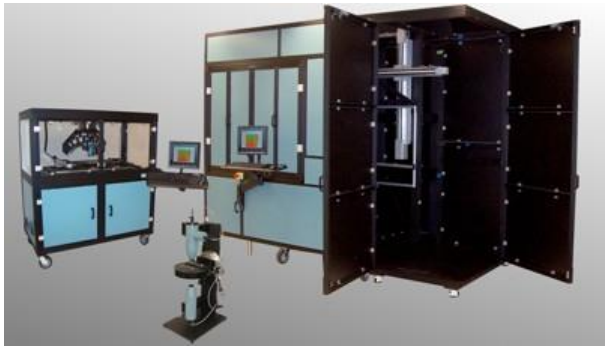
Features

Both Bench top R&D and full scale Production systems are available.

Fixtures – A wide range of fixtures are available for both the AxoScan and the AxoStep. Fixtures for mounting to an optics table, reflection testing, automated XY mapping, and automated tilt and rotation. Fixture range from bench-top systems for microscopic measurements of cell phone camera lenses, to large industrial machines with robot loading of three meter long (Gen 10) LCD motherglass.

Light Sources – A range of light sources offered for our measurement systems, including tunable visible sources (400 nm to 800 nm), ultra-stable single-wavelength LED sources, and lasers. Expert support ready to help you select the right source for your application.

Measurement



• Fast, accurate and reproducible measurements

• Integrated Reference Standard for precision calibration

• Unlimited XY scanning of the entire glass area

• Software easily customized

• Advanced camera system automatically corrects glass position loading errors

• Glass supports have automatic position adjustment

Design

• Multi-head systems designed for the production environment.

• Robot & Human entrance for automated or manual loading

• Ease of access for maintenance and manual loading

• Sliding doors for ease of system entry

Customized

• Built in Operator control panel

• Custom interface to factory automation

• Customized Scaled Systems for all glass sizes

• Optical configurations available for higher speed or lower cost

• Carbon-fiber rails hold glass without bending

• Integrated UPS to prevent external power loss

• Mirrored hard disk drives on main system computer for data protection

Safe

• Sensors to detect glass loaded, robot fork entry, unsafe support rail locations, human entry, others.

• Integrated ionizers to reduce charge buildup / ESD suppression

• Safety light curtains on all openings

Specification

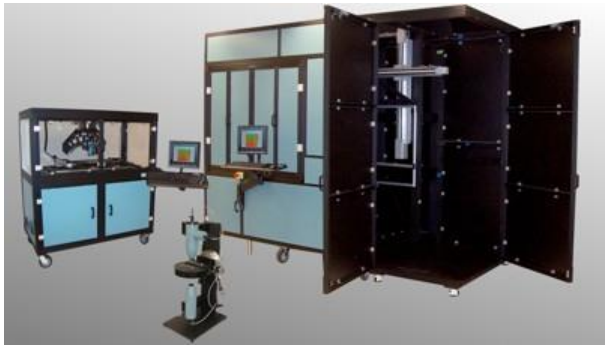
Axo Series instruments are designed and engineered for flexible configuration, low cost of ownership and extreme measurement accuracy. Specifications are listed below.

Axo Series *Polarization / Cell Gap*		Specification
		Axo Scan
Performance		
	Measurement Area	Customizable from 3mm
	Measurement Time	2.5 seconds per location
	Measurement Parameters	Cell Gap, Rub direciton, pre-tilt, twist angle
	Sample Size	G2 panels up to G8
	Repeatability	Rub direction, pretilt angle, cell gap / 3σ = 0.005μm, / 3σ = 0.1 ° twist angle
		Axo Step
Performance		
	Measurement Area	8.6mm × 6.9mm ~ 0.043mm × 0.034mm (different objective lens)
	Measurement Time	15 seconds per location
	Measurement Parameters	Top / Bottom sides, twist angle cell gap, Rub direction, pre-tilt angle
	Sample Size	G2 panels up to G8
	Repeatability	sample dependant
Hardware Configurations		Variable with Application
Facilities Requirements		Variable with Application

Applications

AxoScan

AxoScan is used in a wide range of applications, including:



• LCD Panels (cell gap, pre-tilt, etc).

• LCD Films (polarizers and compensation films)

• Optical Components (waveplates, beamsplitters, etc.)

• 3D Display Components (3D glasses, patterned retarder elements, LC lenses)

• Biological Samples (ex. collagen alignment in tissues)

• Stress Analysis (injection molded lenses and windows)

• Reflective Devices (LCOS displays)

• Fiber Optics (PMD measurement, PM fiber alignment)

AxoStep

AxoStep is used in a wide range of applications, including:

• LCD Panels (cell gap, pre-tilt, etc.)

• Variation within individual pixels

• Multi-domain pixels

• Damage due to laser repair

• Micro-optical Components

• Patterned waveplates and polarizers

• Fiber optic components

• 3D Display Components

• Film patterned retarders (FPR) and FPR polarizers

• Quantitative Polarization Microscopy

Models

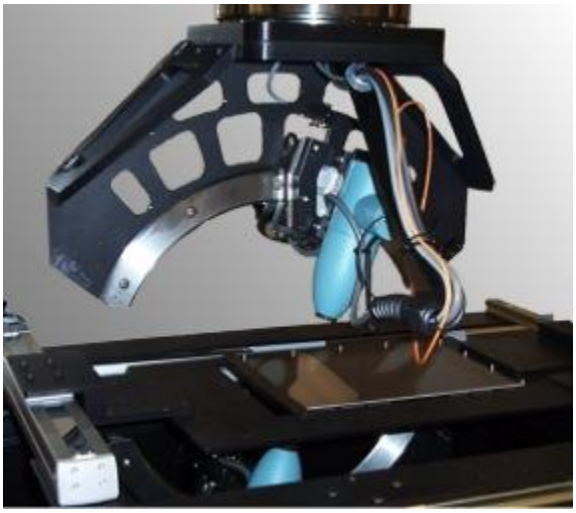
AxoScan

The AxoScan system measures polarization properties in a single point of the sample in only 30 ms. AxoScan is the industry standard for excellence in LCD film and panel testing, and finds many other applications in testing optical components and biological samples.

AxoStep

The AxoStep is the industry's first Mueller Matrix imaging microscope. The system creates a full 2D map of all possible polarization properties in areas ranging from 9 mm x 7 mm down to 40 µm x 30 µm.

Panel Mapper



The Panel Mapper systems combine tilt and rotation measurements with arbitrarily large XY table, allowing complete characterization of large samples across the entire surface of large samples. All systems are engineered for clean room use and can be used in a laboratory or on the production floor.

Film Mappers

For very large film samples, such as cross-web pieces cut from the beginning or end of a full roll, dedicated FilmMapper systems allow the largest possible film samples to be tested. A vacuum film mounting plate is permanently installed in the systems.

The AFM-2000x500H Film Mapper