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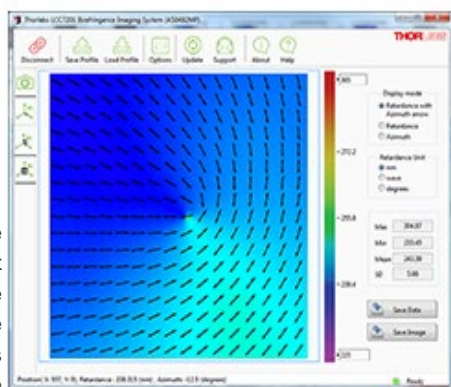


LCC7201 - January 27, 2022

Item # LCC7201 was discontinued on January 27, 2022. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

BIREFRINGENCE IMAGING SYSTEM

- ❑ **Measurements of Retardance and Azimuth (Fast Axis Orientation) in Flat Samples**
- ❑ **Measure Ø20 mm Field of View in <15 s**
- ❑ **Includes Three Sample Holders for Ø0.5", Ø1", and 2" x 2" Optics**



Screenshot of the 2D Measurement Display Mode Using the LCC7201's Software



LCC7201 With Included Laptop

[Hide Overview](#)

OVERVIEW

Features

- Built-In 633 nm Light Source
- Measures Sample Retardance up to a Half-Wave (316 nm) and Azimuths up to $\pm 90^\circ$
- Ø20 mm Field of View
- Complete Imaging System Includes Software and Laptop
- Compatible with MLS203-1 XY Scanning Stage
- Custom Operating Wavelengths by Contacting Tech Support

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Thorlabs' LCC7201 Birefringence Imaging System is designed for use in academic research, medical diagnostics, industrial manufacturing, and product quality assurance; for sample results please see the *Applications* tab. It measures the retardance and azimuths of flat, planar samples, such as crystals and liquid crystal devices, and is particularly well-suited for characterizing stress-induced



Sam Tesfai
 General Manager,
 Thorlabs Imaging Systems
Feedback?
Questions?

Specifications

| Specifications | |
|--------------------------------------|---|
| Light Source Wavelength ^a | 633 nm |
| Retardance Measurement Range | Standard Retardance Range: 0 to 316 nm Low Retardance Range: 0 to 100 nm |
| Azimuth Measurement Range | $\pm 90^\circ$ |
| Retardance Measurement Accuracy | Standard Retardance Range: $< \pm 10$ nm Low Retardance Range: $< \pm 1$ nm |
| Azimuth Measurement Accuracy | Standard Retardance Range: $< \pm 3^\circ$ Low Retardance Range: $< \pm 1^\circ$ |
| Measurement Rate ^b | <15 s |
| Field of View | Ø20 mm |
| Spatial Resolution | 9.77 μ m |
| Interfaces | USB 2.0 and Gigabit Ethernet |
| Camera Resolution | 2048 x 2048 Pixels |
| Dimensions | 500.0 mm (D) x 360.0 mm (W) x 672.0 mm (H) |
| Weight | 26 kg (57.3 lbs) |

birefringence. Since it is based on a liquid crystal device, there is no internal mechanical movement, leading to very stable, vibration-free operation.

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| | |
|------------------------------|--|
| Operating Temperature | 0 to 40 °C |
| Storage Temperature | -15 to 65 °C |
| Included Accessories | Laptop PC, Sample Holders, Birefringent Resolution Target (Item # R2L2S1B) |

The LCC7201 is designed to operate at a wavelength of 633 nm, and provides a Ø20 mm field of view. This system measures retardance up to a half-wave (316 nm) and azimuths up to ±90°. The operation wavelength can be customized to a wavelength from 405 nm to 810 nm. To customize this operational wavelength, please contact Tech Support.

- Customizable upon request. Contact Tech Support for details.
- Performance with Default Camera Settings

For sample viewing, the LCC7201 includes Thorlabs' MLS203P2 sample holder. It also includes three sample holder inserts that are sized to hold Ø0.5", Ø1", and 2" x 2" optics. The MLS203P2 provides manual adjustment in the X direction, which is useful for samples larger than the Ø20 mm field of view. Additionally, larger samples can be scanned by upgrading the system with Thorlabs' MLS203-1 XY Scanning Stage, which provides manual and motorized adjustment in both the X and Y directions. The specifications of the LCC7201 are outlined in the table to the right.

Included with purchase is a laptop with Windows® operating system and the software pre-installed. To view additional information about this system's software features and sample measurement results, please refer to the *Software* tab above.

[Hide Software](#)

SOFTWARE

The LCC7201 system includes a Windows®-based software package that contains everything needed for system control and data acquisition. Please click the Software button to the right to download the latest software for this system.

Software
Version 1.3.0

Click the button below to visit the LCC7201 Birefringence Imaging System software page.

Features

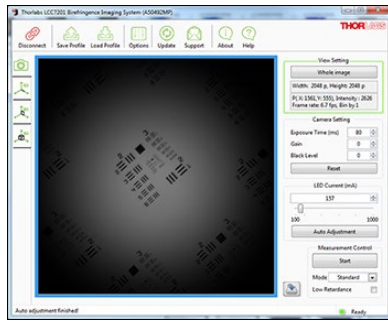
- Standard and Low Noise Modes for Retardance Measurements
- Selectable Region of Interest (ROI)
- Customizable Measurement Rate
- Adjustable Dynamic Camera Settings (Gain, Exposure Time, Black Levels)
- Overexposure Detection
- Auto Adjustment of Light Source Level
- 1D, 2D, and 3D Measurement Result Displays
- Data Output in Binary and CSV Formats



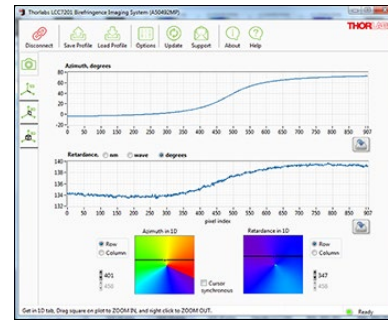
The LCC7201 software includes two modes, Standard Mode and Low-Noise Mode, to measure a sample's retardance. Standard Mode provides a higher measurement rate with a lower signal-to-noise ratio, while Low Noise Mode provides a lower measurement rate with a higher signal-to-noise ratio. An exposure time of 30 ms is set as the default, which allows a measurement to be finished within 15 seconds in Standard Mode and 3 minutes in Low Noise Mode.

These two modes provide two ranges of measurement accuracy, Standard Retardance Range and Low Retardance Range. Standard Retardance provides a measurement accuracy of <±10 nm for retardances in the 0 to 316 nm range, and <±3° for azimuths over the entire measurement range. Low Retardance Range will improve the measurement accuracy of <±1 nm for retardances in the 0 to 100 nm range, and <±1° for azimuths over the entire measurement range. The minimum exposure time is 1 ms, and the maximum exposure time is 10000 ms.

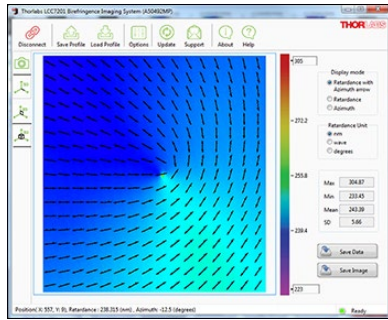
Below are screenshots from the included user interface, showing the different measurement display modes available. The 1D, 2D, and 3D views are all of an m=1, zero-order vortex half-wave plate.



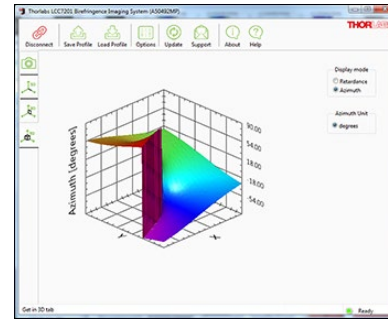
Click to Enlarge
Camera Preview Showing Included Test Target



Click to Enlarge
1D View



Click to Enlarge
2D View



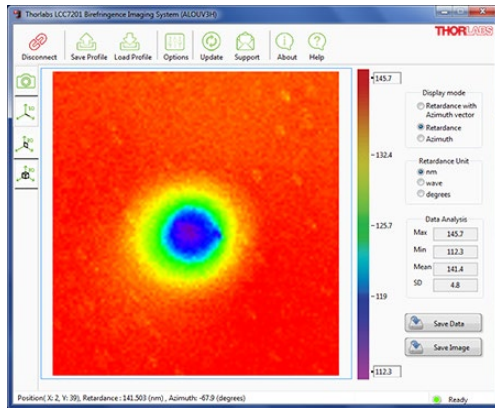
Click to Enlarge
3D View

[Hide Applications](#)

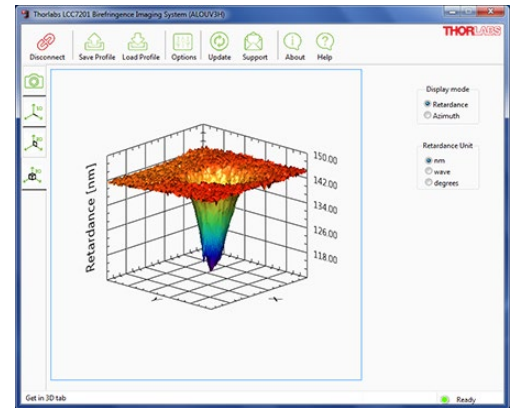
APPLICATIONS

Application Image Gallery

Inspection of Thorlabs' Quartz Quarter-Wave Plate After LIDT Test

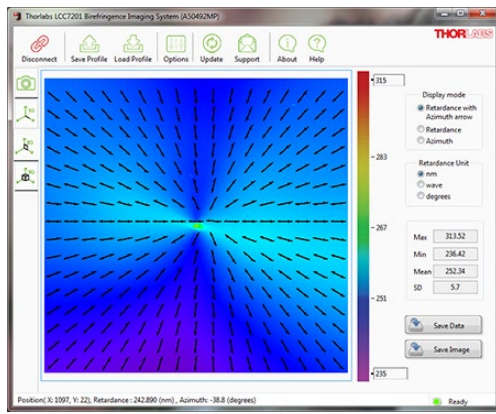


Click to Enlarge
Wave Plate Retardance in 2D View



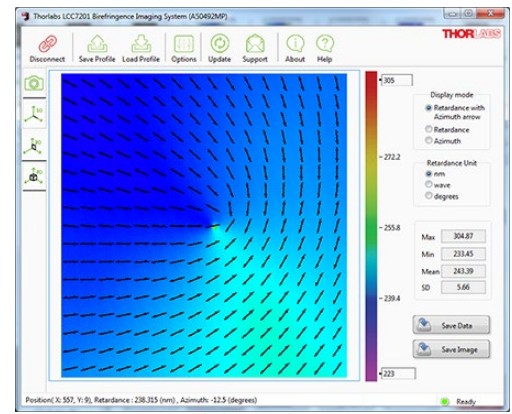
Click to Enlarge
Wave Plate Retardance in 3D View

Inspection of Thorlabs' Patterned Liquid Crystal Polymer Retarders with Fast-Axis Azimuth Distribution



Click to Enlarge

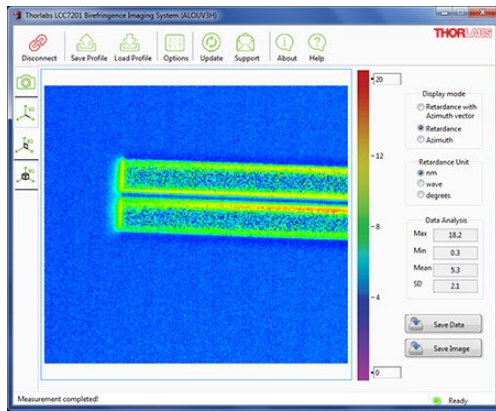
Thorlabs' m = 2 Vortex Retarder Azimuth and Retardance in 2D View



Click to Enlarge

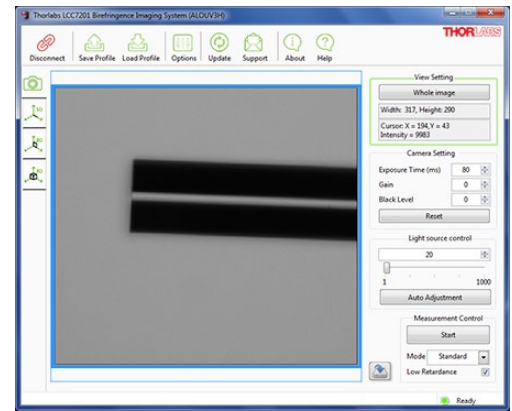
Thorlabs' m = 1 LCP Vortex Retarder Azimuth and Retardance in 2D View

Inspection of Stress- and Strain-Induced Birefringence in Optical Fiber



Click to Enlarge

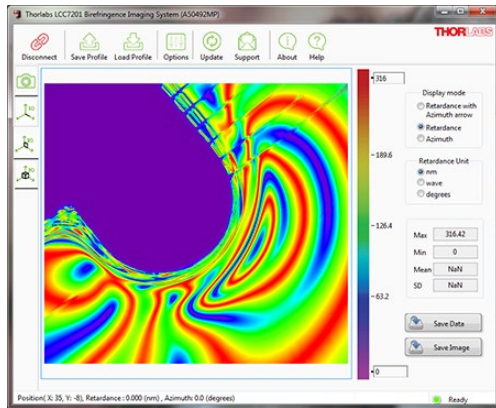
Optical Fiber Retardance in 2D View



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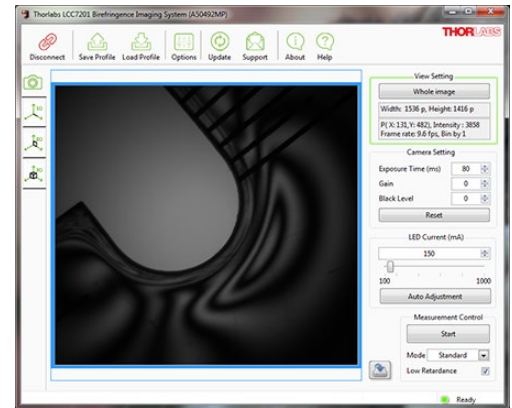
Optical Fiber in Preview

Analysis of Stress- and Strain-Induced Birefringence for Materials Research and Product Development



Click to Enlarge

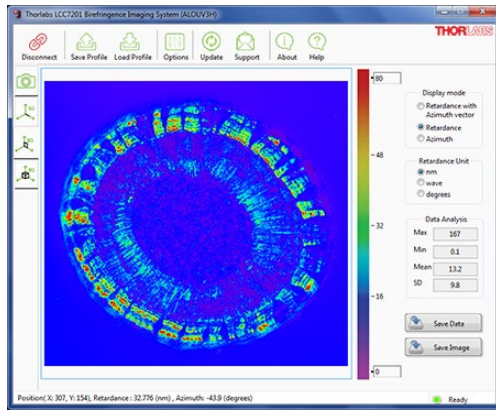
Plastic Ruler Retardance in 2D View



Click to Enlarge

Plastic Ruler in Preview

Visualize Cell Birefringence for Cell Behavior Analysis or Cell Screening



Click to Enlarge
Xylophyta Dicotyledon T.S. Stem in 2D View



Click to Enlarge
Xylophyta Dicotyledon T.S. in Preview

[Hide Demo Rooms](#)

DEMO ROOMS

Try Our Microscopes In Person or Virtually

Thorlabs' sales engineers and field service staff are based out of eight offices across four continents. We look forward to helping you determine the best imaging system to meet your specific experimental needs. Our customers are attempting to solve biology's most important problems; these endeavors require matching systems that drive industry standards for ease of use, reliability, and raw capability.



Click to Enlarge
China Demo Room

To schedule an in-person or virtual demo appointment, please email ImagingSales@thorlabs.com.



[Contact Us](#)

Thorlabs' worldwide network allows us to operate demo rooms in a number of locations where you can see our systems in action. We welcome the opportunity to work with you in person or virtually. A demo can be scheduled at any of our showrooms or virtually by contacting ImagingSales@thorlabs.com.

Customer Support Sites (Click Each Location for More Details)

Newton, New Jersey, USA



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- Bergamo®-II Seies Multiphoton Microscopes
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- Single- and Multi-Channel Cerna®-Based Confocal Microscopes
- Confocal Upgrade for Existing Systems
- Cerna Hyperspectral Imaging System
- Multiphoton Mesoscope
- Birefringence Imaging System
- OCT Systems: Telesto and Ganymede™



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Demo Rooms

- Ganymede™ Series SD-OCT Systems
- Telesto® Series SD-OCT Systems
- Telesto® Series PS-OCT Systems
- Atria® Series SS-OCT Systems
- Vega™ Series SS-OCT Systems



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Demo Rooms

- Four-Channel Cerna®-Based Confocal Systems
- Cerna®-Modular Brightfield Microscopes
- OCT Systems: Ganymede™



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Demo Rooms

- Bergamo®-II Seies Multiphoton Microscopes
- Single- Channel Cerna®-Based Confocal Microscopes
- Galvo-Galvo or Galvo-Resonant Confocal Upgrade for Existing Systems
- OCT Systems: Telesto® and Ganymede™

Birefringence Imaging System

| Part Number | Description | Price | Lead Time |
|-------------|---|-------------|-----------|
| LCC7201 | Customer Inspired! Birefringence Imaging System | \$31,777.75 | Lead Time |

