

Company Overview

A History of Engineering Excellence

I dex adds cameras, filter wheels, and focusers to their system solution toolbox

Experience

Finger Lakes Instrumentation has been supplying high performance imaging solutions to a wide variety of markets for 20 years. We began designing and manufacturing cooled CCD cameras in 1998. We incorporated in 2000. Since that time we have shipped thousands of cameras to over 50 countries worldwide.

Our first cameras were designed for astronomy and astrophotography, but we soon found customers in other applications, including fluorescence imaging, TEM, chemiluminescence, x-ray, forensics, and spectroscopy.

We have designed CCD cameras for more than 50 different CCDs from ON Semi, e2v, Sony, Hamamatsu, and Fairchild. We currently manufacture cameras using more than 40 different CCDs. In January 2018 we introduced our first cooled scientific CMOS cameras. We also develop best-in-class accessories for imaging, including high speed filter wheels and precision focusers.

Customers

The majority of our sales are sold to life science instrumentation companies who integrate our cameras and filter wheels into their products. In the past, many customers saw FLI as an “astronomy camera” company because of the award-winning images taken by our astronomy customers. Astrophotography pushes the boundaries of image acquisition and processing and is ideal for showing the virtues of our cameras.

Electrophoresis gels and microtubing plates are not as photogenic. In addition, companies using our cameras in their products normally want to remain anonymous.

Sensors optimized for one market quickly find homes in other applications. Eliminating channel cross-talk in a multi-channel astronomy camera benefits life scientists using the same sensor. Increased frame rates developed for life scientists were quickly adopted for space-related applications needing higher time resolution.

Markets

Every FLI product is designed and manufactured in New York, USA. The majority of our products however are exported! We supply to OEMs in North America, Asia, the Middle East, and Europe. Our customers have the confidence to install our products in remote automated observatories from Finland to the equator to Antarctica, all around the globe.

FLI is ready to assist you with your camera requirements whether you need hundreds of cameras with consistent batch to batch performance or a single camera optimized for a unique application.

FLI is a registered trademark of I dex Health & Science.

Cooled Cameras

Why Cool the Sensor?

Cooling improves the signal-to-noise ratio and minimizes cosmetic defects in sensors.

Kepler

FLI's new Kepler series of cooled cameras supports higher throughput, up to 35 channels, and a variety of new sensors, including scientific CMOS. The Kepler KL400 has high sensitivity (95% peak quantum efficiency) coupled with low noise (1.5 electrons) even at video frame rates. The KL4040 is a high QE front illuminated camera with a generous 52mm imaging diagonal. The game changing KL6060 features a 38MP, 87mm diagonal sensor. The KL400 & KL6060 are available with front or back illuminated sensors.



Modularity

The majority of FLI cameras are exported; to minimize shipping costs, Kepler's shutter, fans, and digital board have all been designed to be user-replaceable.

Cooled CCD Cameras

ProLine

ProLine cameras offer the deepest cooling of our standard cameras, and provide two power and two USB connections for FLI accessories. A complete imaging system (camera, filter wheel and focuser) can be controlled with a single power and USB cable from your PC. High and low data rates are optimized using independent analog to digital converters. Both the inner and outer chambers are sealed for harsh environments.



MicroLine

MicroLine cameras cover a broad range of possibilities, from small interline transfer sensors with a C-mount front flange to the massive 50-megapixel ML50100. Despite being smaller and lighter than ProLine cameras, MicroLines cool within a few degrees of their larger sibling, and substantially deeper than competitive models. Smaller sensors have a shorter back focal distance than ProLine cameras. MicroLines support dual and quad channel readout with some sensors.



Hyperion

The Hyperion camera was developed to satisfy a single customer's need for MicroLine performance in a package shorter from front to back. Since that time, demand for Hyperion cameras has grown to rival the MicroLines. Based on the same electronics as the MicroLines, Hyperions are similar in performance. Hyperions do not support large shutters (65mm).



High Speed Filter Changers

Industry-Leading Filter Exchange Times

Some applications require rapid change of filters in order to observe different spectral ranges as close together in time as possible. FLI's high speed filter changers represent a major leap forward in speed and ease of use. Optimized hardware cuts filter wheel move times in half even with a fully loaded wheel. Software does not need to be manually "tuned" to the number of filters or their locations. The compact units connect directly to the host computer via USB (no bulky external controller needed) and up to three can be daisy-chained from a single computer port.

- Filter wheels 2X-3X higher throughput than competitors' units
- Cube turret 10X higher throughput
- Exceptional reliability
- Automatic adjustment for filter distribution
- Easy OEM integration
- No external controller needed
- Major software program support
- Optional external shutter driven from auxiliary port
- Optional reflection reducing angled filter pockets

Servo Motors for Speed

High performance brushless servo motors are more efficient than the stepper motors used in other systems. FLI's high speed filter switchers use state-of-the-art semiconductor components, a high performance digital signal processor (DSP), and a sophisticated control algorithm. This control system continuously monitors the position of the wheel and adjusts the amount of torque delivered by the motor to get maximum speed with minimum vibration. When filters are added or removed, the controller automatically adapts to changes in load.

Servo Motors for Reliability

Encoder feedback provides more reliable positioning than open-loop stepper motors that can sometimes skip steps. In terms of usable lifetime, a HSFW continuously running at FLI has completed 250 million operations without a problem.



The compact HSFWs do not require an external controller.

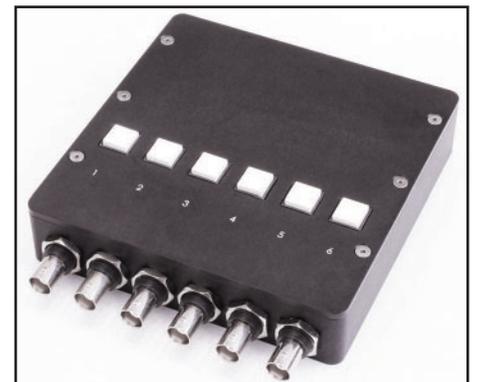
Contact FLI with your customization needs.



High Speed Filter Wheel HS625



High Speed Filter Switcher for Nikon Inverted Microscope



Optional Hand Controller for HS625

Filter Wheels and Focusers

Leading Edge Accessories

CFW Filter Wheels



CenterLine Filter Wheels



Atlas Focuser



FLI has developed filter wheels accepting a broad range of filter sizes and positions. Our color filter wheels' robust mechanical designs provide the basis for stunning, uncompromising images. Each FLI color filter wheel is precision engineered with a highly accurate no-slip drive chain and stepper motor. The large diameter pivot pin and bushings are precision ground and matched for smooth, quiet no-fuss operation. FLI color filter wheels do not use internal lights for homing, so your images are protected from stray light interference.

CenterLine color filter wheels have two overlapping filter carousels with a central aperture. Symmetrical weight distribution eliminates changes in the telescope's balance as it tracks across the sky. CenterLines are also ideal for prime focus installations where a symmetric location over the secondary mirror is beneficial. The CL-1-10 has two 5 position carousels for 50 mm square filters, ideal for the PL16803. The CL-1-14 has two 7-position carousels for 50 mm diameter filters; the CL-1-20 has two 10-position carousels for 25 mm diameter filters.

FLI developed the Atlas focuser to satisfy the demand for high precision focusing on telescopes with heavy loads. The Atlas is the finest available focuser for large sensors: 105,000 steps with 85 nm per step. The Atlas's precision drive screws guarantee superior positional accuracy and repeatability in any orientation. Custom linear bearings provide extreme torsional rigidity. The Zero Tilt Adapter™ ensures no tilt, tip, or marred surfaces.