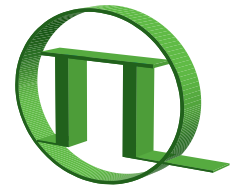


SCX 200



PICOQUANT
Unternehmen für optoelektronische
Forschung und Entwicklung

<http://www.picoquant.com>

Fluorescence Lifetime Imaging Controller

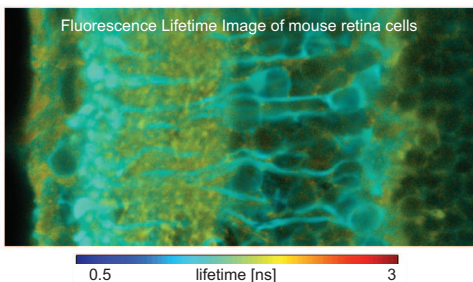


Image courtesy of F. Müller, I. Gregor, J. Enderlein (IBI-1, FZ Jülich)

- Two-channel piezo control voltage driver
- Area or point measurements
- Scan speed up to 0.1 ms/pixel
- Synchronization with TimeHarp 200
- Imaging based on versatile TTTR mode
- Acquisition software integrated into TimeHarp 200



Applications

- Fluorescence Lifetime Imaging (FLIM)
- Confocal fluorescence microscopy
- Single Molecule Spectroscopy (SMS)
- Single cell imaging
- Fluorescence Correlation Spectroscopy (FCS) and Förster Resonance Energy Transfer (FRET)
- Materials research

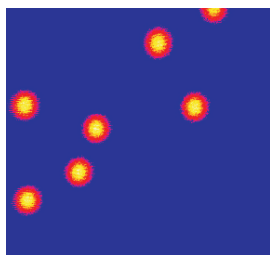
Fluorescence Lifetime Imaging Controller

The Fluorescence Lifetime Imaging Controller SCX 200 is an accessory for the TimeHarp 200 Time-Correlated Single Photon Counting board. The product allows researchers to connect a high resolution 2-D piezo scanner and collect fluorescence lifetime data synchronously with high speed scanning. Scan and data acquisition in Time-Tagged-Time Resolved (TTTR) mode are driven from the same 100 nanosecond clock, while at the same time picosecond timing is performed on laser induced fluorescence photons. This allows to acquire fluorescence lifetime images with picosecond lifetime and nanometer spatial resolution.

The setup is specifically designed to support confocal microscopy with ultimate resolution and sensitivity even down to the single molecule level. Using the powerful TTTR mode for data acquisition, the system allows extremely flexible data analysis, well beyond simple lifetime histogramming. Important examples are burst analysis, Fluorescence Correlation Spectroscopy (FCS) and Burst Integrated Fluorescence Lifetime (BIFL). Having both temporal and spatial information of all collected photons available in one data set permits the combination of all these methods to the end of vastly enhanced sensitivity and signal-to-noise ratio. Using either the PRT 400 or NRT 400 detector router, users can connect up to 4 Avalanche Photo Diodes (APD) or Photomultiplier Tubes (PMT) to perform simultaneous multi-channel time-resolved measurements. These can provide yet another dimension of information, e.g. colour and/or polarization.

The scan controller is connected to the TimeHarp's general purpose control port and delivers the control voltages for the scan controller via BNC cables. An auxiliary port is available to control a shutter or switchable lasers to avoid unnecessary bleaching of fluorescent dye molecules. The piezo control voltages can be customized for various piezo stages.

Scanning (pixel size, timing, area etc.) is controlled via the TimeHarp system software. The 32-bit software is available for Windows™ 2000, XP, Vista, 7 and provides vast functionality combined with exceptional ease of use. A driver library and demo code for custom programming is available and supports all modern 32-bit programming environments, e.g. C, Delphi™, Matlab™ and the popular LabVIEW™. Basic data visualisation software is supplied with SCX 200. Further analysis is possible via custom programs or advanced software available from PicoQuant.



Measurement Example

Scanned image (300x300 pixel, 7.3 x 7.3 microns) of single fluorescent latex beads (500 nm diameter). The excitation was carried out at 638 nm and the acquisition time per pixel was 1 ms. [Böhmer M.; Pampaloni F.; Wahl M.; Rahn H.J.; Erdmann R.; Enderlein J. "Time-resolved confocal scanning device for ultrasensitive fluorescence detection" Rev. Sci. Instrum. 72, 2001, 4145-52.]

Specifications

Scanning

Scan speed	100 μ s to 3.2 ms / pixel, in steps of 100 μ s
Scan area	up to 4096 x 4096 pixels
Voltage range each axis	0 to 10 V (other polarities or voltages upon request)
Recommended piezo controller	P-527.2CL Physik Instrumente
Shutter control	TTL output, high level for shutter open
Connectors	Control voltages: BNC female Shutter control: 3.5 mm ear phone jack

Data Acquisition

Compatibility	TimeHarp 200 TCSPC data acquisition board and PRT/ NRT 400 router
Communication	Controlled out of TimeHarp 200 software or TimeHarp 200 custom programming library

Power Requirements

Voltage	110 to 240 V, 50/60 Hz
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Dimensions

Width	125 mm
Depth	215 mm
Height	45 mm

Further available are Fluorescence Lifetime Spectrometer; Time-resolved Fluorescence Microscopes; Upgrade kit for Laser Scanning Microscopes; Picosecond / Nanosecond Pulsed and Modulated Diode Lasers; PC Modules for TCSPC. Please call for detailed information and data sheets. **Please check our website for latest changes of specs.**

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