MW FLIM Multi-Wavelength FLIM Detector

Fluorescence lifetime imaging with spectral resolution Picosecond time resolution Simultaneous detection in all time and wavelength channels Based on BH's multi-dimensional TCSPC technique Connects directly to all bh SPC modules Adapters for non-descanned outputs of multiphoton microscopes Adapters for confocal microscopes

Upgrade for existing bh FLIM systems





Mouse kidney tissue, autofluorescence. Zeiss LSM 510 NLO multiphoton microscope, non-descanned detection

The bh MW-FLIM system is based on a 16-channel multi-anode PMT detector module, routing electronics, spectral dispersion optics, and BH's multi-dimensional TCSPC technique. A fibre bundle is used to transfer the light from the microscope into the entrance slit of the polychromator. Due to the large light collection area a high efficiency is obtained both for confocal detection and for non-descanned (direct) detection in multiphoton microscopes. Typical applications are multi-spectral autofluorescence imaging of biological tissue, combined FLIM and SHG imaging, plant physiology, and investigation of protein interaction by FRET.





Plant tissue, autofluorescence. Zeiss LSM 710 NLO multiphoton microscope, 2-photon excitation, non-descanned detection

More than 19 years experience in multi-dimensional TCSPC. More than 1300 TCSPC systems worldwide.

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Part List of Detector Assembly

M-SHUT field lens and shutter assembly ¹⁾ MW-FLIM fibre bundle MW-FLIM fibre adapter to spectrograph LOT MS125 spectrograph PML-16-0-C (300 to 600 nm) or PML-16-1-C (300 to 800 nm) 16 channel PMT module, with MS125 adapter

TCSPC components required

SPC-830 or SPC-150 TCSPC module ²⁾ or DCC-100 detector controller ²⁾ SPCImage FLIM data analysis software Simple-Tau 830 or 150 standalone TCSPC system³⁾

1) please specify microscope type and configuration in your order

2) PC cards, to be inserted in a Pentium PC

3) Laptop based stand-alone system, contains SPC-830 or SPC-150 and DCC-100

Wavelength range and resolution

Grating Part No.	Primary wavelength region adjustable by set screw ⁴⁾	Width of recorded wavelength interval, channel 1 to 16	Blaze Wavelength
77417	340-820 nm	300 nm	500 nm
77414 (standard)	340-820 nm	200 nm	400 nm
77411	340-820 nm	100 nm	350 nm

4) for PML-16-1, may vary due to transmission range of microscope optics

The employs BH's setup multidimensional TCSPC technique featuring multi-wavelength capability, high count rate, near-ideal counting efficiency, low differential nonlinearity, and ultra-high time-resolution. It contains the usual building blocks (CFDs, TAC, ADC) in the 'reversed start-stop' configuration together with a scanning interface and a large histogram memory integrated on a single PC board. For each photon the TCSPC module determines the time within the fluorescence decay function, t, the wavelength, λ , and the location within the scanning area, x and y. These values are used to address a memory in which the events are accumulated. Thus, in the memory the distribution of the photon density over X, Y, λ , and t builds up. With a 16-channel detector, the result contains 16 data sets for different wavelength, each containing a large number of images for different time in the fluorescence decay curve. The recording process runs at any scan rate, including ultra-high rates of resonance scanners.



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For more information please download or request

W. Becker, The bh TCSPC Handbook, 5th edition, Becker & Hickl GmbH (2012), www.becker-hickl.com Becker & Hickl GmbH, PML-16-C User Handbook, www.becker-hickl.com

Becker & Hickl GmbH, FLIM systems for Zeiss LSM 510 and LSM 710 family microscopes, www.becker-hickl.com

Becker & Hickl GmbH. DCS-120 confocal scanning FLIM systems, www.becker-hickl.com
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