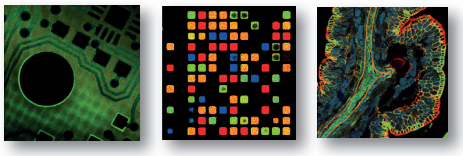
MicroTime 100

Upright Time-Resolved Confocal Fluorescence Microscope

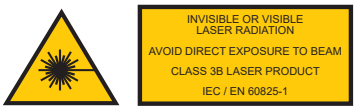
- Complete microscope with laser coupling module
- Laser wavelengths from 375 nm to 810 nm
- Multiple detector options
- Upright microscope base
- XY-scanning Piezo stage for 2D-lifetime imaging
- Wide range scanner with a scan range up to several cm (on special request)



Applications

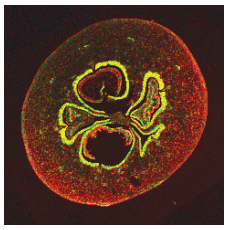
- Lifetime mapping
- Time-resolved microscopy in biology and chemistry
- Semiconductor wafer testing and analysis
- Materials research
- Cell biology and Fluorescence Lifetime Imaging (FLIM)
- Fluorescence Correlation Spectroscopy (FCS)

The time-resolved microscope MicroTime 100 contains the complete optics and electronics for recording fluorescence decays in small volumes by means of Time-Correlated Single Photon Counting (TCSPC). The system is based on a conventional upright microscope body. With the MicroTime 100, decay times down to some picoseconds can be resolved. The system allows operation at laser repetition rates as high as 84 MHz and count rates up to several million counts/sec.
A laser coupling module with sophisticated beam shaping and focusing optics allows the use of external pulsed diode lasers. The system is designed to be used with the picosecond diode lasers of the LDH Series. Standard dichroic filter blocks are utilized to guide the light onto the sample and to filter out the fluorescence light. Standard PMT modules or SPAD detectors can be provided in a single or dual channel detector configuration. All data acquisition as well as analysis functions of the MicroTime 100 are controlled by the SymPhoTime software.
Further available is an inverse microscope, the MicroTime 200, with up to 4 detection channels for simultaneous detection of either polarization anisotropy or multicolor experiments.

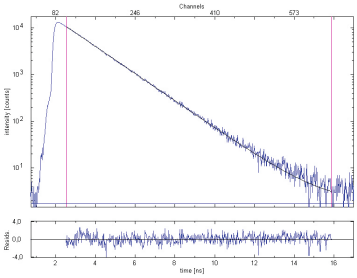


These tables are updated on a regular basis based on data of recently manufactured laser heads. Other specifications such as shorter pulse widths or higher powers than listed might be possible depening on the performance of diodes on stock. Please contact us for more information. All measurements shown may be subject to a 10 % callibration error. Each laser head undergoes an extensive burn-in test to ensure long-term stability and is shipped with a comprehensive set of test data. This test data is kept in our database, which already holds records of more than 18 years.

Measurement Example



Fluorescence lifetime image of a young pome of pyrus malus, 8 × 8 mm, excitation at 470 nm with LDH picosecond diode laser, detected emission > 500 nm, 40x objective, 300 × 300 pixel



Time-resolved fluorescence lifetime measurement of Cy5 in Ethylene Glycol on a glass substrate. Excitation at 635 nm with LDH picosecond diode laser, 20 MHz repetition rate. The plot shows the sample decay (blue) and the fitted decay (black). The recovered fluorescence lifetime is 1.5 ns.

Options

High precision piezo scanning table, wide range scanner with centimeter scanning range

Specifications

Excitation Sources				
Picosecond diode laser wavelengths	375 - 900 nm			
Repetition rate	up to 40 MHz, (optional 80 MHz)			
Detectors				
Type	PMT (PMA Series)		SPAD (PDM Series)	SPAD (SPCM-AQRH)
Spectral range[1)]	185 - 700 nm	185 - 820 nm	400 - 1000 nm	400 - 1000 nm
Dark counts (at 20 °C, typ. value)	< 50 cps	< 900 cps	< 250 cps	< 100 cps
Instrument Response Function[2)]	typ. 200 ps	typ. 200 ps	typ. 50 ps	typ. 200 ps
Data Acquisition				
Type	PicoHarp 300		TimeHarp 260 PICO	TimeHarp 260 NANO
Time resolution (bin width)	4 ps		25 ps	1 ns
Dead time	< 95 ns		< 25 ns	< 1 ns
Time channels per curve	up to 65536		32768	32768
Scanning (optional)				
Type	high precision			
Range	80 × 80 µm			
Positioning accuracy	< 10 nm			
Operation & Electrical				
PC requirements	Quad-core CPU > 3 GHz, RAM >= 4 GB, Windows™ 7/8			
Power requirements	220/240 or 110/120 VAC, 50/60 Hz			
Dimensions				
Microscope unit	320 × 600 × 600 mm (w × d × h)			

1) other detectors and cooling available upon request
2) IRF @ λ = 650 nm

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