

MicroTime 200

A versatile platform for time-resolved confocal microscopy

- Complete confocal system with laser combining unit, inverted microscope body
- Turn-key diode lasers for multicolor excitation from 375 to 900 nm
- Up to 6 truly parallel detection channels using application-optimized detection with SPADs, PMTs or Hybrid-PMTs
- Time-Correlated-Single Photon Counting (TCSPC) and TTTR modes for investigating fast dynamics with FCS and FLIM
- Two optional exit ports for additional hardware like spectrographs
- SymPhoTime 64: advanced easy-to-use software for data acquisition, analysis, and visualization
- Unique upgrades: 2focus FCS, simultaneous AFM/FLIM, deep UV excitation
- STED add-on for super-resolution imaging
- Scanning options:
 - FLIMbee galvo scanner add-on for outstanding flexibility in scanning speed with excellent spatial accuracy or piezo scanning for ultra precise point positioning and optical distortion free imaging
 - NEW** FLIMbee linescan modus in x, allowing scanning FCS

Applications

- Single Molecule Spectroscopy/Detection
- Fluorescence Lifetime Imaging (FLIM)
- Phosphorescence Lifetime Imaging (PLIM)
- Fluorescence Correlation Spectroscopy (FCS)
- Fluorescence Lifetime Correlation Spectroscopy (FLCS)
- Foerster Resonance Energy Transfer (FRET)
- Dual-focus Fluorescence Correlation Spectroscopy (2fFCS)
- **NEW** scanning FCS (sFCS)
- Pulsed Interleaved Excitation (PIE)
- Fluorescence Anisotropy (Polarization)
- Pattern Matching Analysis
- Time-Resolved Photoluminescence (TRPL)
- Antibunching



Scientific advances at the cutting edge of many fields hinges on single molecule studies. This includes, for example, the quantification of molecular dynamics or molecular properties as well as interaction studies in material and life sciences. Such a wide field of research requires a flexible instrument, which can be adapted to the individual needs. This versatility is given in the MicroTime 200, a time-resolved confocal fluorescence microscope system. This powerful instrument is ready to analyze a multitude of parameters down to the single molecule level using methods such as Fluorescence Lifetime Imaging (FLIM), FLIM/FRET, deep tissue FLIM, PIE, FCS/FCCS, FLCS/FLCCS, dual-focus FCS, anisotropy, burst analysis, simultaneous AFM/FLIM or deep UV detection, to name only the most common. Even high resolution imaging with spatial resolutions below 50 nm is possible with the new MicroTime 200 STED add-on.

Specifications

Objectives*				
Standard	PL 20x PlanAchromat, NA 0.4, air spaced, 400-750 nm PL 40x PlanAchromat, NA 0.65, air spaced, 400-750 nm			
Optional	UPLSAPO 60x PlanApochromat, NA 1.2, water immersion, 360-900 nm UPLSAPO 100x PlanApochromat, NA 1.4, oil immersion, 370-850 nm UAPON 100x Apoachromat, NA 1.49, oil immersion, 370-850 nm other oil immersion, apochromatic correction, air spaced, IR/UV-enhanced or long working distance, TIRF objectives			
Detectors				
Type*	SPAD (PDM Series)	PMA Hybrid - 40	PMA 175	SPAD (SPCM-AQRH)
Spectral range	400 - 1000 nm	300 - 720 nm	230 - 700 nm	400 - 1000 nm
Dark counts (at 20 °C, typ. value)	< 250 cps	< 700 cps	< 50 cps	< 100 cps
Photon detection efficiency	50 % at 550 nm	45 % at 500 nm	> 40% @ 400 nm	> 70 % at 700 nm
Excitation system				
	Picosecond diode lasers (375-900 nm) with repetition rates up to 80 MHz inside a compact Laser Combining Unit Single or multichannel laser driver Optional: excitation down to 266 nm Optional: integration of external laser (e.g., Titanium:Sapphire laser)			
For STED	640 nm (excitation) 765 nm (STED laser) triple species STED with 595, 640 and 660 nm excitation Easy-STED phase plate for alignment-free STED imaging			
Scanning				
	Comprehensive software control via SymPhoTime 64 Fast galvo scanner (FLIMbee) with highly flexible scanning speeds (mandatory for rapidFLIM, highly recommended for STED, not suitable for UV), see our FLIMbee brochure for details Optical distortion free 3-dimensional piezo objective scanning with 80 x 80 x 80 µm scan range at nominal 1 nm positioning accuracy, mandatory for deep UV imaging Available in combination with z stage for 3D imaging			
Data acquisition				
Type	HydraHarp 400	TimeHarp 260 PICO	TimeHarp 260 NANO	
Time resolution (bin width)	1 ps	25 ps	250 ps	
Dead time	< 80 ns	< 25 ns	< 1 ns	



Operating environment	
Power requirements	110 to 230 V, 50/60 Hz Power consumption of a standard system: 6 A @ 230V
Dimensions (w×d×h)	
Laser combining unit	600×400×200 mm (without laser driver)
Microscope and main optical unit	1150×600 mm (2 detection channels)
19" electronic rack (typ.)	600×550×900 mm
Table	Optical table with imperial or metric breadboard required. We highly recommend active vibration isolation. The table size depends on system options, please ask us for our detailed pre-installation requirements.

* Other types are available upon request.



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