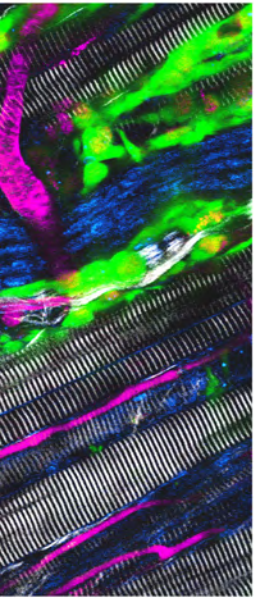
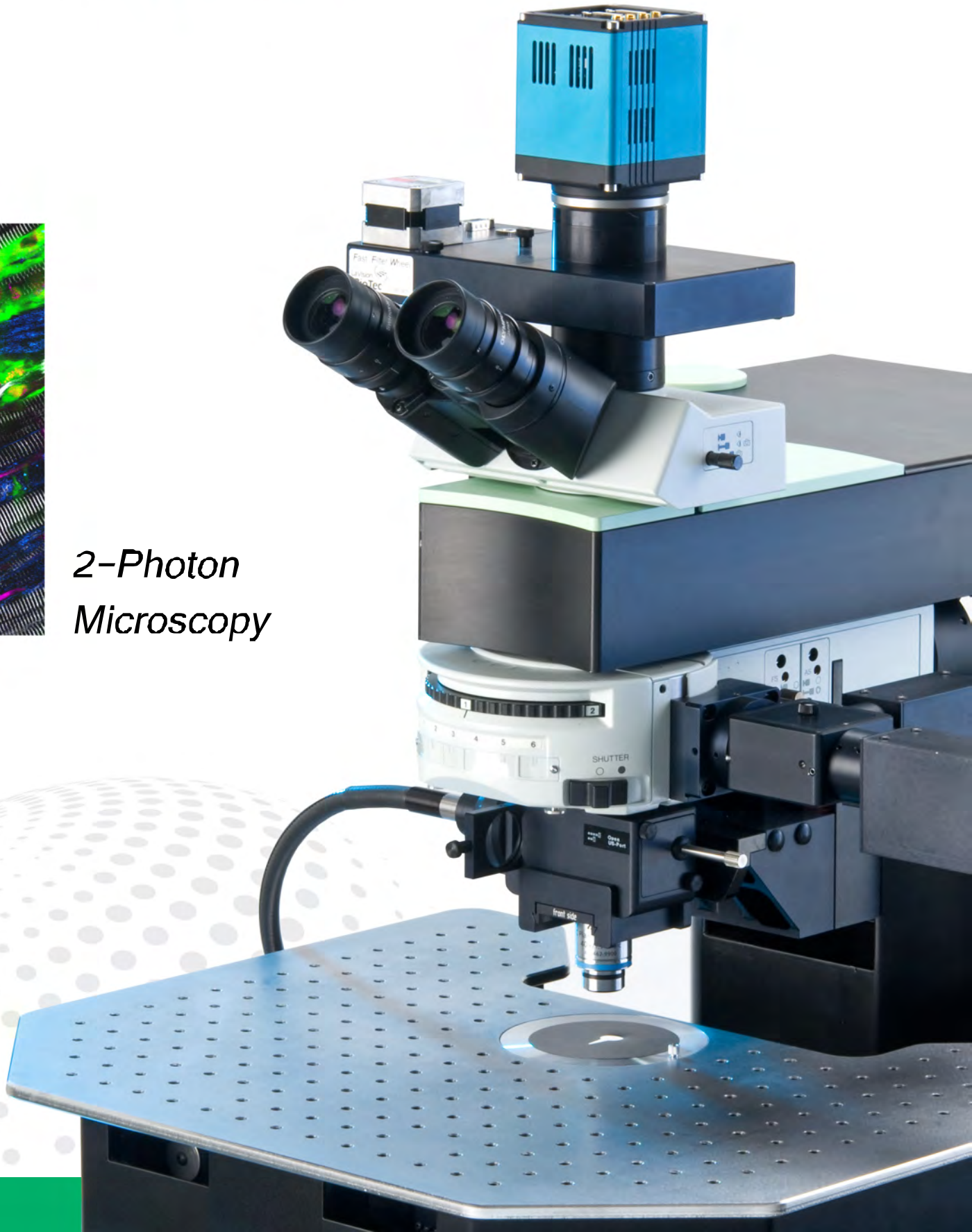


TriM Scope II.

LaVision **BioTec** 



*2-Photon
Microscopy*



TriM Scope II ■

The modular 2-Photon microscope platform for functional imaging

The TriM Scope II is a modular 2-photon microscope platform that can be adapted to various applications. It comes with an upright, inverted or both stands and allows simultaneous scanning with up to two Ti:Sa lasers, one OPO and various visible laser lines. To increase the imaging speed it can be equipped with LaVision BioTec's 64 Beam Splitter, LaVision BioTec's Cloud Scanner and a resonant scanner.

In addition to its imaging capabilities the TriM Scope II provides various line scanning and photo treatment modes that allow fast data acquisition, photo stimulation, uncaging and bleaching. Finally the TriM scope can be combined with a variety of detectors. Up to 2 imaging camera detectors for 64 beam imaging, up to 8 NDD detectors, up to 3 descanned PMT detectors and LaVision BioTec's FLIM x16 TCSPC detector for FLIM imaging.

- Ultrafast functional 64 beam imaging with up to 100 frames/s @ 2560x2160 pixel
- Integrated FLIM imaging with LaVision BioTec's FLIM x16 TCSPC detector
- SHG and THG imaging with OPO and Ti:Sa laser
- Fast intravital imaging with Cloud and resonant Scanner
- FRAP, photoactivation, photostimulation, uncaging and line imaging with Cloud scanner



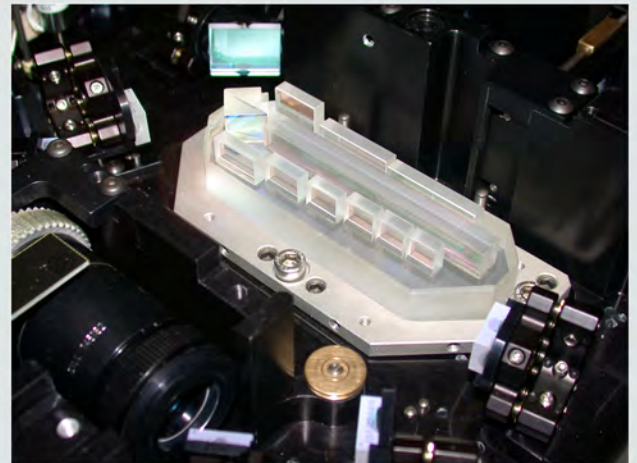
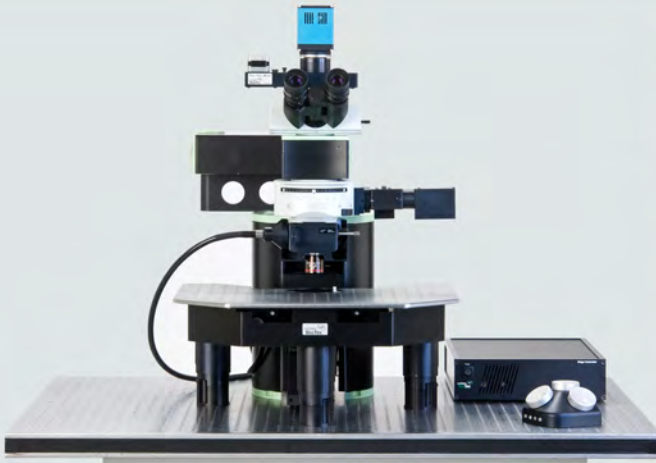
Options

Stands & Stages

The TriM Scope II scanhead can be combined with upright and inverted stands. Actually LaVision BioTec provides its own upright intravital stand, Nikon FN1, Nikon TiU, Olympus BX 51 WI, Zeiss Axio Examiner and Zeiss Axio Observer. All stand can be combined with LaVision BioTec's intravital stage that includes a hydraulic z-drive to adapt the stage to the sample height and the length of the objective lens

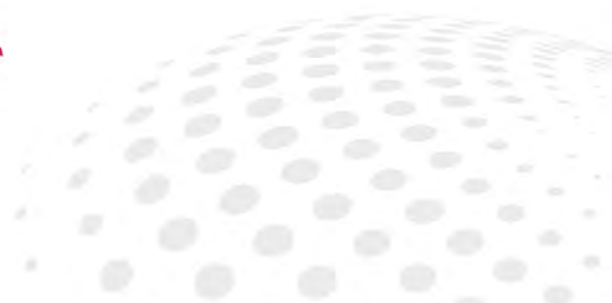
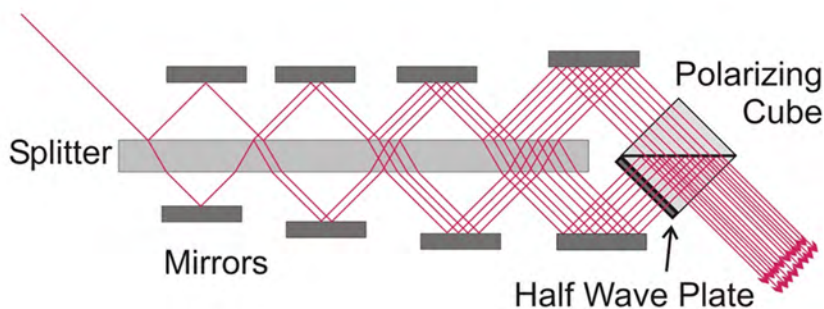
Non Descanned Detector Ports

All upright setups can be equipped with one transmission port, one port located at the fluorescence arm and one port close to the objective lens. Inverted setups can be equipped with one transmission port and one port close to the objective lens. In addition all standard imaging camera ports of the inverted stand can work as a NDD port. All ports can be equipped with 1 to 4 standard or GaAsP PMTs.



64 Beam Option

The 64 beam option is the best choice for high frame rate applications like Ca^{2+} imaging in brain slices. LaVision BioTec's monolithic flat optics beam splitter splits the one laser beam into 64 individual beams that will be scanned simultaneously. This option requests a sCMOS, CCD or emCCD camera as a detector. Depending on the camera the 64 beam option delivers up to 100 frames/s @ 2560x2160 pixel resolution

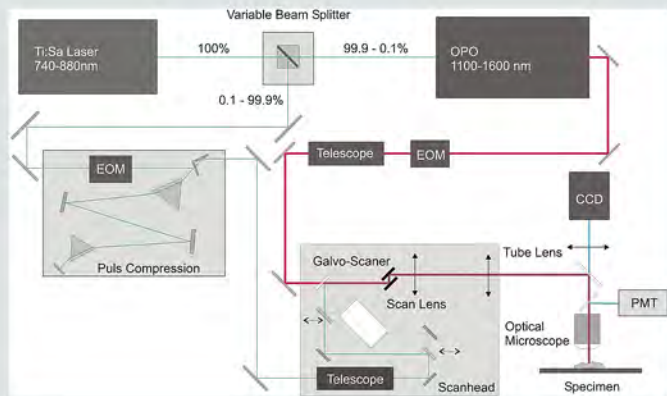
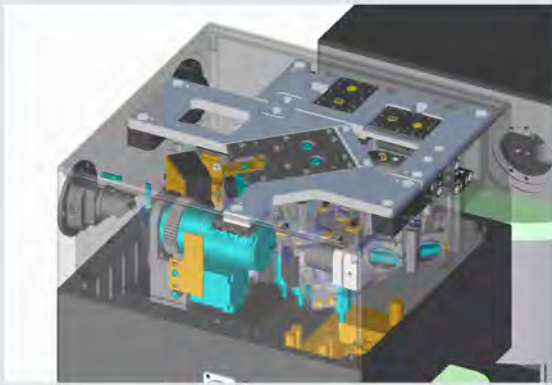


Cloud Scanner

The Cloud is a software controlled beam splitter that delivers 8 individual beams that will be scanned simultaneously. Eight foci in the object plane can be arranged by software and will be automatically adapted to magnification of the objective lens. Therefore the excitation volume will be adapted to the voxel volume without limiting the physical resolution. As a result the images are much brighter than any other single beam image. Next, the foci pattern can be adapted to individual cells or structures that should be photo treated.

Targeted Path Scanning Package

The targeted path scanning module measures the exact position of the xy galvo scanners and displays the information in the image. Therefore the laser focus can be exactly positioned for fas line imaging and laser treatment applications. Nest, it allows fast bidirectional scanning.

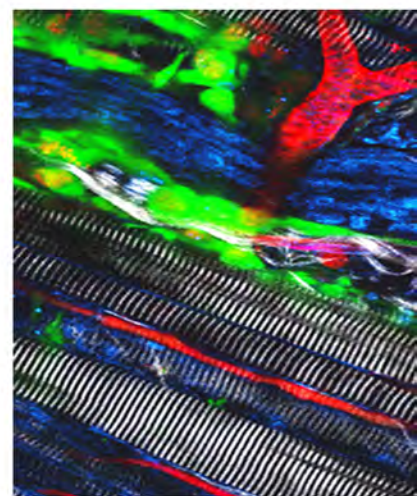


OPO Package

The OPO package is a standard option since 2005. It allows deep imaging and simultaneous excitation of blue/yellow/green and red dyes/fluorescent proteins. Custom made optics make sure that OPO and Ti:Sa focus matches exactly in the object plan.

Negative Chirp compensation

A fixed predefined negative Chirp compensation is an option for all setups. The negative chirp compensation is prism based and does not have to be adjusted during the wave length sweep.

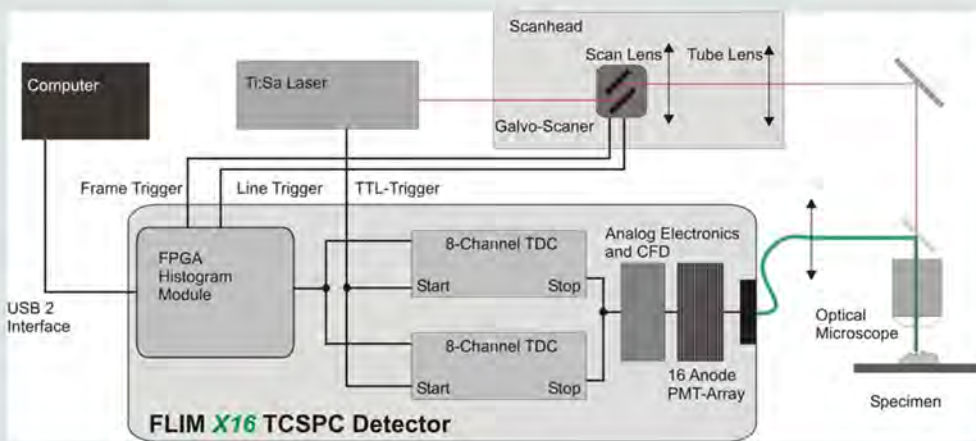
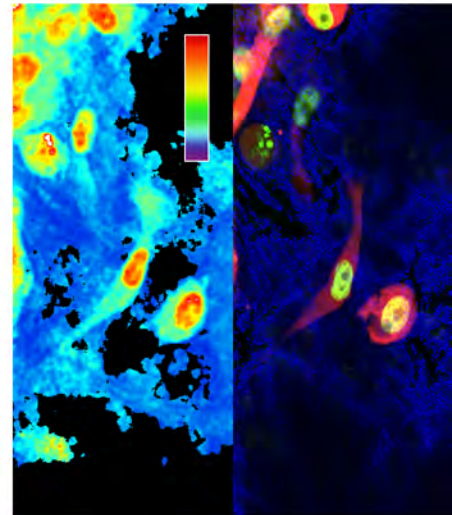


FLIM Package

The FLIM package integrates LaVision BioTec's fast FLIM x16 TCSPC detector into the TriM Scope laser scanning microscope without limiting its imaging capabilities. The FLIM x16 detector is integrated into the software package and does not require any additions computer or software equipment. As the FLIM x16 detector allows 78 MHz count rate it does not compromise the scan rate.

Confocal Package

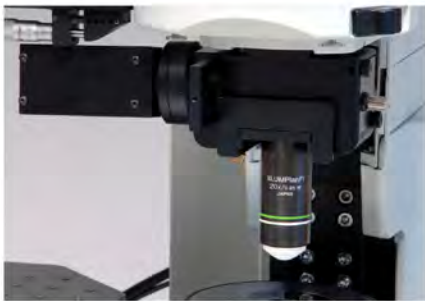
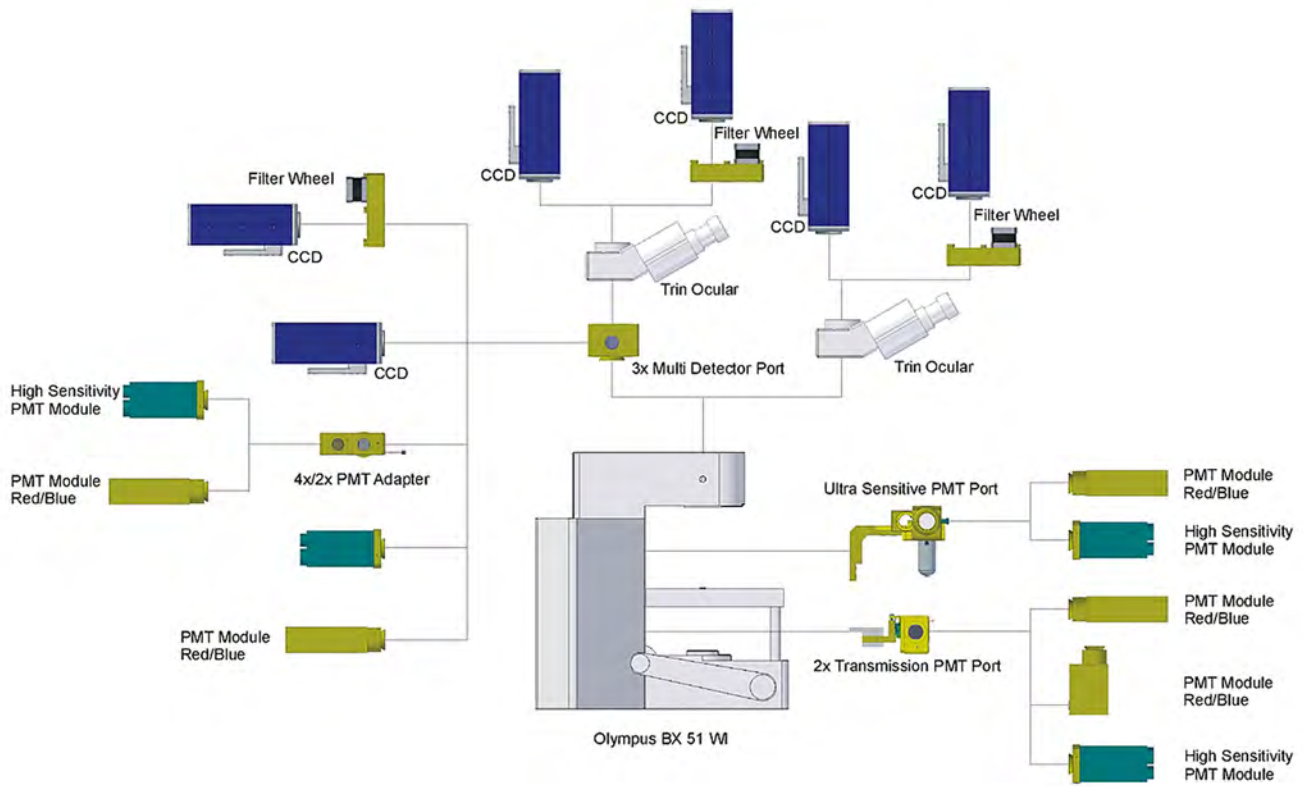
The TriM Scope can be equipped with up to 3 confocal detectors and LaVision BioTec's visible laser module that includes up to 5 different .



Power Modulation Package

The Power modulation package is designed to serve applications like FRAP, photo-stimulation, photo-activation and uncaging require a precise focus positioning and laser power adaptation. In addition, the laser scanning microscope has to switch between laser treatment mode and imaging mode within ms. The Power modulation package provides the functionality. It allows to image or treat combinations of individual points, lines, and region of interest in the field of view. In combination with AOMs the laser power can be adapted precisely to the individual region within μs .





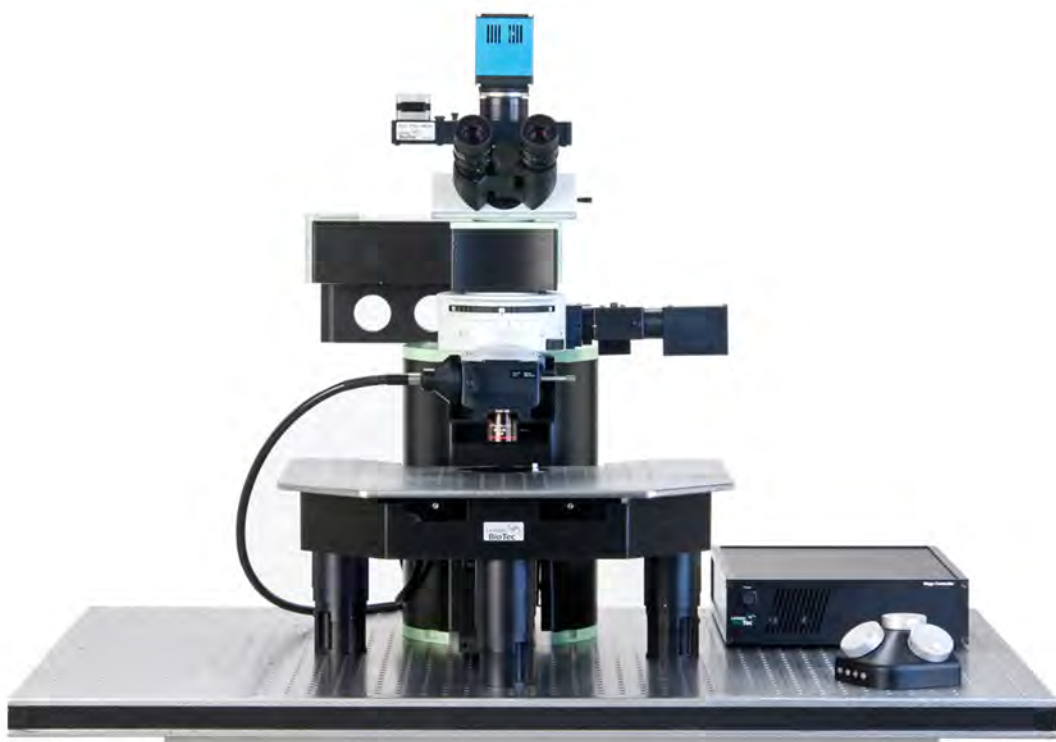
Scan Rates @ 250x250 pixel resolution						
FOV / μm^2 (20x Objective lens)	Unidirectional			Bidirectional		
	Max scanner frequency / Hz	Min frame time / ms	Max frame rate / Hz	Max scanner frequency / Hz	Min frame time / ms	Max frame rate / Hz
500 x 500	800	397	2.5	2000	129	7.7
400 x 400	1200	294	3.4	2500	106	9.3
300 x 300	1600	241	4.1	3000	89	11.1
200 x 200	2000	207	4.8	3500	78	12.8
100 x 100	2400	190	5.2	4000	66	15.0
50 x 50	2600	178	5.6	4000	66	15.0

TriM Scope Scanhead

The scanhead is rigidly mounted on top of the fluorescence arm of most scientific upright microscopes and allows simultaneous imaging with up to 2 Ti:Sa and 1 OPO laser beams.

Including:

- a. Motorized telescope
Motorized telescope for adapting the beam diameter to the back aperture of the objective lens. 8 positions definable
- b. 2 axis galvanometric XY-scanner
Max. # of pixel: 14500 x 14500 unidirectional
1000 x 1000 bidirectional





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