

MPX-SERIES MULTIPHOTON MICROSCOPES

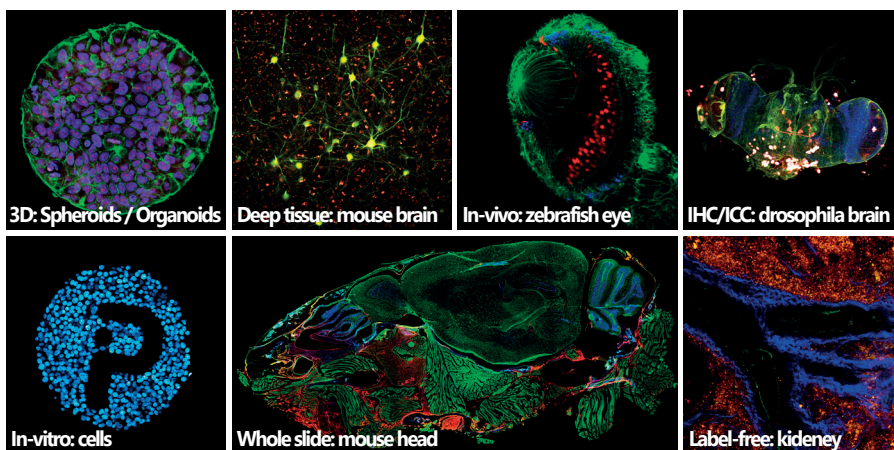
TURN-KEY - FLEXIBLE - MULTIMODAL - COMPACT



- Offers multiple imaging modes
- Built-in laser or 3-Photon-ready
- Dual-output tunable wavelength and low-noise 1030 nm fixed wavelength
- Large 2" detection optics
- Up to 4 ultra sensitive GaAsP PMTs with low dark count rate in epi or transmission
- Fully flexible 360° scanhead for inverted, upright or oblique angle imaging
- Integrated workspace illumination
- Easy mode switching via software
- User-friendly, compact, and air-cooled

The MPX-series **multiphoton multimodal imaging platform** is highly modular, offering two standard models that can be customized with options and accessories. Users have the flexibility to design a **multiphoton microscope that suits their specific needs and budget**. The scanhead can be easily configured in various positions, and the modular design allows for future upgrades and the addition of extra features on the same platform.

	MPX-1030	MPX-TUNE
First wavelength: 1030 nm	✓	✓
Second wavelength: 765 - 940 nm (tunable)	✗	✓
Options: Widefield, Resonant-galvo-galvo, Adaptive Optics, Optogenetics, FLIM, CARS, SRS		



Broad range of applications:

- 2D/3D/4D imaging
- In-vitro & in-vivo
- Whole slide imaging
- Label-free & IHC/ICC
- Non-destructive
- Deep tissue imaging
- Pathology & Cancer
- Neuroscience
- Optogenetics
- Tissue Engineering & Bioprinting
- Spheroids/Organoids

SPECIFICATIONS

Laser source: built-in femtosecond lasers	MPX-1030	MPX-TUNE
Single-wavelength: 1030 nm	✓	✓
All parameters @ sample: 100 MHz (40 MHz**), >600 mW, <140 fs @sample		
Second wavelength: 765 - 940 nm (tunable in range)	X	✓
100 MHz, >200 mW / output, <140 fs @sample		

(I) Multiphoton fluorescence imaging	
Motorized laser power control	0.5 % - 100 %
Scan path	Galvo-galvo or resonant-galvo-galvo scanner*
Scan speed (galvo-galvo / resonant-galvo-galvo)	4.6 fps at 512 x 512 pixels 0.3 fps at 2048 x 2048 pixels Pixel dwell time: 0.8 to 32 μ s
Field of view (FOV)	20 mm diagonal square (max) at the intermediate image plane
Beam diameter @ objective back aperture	22 mm
Point spread function	Depending on installed objective
Scan zoom (digitally via ScanImage)	1x to 99x
Scan size	Up to 2048 x 2048 pixels (both bi- and unidirectional)

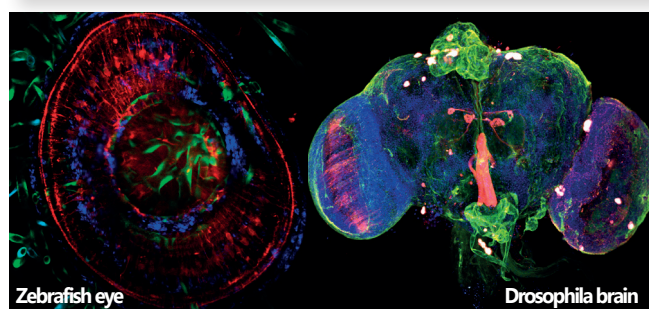
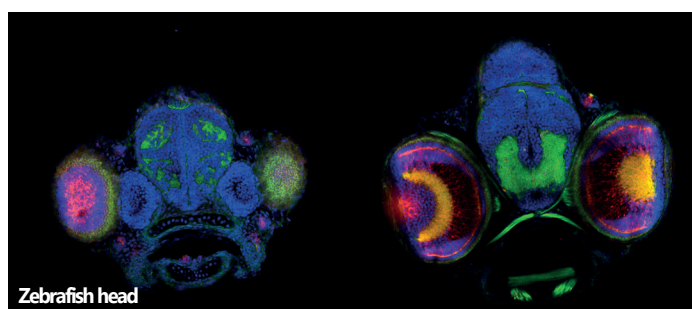
Multiphoton signal detection	
Detection	Non-descanned fluorescence excitation detection, up to 4 PMTs, HDDs, SiPMs or SPADs in epi or transmission.
Collection optics	Extra-large highly efficient 2" achromatically compensated detection optics, collection of fluorescence photons within +/- 12° from objective back aperture.

(II) Widefield fluorescence imaging	
Lightsources	White-light LED or up to 9 channel solid-state based illumination.
Filter set	Excitation, dichroic and emission filter sets individually selectable, matching illumination light source option.
Fluorescence camera	sCMOS monochrome, 6.5 μ m pixel size, readout noise 2.1 med e-, q.e. up to 80 %, spectral range 370 nm - 1100 nm, dark current (typ.) 15 e- / pixel / s. All other major fluorescence camera models can be integrated.
Widefield options	Olympus OEM catalogue, such as binoculars, trinoculars, Köhler illumination, multiple camera ports. Wide selection of evident. Olympus or OEM catalogue possible.

Software	
ScanImage Basic or Premium	Laser scanning
Chromogazer™	System monitoring & modality change
MS Windows™	PC operating system
ImageJ / Fiji	Image post-processing
Matlab	Scanimage API and acquisition scripts for fully autonomous imaging

Controller	
Umbilical	Non-detachable umbilical between controller and scanhead, >2.0 m length.
Embodiment	Stand-alone controller on wheels.
Cooling	No chiller, fully aircooled.
Power	Single phase, 85 - 240 VAC, 10 A max (max 800 W total power consumption).
Built-in PC hardware	ATX gaming board, AMD Ryzen, 64 GB RAM, 500 GB SSD, 4 TB HDD, Quadro RTX GPU. High performance PC platform or better.
Size scanhead	50 cm x 40 cm x 15 cm (WxHxD)
Operating environment	18°C - 27°C. Extended operating conditions available.
Storage temperature	-15°C to +50°C.
Humidity	10% - 90% (non condensing)

Objectives	
Turret	3-positions, motorized & software controlled
Turret threadings	M32 x 0.75
Objectives	Scan optics compatible to all major objective manufacturers. Optimized for state-of-the-art high-NA objectives.



OPTIONS / MODALITIES

Resonant-galvo-galvo

*Resonant-galvo-galvo

30 fps at 512 x 512 pixels
(8 kHz resonant galvo CRS8K)

* up to 100 Hz

@ full FOV

@ line scan

Motion control / upright and inverted

Microscope body
(scanhead) motion

Fully flexible 360° scanhead for inverted, upright or oblique angle imaging
Up to 5-axis system with tip-tilt function. Easily changeable to an inverted setup that can be done by the user.

Piezo objective scanner

Various piezo objective scanners can be integrated for fast z-scanning.

Adaptive optics

Adaptive optics transmissive wavefront modulator (Phaseform) for enhanced image quality and penetration depth with up to 7th radial order Zernikes, 63 actuators.

Neuroexplorer bundle

The Neuroexplorer, has been unveiled for deep tissue imaging. This device combines various imaging techniques to simplify functional and intravital imaging, and it offers bundles tailored for awake and sleeping mouse experiments, including features like stable head fixation and wireless vital signs monitoring during in vivo imaging.

Optogenetics

Photostimulation via dual-path galvo-galvo beam steering for simultaneous imaging and stimulation.

THG & 3P imaging

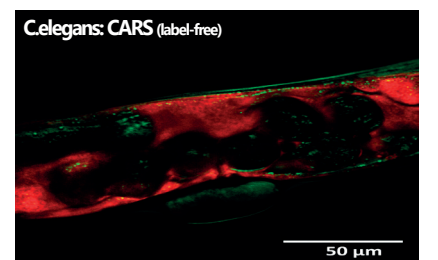
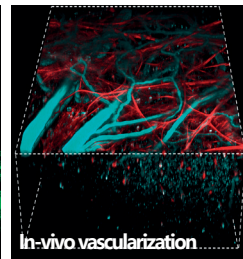
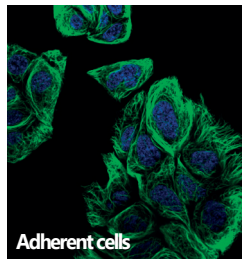
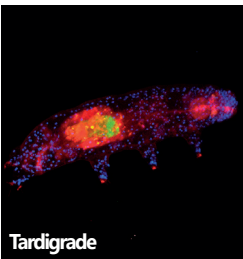
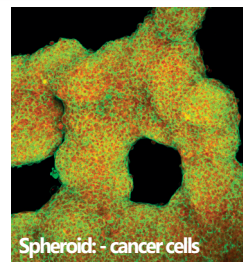
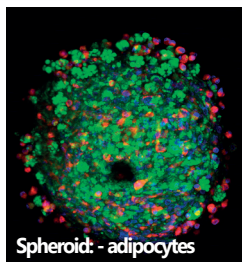
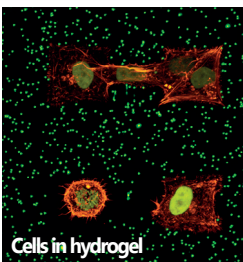
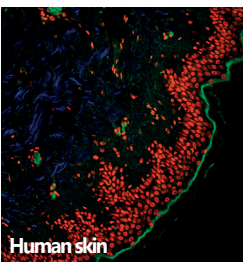
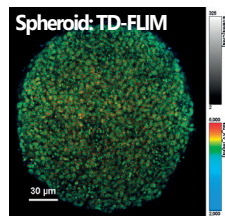
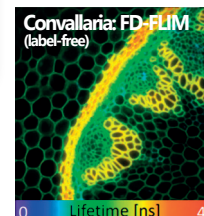
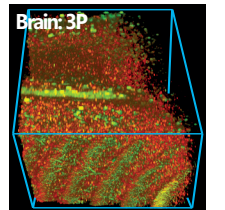
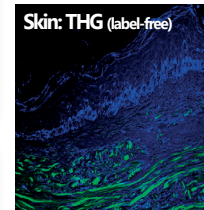
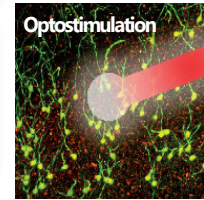
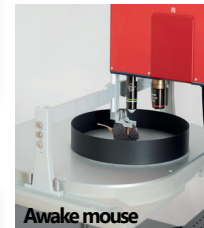
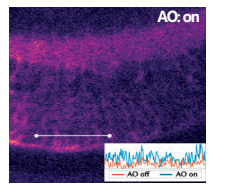
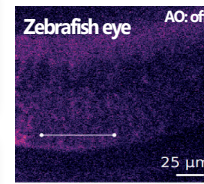
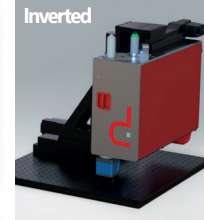
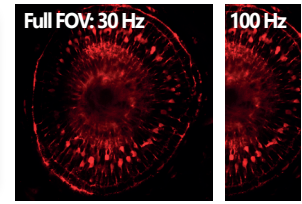
Fully custom-designed laser scanning optics, achromatically compensated from 680nm to 1700nm, covering the full range of Ti:Sapphire lasers, fiber lasers as well as OPO/OPA/OPCPA systems up to 1700nm allowing THG and 3P imaging.

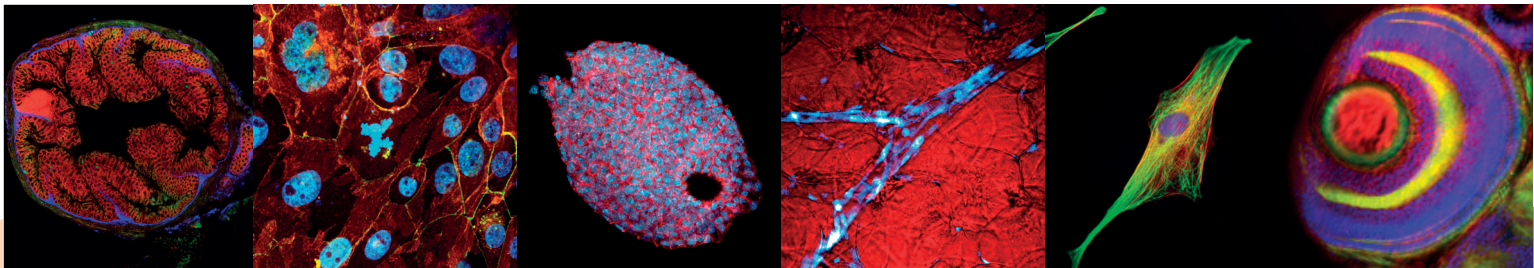
FLIM

Providing pixel, line, frame clocks and laser synchronization for FLIM imaging. Detectors can be upgraded to single-photon counting. Easy upgradeable to widefield FD-FLIM.

CARS & SRS

MPX scan optics is optimized for label free coherent Raman imaging. The MPX can be configured for CARS/SRS microscopy by using Prospective's build-in FSX-dual output laser, a build-in time delay/AOM as well as PMT detectors in epi and/or transmission.





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PROSPECTIVE

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