



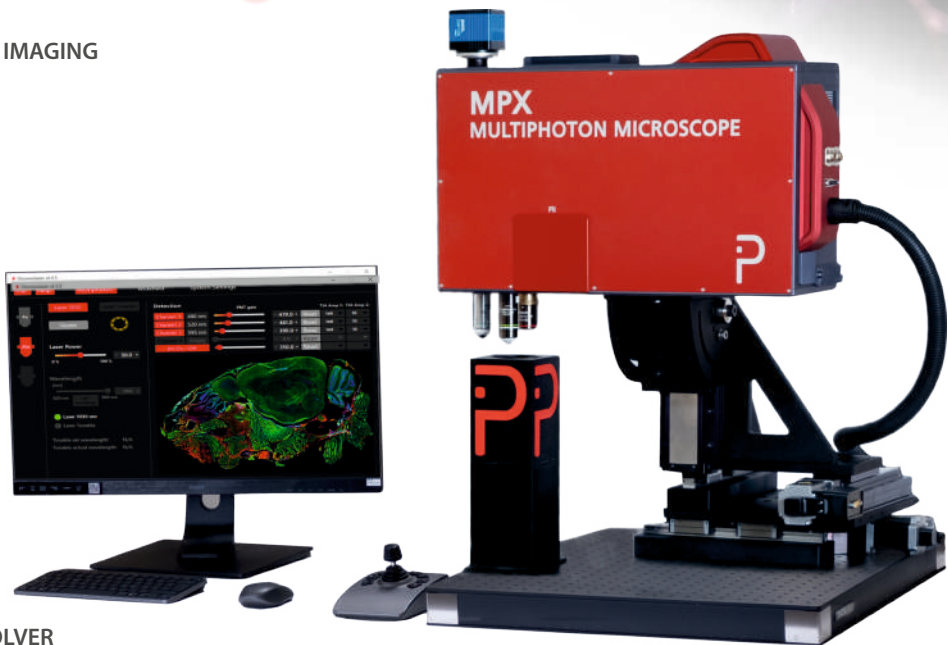
PROSPECTIVE

MULTIPHOTON MICROSCOPES

MPX-SERIES

TURN-KEY ● **VERSATILE** ● **MULTIMODAL** ● **360° IMAGING**

- WIDEFIELD, MULTIPHOTON & LABEL-FREE IMAGING
- BUILT-IN FS LASER OR 3-PHOTON-READY
- 765 nm - 940nm & 1030 nm EXCITATION TUNABLE WAVELENGTHS
- HIGH NA 2" DETECTION OPTICS
- UP TO 4 ULTRA SENSITIVE GAASP PMTS or SiPMs WITH LOW DARK COUNT RATE IN EPI OR TRANSMISSION
- FLEXIBLE 360° SCANHEAD FOR INVERTED, UPRIGHT OR OBLIQUE ANGLE IMAGING
- INTEGRATED WORKSPACE ILLUMINATION
- MOTORIZED MODALITY CHANGE
- MOTORIZED 3-POSITION OBJECTIVE REVOLVER
- USER-FRIENDLY, COMPACT, AND AIR-COOLED



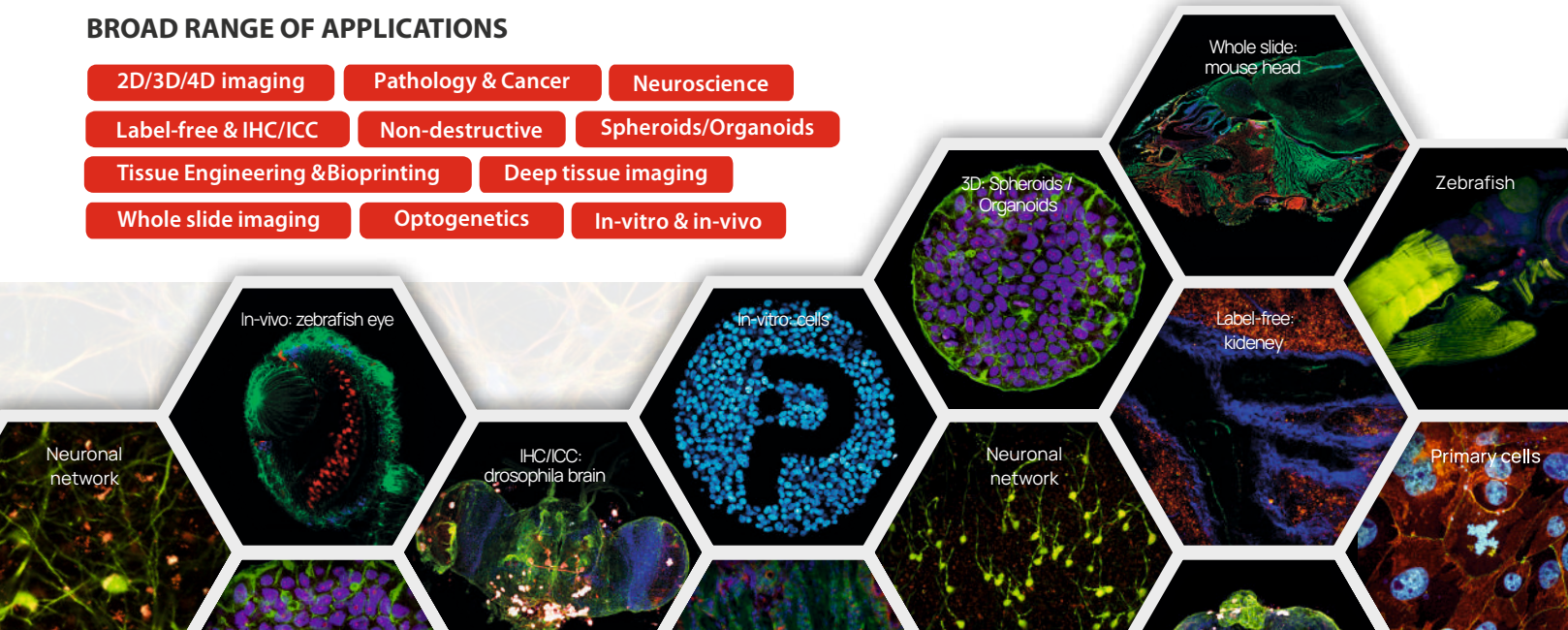
MPX-FIXED	Single wavelength: 780 / 920 / 1030 nm	MPX-TUNE	First wavelength: 1030 nm	Second wavelength: 765 - 940 nm (tunable)
Options:	Widefield, Resonant-galvo-galvo, Adaptive Optics, Optogenetics, FLIM, CARS, SRS			

The turn-key MPX-series **multiphoton multimodal imaging platform** is highly modular, offering various models that can be customized with options and accessories.

Ist designed for **ease-of-use**, equipped with a **motorized objective revolver & motorized modality changer**. The **360° scanhead** can be easily configured in **various positions** and the modular design allows for future upgrades and additions of **extra features** on the same platform.

BROAD RANGE OF APPLICATIONS

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



SPECIFICATIONS

Laser source: built-in femtosecond lasers	MPX-FIXED	MPX-TUNE
Single wavelength: 780 / 920 / 1030 nm All parameters @ sample: 100 MHz (40 MHz**), >600 mW, <140 fs @sample	✓	-
First wavelength: 1030 nm All parameters @ sample: 100 MHz (40 MHz**), >600 mW, <140 fs @sample	-	✓
Second wavelength: 765 - 940 nm (tunable in range) 100 MHz, >200 mW / output, <140 fs @sample	-	✓

(I) Multiphoton fluorescence imaging

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 μs	30 fps at 512 x 512 pixels (8 kHz resonant galvo CRS8K) Pixel dwell time: 44 ns
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	High NA, high efficiency 2" achromatically compensated detection optics, collection of fluorescence photons within +/- 15° 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 μm 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	Evident OEM components, such as binoculars, trinoculars, Köhler illumination, multiple camera ports. Wide selection of Evident (Olympus) OEM components 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*

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

@ full FOV

* up to 100 Hz

@ 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 within minutes 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. 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.

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.

Optogenetics

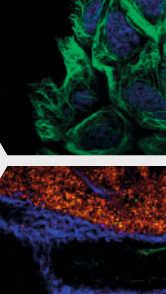
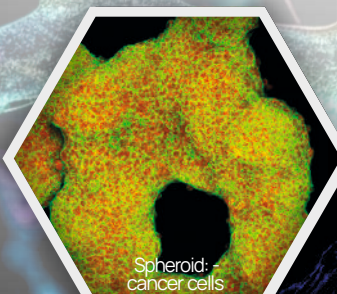
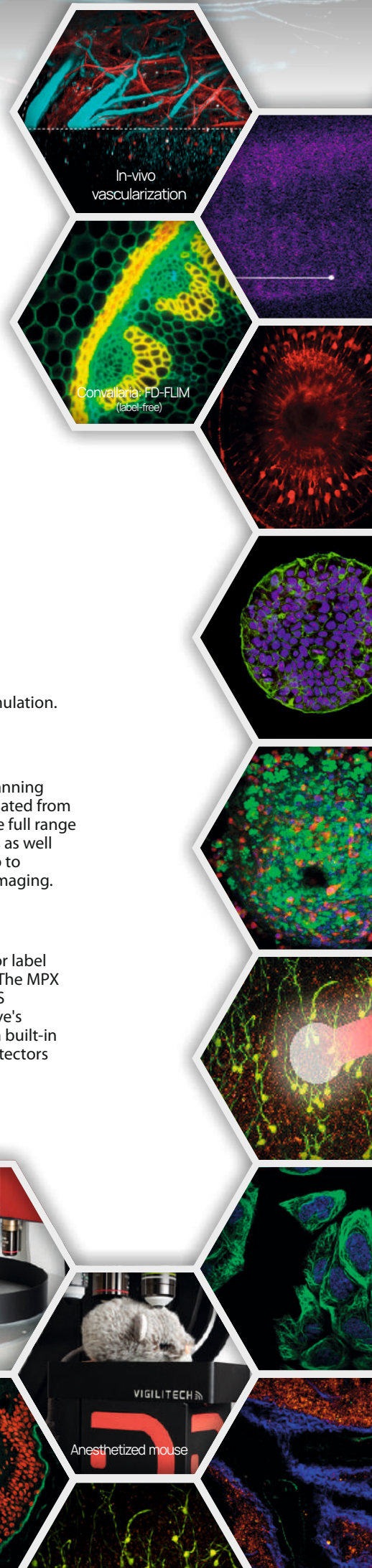
Photostimulation via dual-path galvo-galvo beam steering for simultaneous imaging and stimulation.

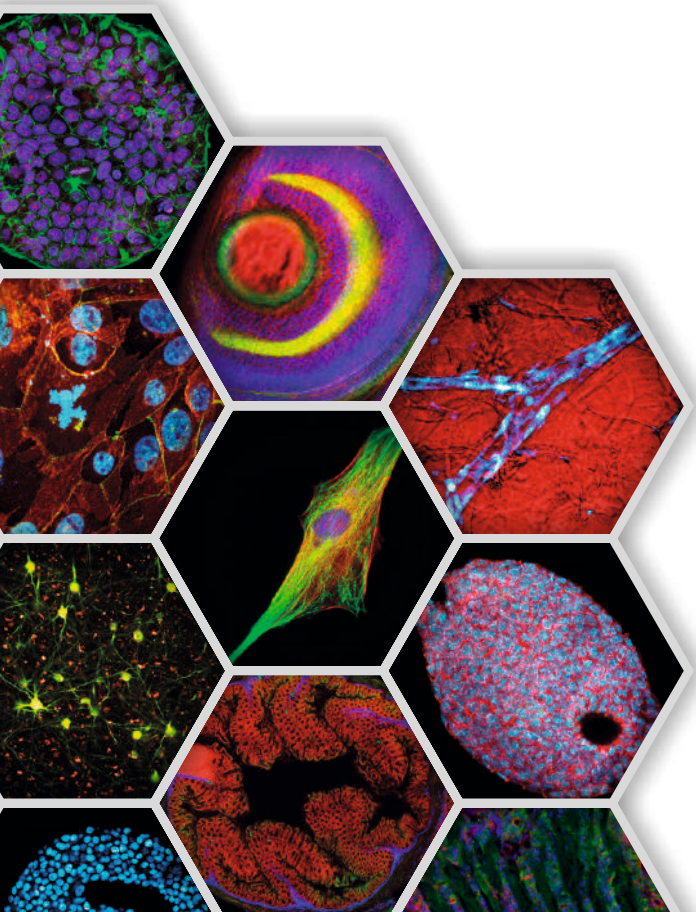
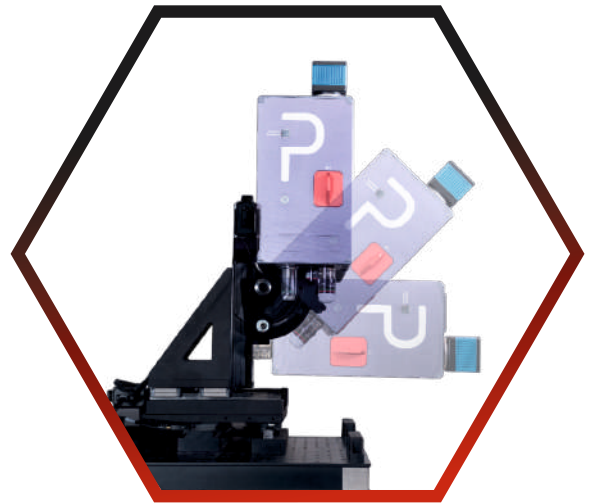
THG & 3P imaging

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.

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 built-in FSX-dual output laser, a built-in time delay & AOM as well as detectors in epi and/or transmission.





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