

FOCUS 920

FOCUS 920 - High-Performance Femtosecond Fiber Laser for Multiphoton Imaging

FOCUS 920 is a femtosecond fiber laser specifically engineered for multiphoton microscopy and neuroscience imaging. Operating at **920 nm**, one of the most widely used excitation wavelengths for multiphoton calcium imaging, it provides the photon density required to efficiently drive nonlinear processes including **multiphoton fluorescence, SHG, and THG imaging**. This wavelength is ideally suited for commonly used genetically encoded indicators and fluorescent reporters in neuroscience, enabling efficient excitation for calcium and voltage imaging while supporting deep tissue penetration and high signal-to-noise ratio in demanding in-vivo imaging experiments.

Designed as a robust and cost-effective alternative to tunable Ti:Sapphire laser oscillators, FOCUS 920 is built on a fully integrated all-fiber architecture that eliminates optical alignment and ensures exceptional long-term stability. The system requires no expert installation and is ready for imaging directly out of the box. Essential microscopy capabilities, including dispersion compensation and both digital and analog modulation, are fully integrated to enable seamless operation in advanced multiphoton imaging platforms and OEM microscope systems.

Operating at a **40 MHz repetition rate with sub-100 fs pulse duration**, FOCUS 920 delivers **twice the pulse energy** of conventional 80 MHz femtosecond oscillators at comparable average power. The increased pulse energy enhances nonlinear excitation efficiency, enabling stronger fluorescence signals while maintaining low average power at the sample, an important advantage when imaging delicate biological tissues.

The extended 25 ns pulse spacing also makes FOCUS 920 particularly well suited for Fluorescence Lifetime Imaging Microscopy. The lower repetition rate allows accurate measurement of longer fluorescence lifetimes that can be difficult to resolve with higher-repetition-rate laser sources.

Developed in collaboration with Indie Photonics, FOCUS 920 integrates proprietary **HB-LH (High Brightness, Low Heat)** technology. By leveraging advanced fiber Bragg grating engineering, this design maximizes peak pulse intensity to boost nonlinear signal generation while minimizing heat deposition within biological samples.

Compact, stable, and easy to operate, FOCUS 920 integrates seamlessly into modern multiphoton microscopy laboratories and OEM imaging platforms, providing a reliable, alignment-free light source for high-performance nonlinear imaging.

Applications

Science:

- > Multiphoton microscopy
- > Lifescience instrumentation
- > Neuroscience
- > Nano-fabrication

Key Features

- > High energy for increased fluorescence with less power
- > Long-lifetime FLIM compatible
- > Compact, cost effective & maintenance-free
- > Air-cooled for trouble-free integration





Specifications

Focus 920

Power	> 1.3 W
Energy per pulse	> 32 nJ
Pulse Duration	< 100 fs
Repetition Rate	40 MHz
Wavelength	920 nm
Beam Diameter	1.2 mm
M2	< 1.2
Pointing Stability	< 20 μrad / °C
Dispersion Compensation	0 fs ² to - 40,000 fs ²
Operating temperature	19 to 26 °C

Option Power Modulation

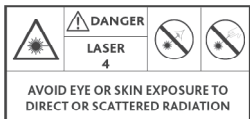
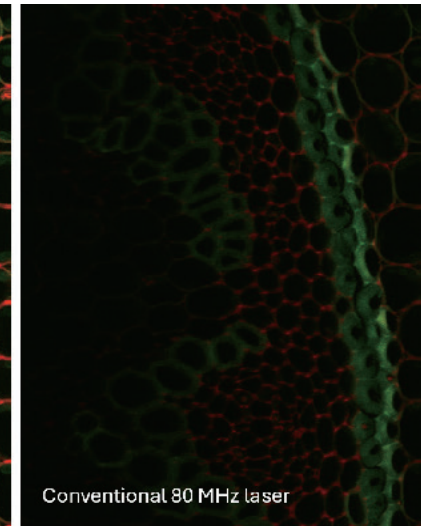
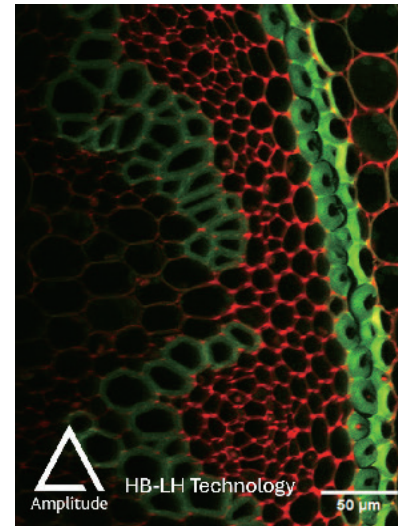
Transmission	> 80 %
ON / OFF response time	< 500 ns
External power control	Analog 0 - 5 V (bandwidth > 1 MHz)
Internal power control	software 0 - 100 %

Cooling

All Models	Air-cooled
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Dimensions

Laser Head (mm)	300 x 230 x 115
Weight	9 kg



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