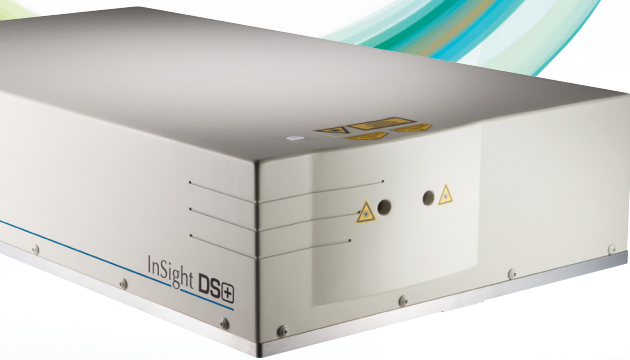


InSight® DS+™

ULTRAFAST LASER SYSTEM FOR MULTIPHOTON IMAGING

The InSight DS+ Advantage

- Field proven with largest installed base
- Broadest tuning range: 680 nm to 1300 nm for deepest imaging
- Dual output at 1041 nm for simultaneous two-photon imaging
- Short pulse width and highest peak power for maximum fluorescence
- Integrated DeepSee to deliver short pulses to the sample
- Ideal beam characteristics optimized for multiphoton imaging



Spectra-Physics' new InSight® DS+™ is the leading ultrafast laser system for deep, in vivo multiphoton microscopy with the largest installed base.

Based on patented technology¹, the InSight DS+ features an unparalleled 680 nm to 1300 nm continuous, gap free tuning from a single source, nearly double the tuning range of legacy Ti:Sapphire ultrafast lasers. In particular, the InSight DS+ delivers substantially increased average and peak power levels at the long infrared wavelengths (>1 μm) for deepest in vivo imaging.

With Spectra-Physics' integrated patented DeepSee™, the industry standard dispersion pre-compensator, the short sub-100 fs pulses are optimally delivered through a microscope to the sample for maximum fluorescence and penetration depth. InSight DS+ also has exceptional beam pointing stability, beam quality and output power stability, as well as fast wavelength tuning, making it ideal for microscopy.

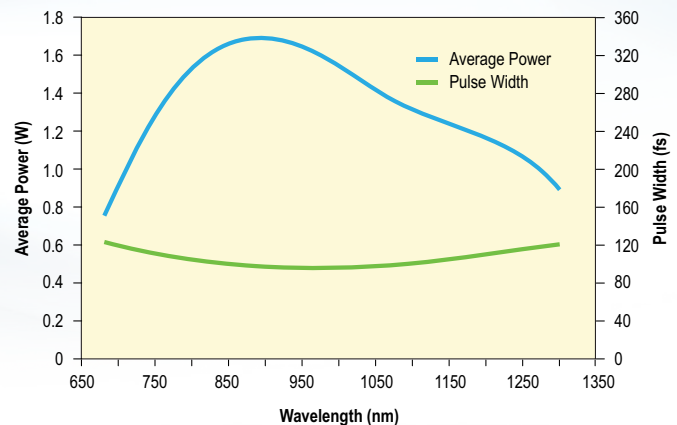
When equipped with the dual output beam option, InSight DS+ fully supports the diverse needs of multimodal imaging. The two synchronized output beams enable easy simultaneous imaging of various fluorophores (for instance GFP/YFP and mCherry), SHG/THG imaging, and advanced imaging techniques such as CARS and SRS.

InSight DS+ is designed, manufactured and tested according to the same stringent quality standards as for our industrial lasers used in 24/7 manufacturing environments. Robust, and fully automated, InSight DS+ provides hands-off operation, freeing users to focus on their critical research.

Applications

- Multiphoton microscopy
- Multimodal imaging including CARS, SRS, SHG, THG
- Optogenetics
- Time-resolved photoluminescence
- Non-linear spectroscopy
- Optical computed tomography
- Surface second harmonic generation
- Terahertz imaging
- Semiconductor metrology

Typical Tuning Curve and Pulse Width*



* Typically measured performance; not a guaranteed or warranted specification.

Specifications^{1, 8}

Output Characteristics	InSight DS+	Dual Option
Tuning Range	680 nm–1300 nm	1041 nm (fixed)
Average Power ²	600 mW at 700 nm 1.3 W at 900 nm 1.1 W at 1000 nm 800 mW at 1100 nm 800 mW at 1200 nm 600 mW at 1300 nm	>1.5 W at 1041 nm
Pulse Width ^{3, 6}	<120 fs	<200 fs
Repetition Rate	80 MHz ±0.5 MHz	
Noise ^{3, 4}	<0.5%	
Stability ⁵	<±1%	
Spatial Mode	TEM ₀₀ , M ² <1.2	
Polarization ³	>500:1 horizontal	
Beam Divergence, full angle ³	<1.5 mrad	
Beam Diameter (1/e ²) ³	1.1 ±0.2 mm	
Beam Roundness ³	0.8–1.2	
Beam Pointing Stability	<350 μrad full range	N/A
Tuning Speed	>50 nm/sec full range	N/A
Dispersion Range ²	680 nm: -12,000 fs ² to -40,000 fs ² 800 nm: 0 fs ² to -25,000 fs ² 1050 nm: 0 fs ² to -10,000 fs ² 1300 nm: -3,000 fs ² to -8,000 fs ²	N/A

Environmental Requirements

Altitude	Up to 2000 m
Temperature, Operating	20–25°C
Relative Humidity, Operating	Maximum 75% non-condensing up to 25°C
Temperature, Storage	15–35°C
Relative Humidity, Storage	<65% for 15–35°C
Cooled Water Temperature in Closed-loop Chiller	21°C typical ⁷

- Due to our continuous improvement program, specifications may change without notice.
- Specifications only apply to the wavelength noted.
- Specification applies only to 900 nm (tunable) or 1041 nm (fixed), respectively.
- Specification represents rms noise measured in a 10 Hz to 10 MHz bandwidth.
- Percent power drift in any 2-hour period with less than ±1°C temperature change after a 1-hour warm up.
- A sech² pulse shape is used to determine the pulse width as measured with a Newport PulseScout® autocorrelator.
- Avoid obstructing the air exhaust grills which will result in the recirculation of hot exhaust air. Cooling air enters through the front panel and exits through the rear fan apertures.
- The InSight DS+ is a Class IV – High-Power Laser, whose beam is, by definition, a safety and fire hazard. Take precautions to prevent exposure to direct and reflected beams. Diffuse as well as specular reflections can cause severe skin or eye damage.

InSight DS+ Dimensions

