

Solstice®

ONE BOX ULTRAFAST AMPLIFIER



The Solstice Advantage

- One box ultrafast amplifier
- Patented Spitfire Pro XP regenerative amplifier cavity design
- More than 3.5 W of output power
- Pulse width 100 fs
- Available in 1, 5 and 10 kHz versions
- Exceptional beam quality ($M^2 < 1.3$)
- Capable of operating in a $\pm 5^\circ\text{C}$ environment
- All digital timing electronics for temperature insensitive long term stability
- Computer controlled

APPLICATIONS

- OPA pumping
- Ultrafast multicolor pump-probe spectroscopy
- Ultrafast micromachining on a wide variety of materials
- Nonlinear optics
- Time resolved spectroscopy
- Four wave mixing spectroscopy

The Spectra-Physics® Solstice® one-box ultrafast laser sets the industry standard for femtosecond (fs) amplifier stability and reliability. This rugged laser system is designed to deliver hands-free, cutting-edge performance for a wide range of applications in both scientific research and industrial environments.

Unprecedented Stability and Optical Performance

To ensure hands-off, reliable operation, the Solstice amplifier uses industry-leading, field proven technologies to further enhance system performance. By extending industrial quality elements throughout the entire unit, Spectra-Physics has created a platform of unprecedented stability and optical performance.

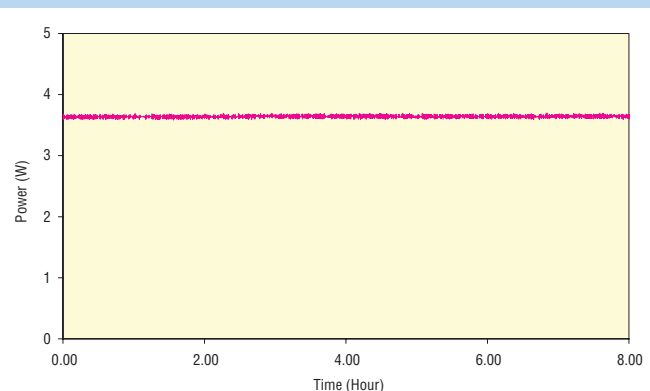
Using the patented Spitfire® Pro XP regenerative amplifier cavity, the Solstice has an output average power of more than 3.5 W at 1, 5, or 10 kHz and high contrast pulses of less than 100 fs. It also delivers a high quality beam ($M^2 < 1.3$) that is essential for the most demanding applications.

Field-proven Mai Tai® and Empower® Pump Lasers

The Solstice amplifier is compatible with all versions of the fully-automated Spectra-Physics Mai Tai femtosecond oscillator. The Mai Tai oscillator's rugged design provides the reliability required to enable industrial processes. Access to the Mai Tai laser output is possible using the side access port. Using a tunable Mai Tai provides Solstice users with the additional flexibility to perform 'low-energy' experiments.

The Solstice laser comes equipped with the Empower diode-pumped solid state pulsed green laser as the pump source. Its superior reliability, outstanding stability and low cost of ownership makes the Solstice an ideal solution for today's demanding applications.

Typical Average Power for Solstice, 8 Hour Run @ 10 kHz



Solstice®

Specifications

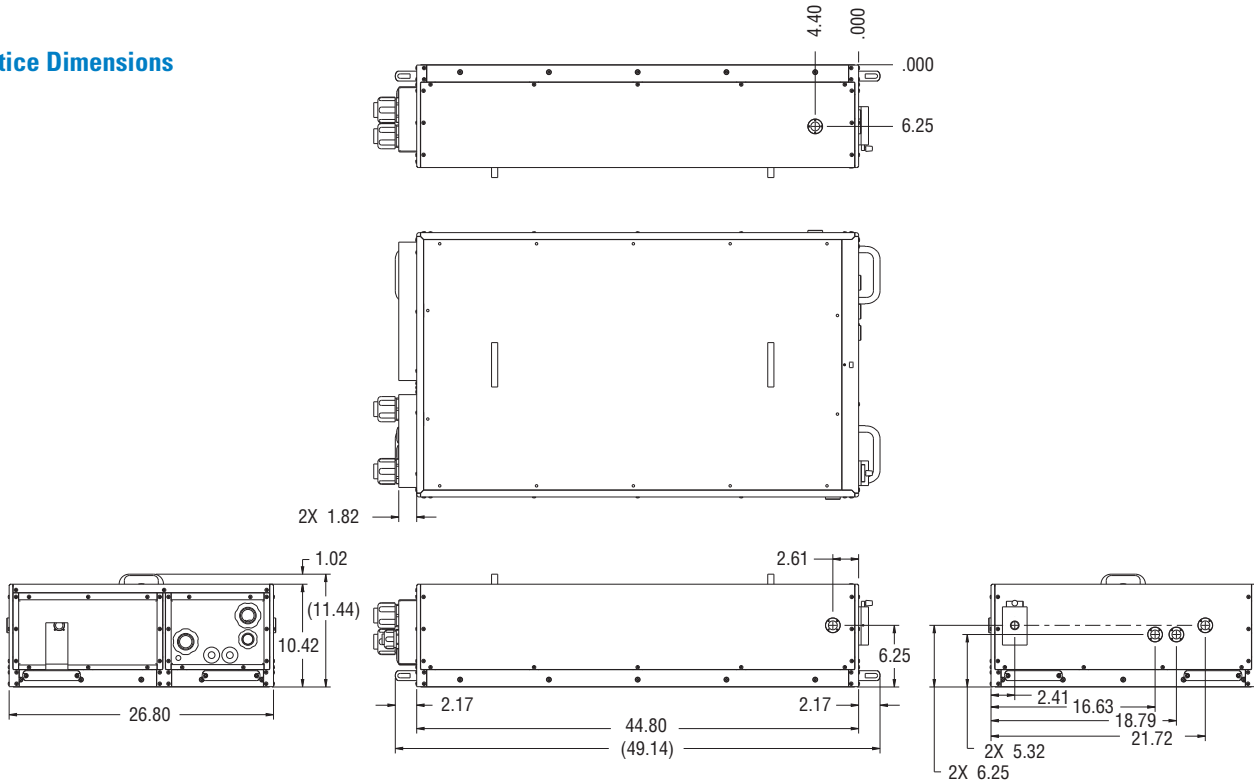
Output Characteristics

Repetition Rate ¹	1 kHz	5 kHz	10 kHz
Pulse Energy	>3.5 mJ	>0.7 mJ	>0.35 mJ
Wavelength ²	Factory set between 780–820 nm		
Operating Temperature Range	23°C ±5°C		
Pulse Width ³	<100 fs		
Pre-Pulse Contrast Ratio ⁴	1000:1		
Post-Pulse Contrast Ratio ⁵	100:1		
Stability ⁶	<0.5% rms over 8 hours		
Transform Limit ⁷	<1.5 x transform limit		
Spatial Mode	TEM ₀₀ (M ² <1.3)		
Beam Diameter (1/e ²)	7 mm (nominal)		
Polarization	Linear Horizontal		

Notes

1. The desired repetition rate should be specified at time of purchase. Any system can be operated (with the same energy per pulse) at reduced repetition rates through internal divide-down electronics.
2. For wavelength extension through SHG, THG, FHG or OPA, please contact Spectra-Physics.
3. A Gaussian pulse shape (0.7 deconvolution factor) is used to determine pulse width (FWHM) from autocorrelation signal as measured with a Newport PulseScout® autocorrelator.
4. Defined as the ratio between peak intensity of output pulse to peak intensity of any pre-pulse that occurs >1 ns before the output pulse.
5. Defined as the ratio between peak intensity of output pulse to peak intensity of any pre-pulse that occurs >1 ns after the output pulse.
6. Applies at peak wavelength: % rms with near Gaussian distribution.
7. Assuming Gaussian pulse shape.

Solstice Dimensions



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