Solstice® Ace™

HIGH ENERGY, INDUSTRIAL ONE BOX ULTRAFAST AMPLIFIER

The Solstice Ace Advantage

- *Unsurpassed operating stability and stable operation over a 10°C temperature range*
- *Patented Ace regenerative amplifier cavity design*
- *Configurable pulse width, <35 fs – <120 fs*
- *Configurable repetition rate, 1–10 kHz*
- *Exceptional beam quality (M^2 <1.25)*

The Spectra-Physics® Solstice Ace was the first femtosecond ultrafast amplifier designed, built and tested to meet rigorous industrial standards. Solstice Ace incorporates modular components, adjustment-free mounting hardware, and field proven pump and seed lasers. The result is an industry-leading, hands-free ultrafast light source for a wide range of ultrafast applications.

Unsurpassed Operating Stability

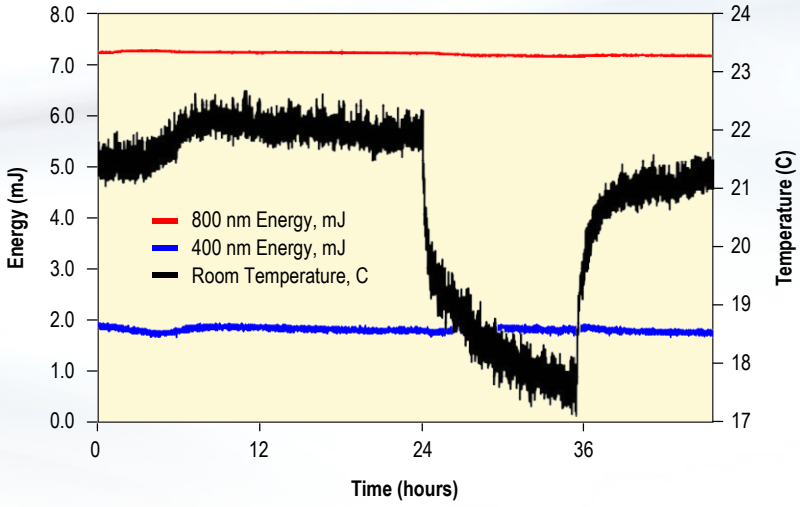
Solstice Ace is capable of reliable operation over a 10°C temperature range. Unlike traditional lasers that utilize standard optomechanics, Solstice Ace employs adjustment-free EternAlign™ optical mounts to maximize long-term stability and performance. The regenerative amplifier and the stretcher/compressor are housed in 2 independently temperature stabilized enclosures to ensure optimal reliability. With the Solstice Ace revolutionary design, both short term and long term stability are maximized.

Using Spectra-Physics' patented Ace regenerative amplifier cavity, the Solstice Ace delivers >7 W at 1 kHz, >8 W at 5 kHz and >7 W at 10 kHz with pulse width configurations ranging from <35 fs to <120 fs. For every configuration of Solstice Ace, the beam quality is exceptional (M^2 <1.25) making it perfect for OPA pumping and a wide range of nonlinear spectroscopy applications.

Applications

- *OPA pumping*
- *2D IR spectroscopy*
- *Ultrafast pump-probe spectroscopy*
- *Nonlinear optics*
- *Four wave mixing spectroscopy*
- *Ultrafast micromachining on a wide variety of materials*

Fundatmental and SHG Stability
Solstice Ace 35 fs, 1 kHz, 7 mJ



Typically measured performance; not a guaranteed or warranted specification.

Spectra-Physics®
A Newport Company

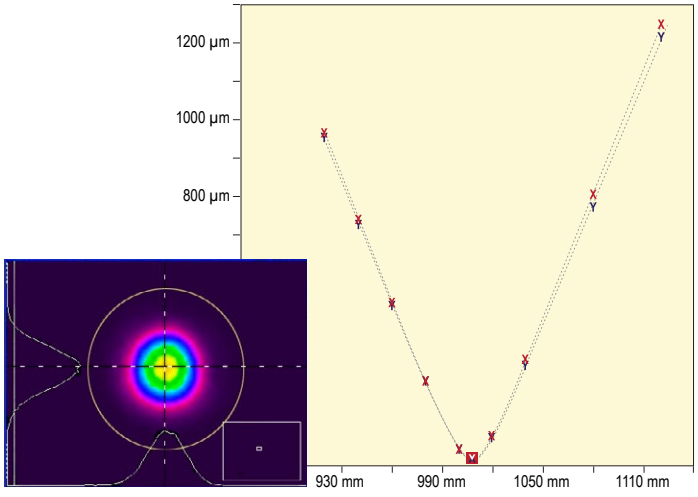
Solstice Ace

Specifications[1, 10]

Output Characteristics		Solstice Ace		
Pulse Width[2, 3]		<35 fs – <120 fs		
Repetition Rate[4]		1 kHz	5 kHz	10 kHz
Average Power	Ascend 60:	>7.0 W	>8.0 W	>7.0 W
	Ascend 40:	>5.0 W	>6.0 W	>5.0 W
Pulse Energy	Ascend 60:	>7.0 mJ	>1.6 mJ	>0.7 mJ
	Ascend 40:	>5.0 mJ	>1.2 mJ	>0.5 mJ
Pre-Pulse Contrast Ratio[5]		1000:1		
Post-Pulse Contrast Ratio[6]		100:1		
Operating Temperature Range		±5°C		
Energy Stability		<0.5% rms over 24 hours		
Beam Pointing Stability		<5 µrad (rms)[7]		
Wavelength[8, 9]		780–820 nm[9]		
Spatial Mode		TEM_{00} (M^2 <1.25, both axes)		
Beam Diameter (1/e²)		10–11 mm (nominal)		
Polarization		Linear, Horizontal		

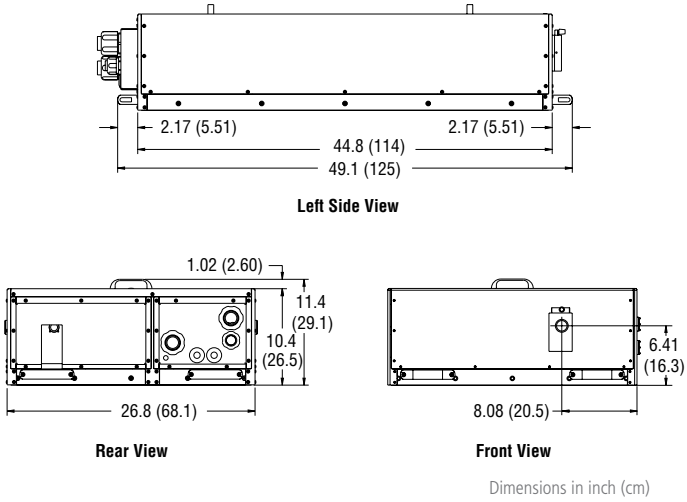
1. Due to our continuous product improvements, specifications are subject to change without notice.
2. A Gaussian pulse shape (0.7 deconvolution factor) is used to determine pulse width (FWHM) from autocorrelation signal as measured with a Newport PulseScout® autocorrelator.
3. Pulse width must be specificed at time of purchase.
4. The desired optimum repetition rate can be specified at the time of purchase or additonal optics sets can be used to reconfigure the amplifier. Any system can be operated (with the same energy per pulse) at reduced repetition rates through internal divide-down electronics.
5. 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.
6. Defined as the ratio between peak intensity of output pulse to peak intensity of any post-pulse that occurs >1 ns after the output pulse.
7. At constant temperature. Variable temperature specification <20 µrad/°C, peak-to-peak.
8. For wavelength extension through SHG, THG, FHG or OPA, please contact Spectra-Physics.
9. Performance specifications apply at peak of gain curve. Tuning range for <35 fs version: 795–805 nm.
10. The Solstice Ace 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.

Solstice Ace Beam Quality



Typically measured performance.

Solstice Ace Dimensions



Dimensions in inch (cm)

Spectra-Physics
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