

TOPAS Prime Automated OPA

Hands-Free Wavelength Extension
for Solstice® Ace and Spitfire® Ace™



The TOPAS Prime optical parametric amplifier (OPA) is a state-of-the-art instrument for Ti:Sapphire amplifier system wavelength extension. Wavelengths can be generated from the deep UV through the infrared (189–18000 nm) range. The TOPAS Prime is computer controlled which minimizes adjustment time of the laser system and maximizes experimental productivity. TOPAS Prime is the ideal instrument for your scientific application.

TOPAS Prime utilizes several key features to maximize utility and efficiency. In the visible range, the fresh pump option provides improved beam quality for more efficient sum-frequency conversion. The improved optical design accommodates a larger beam diameter, (~11 mm) which eliminates the need for an external telescope. When higher energy output is needed, the TOPAS Prime Plus can accept input energies up to 5 mJ.

The TOPAS Prime works best when pumped using the market leading Solstice Ace and Spitfire Ace regenerative amplifiers. Both amplifiers are equipped with the Spectra-Physics patented Ace regenerative amplifier cavity. This cavity utilizes a normal incidence rod design for an outstanding beam quality with minimal astigmatism. In addition, the Solstice Ace and Spitfire Ace provide market leading stability specifications making TOPAS Prime the perfect tool for performing ultrafast research.

The TOPAS Prime Advantage

- Hands-free operation
- High conversion efficiency
- Up to 5 mJ input energy
- Excellent beam quality



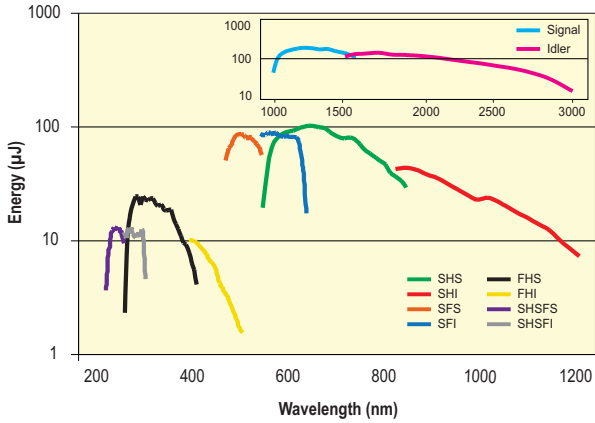
TOPAS Prime Specifications¹

Input Requirements		Output Requirements			
Input Wavelength	770–830 nm	Tuning Range	TOPAS Prime-F Output Energy 100 fs	TOPAS Prime-U Output Energy 35 fs	Polarization
Pulse Energy ^{2,3}	0.15–5.0 mJ		Signal: 1140–1600 nm	>250 µJ (signal + idler at peak)	>250 µJ (signal + idler at peak)
Pulse Width, FWHM TOPAS Prime-U	20–60 fs	Idler: 1600–2600 nm			Horizontal
Pulse Width, FWHM ⁴ TOPAS Prime-F	60–150 fs	SHS: 580–800 nm	>80 µJ	>30 µJ	Horizontal
Polarization	Horizontal	SHI: 800–1160 nm	>50 µJ	>20 µJ	Vertical
Energy Stability	1% rms	SFI: 533–600 nm	>50 µJ ⁶	>30 µJ	Vertical
Pulse-to-Pulse Stability	1%	SFS: 475–533 nm	>70 µJ ⁶	>40 µJ	Vertical
Beam Divergence	<1.5 x (diffraction limit)	FHS: 290–400 nm	>15 µJ	>5 µJ	Horizontal
Beam Height	120–185 mm from optical table	FHI: 400–480 nm	>15 µJ	>4 µJ	Horizontal
Beam Diameter (1/e ²)	<11 mm	SH of SFS: 240–266 nm	>7 µJ	>3 µJ	Horizontal
		SH of SFI: 266–295 nm	>7 µJ	>3 µJ	Horizontal
		Deep UV - FHS + Pump: 215–240 nm	>3 µJ	>1 µJ	Vertical
		Deep UV - SH of SFI + Pump: 200–215 nm	>3 µJ	>1 µJ	Vertical
		Deep UV - SH of SFS + Pump: 190–200 nm	>3 µJ	>1 µJ	Vertical
		NDFG1K: 2600–4500 nm (100 fs) ⁵	>8 µJ at 4000 nm		Horizontal
		NDFG2K: 4000–18000 nm (100 fs) ⁵	>4 µJ at 5000 nm >0.3 µJ at 15000 nm		Horizontal
		NDFG1K: 2600–4500 nm (35 fs) ⁵		>2 µJ at 4000 nm	Horizontal
		NDFG2K: 4000–15000 nm (35 fs) ⁵		>1 µJ at 5000 nm >0.1 µJ at 13000	Horizontal

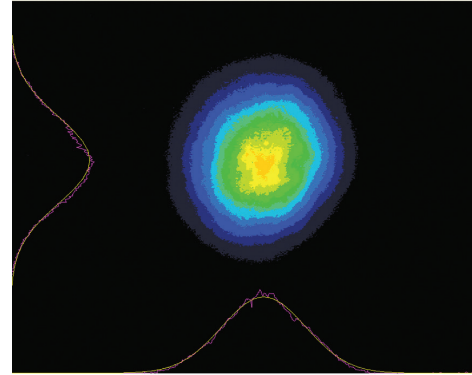
1. Due to our continuous product improvement program, specifications are subject to change without notice.
2. TOPAS Prime energies scaled linearly with input energy. Energy above generated at 1 mJ input energy.
3. 5 mJ input energy requires TOPAS Prime Plus configuration.
4. For pulse widths >150 fs, contact Spectra-Physics
5. Collinear DFG available upon request.
6. Optional fresh pump available

TOPAS Prime

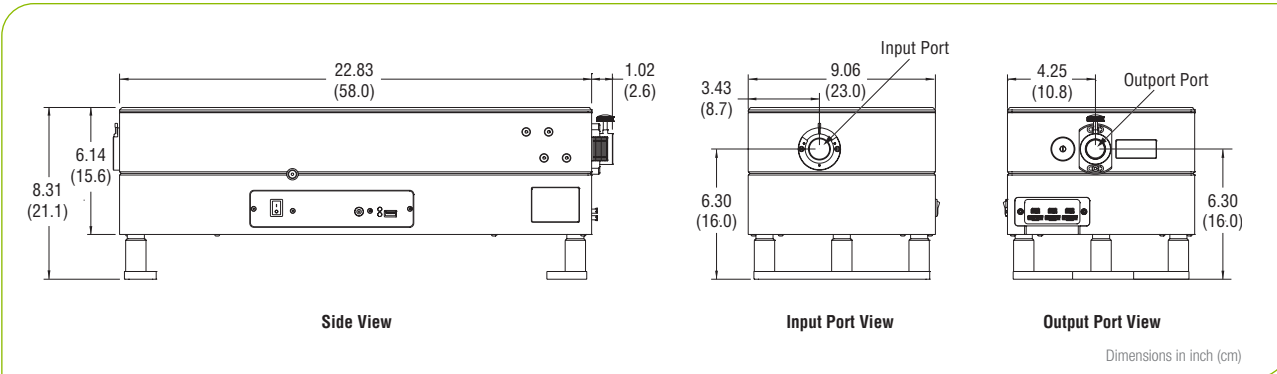
Tuning curves for TOPAS Prime when pumped by 100 fs, 1 mJ Solstice Ace¹



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



Typical beam profile pumped with Spectra-Physics Ace regenerative amplifier cavity – sum frequency, fresh pump option.



TOPAS Prime Dimensions



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