

TOPAS Prime Automated OPA

HANDS-FREE WAVELENGTH EXTENSION FOR SPITFIRE® ACE™ AND SOLSTICE® ACE

The TOPAS Prime Advantage

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

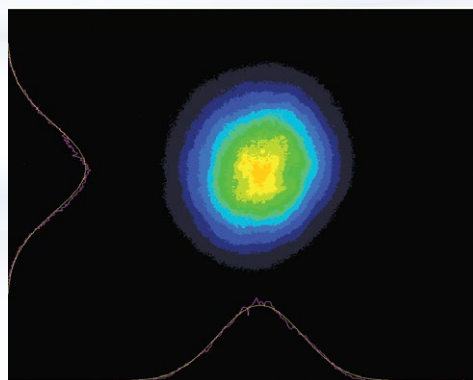
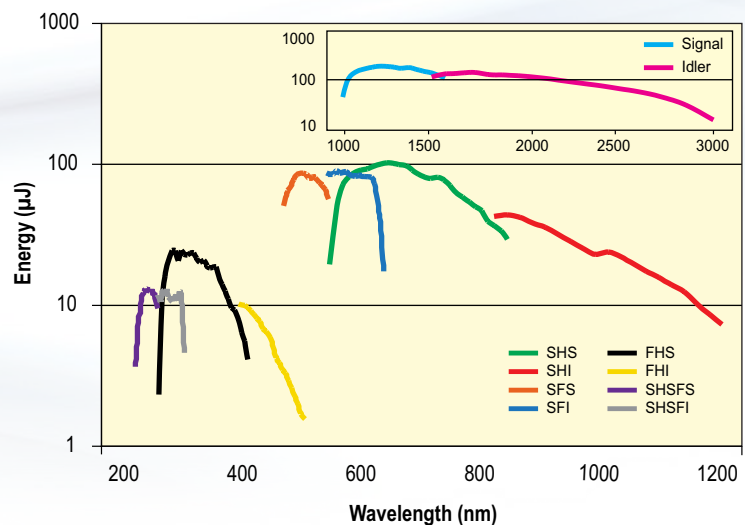


The TOPAS Prime optical parametric amplifier (OPA) is a state-of-the-art instrument for Ti:Sapphire amplifier system wavelength extension. Wavelengths can be generated from the deep UV through the infrared (189–2000 nm) range. The TOPAS Prime is computer controlled which minimizes adjustment time of the laser system and optimizes 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 Spitfire® Ace™ and Solstice® 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 Spitfire Ace and Solstice Ace provide market leading stability specifications making TOPAS Prime the perfect tool for performing ultrafast research.

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



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

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

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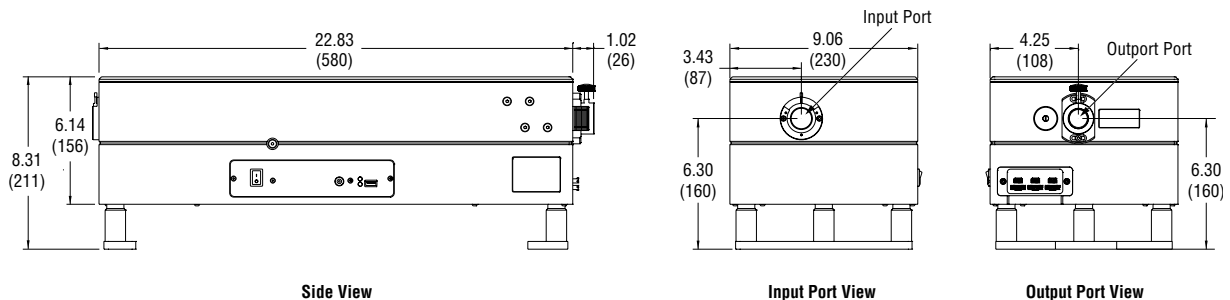
Specifications¹

Input Requirements	
Input Wavelength	770–830 nm
Pulse Energy ^{2,3}	0.15–5.0 mJ
Pulse Width, FWHM TOPAS Prime-U	20–60 fs
Pulse Width, FWHM ⁴ TOPAS Prime-F	60–150 fs
Polarization	Horizontal
Spectral Linewidth	Spectral Linewidth
Energy Stability	1% rms
Pulse-to-Pulse Stability	1%
Beam Divergence	<1.5 x (diffraction limit)
Beam Height	120–185 mm from optical table
Beam Diameter (1/e ²)	<11 mm

Output Requirements			
Tuning Range	TOPAS Prime-F Output Energy 100 fs	TOPAS Prime-U Output Energy 35 fs	Polarization
Signal: 1140–1600 nm	>250 μJ (signal + idler at peak)	>250 μJ (signal + idler at peak)	Vertical
Idler: 1600–2600 nm			Horizontal
SHS: 570–800 nm	>80 μJ	>30 μJ	Horizontal
SHI: 800–1160 nm	>30 μJ	>15 μJ	Vertical
SFI: 533–600 nm	>60 μJ ⁵	>30 μJ	Vertical
SFS: 480–533 nm	>90 μJ ⁵	>40 μJ	Vertical
FHS: 290–400 nm	>15 μJ	>5 μJ	Horizontal
FHI: 400–480 nm	>6 μJ	>2.5 μJ	Horizontal
SH of SFS: 240–266 nm	>8 μJ	>3 μJ	Horizontal
SH of SFI: 266–295 nm	>8 μJ	>3 μJ	Horizontal
Deep UV - FHS + Pump: 215–240 nm	>3 μJ	>1 μJ	Vertical
Deep UV - FHI + Pump: 200–215 nm	>3 μJ	>1 μJ	Vertical
Deep UV - SH of SFS + Pump: 190–200 nm	>3 μJ	>1 μJ	Vertical
DFG1, NDFG1: 2400–11000 nm (100 fs)	>8 μJ at 4000 nm >1.5 μJ at 10000 nm		Horizontal
DFG2, NDFG2: 4000–20000 nm (100 fs)	>4 μJ at 5000 nm >0.3 μJ at 15000 nm		Horizontal
DFG1, NDFG1: 2400–9000 nm (35 fs)		>2 mJ at 4000 nm >0.5 μJ at 9000 nm	Horizontal
DFG2, NDFG2: 4000–15000 nm (35 fs)		>1 mJ at 5000 nm >0.1 μJ at 15000 nm	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. Optional fresh pump available

Topas Prime Dimensions



Dimensions in inch (mm)



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