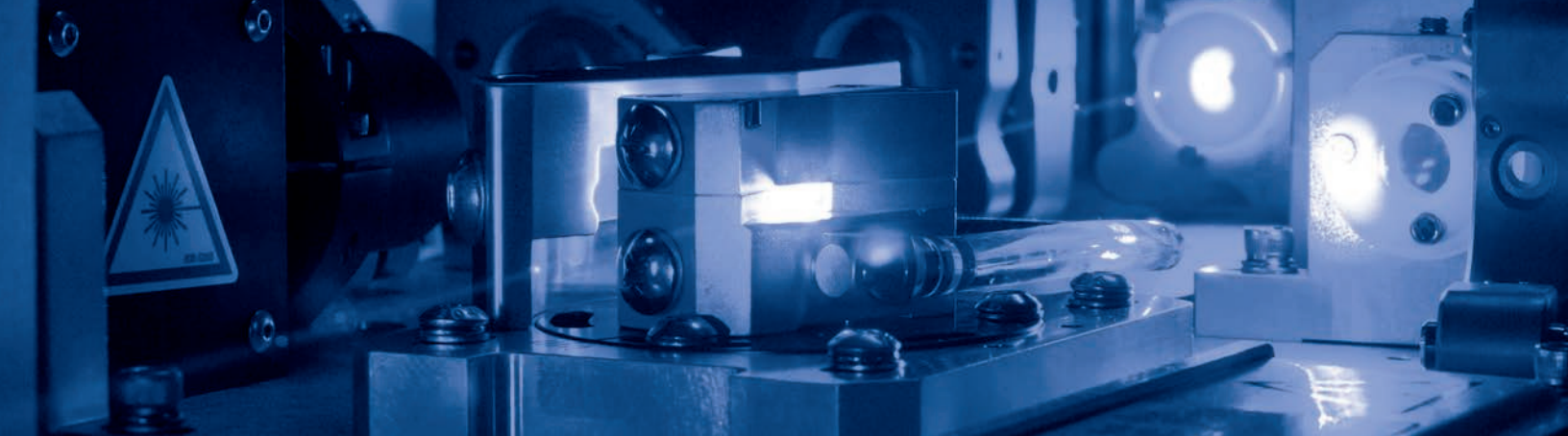




TOPAS-Prime

Computer-Controlled Femtosecond Optical Parametric Amplifier Accessory

TOPAS-Prime is the newest generation of computer-controlled optical parametric amplifiers (OPA) providing the ability to extend the tuning ranges of the Astrella and Legend Elite HE+ ultrafast amplifier families. TOPAS-Prime employs a monolithic housing for improved mechanical stability and white light seeding for lowest output noise performance. TOPAS-Prime uses a modular design of wavelength extension packages to achieve a tuning range of 190 nm to 20 μ m.

The standard TOPAS-Prime model accepts pulse energies up to 3.5 mJ. Input pulse energies up to 5 mJ can be achieved with the TOPAS-Prime Plus model. HE-TOPAS-Prime and HE-TOPAS-PrimePlus can support even higher pump energies, up to 20 mJ.

FEATURES & BENEFITS

- Monolithic housing for mechanical stability
- Computer-controlled tunable output
- Optional Fresh pump channel for improved sum frequency performance
- Modular options for extending tuning range from 190 nm to 20 μ m
- Configurations to accommodate Femto, USP, and USX pulse widths from Coherent kHz femtosecond amplifiers
- Multiple OPAs can be pumped by a single kHz amplifier
- High energy (HE) models available up to 20 mJ pump energy

APPLICATIONS

- Time-resolved Spectroscopy
- Multi-dimensional Spectroscopy
- Surface SFG/SHG



SPECIFICATIONS ^{1,2}		Wavelength Range	Pulse Energy		Polarization
			<50 fs pump	<110 fs pump	
TOPAS-Prime ³	Signal	1140 to 1600 nm	>250 µJ (S+I)	>250 µJ (S+I)	V
	Idler	1600 to 2600 nm			H
OPTIONS ⁴					
VIS Package ⁵	SHI	800 to 1150 nm	>15 µJ ⁶	>30 µJ ⁶	V
	SHS	580 to 800 nm	>30 µJ	>80 µJ	H ⁷
BLUE Package ⁵	SFI	533 to 600 nm	>30 µJ	>50 µJ	V
	SFS	475 to 533 nm	>40 µJ	>70 µJ	V
UV1 Package	FHI	400 to 480 nm	>2.5 µJ ⁸	>6 µJ ⁸	H
	FHS	290 to 400 nm	>5 µJ	>15 µJ	V ⁷
UV2 Package	SHSFI	266 to 295 nm	>3 µJ	>7 µJ	H
	SHSFS	240 to 266 nm	>3 µJ	>8 µJ	H
DUV Package	DUV ⁹	189 to 240 nm	>1 µJ	>3 µJ	V
NDFG Package	NDFG1 ^{10,11}	2.6 to 11 µm	>2 µJ at 4 µm >0.5 µJ at 9 µm	>8 µJ at 4 µm >1.5 µJ at 10 µm	H
	NDFG1-KTA ¹¹	2.6 to 4.9 µm	>2 µJ at 4 µm	>8 µJ at 4 µm	H
	NDFG2 ¹¹	4 to 20 µm	>1 µJ at 5 µm >0.1 µJ at 13 µm	>4 µJ at 5 µm >0.3 µJ at 15 µm	H

¹ All specifications are based on pumping with 1 mJ from Astrella, Legend Elite, or Libra systems at 1 kHz (contact factory for other pump systems). Specifications for harmonic wavelengths pumped by Legend Elite USX and Legend Elite Duo USX models are 25% lower.

² Energy scales linearly with pump in range 0.3 mJ to 4 mJ for <110 fs pump and 0.3 mJ to 3.5 mJ for <50 fs pump. TOPAS-PrimePlus model extends pump energy input to 5 mJ for both <50 and <110 fs models.

³ Signal pulse width is (0.7 to 1.0) x pump for <110 fs pump duration, (1 to 1.5) x pump for <50 fs pump duration.

⁴ Energies given at peak of tuning ranges. VIS/BLUE/UV wavelength extension options listed include all mixing crystals listed in preceding options (e.g., TOPAS-Prime-UV-2 options includes crystals, etc., to tune from 240 to 1150 nm). External mixer or integrated monolithic mixer options available.

⁵ With optional fresh pump package.

⁶ With Monolithic mixer option >50 µJ at <110 fs pump and >20 µJ at <50 fs pump.

⁷ Polarization switches when DUV option is included.

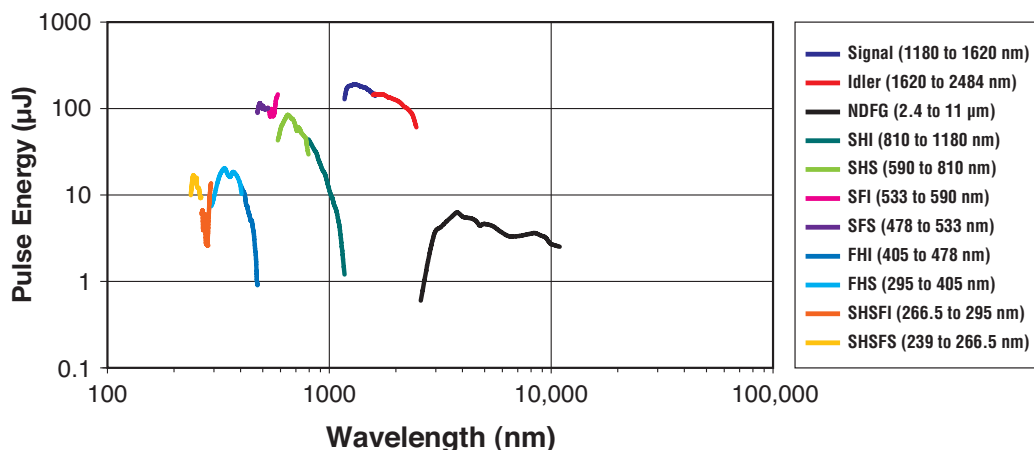
⁸ With Monolithic mixer option >15 µJ at <110 fs pump and >4 µJ at <50 fs pump.

⁹ Requires purchase of TOPAS-Prime-M-UV2 option, specifications assume 15 % of pump energy into DUV channel and another 15 % into fresh pump channel. DUV option reduces performance at other wavelengths, contact Coherent for details.

¹⁰ Maximum pump repetition rate – 1 kHz. Limited crystal life time of 1000 to 2000 hr.

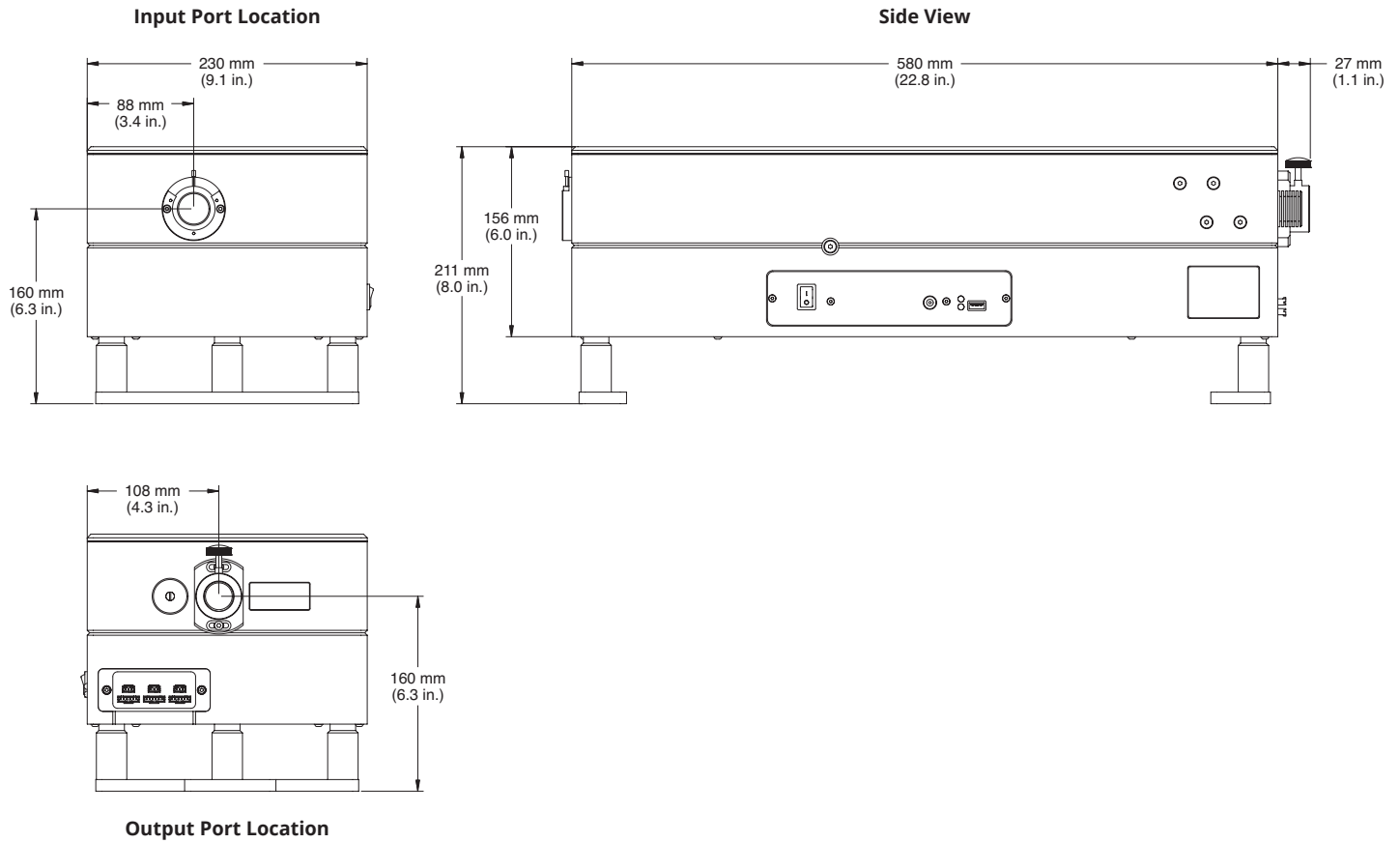
¹¹ For <50 fs pump NDFG tuning ranges are as follows: NDFG1 - 2.6 µm to 9 µm, NDFG1-KTA - 2.6 µm to 4.5 µm and NDFG2 - 4 µm to 13 µm.

Typical Tuning Curve
(pumped by 1 mJ, 1 kHz, 800 nm Legend Elite)



MECHANICAL SPECIFICATIONS

TOPAS-Prime



Coherent, Inc.,
 5100 Patrick Henry Drive Santa Clara, CA 95054
 p. (800) 527-3786 | (408) 764-4983
 f. (408) 764-4646

tech.sales@coherent.com www.coherent.com

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice. Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all TOPAS-Prime OPA Accessories. For full details of this warranty coverage, please refer to the Service section at www.coherent.com or contact your local Sales or Service Representative. MC-025-12-0M1020Rev.A Copyright ©2020 Coherent, Inc.