



TOPAS-Prime

Computer-Controlled Optical Parametric Amplifiers

TOPAS-Prime is the newest generation of computer-controlled optical parametric amplifiers (OPA) providing the ability to extend the tuning ranges of the Astrella, Legend Elite HE+ and Libra ultrafast amplifier families. All of the best features from our TOPAS-800-fs are retained in the TOPAS-Prime including white light seeding for lowest output noise performance. In addition, TOPAS-Prime employs a monolithic housing for improved mechanical stability. TOPAS-Prime uses a modular design and wavelength extension packages to achieve a tuning range of 190 nm to 20 μm .

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 higher pump energies.

FEATURES

- Monolithic housing for mechanical stability
- Computer-controlled tunable output
- Energy conversion >30% to 35% to parametric light
- Low output noise due to whitelight seeding
- Optional fresh pump channel for improved sum frequency performance
- Modular option for extended tuning from 190 nm to 20 μm : Standard tuning is from 1150 nm to 2600 nm
- Configurations to accommodate pulse widths from all Coherent kHz femtosecond amplifiers (<130 fs, <50 fs, <40 fs, <35 fs, <25 fs)
- Multiple OPAs can be pumped with one Ti:Sapphire amplifier
- High energy (HE) models available: Up to 20 mJ



SPECIFICATIONS ^{1,2}		TOPAS-Prime			
	Beam	Wavelength Range	Pulse Energy		Polarization
			<50 fs pump	<130 fs pump	
TOPAS-Prime ³	Signal	1140 to 1600 nm	250 µJ (S+I)		V
	Idler	1600 to 2600 nm			H
OPTIONS ⁴					
TOPAS-Prime-VIS ⁵	SHI	800 to 1150 nm	>30 µJ	>80 µJ	V
	SHS	580 to 800 nm			H
	SFI	533 to 580 nm	>30 µJ	>50 µJ	V
TOPAS-Prime-BLUE ⁵	SFS	480 to 533 nm	>40 µJ	>70 µJ	V
TOPAS-Prime-UV1	FHI	400 to 480 nm			H
	FHS	290 to 400 nm	>5 µJ	>15 µJ	V
TOPAS-Prime-UV2	SH (SFI)	266 to 295 nm			H
	SH (SFS)	240 to 266 nm	>3 µJ	>8 µJ	H
TOPAS-Prime-NDFG1/2	DFG1	2.6 to 11 µm ^{6,7}	>2 µJ at 4 µm >0.5 µJ at 9 µm	>8 µJ at 4 µm >1.5 µJ at 10 µm	H H
	DFG2	4 to 20 µm ⁸	>1 µJ at 5 µm >0.1 µJ at 15 µm	>4 µJ at 5 µm >0.3 µJ at 15 µm	H 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 <130 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 <130 fs models.

³ Signal pulse width is (0.7 to 1.0) x pump for <130 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). Contact factory for tuning down to 190 nm.

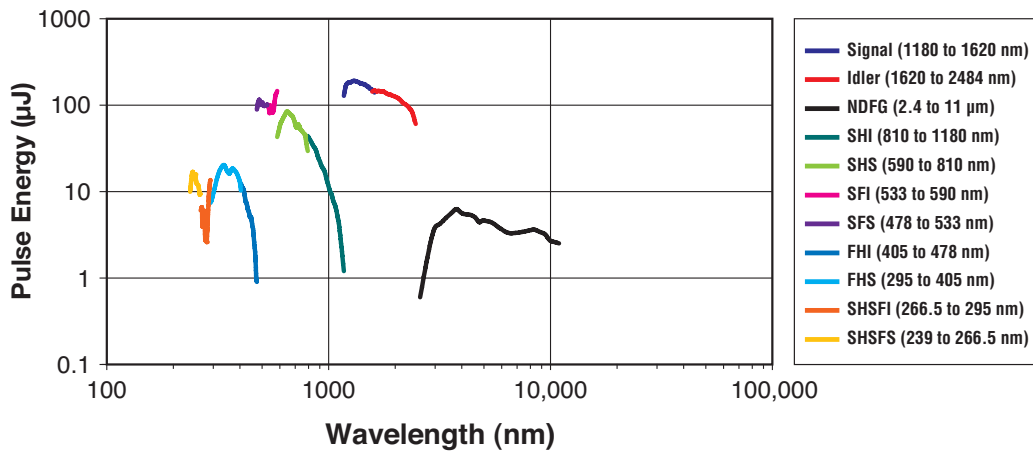
⁵ With optional fresh pump package. Specifications for non-fresh pump option are unchanged at <50 fs and for <130 fs; SFI = >60 uJ, SFS = >90 uJ.

⁶ DFG1 tuning range is 2.6 µm to 9 µm for <50 fs pump. DFG1 pulse width is (1 to 1.5) x pump for <130 fs pump and (1.5 to 2) x pump for <50 fs pump.

⁷ DFG1 option with KTA crystal available, tuning range limited to 2.6 mm to 4.9 mm.

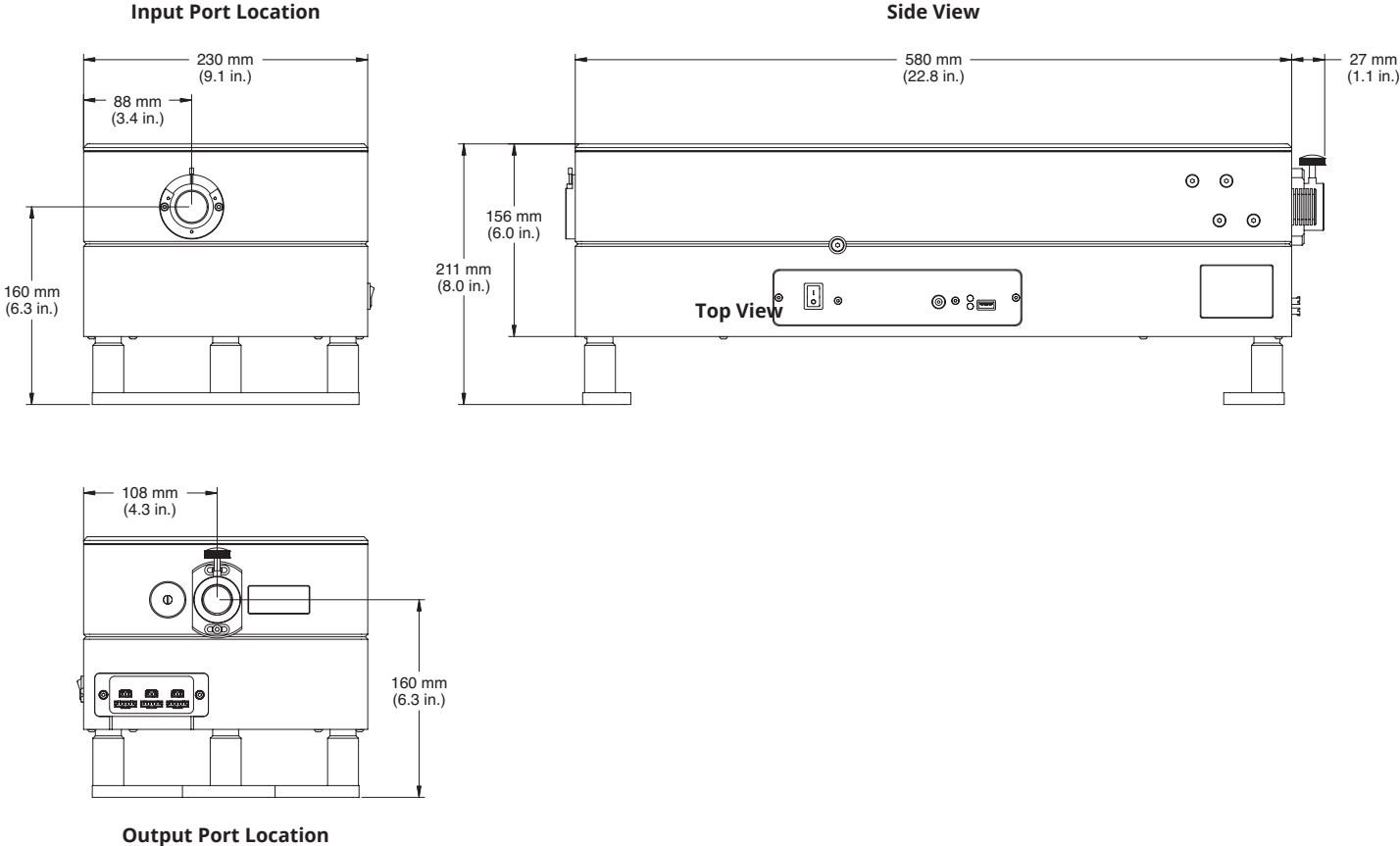
⁸ DFG2 tuning range is 4 µm to 15 µm for <50 fs pump. DFG2 pulse width is (1 to 2) x pump for <130 fs pump.

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



MECHANICAL SPECIFICATIONS

TOPAS¹-Prime



¹ TOPAS is a registered trademark of Light Conversion.



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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. Printed in the U.S.A. MC-025-12-0M0217 Copyright ©2017 Coherent, Inc.