

OPerA Solo

Fully Integrated, Computer-Controlled Femtosecond Optical Parametric Amplifier Accessory

OPerA Solo is a one-box femtosecond optical parametric amplifier (OPA) that extends the wavelength availability of the Astrella and Legend Elite HE+ families of ultrafast amplifiers from 240 nm to 20 μm . OPerA Solo is the only kHz OPA that integrates all pump conditioning optics, wavelength extension options and wavelength separation optics within one enclosure. This makes OPerA Solo a very compact, easy-to-use and stable device. OPerA Solo incorporates well-proven TOPAS technology including white light seeding for lowest output noise performance.

FEATURES & BENEFITS

- Fully integrated one-box system
- Convenient computer-controlled tuning
- Options for 240 nm to 20 μm tuning
- Configurations to accommodate Femto, USP, and USX pulse widths from Coherent kHz femtosecond amplifiers
- “Fresh pump” configuration for optimum spatial, temporal, and spectral performance
- Multiple OPAs may be pumped by a single kHz amplifier

APPLICATIONS

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



SPECIFICATIONS ^{1,2}		Wavelength Range	Pulse Energy		Polarization
			<50 fs pump	<110 fs pump	
OPerA Solo ³	Signal	1160 to 1600 nm	>220 µJ (S+I)	>220 µJ (S+I)	V
	Idler	1600 to 2600 nm			H
OPTIONS ⁴					
SH Package	SHI	800 to 1160 nm	>30 µJ	>50 µJ	V
	SHS	580 to 800 nm			V
SF Package	SFI	533 to 600 nm	>30 µJ	>50 µJ	V
	SFS	475 to 533 nm	>40 µJ	>70 µJ	V
FH Package	FHI	400 to 480 nm	>5 µJ	>10 µJ	H
	FHS	290 to 400 nm			H
SHSF Package	SHSFI	266 to 295 nm	>3 µJ	>8 µJ	H
	SHSFS	240 to 266 nm			H
NDFG Package	NDFG1 ^{5,6}	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 ⁶	2.6 to 4.9 µm	>2 µJ at 4 µm	>8 µJ at 4 µm	H
	NDFG2 ⁶	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 0.2 mJ to 4 mJ for <110 fs pump and 0.2 mJ to 3.5 mJ for <50 fs pump.

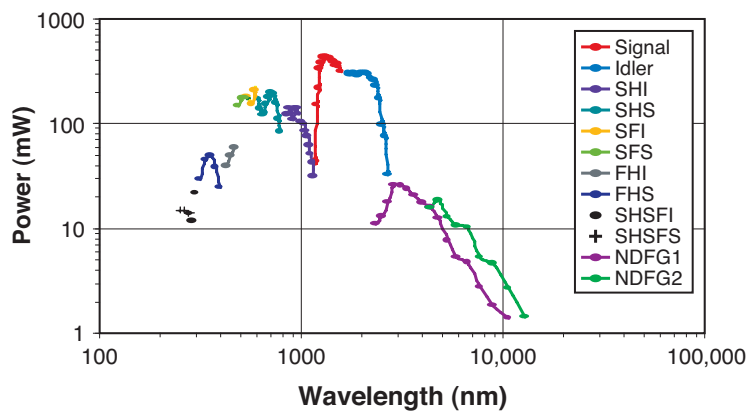
3 Signal pulse width is (0.7 to 1.0) x pump for <110 fs pump duration, (1 to 1.5) x pump for <50 sec. pump duration.

4 Energies given at peak of tuning curves. SH/SF/FH/SHSF wavelength extension packages listed include all mixing crystals listed in preceding options (e.g., SHSF option includes crystals, etc., to tune from 240 to 1160 nm).

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

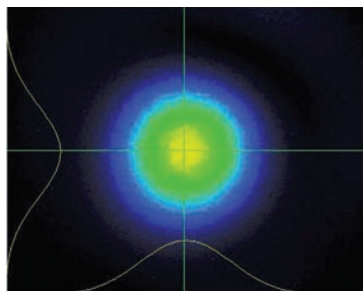
6 For <50 fs pump NDFG tuning ranges are as follows: NDFG1- 2.6 µm to 9 µm, NDFG1-KTA - 2.6 µm to 4.5 µm and NDFG2 - 4 µm to 15 µm.

Typical OPerA Solo Tuning Curve
Legend Elite USP-1K-HE Pump (3.3 mJ)

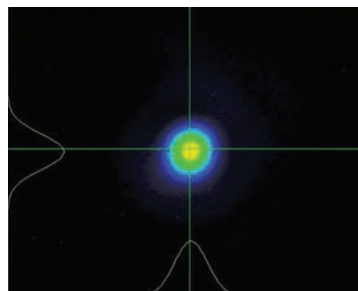


Typical OPerA Solo Beam Profile
500 nm Sum Frequency Generation

Near Field



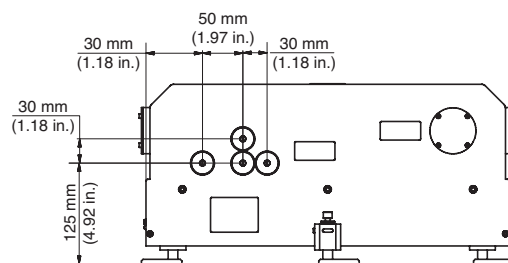
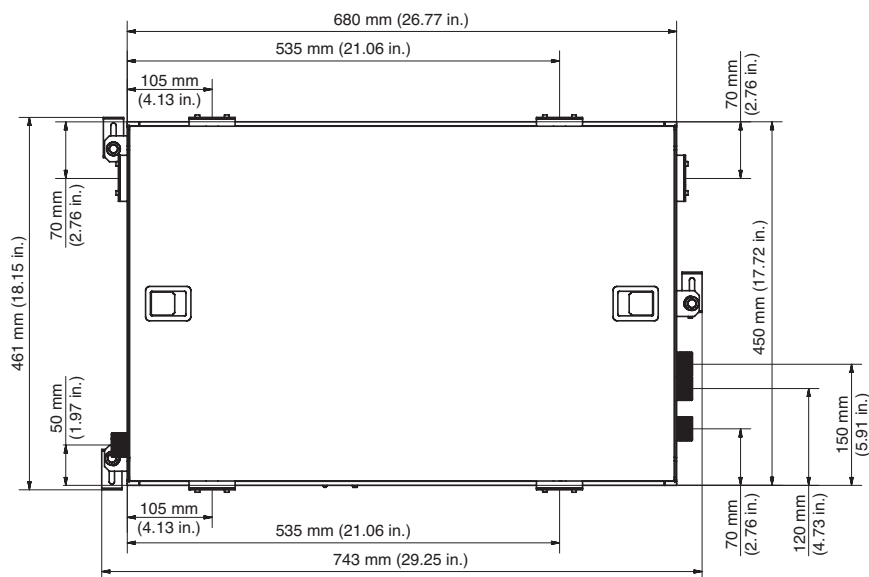
Far Field



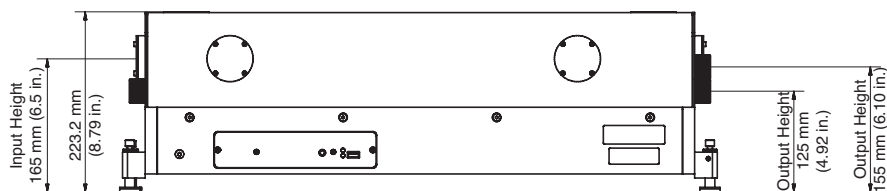
MECHANICAL SPECIFICATIONS

OPerA Solo

Top View



Side View



Front View



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Coherent offers a limited warranty for all OPerA Solo Amplifiers. 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.
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