

TOPAS prime

SERIES

Optical Parametrical Amplifiers



GENERAL DESCRIPTION

TOPAS-Prime series of Optical Parametric Amplifiers (OPA) is a range of white light seeded femtosecond OPA, which deliver pulses continuously and automatically tunable from 189 nm to 20 μm . TOPAS-Prime series OPA can be pumped with Ti:sapphire amplifiers with pulse duration ranging from 20 fs to 200 fs and pulse energies from 0.15 mJ up to 60 mJ. Several devices are offered depending on required output energy and level of integration: TOPAS-Prime and TOPAS-Prime-Plus, HE-TOPAS-Prime and HE-TOPAS-Prime-Plus, TOPAS-Twins, and HE-TOPAS-Stage. Custom solutions beyond the given specifications are available.

FEATURES

- Energy conversion into the parametric radiation ~30-40%
- Tuning range spanning from 189 nm to 20 μm
- High output stability throughout the entire tuning range
- Nearly bandwidth and diffraction limited output
- Upgradeability for pump energy, wavelength and pulse width
- Computer controlled operation
- Monolithic housing for mechanical robustness and minimal environmental sensitivity
- Customized solutions available

TOPAS-PRIME

TOPAS-Prime is a two stage optical parametric amplifier of white-light continuum. It replaces our OPA TOPAS-C offering better performance and new options. TOPAS-Prime introduces a number of important upgrades including monolithic housing, fresh pump sum frequency generation, and new enclosed beam routing units. The TOPAS-Prime is more mechanically stable, user friendly and versatile in terms of input parameters. Two main versions of TOPAS-Prime are available: a standard version with input energy of up to 3.5 mJ @ 35 fs and TOPAS-Prime-Plus with increased input energy acceptance of up to 5 mJ @ 35-100 fs, which yields 40% higher output energy as compared to TOPAS-Prime.

TOPAS-TWINS

TOPAS-Twins are two independently tunable OPAs integrated into single monolithic housing. Both OPAs share the same white light source in order to provide excellent and bound up stability of both outputs. Shared white light enables the user to generate passively carrier envelope phase (CEP) locked mid-IR pulses in 4-20 μm range. The energy for each OPA can be split to nearly any ratio internally while the specifications for each OPA are the same as of TOPAS-Prime.

HE-TOPAS-PRIME

HE-TOPAS-Prime has a third amplification stage added to a standard TOPAS-Prime section, all in one monolithic housing, in order to accept input energy higher than 5 mJ and achieve energy conversion of ~40% to Signal and Idler. Thanks to wisely several times folded optical layout, the system is compact, user-friendly and easily reconfigurable for different pump pulse parameters. Two main versions of HE-TOPAS-Prime are available: a standard version with input energy of up to 25 mJ @ 100 fs (8 mJ @ 35 fs) and HE-TOPAS-Prime-Plus with input energy of up to 60 mJ @ 100 fs (20 mJ @ 35 fs). Customized solutions are available, for example: even higher pump energy, temperature stabilized body, piezo controlled delays.

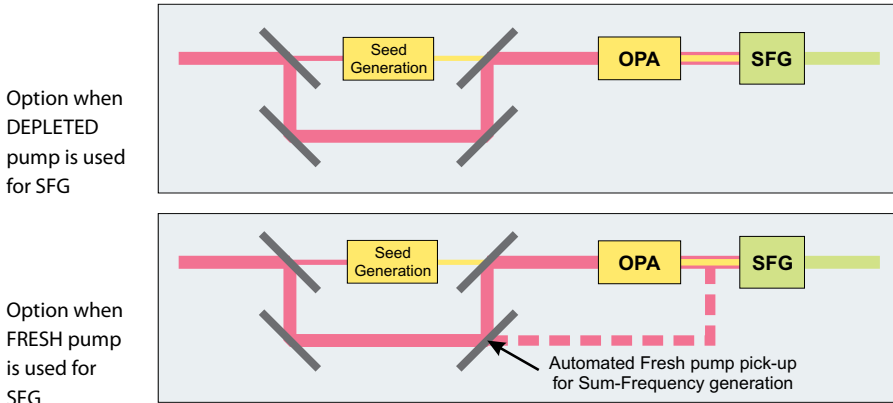
HE-TOPAS-STAGE

HE-TOPAS-Stage is an additional amplification stage for customers who already have TOPAS-Prime, TOPAS-C or TOPAS-Twins devices. This compact add-on unit transforms your TOPAS device into High Energy TOPAS. HE-TOPAS-Stage can accept input energy of up to 25 mJ @ 100 fs (8 mJ @ 35 fs).

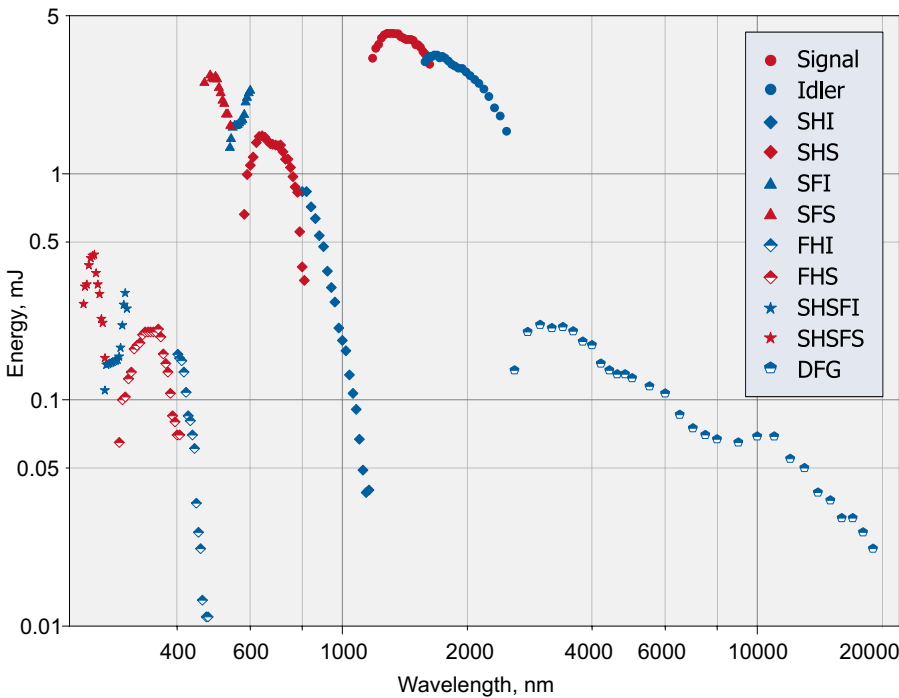
TOPAS-PRIME SERIES COMPARISON TABLE

	TOPAS Prime	TOPAS Prime Plus	TOPAS Twins		HE-TOPAS stage *	HE-TOPAS Prime	HE-TOPAS Prime Plus
Pump, mJ @ 20 fs	0.15 - 3.5	0.15 - 5	1st channel	2nd channel	2-5		5-12
Pump, mJ @ 35 fs			0.15 - 0.8 (<60 fs)	0.15 - 3.5 (<60 fs)	2-8		8-20
Pump, mJ @ 100 fs			0.15 - 2 (60 - 200 fs)	0.15 - 4 (60 - 200 fs)	2-25		25-60
Tuning range	189 nm - 20 μm						
Beam size, mm (1/e ²)	<11				<13		<20
Amplification stages	2				+1	3	
S+I efficiency	~30% at peak				~40% at peak		

* HE-TOPAS stage – additional amplification stage for TOPAS-Prime, TOPAS-Twins or TOPAS-C.



New sum-frequency generation (SFG) option for TOPAS-Prime



HE-TOPAS-Prime tuning curve. Pump: 22 mJ, 45 fs, 805 nm.

Local distributor list available at www.lightcon.com



Specifications are subject to change without notice.



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