TOPAS

Optical Parametric Amplifiers for Ti:Sapphire Lasers

- Tuning range 1160 – 2600 nm, extendable to 189 nm – 20 µm
- Conversion efficiency of > 25%
- Wavelength extensions and high-energy upgrades
- Nearly bandwidth- and diffraction-limited output
- CEP stabilization of idler, 1600 – 2600 nm

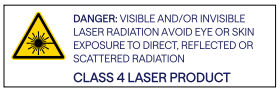
Comparison table

Product [1]	Pump pulse energy [2]	Tuning range	Extended tuning range	Output pulse duration	Upgrades	Features
TOPAS-PRIME	0.15 – 6 mJ	1160 – 2600 nm	189 nm – 20 µm	30 – 150 fs	HE-STAGE	Motorized wavelength control, hands-free operation
TOPAS-PRIME-HE	2 – 60 mJ				n/a	High energy, high conversion efficiency
TOPAS-TWINS [3]	0.3 – 6 mJ				HE-STAGE	Two independently tunable CEP-stable outputs

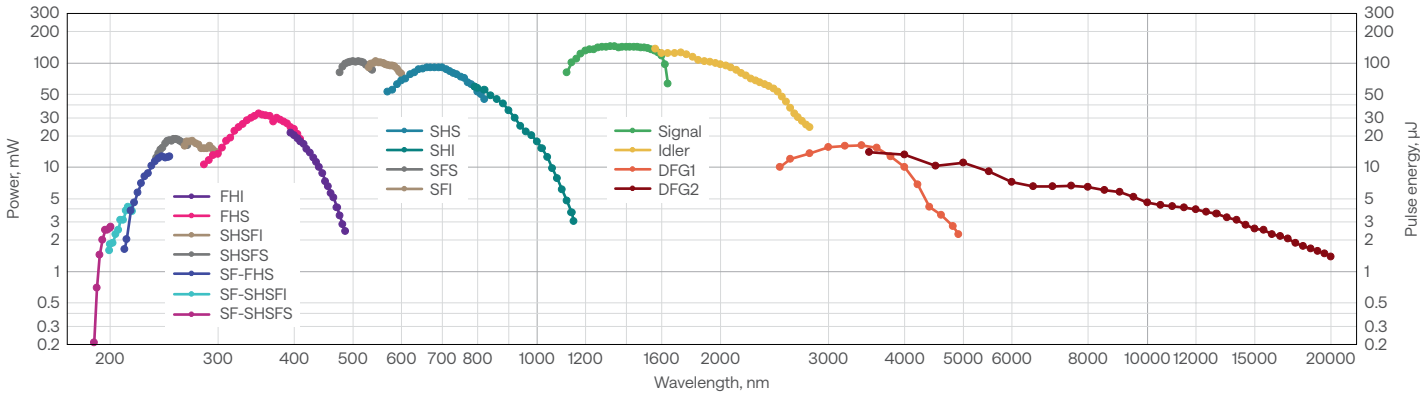
[1] *Custom solutions are available, contact sales@lightcon.com for more details.*

[2] *Maximum pump pulse energy depends on pump pulse duration.*

[3] *TWINS consists of two OPAs, seeded by the same white light source. Specifications and upgrades are applicable for each output.*



TOPAS-PRIME tuning curves. Pump: 1 mJ, 100 fs, 800 nm



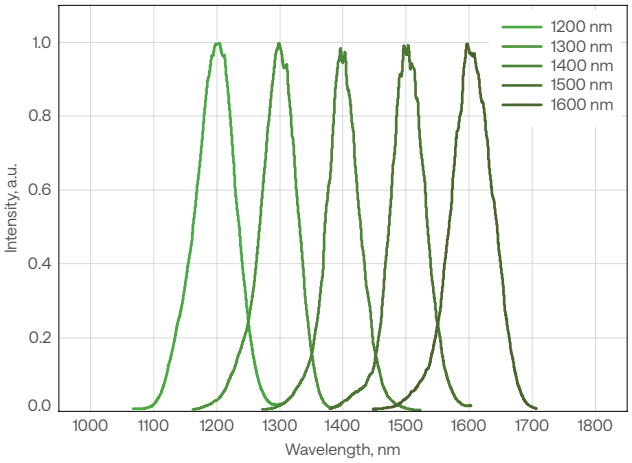
Wavelength extensions and upgrades

Product	Tuning range	Features
HE-STAGE	1160 – 2600 nm	High-energy upgrade for TOPAS-PRIME or TOPAS-TWINS
NIRUVIS	240 – 2600 nm	Motorized wavelength tuning, single housing
NIRUVIS-DUV-HE	189 – 2600 nm	High-energy version, broadest tuning range, motorized wavelength tuning, single housing
NIRUVIS-DUV	189 – 2600 nm	Broadest tuning range, motorized wavelength tuning, single housing
NIRUVIS-MW	240 – 2600 nm	Fully automated version, the same output port for the entire wavelength range, motorized wavelength tuning, single housing
NDFG	2600 nm – 20 µm	Noncolinear generator for background-free mid-IR pulses
SIG-SIG NDFG	4500 nm – 16 µm	Noncolinear generator for CEP-stable mid-IR pulses used with TOPAS-TWINS, CEP slow drift compensation-ready [1]

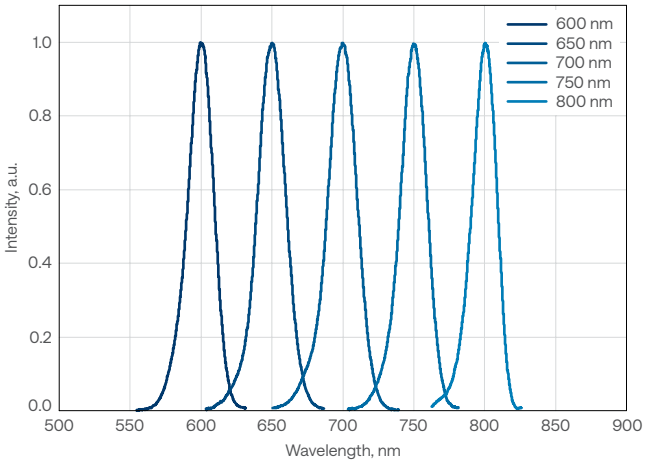
[1] *CEP slow drift is available upon request.*

Performance

TOPAS-PRIME typical signal spectra set



TOPAS-PRIME SHS typical signal spectra set

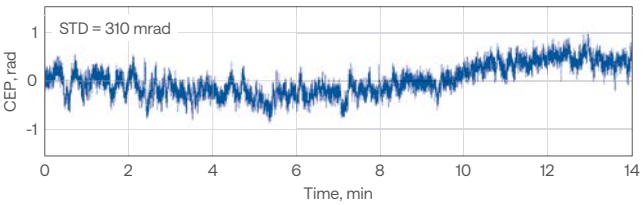


CEP stabilization of idler

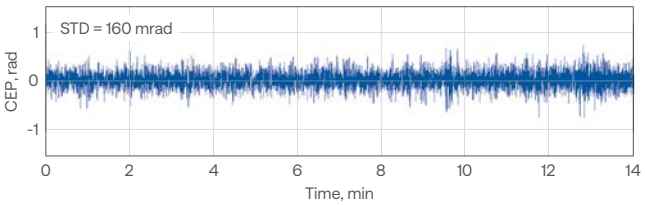
TOPAS idler (1600 – 2600 nm) is passively CEP locked due to a three-wave interaction. However, a slow CEP drift may persist because of changes in pump beam pointing or environmental conditions.

Such a drift can be compensated by employing an f-2f interferometer and a feedback loop controlling the temporal delay between the seed and pump in the power amplification stage of **TOPAS-PRIME** and **TOPAS-PRIME-HE.**

CEP stability of idler over 14 min
(a) without drift compensation



(b) with drift compensation with a slow loop



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