

TOPAS

Optical Parametric Amplifiers for Ti:Sapphire Lasers

Tuning range 1160 – 2600 nm,
extendable to 189 nm – 20 μ m

Conversion efficiency of > 25%

Wavelength extensions and
high-energy upgrades

Nearly bandwidth- and
diffraction-limited output

CEP stabilization of idler, 1600 – 2600 nm



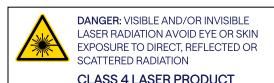
Comparison table

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

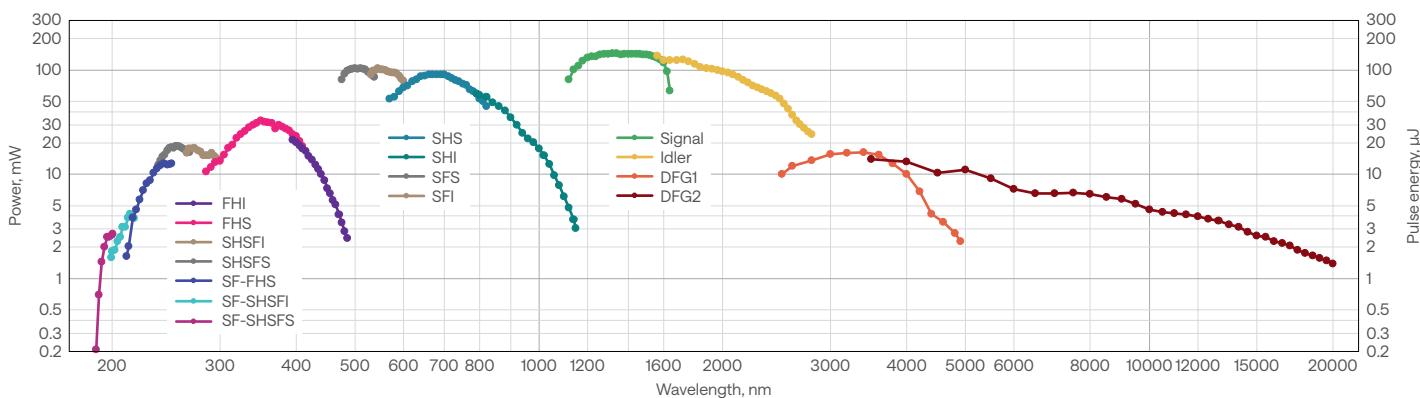
¹⁾ Custom solutions are available, contact sales@lightcon.com for more details.

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

²⁾ Maximum pump pulse energy depends on pump pulse duration.



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



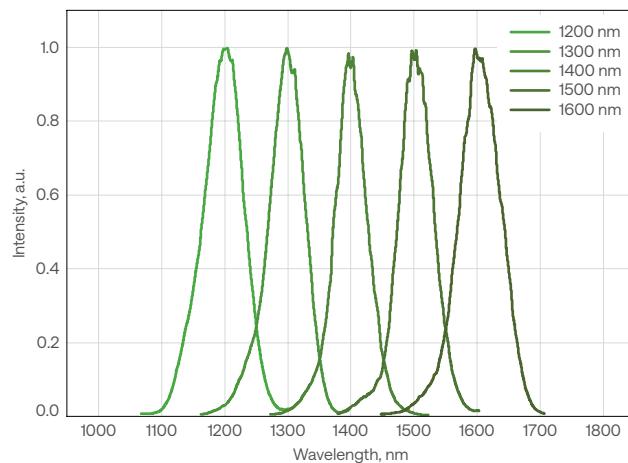
Wavelength extensions and upgrades

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 μ m	Noncollinear generator for background-free mid-IR pulses
SIG-SIG NDFG	4500 nm – 16 μ m	Noncollinear generator for CEP-stable mid-IR pulses used with TOPAS-TWINS, CEP slow drift compensation-ready ¹⁾

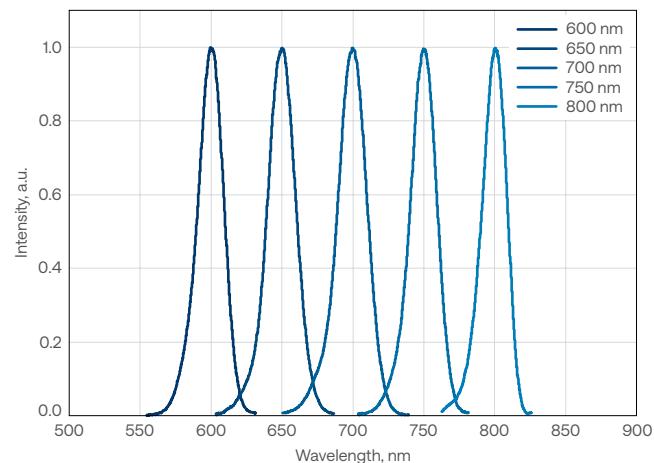
¹⁾ CEP slow drift is available upon request.

Performance

TOPAS-PRIME typical signal spectra set



TOPAS-PRIME SHS typical signal spectra set



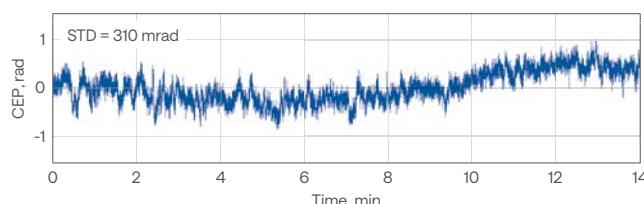
CEP stabilization of idler

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

