

ORPHEUS

Collinear Optical Parametric Amplifier

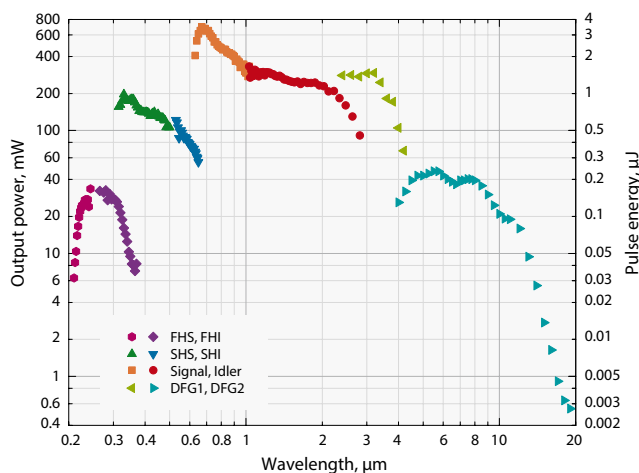


FEATURES

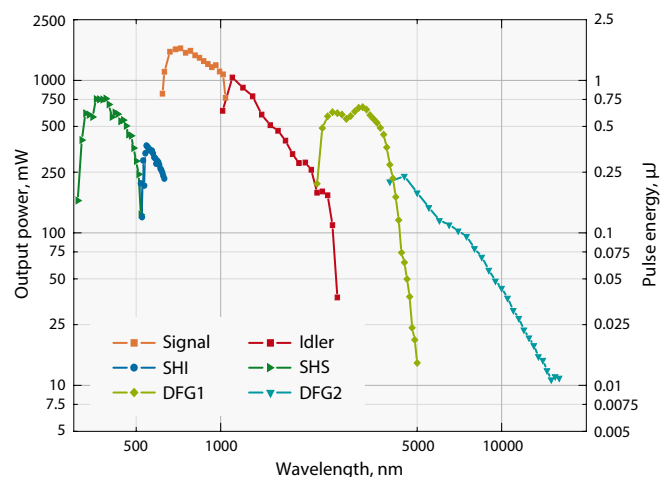
- 190 nm – 16000 nm tunable wavelength
- Single pulse – 1 MHz repetition rate
- Up to 40 W pump power
- Up to 2 mJ pump energy
- Completely automated
- Integrated spectrometers for monitoring the output wavelength

ORPHEUS is collinear optical parametric amplifier of white light continuum pumped by femtosecond Ytterbium based laser amplifiers. With the additional feature of being able to work at high repetition rates, ORPHEUS maintains the best properties of TOPAS series OPA's: high output pulse stability throughout the entire tuning range, high output beam quality and full computer control via USB port as well as optional frequency mixers to extend the tuning range from UV up to mid IR ranges. Femtosecond pulses, high power tunable output together with flexible multi kilohertz repetition rate make the tandem of ORPHEUS and PHAROS or CARBIDE laser an invaluable tool for multiphoton microscopy, micro structuring and spectroscopy applications. Several ORPHEUS can be pumped by a single PHAROS or CARBIDE laser providing independent beam wavelength tuning.

ORPHEUS-HP and ORPHEUS-HE devices are modified versions of the ORPHEUS. ORPHEUS-HP is available with UV-VIS tuning range frequency mixers integrated into a thermally stabilized monolithic housing. Also, it provides the option of generating deep ultraviolet pulses (190 – 215 nm) and DFG (2200 – 16000 nm). The design offers completely hands free wavelength tuning and automated wavelength separation, ensuring the same position and direction for all wavelengths in UV, VIS and near IR regions. A mini spectrometer is integrated for online monitoring of output wavelength and comes with specialized software that enables wavelength feedback and automatic calibration. ORPHEUS-HE is available with UV-VIS tuning range extension and is dedicated for high energy pump lasers (1 – 2 mJ).



ORPHEUS
Typical tuning curve of ORPHEUS.
Pump: 6 W, 30 μ J, 200 kHz



ORPHEUS-HP
Typical tuning curve of ORPHEUS-HP.
Pump: 40 W, 40 μ J, 1000 kHz

For custom tuning curve value visit <http://toolbox.lightcon.com/tools/tuningcurves/>

SPECIFICATIONS

Product name	ORPHEUS		ORPHEUS-HP		ORPHEUS-HE
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OUTPUT FROM ORPHEUS

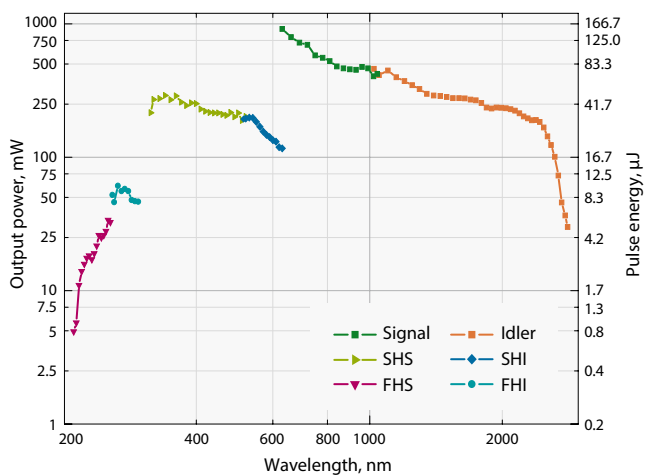
Tuning range	630 – 1030 nm (Signal) 1030 – 2600 nm (Idler)				
Integrated second harmonic generation efficiency	> 35 % (515 nm) port B		not specified		
Pump power (max)	8 W		40 W		10 W
Pump energy	8 – 20 µJ	20 – 400 µJ	8 – 20 µJ	20 – 1000 µJ	1000 – 2000 µJ ¹⁾
Conversion efficiency at peak	> 6 % (Signal + Idler combined)	> 12 % (Signal + Idler combined)	> 4.5 % (Signal) > 2.8 % (Idler)	> 9 % (Signal) > 4 % (Idler)	
Pulse duration	130 – 290 fs (PHAROS / CARBIDE) 120 – 190 fs (PHAROS-SP)				
Pulse bandwidth @ 700 – 960 nm	80 – 150 cm ⁻¹ (PHAROS / CARBIDE) 100 – 220 cm ⁻¹ (PHAROS-SP)				
Long term power stability (8 h)	< 2 % @ 800 nm				
Pulse energy stability (1 min)	< 2 % @ 800 nm				
Features	Cost effective		Completely automated		High energy

WAVELENGTH EXTENSIONS

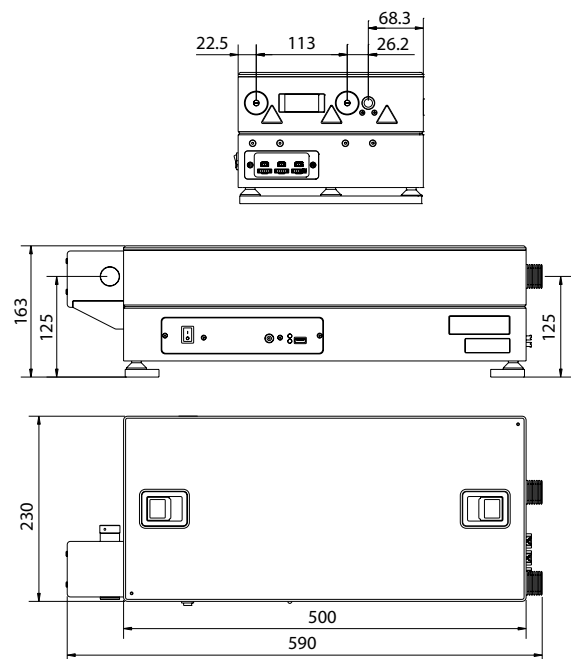
When pump energy	8 – 20 µJ	20 – 400 µJ	8 – 20 µJ	20 – 1000 µJ	1000 – 2000 µJ ¹⁾
315 – 515 nm (SH of Signal)	> 1.2 %	> 3 %	> 1.2 %	> 2.4 %	
515 – 630 nm (SH of Idler)					
210 – 315 nm (TH of Signal)	—		> 0.4 %	> 0.8 %	—
210 – 255 nm (FH of Signal)	> 0.3 %	> 0.6 %	—		> 0.6 %
255 – 315 nm (FH of Idler)					
190 – 215 nm (DeepUV)	—			> 0.3 % ²⁾	Contact LIGHT CONVERSION
2200 – 4200 nm (DFG1)	> 1.5 % @ 3000 nm	> 3 % @ 3000 nm	> 1.5 % @ 3000 nm	> 3 % @ 3000 nm	
4000 – 16 000 nm (DFG2)	> 0.1 % @ 10000 nm	> 0.2 % @ 10000 nm	> 0.1 % @ 10000 nm	> 0.2 % @ 10000 nm	

¹⁾ Pump energy up to 5 mJ available, please contact sales@lightcon.com for specifications.

²⁾ DeepUV conversion efficiency is specified only when pump input to OPA is <10 W. In case of higher pump power, DeepUV efficiency decreases, the maximum output power is limited to ~40 mW @ 200 nm.



ORPHEUS-HE
Typical tuning curve of ORPHEUS-HE.
Pump: 6 W, 1 mJ, 6 kHz



ORPHEUS drawings