ORPHEUS

Collinear Optical Parametric Amplifier

FEATURES

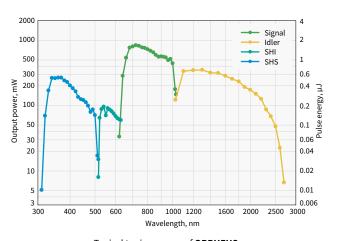
- 190 16000 nm tuning range
- Single-shot 2 MHz repetition rate
- Up to 80 W pump power
- Up to 2 mJ pump pulse energy
- Completely automated



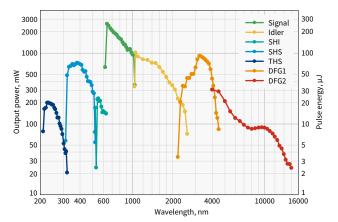
ORPHEUS is a collinear optical parametric amplifier (OPA) designed to provide the widest tuning range. Coupled with a PHAROS or CARBIDE laser, it emits femtosecond pulses tunable from ultraviolet to mid-IR at a repetition rate of up to 2 MHz. Accordingly, it is an invaluable tool for ultrafast spectroscopy, nonlinear microscopy, and microstructuring applications.

The base ORPHEUS model provides a tuning range from 630 to 2600 nm, which is extendable down to 210 nm with external harmonic generators. The ORPHEUS-HP model

integrates all of the wavelength tuning options into a single thermally-stabilized housing. Output wavelength calibration and feedback is possible with an internal spectrometer. Its design offers completely hands-free wavelength tuning and automated wavelength separation, ensuring the same position and direction for the 190 – 2600 nm wavelength range. The mid-IR output is tunable from 2400 nm to 16 μm and has a separate output port. The ORPHEUS-HE model is designed for higher pump pulse energy.



Typical tuning curves of **ORPHEUS**. Pump: 8 W, 16 μJ, 500 kHz



Typical tuning curves of **ORPHEUS-HE**. Pump: 20 W, 2 mJ, 10 kHz

For custom tuning curves visit http://toolbox.lightcon.com/tools/tuningcurves/

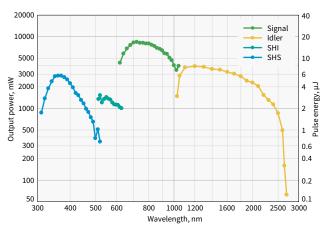


SPECIFICATIONS

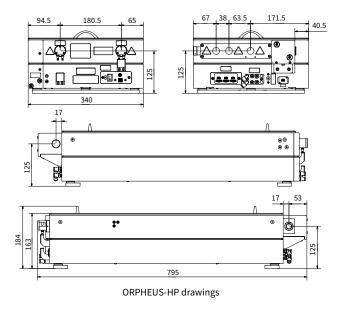
Model	ORPHEUS		ORPHEUS-HP		ORPHEUS-HE	
OUTPUT FROM ORPHEUS						
Tuning range	630 –1030 nm (Signal) 1030 – 2600 nm (Idler)					
ntegrated 2H (515 nm) generation efficiency	> 35% 1)		not specified			
Maximum pump power	8 W		80 W			
Pump pulse energy	8 – 20 μJ	20 – 400 μJ	8 – 20 μJ	20 – 400 μJ	400 – 2000 μJ ²⁾	
Conversion efficiency at peak	> 6% (Signal and Idler combined)	> 12% (Signal and Idler combined)	> 4.5% (Signal) > 2% (Idler)	> 9% (Signal) > 4% (Idler)		
Pulse duration	120 – 250 fs					
Spectral bandwidth @ 700 – 960 nm	75 – 220 cm ⁻¹					
ong-term power stability, 8 h ³⁾	<2% @ 800 nm					
Pulse-to-pulse energy stability, 1 min ³⁾	< 2% @ 800 nm					
Features	Cost-effective		Completely automated		High energy & completely automate	
OPTIONAL WAVELENGTH EXTEN	SIONS					
Pump pulse energy	8 – 20 μJ	20 – 400 μJ	8 – 20 μJ	20 – 400 μJ	400 – 2000 μJ ²⁾	
5H package at peak 315 – 515 nm (SHS) 515 – 630 nm (SHI)	> 1.2%	> 3%	> 1.2%	> 2.4%		
210 – 315 nm (THS)	n/a		> 0.4% 4)	> 0.8% 4)		
FH package at peak 210 – 258 nm (FHS) 258 – 315 nm (FHI)	Contact sales@lightcon.com		n/a			
190 – 215 nm (DeepUV)	n/a			> 0.3% 5)	Contact sales@lightcon.com	
	Contact sales@lightcon.com		> 1.5% @ 3000 nm	> 3% @ 3000 nm		
2200 – 4200 nm (DFG1)	C				> 0.2% @ 10000 nm	

¹⁾ At designated output port B.

⁵⁾ DeepUV conversion efficiency is specified for pump power of < 10 W. In case of higher pump power, conversion efficiency decreases. The maximum output power is limited to 40 mW @ 200 nm.</p>



Typical tuning curves of ORPHEUS-HP. Pump: 80 W, 160 μJ, 500 kHz





CLASS 4 LASER PRODUCT

 $^{^{\}rm 2)}$ Pump energy of up to 5 mJ available; contact sales@lightcon.com for details.

³⁾ Expressed as NRMSD (normalized root mean squared deviation).

⁴⁾ Maximum output power of 400 mW.