

ORPHEUS-ONE

Mid-IR Collinear Optical Parametric Amplifier

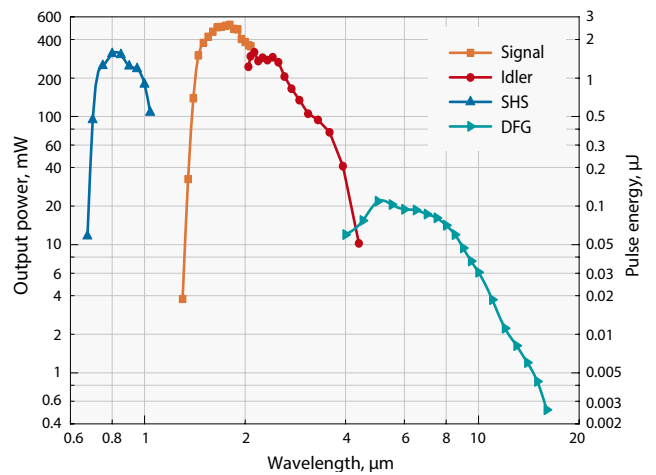


FEATURES

- Twice the output in mid-IR
- Broad-bandwidth >200 cm⁻¹ configuration available
- 1350 nm – 16000 nm tunable wavelength
- Single pulse – 1 MHz repetition rate
- Up to 40 W pump power
- Up to 2 mJ pump energy
- Computer controlled

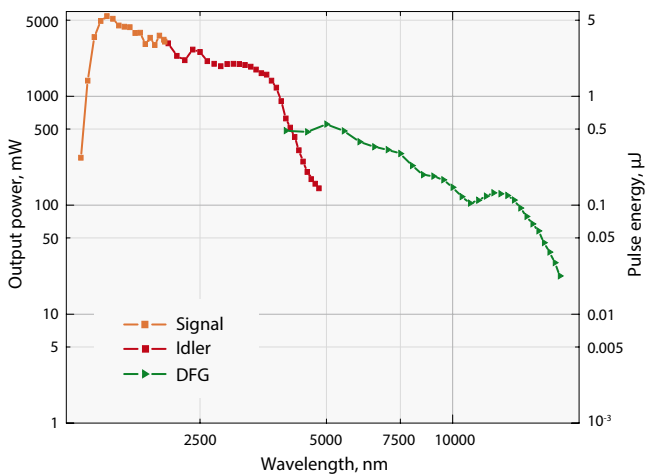
ORPHEUS-ONE is a collinear optical parametric amplifier (OPA) of white-light continuum pumped by femtosecond Ytterbium based laser amplifiers and focused on mid-infrared wavelengths generation.

In comparison to standard ORPHEUS + DFG configuration, the ORPHEUS-ONE provides higher conversion efficiency into the infrared range. The scheme used in ORPHEUS-ONE can generate >150 cm⁻¹ bandwidth pulse when OPA is configured for broad-bandwidth amplification.



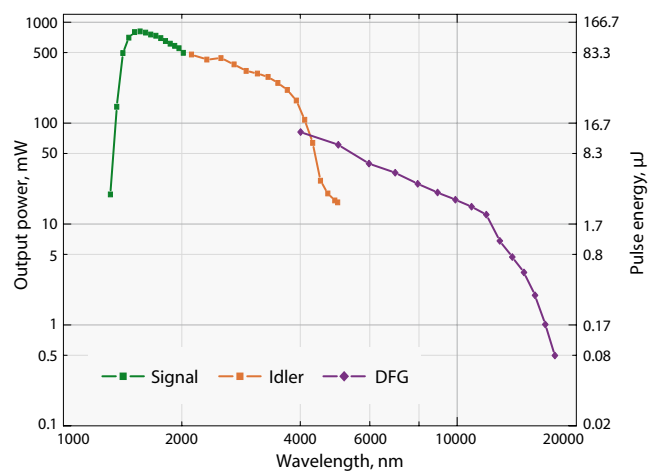
ORPHEUS-ONE

Typical tuning curve of ORPHEUS-ONE.
Pump: 6 W, 30 μJ, 200 kHz



ORPHEUS-ONE-HP

Typical tuning curve of ORPHEUS-ONE-HP.
Pump: 40 W, 40 μJ, 1000 kHz



ORPHEUS-ONE-HE

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

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

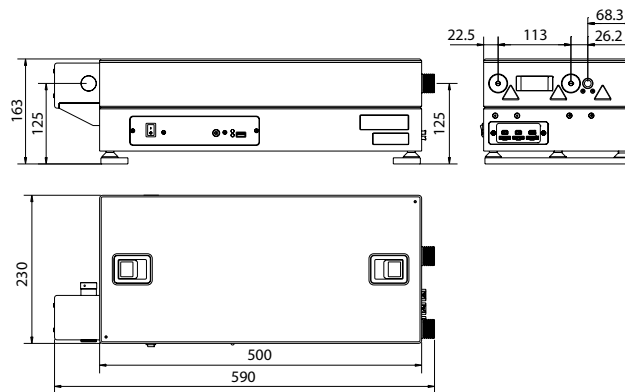
SPECIFICATIONS

Product name	ORPHEUS-ONE	ORPHEUS-ONE-HP	ORPHEUS-ONE-HP (BB)	ORPHEUS-ONE-HE
OUTPUT FROM ORPHEUS-ONE (1350 – 4500 nm)				
Tuning range	1350 – 2060 nm (Signal) 2060 – 4500 nm (Idler)			
Maximum pump power	8 W	40 W		8 W
Pump energy	12 – 400 μ J	12 – 1000 μ J		1000 – 2000 μ J
Conversion efficiency at peak of tuning curve, signal and idler combined ¹⁾	> 14 %, pump 30 – 1000 μ J > 10 %, pump 12 – 30 μ J			> 14 %
Pulse bandwidth	60 – 120 cm^{-1} @ 1450 – 2000 nm	60 – 150 cm^{-1} @ 1450 – 2000 nm	> 300 cm^{-1} @ 1400 nm 60 – 140 cm^{-1} @ 1550 – 2000 nm	60 – 150 cm^{-1} @ 1450 – 2000 nm
Long term power stability (8 h)	< 2 % @ 1550 nm			
Pulse energy stability (1 min)	< 2 % @ 1550 nm			
Features	Cost effective	High power		High energy

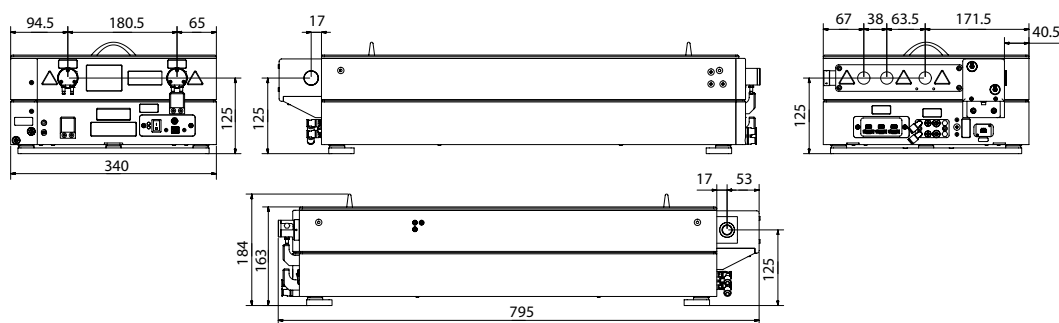
WAVELENGTH EXTENSIONS

Tuning range (SHS)	720 – 970 nm	—	720 – 970 nm
Pulse energy conversion efficiency ¹⁾	> 2 % at peak		> 2 % at peak
Pulse bandwidth	70 – 150 cm^{-1} @ 800 – 970 nm		70 – 150 cm^{-1} @ 800 – 970 nm
Tuning range (DFG2)	4500 – 16000 nm (based on signal and idler calibration)		
Pulse energy conversion efficiency ¹⁾	> 0.3 % @ 10000 nm, when pump energy 30 – 2000 μ J > 0.2 % @ 10000 nm, when pump energy 12 – 30 μ J		
Pulse bandwidth	60 – 150 cm^{-1} @ 5000 – 8000 nm	60 – 120 cm^{-1} @ 5000 – 8000 nm	

¹⁾ Conversion efficiency specified as the percentage of input power to ORPHEUS-ONE.



ORPHEUS-ONE outline drawings



ORPHEUS-ONE-HP and ORPHEUS-HP outline drawings