ORPHEUS-ONE

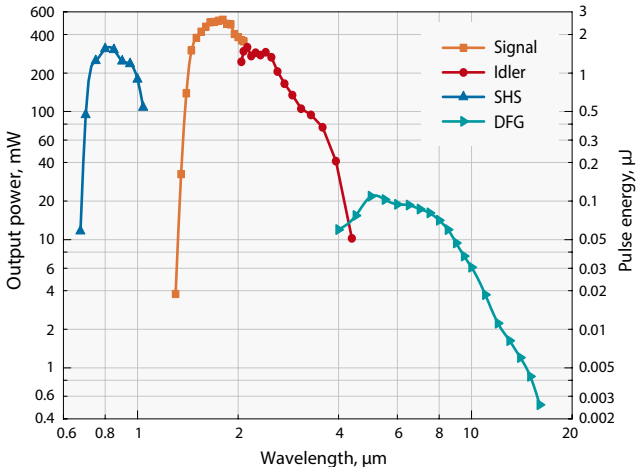
Mid-IR Collinear Optical Parametric Amplifier

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

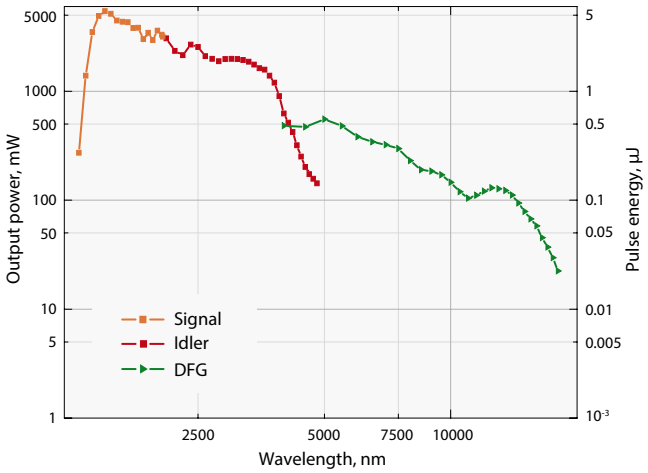
ORPHEUS-ONE is a collinear optical parametric amplifier (OPA) of white-light continuum pumped by femtosecond Ytterbium based laser amplifiers and focused on mid-infrared wavelengths generation.

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.



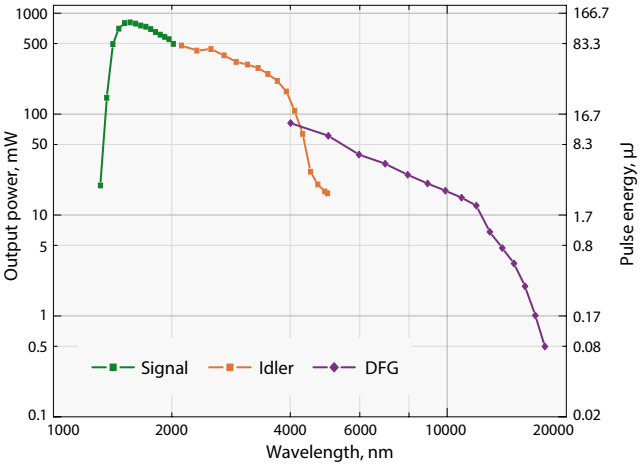
ORPHEUS-ONE

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

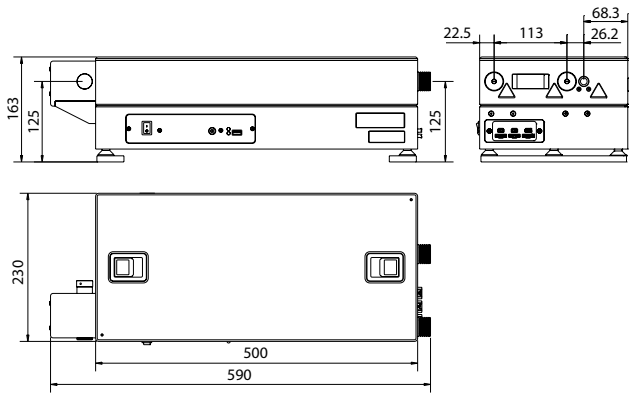
For custom tuning curve value visit *http://toolbox.lightcon.com/tools/tuningcurves/*

Rev. 20190213

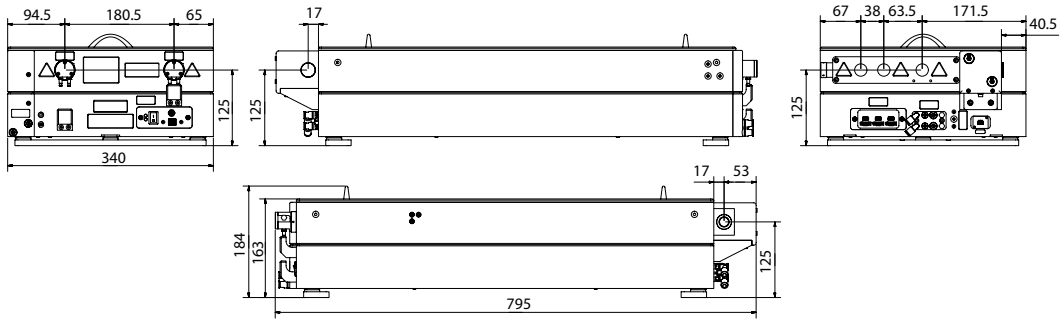
SPECIFICATIONS

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		10 W
Pump energy	12 – 400 µJ	12 – 1000 µJ		1000 – 2000 µJ
Conversion efficiency at peak of tuning curve, signal and idler combined [1]	> 14 %, pump 30 – 1000 µJ > 10 %, pump 12 – 30 µJ			> 14 %
Pulse bandwidth	60 – 120 cm^{-1} @ 1450 – 2000 nm	60 – 150 cm^{-1} @ 1450 – 2000 nm	> 200 cm^{-1} @ 1450 – 1550 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			
Pulse energy conversion efficiency [1]	> 2 % at peak			
Pulse bandwidth	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 µJ > 0.2 % @ 10000 nm, when pump energy 12 – 30 µJ			
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