

# ORPHEUS | ONE

## Mid-IR Collinear Optical Parametric Amplifier

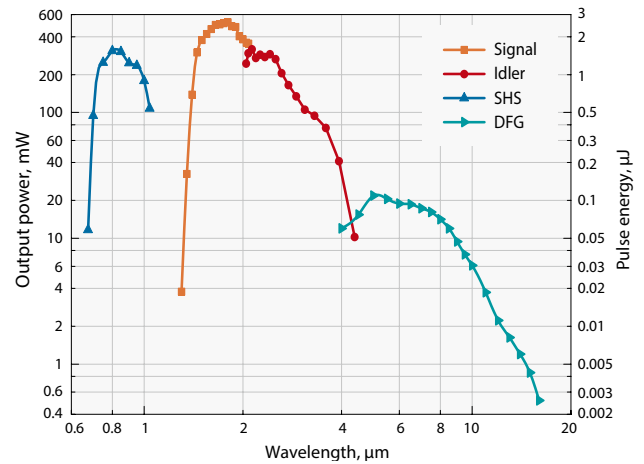
### FEATURES

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

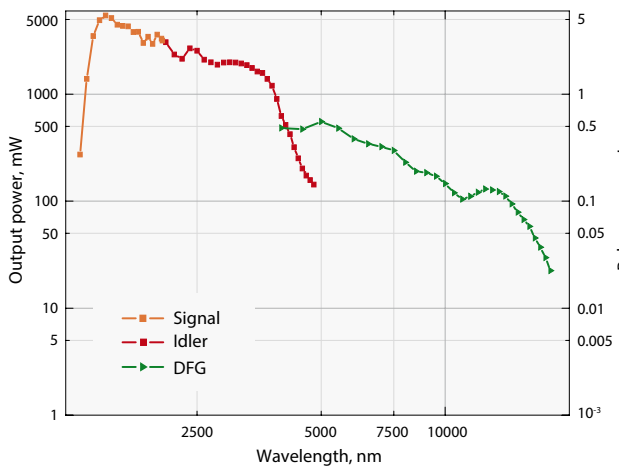


ORPHEUS-ONE is a collinear optical parametric amplifier (OPA) of white-light continuum pumped by femtosecond Ytterbium based laser amplifiers and focused on mid-infrared wavelengths generation.

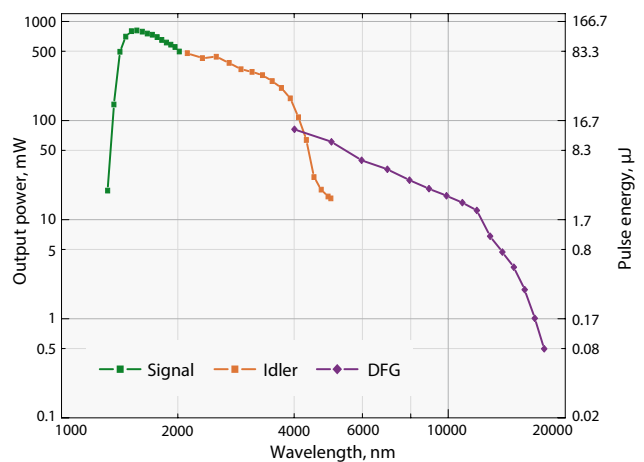
In comparison to standard ORPHEUS + DFG configuration, the ORPHEUS-ONE provides higher conversion efficiency into the infrared range. The scheme used in ORPHEUS-ONE can generate >150 cm<sup>-1</sup> bandwidth pulse when OPA is configured for broad-bandwidth amplification.



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



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



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

Model	ORPHEUS-ONE	ORPHEUS-ONE-HP	ORPHEUS-ONE-HP (BB)	ORPHEUS-ONE-HE
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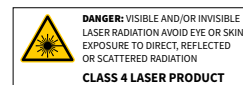
### OUTPUT FROM ORPHEUS-ONE (1350 – 4500 nm)

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 – 400 μJ		400 – 2000 μJ
Conversion efficiency at peak of tuning curve, signal and idler combined <sup>1)</sup>	> 14 %, pump 30 – 2000 μJ > 10 %, pump 12 – 30 μJ			
Pulse bandwidth	60 – 120 cm <sup>-1</sup> @ 1450 – 2000 nm	60 – 150 cm <sup>-1</sup> @ 1450 – 2000 nm	> 300 cm <sup>-1</sup> @ 1400 nm 60 – 140 cm <sup>-1</sup> @ 1550 – 2000 nm	60 – 150 cm <sup>-1</sup> @ 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

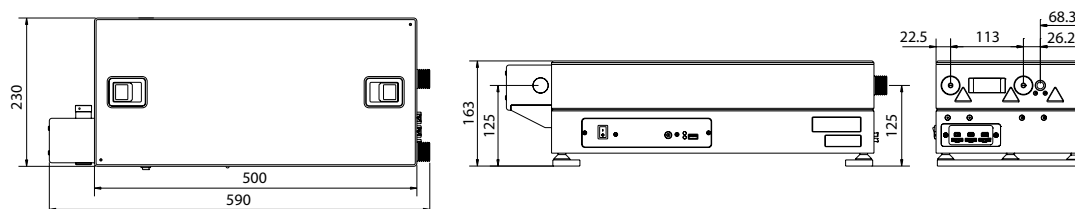
### WAVELENGTH EXTENSIONS

Tuning range (SHS)	720 – 970 nm	n/a	720 – 970 nm
Pulse energy conversion efficiency <sup>1)</sup>	> 2 % at peak		> 2 % at peak
Pulse bandwidth	70 – 150 cm <sup>-1</sup> @ 800 – 970 nm		70 – 150 cm <sup>-1</sup> @ 800 – 970 nm
Tuning range (DFG2)	4500 – 16000 nm (based on signal and idler calibration)		
Pulse energy conversion efficiency <sup>1)</sup>	> 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 <sup>-1</sup> @ 5000 – 8000 nm	60 – 120 cm <sup>-1</sup> @ 5000 – 8000 nm	

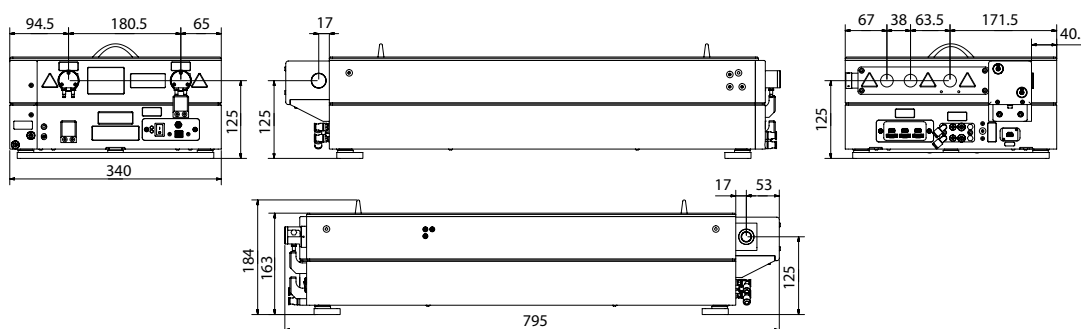
<sup>1)</sup> Conversion efficiency specified as the percentage of input power to ORPHEUS-ONE.



## OUTLINE DRAWINGS



ORPHEUS-ONE outline drawings



ORPHEUS-ONE-HP and ORPHEUS-HP outline drawings