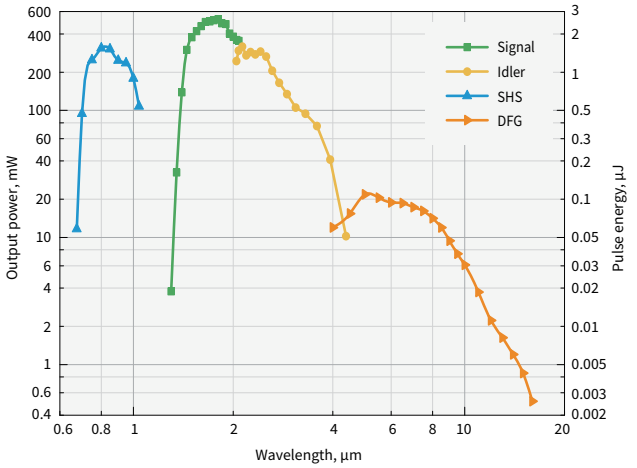
ORPHEUS | ONE

Mid-IR Collinear Optical Parametric Amplifier

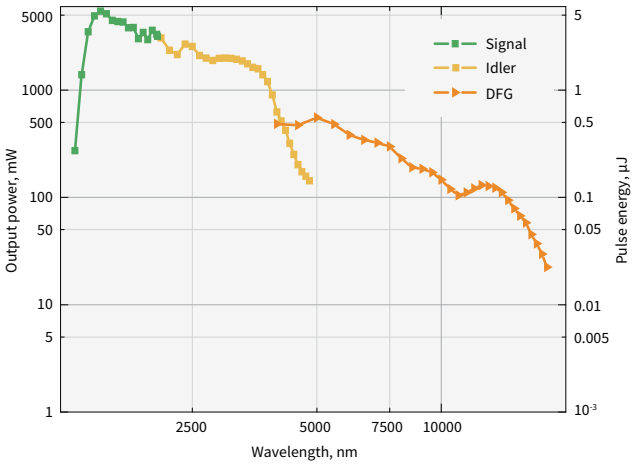
FEATURES

- High conversion efficiency in mid-IR
- 1350 – 16000 nm tuning range
- Single-shot – 2 MHz repetition rate
- Up to 80 W pump power
- Up to 2 mJ pump pulse energy

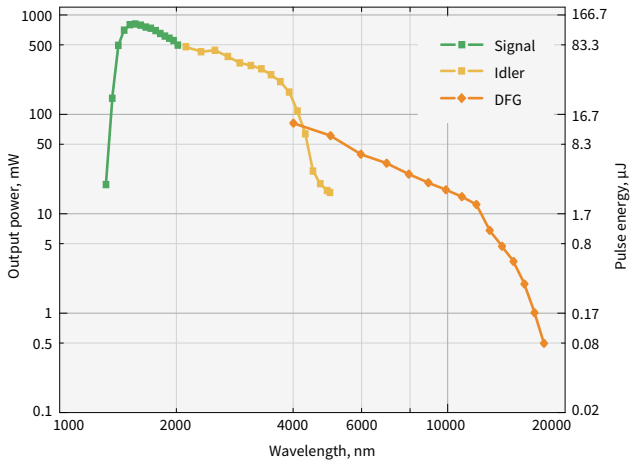
ORPHEUS-ONE is an optical parametric amplifier designed for the infrared spectral range. It has fewer wavelength extension options but provides higher conversion efficiency into mid-IR compared to ORPHEUS-HP. While ORPHEUS-ONE is simple and efficient, the output spectral bandwidth is limited by the pump pulses. For sum-frequency generation (SFG) spectroscopy and other applications requiring broad-bandwidth infrared pulses – consider ORPHEUS-MIR.



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



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



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

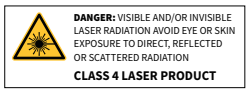
For custom tuning curves visit *http://toolbox.lightcon.com/tools/tuningcurves/*

SPECIFICATIONS

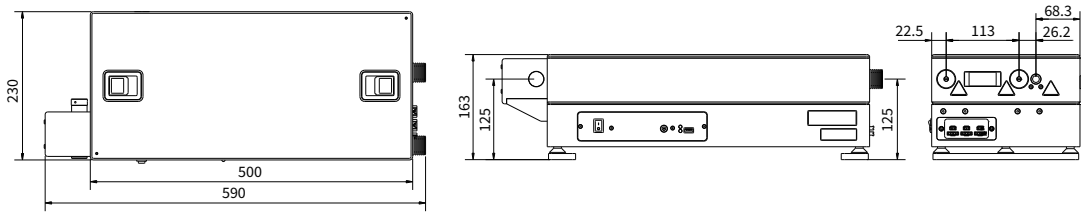
Model	ORPHEUS-ONE	ORPHEUS-ONE-HP	ORPHEUS-ONE-HE
OUTPUT FROM ORPHEUS-ONE (1350 – 4500 nm)			
Tuning range	1350 – 2060 nm (Signal) 2060 – 4500 nm (Idler)		
Maximum pump power	8 W	80 W	
Pump pulse energy	12 – 400 µJ	12 – 400 µJ	400 – 2000 µJ
Conversion efficiency at peak [1] **(Signal and Idler combined)**	> 14%, pump 30 – 2000 µJ > 10%, pump 12 – 30 µJ		
Spectral bandwidth	60 – 150 cm^{-1} @ 1450 – 2000 nm		60 – 150 cm^{-1} @ 1450 – 2000 nm
Long-term power stability, 8 h [2]	< 2% @ 1550 nm		
Pulse-to-pulse energy stability, 1 min [2]	< 2% @ 1550 nm		
Features	Cost-effective	High power	High energy

OPTIONAL WAVELENGTH EXTENSIONS			
SH option	Tuning range	Contact sales@lightcon.com	
DFG option	Tuning range	4500 – 16000 nm (based on signal and idler calibration)	
	Conversion efficiency [1]	> 0.3% @ 10000 nm, when pump energy 30 – 2000 µJ > 0.2% @ 10000 nm, when pump energy 12 – 30 µJ	
	Spectral bandwidth	60 – 150 cm^{-1} @ 5000 – 8000 nm	60 – 120 cm^{-1} @ 5000 – 8000 nm

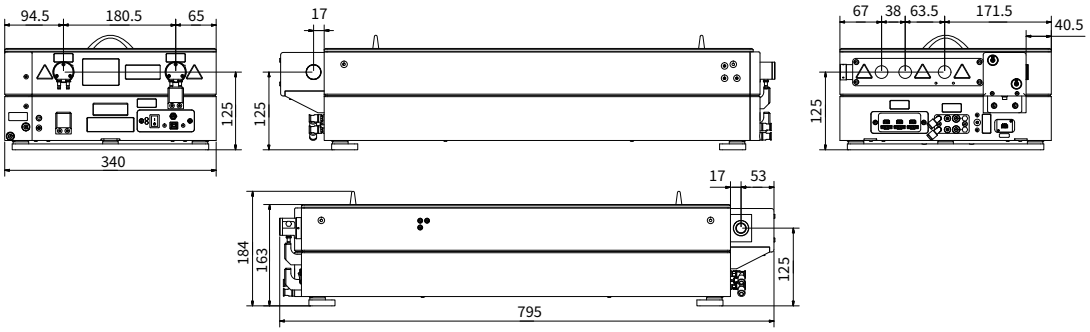
[1] *Conversion efficiency specified as the percentage of pump power to ORPHEUS-ONE.*
[2] *Expressed as NRMSD (normalized root mean squared deviation).*



DRAWINGS



ORPHEUS-ONE drawings



ORPHEUS-ONE-HP / ORPHEUS-HP drawings

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