

Mid-Infrared Collinear Optical Parametric Amplifier



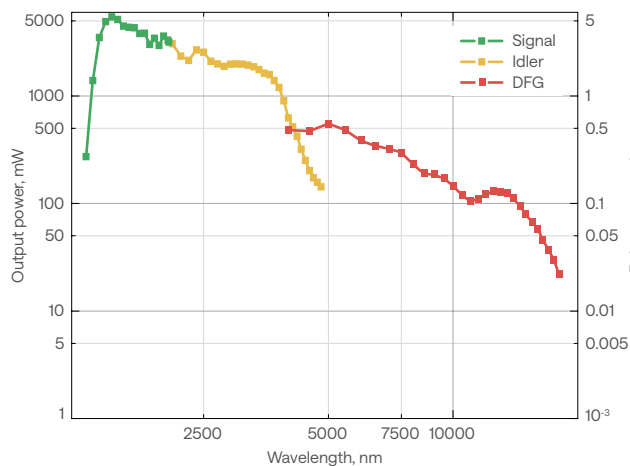
High conversion efficiency in MIR, 1400 – 16 000 nm

High energy and high power models for all needs

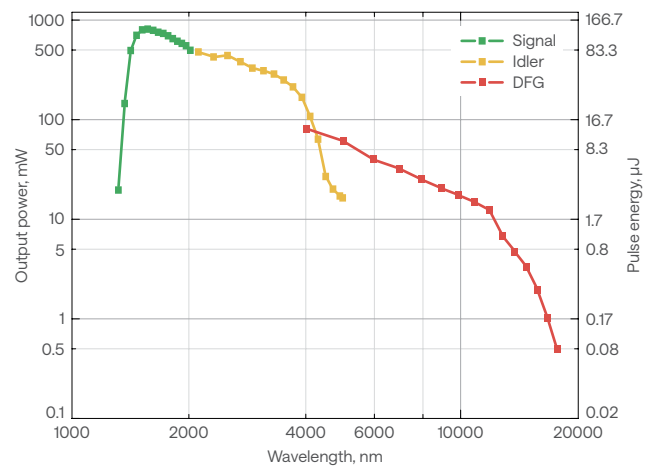
Single-shot – 2 MHz repetition rate

Supports up to 80 W, 2 mJ pump

ORPHEUS-ONE-HP typical tuning curves
Pump: 40 W, 40 μ J, 1000 kHz



ORPHEUS-ONE-HE typical tuning curves
Pump: 6 W, 1 mJ, 6 kHz



Optics Toolbox



Specifications

Model	ORPHEUS-ONE-HP	ORPHEUS-ONE-HE
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MAIN OUTPUT

Tuning range	1400 – 2000 nm (signal) 2100 – 4200 nm (idler)	
Maximum pump power	80 W	
Pump pulse energy	12 – 400 µJ	400 – 2000 µJ
Conversion efficiency ¹⁾ @ 1550 nm	> 9%, 30 – 2000 µJ pump > 6%, 12 – 30 µJ pump	
Spectral bandwidth	50 – 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	

WAVELENGTH EXTENSION (MIR)

Tuning range	4000 – 16 000 nm (DFG)	
Conversion efficiency ¹⁾	> 0.3% @ 10 000 nm, 30 – 2000 µJ pump > 0.2% @ 10 000 nm, 12 – 30 µJ pump	
Spectral bandwidth	50 – 120 cm ⁻¹ @ 5000 – 8000 nm	

PUMP LASER REQUIREMENTS

Pump laser	PHAROS or CARBIDE	
Center wavelength	1030 ± 10 nm	
Maximum pump power	80 W	
Maximum repetition rate	2 MHz	200 kHz
Pump pulse energy	12 – 400 µJ	400 – 2000 µJ
Pump pulse duration ³⁾	180 – 500 fs	

ENVIRONMENTAL & UTILITY REQUIREMENTS

Operating temperature ⁴⁾	19 – 25 °C (air conditioning recommended)	
Relative humidity ⁴⁾	20 – 70% (non-condensing)	
Electrical requirements	100 – 240 V AC, 1.4 A; 50 – 60 Hz	
Rated power	120 W	
Power consumption	Standby: 10 W Max during wavelength tuning: 100 W	

¹⁾ Specified as a percentage of pump power.

²⁾ Expressed as normalized root mean squared deviation (NRMSD).

³⁾ Full width at half maximum (FWHM), assuming a Gaussian pulse shape.

⁴⁾ Specifications are guaranteed for a maximum temperature variation of ± 1 °C and humidity variation of ± 10%.



DANGER: VISIBLE AND/OR INVISIBLE
LASER RADIATION AVOID EYE OR SKIN
EXPOSURE TO DIRECT, REFLECTED OR
SCATTERED RADIATION
CLASS 4 LASER PRODUCT

Drawings

ORPHEUS-ONE-HP / HE

