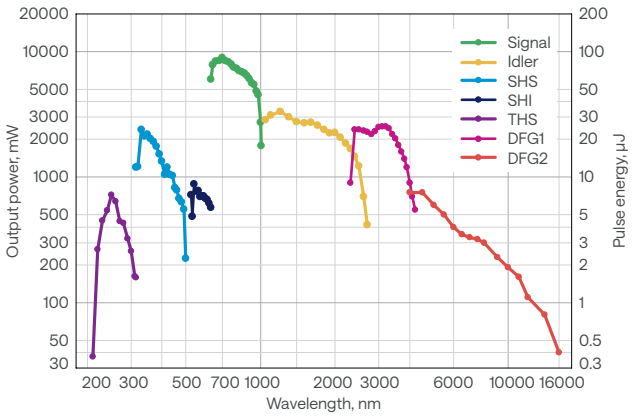
ORPHEUS | NEO

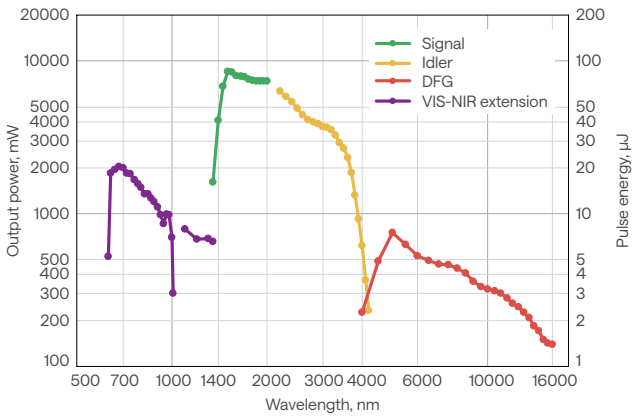
Next-Generation Optical Parametric Amplifier

- From UV to MIR
- Continuous power monitoring and diagnostics
- Pumped by PHAROS-UP for ultrashort pulses
- Up to 80 W, 800 µJ pump at up to 2 MHz
- Fully integrated wavelength extensions
- Exceptional output stability

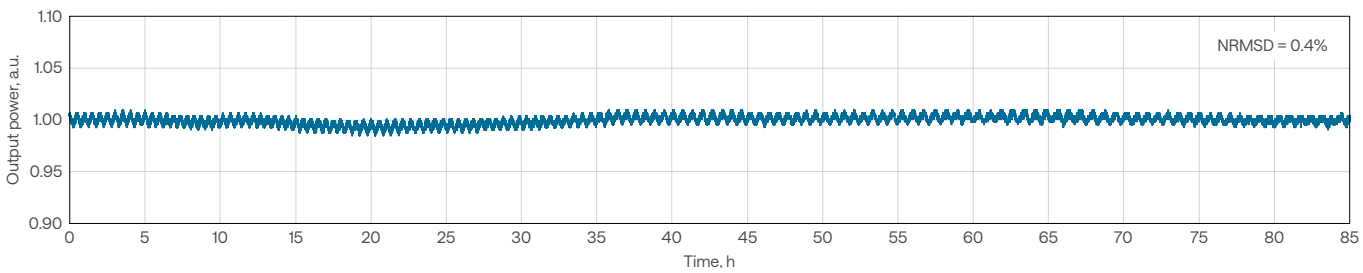
ORPHEUS-NEO typical tuning curves in HP configuration.
Pump: 80 W, 800 µJ, 100 kHz



ORPHEUS-NEO-ONE typical tuning curves in ONE configuration.
Pump: 80 W, 800 µJ, 100 kHz



ORPHEUS-NEO typical long-term power stability at 800 nm



ORPHEUS-NEO specifications

Model	ORPHEUS-NEO	ORPHEUS-NEO-ONE
Configuration	ORPHEUS	ORPHEUS-ONE
Pump power	Up to 80 W	
Pump pulse energy	20 – 800 µJ	
Repetition rate	Up to 2 MHz	
Tuning range	640 – 1000 nm (signal) 1050 – 2600 nm (idler)	1400 – 2000 nm (signal) 2100 – 4200 nm (idler)
Conversion efficiency	> 7% @ 700 nm (40 – 800 µJ pump; up to 1 MHz)	> 9% @ 1550 nm (40 – 800 µJ pump; up to 1 MHz)
	> 3.5% @ 700 nm (20 – 40 µJ pump; up to 2 MHz)	> 6% @ 1550 nm (20 – 40 µJ pump; up to 2 MHz)
Spectral bandwidth	60 – 220 cm^{-1} @ 700 – 960 nm	50 – 150 cm^{-1} @ 1450 – 2000 nm
Pulse duration [1]	120 – 400 fs	100 – 400 fs
Beam quality, M^2	< 1.3 @ 800 nm	< 1.3 @ 1550 nm
Beam diameter [2]	2.1 ± 0.6 mm @ 800 nm	2.1 ± 0.6 mm @ 1550 nm
Beam divergence (full-angle)	< 2 mrad @ 800 nm	< 4 mrad @ 1550 nm
Long-term power stability, 8 h [3]	< 1% @ 800 nm	< 1% @ 1550 nm
Pulse-to-pulse energy stability, 1 min [3]	< 1% @ 800 nm	< 1% @ 1550 nm
Wavelength extension options; conversion efficiency	210 – 320 nm (THS); > 0.4% @ 250 nm	640 – 1000 nm and 1050 – 1350 nm (VIS–NIR); > 1% @ 700 nm
	320 – 500 nm (SHS) and 525 – 640 nm (SHI); > 1.2% @ 350 nm	
	2500 – 4200 nm (DFG1); > 3% @ 3000 nm	4000 – 16000 nm (DFG); > 0.3% @ 10000 nm (for > 40 µJ pump)
	4000 – 16000 nm (DFG2); > 0.2% @ 10000 nm	

PUMP LASER REQUIREMENTS

Configuration	PHAROS or CARBIDE
Center wavelength	1030 ± 10 nm
Maximum pump power	80 W
Maximum repetition rate	2 MHz
Pump pulse energy	20 – 800 µJ
Pump pulse duration	180 – 500 fs

ENVIRONMENTAL & UTILITY REQUIREMENTS

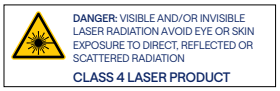
Operating temperature [4]	19 – 25 °C (air conditioning recommended)
Relative humidity [4]	20 – 70% (non-condensing)
Electrical requirements	100 – 240 V AC, 4.5 A; 50 – 60 Hz
Rated power	280 W
Power consumption	Standby: 20 W Max during wavelength tuning: 200 W

[1] *Output pulse duration depends on selected wavelength and pump laser pulse duration.*

[2] *FW 1/e^2, measured at laser output, using maximum pulse energy.*

[3] *Expressed as normalized root mean squared deviation (NRMSD).*

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



ORPHEUS-NEO-UP specifications

Model	ORPHEUS-NEO-UP	ORPHEUS-NEO-ONE-UP
Configuration	ORPHEUS	ORPHEUS-ONE
Pump power	Up to 20 W	
Pump pulse energy	20 – 400 µJ	
Repetition rate	Up to 1 MHz	
Tuning range	640 – 1000 nm (signal) 1050 – 2600 nm (idler)	1450 – 2000 nm (signal) 2100 – 4500 nm (idler)
Conversion efficiency	> 7% @ 700 nm	> 9% @ 1550 nm
Spectral bandwidth	120 – 300 cm^{-1} @ 700 – 2600 nm	150 – 300 cm^{-1} @ 1500 – 1900 nm & 2200 – 3500 nm [1]
Pulse duration [2]	< 100 fs @ 700 – 1000 nm < 120 fs @ 1060 – 2000 nm	< 120 fs @ 1500 – 1900 nm
Beam quality, M^2	< 1.3 @ 800 nm	< 1.3 @ 1550 nm
Beam diameter [3]	2.1 ± 0.6 mm @ 800 nm	2.1 ± 0.6 mm @ 1550 nm
Beam divergence (full-angle)	< 2 mrad @ 800 nm	< 4 mrad @ 1550 nm
Long-term power stability, 8 h [4]	< 1% @ 800 nm	< 1% @ 1550 nm
Pulse-to-pulse energy stability, 1 min [4]	< 1% @ 800 nm	< 1% @ 1550 nm
Wavelength extension options; conversion efficiency	210 – 320 nm (THS); > 0.2% @ 250 nm	640 – 1000 nm and 1050 – 1450 nm (VIS–NIR); > 1% @ 700 nm
	320 – 500 nm (SHS) and 525 – 640 nm (SHI); > 1.2% @ 350 nm	
	2500 – 4500 nm (DFG1); > 3% @ 3000 nm	4500 – 14000 nm (DFG); 0.2% @ 10000 nm
	4500 – 14000 nm (DFG2); > 0.1% @ 10000 nm	

PUMP LASER REQUIREMENTS

Configuration	PHAROS-UP
Center wavelength	1030 ± 10 nm
Maximum pump power	20 W
Maximum repetition rate	1 MHz
Pump pulse energy	20 – 400 µJ
Pump pulse duration	80 – 100 fs

ENVIRONMENTAL & UTILITY REQUIREMENTS

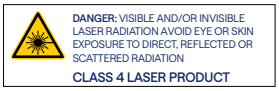
	Refer to www.lightcon.com

[1] *Spectral bandwidth is equal to 150 – 250 cm^{-1} @ 5000 – 12000 nm.*

[2] *Output pulse duration depends on selected wavelength and pump laser pulse duration.*

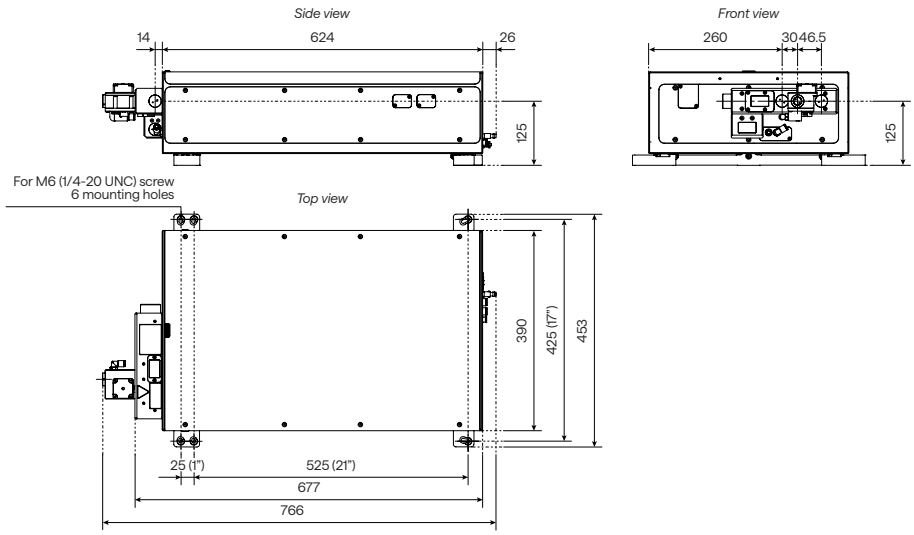
[3] *FW 1/e², measured at laser output, using maximum pulse energy.*

[4] *Expressed as normalized root mean squared deviation (NRMSD).*



Drawings

ORPHEUS-NEO / ORPHEUS-NEO-UP drawings



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