ORPHEUS | NEO

Next-Generation Optical Parametric Amplifier

FEATURES

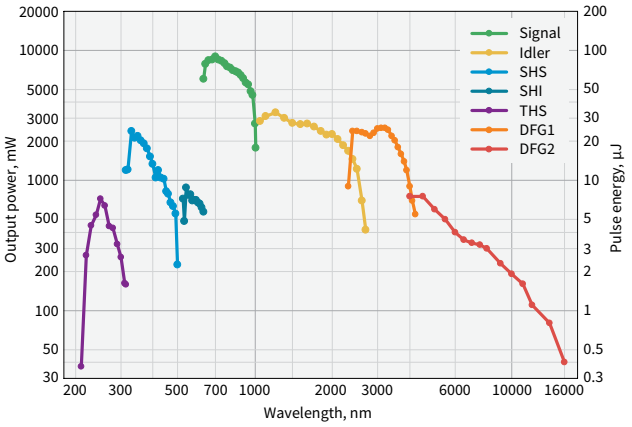
- From UV to MIR
- Continuous power monitoring and diagnostics
- Pumped by PHAROS-UP for ultrashort pulses
- Up to 80 W, 800 µJ pump at up to 2 MHz
- Fully integrated wavelength extensions
- Second repetition rate pump option
- Exceptional output stability

ORPHEUS-NEO is the next-generation optical parametric amplifier. With its simple-to-use and hassle-free design, ORPHEUS-NEO emerges as an invaluable tool in even the most demanding scientific applications.

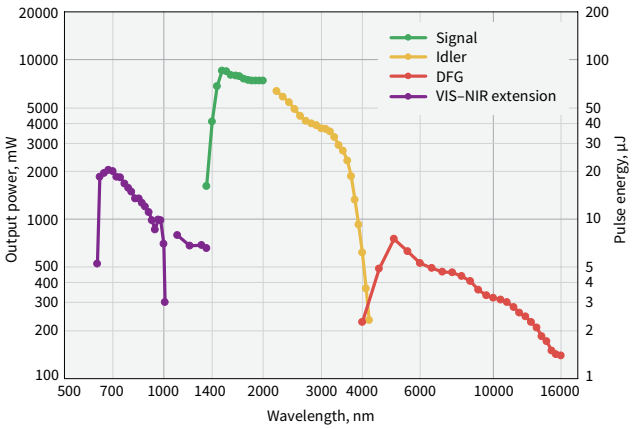
The ORPHEUS-NEO is available in several different configurations providing high-power UV – MIR (210 – 16000 nm). Furthermore, ORPHEUS-NEO can be pumped by sub-100 fs PHAROS-UP, see ORPHEUS-NEO-UP and ORPHEUS-NEO-ONE-UP.

Thanks to its robust industrial design, all configurations ensure remarkable long-term stability. Most importantly, the device is equipped with multiple detectors for pump beam position tracking and continuous monitoring of output parameters. This results in the fastest remote diagnostics and troubleshooting capability.

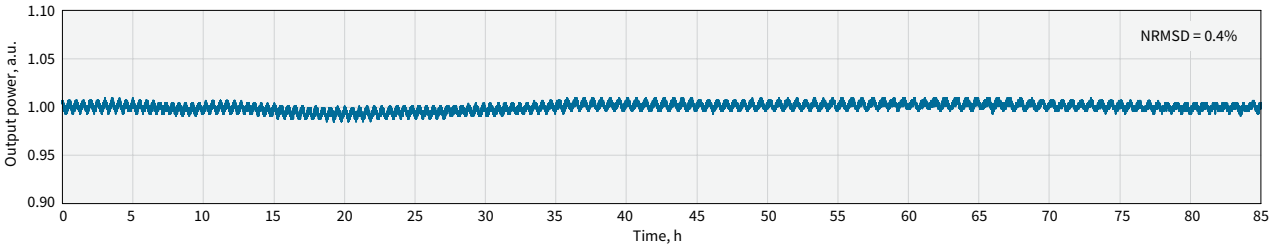
Inspired by the most demanding users, ORPHEUS-NEO has been engineered to become the most stable and versatile tool in ultrafast spectroscopy, and many other scientific applications.



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



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

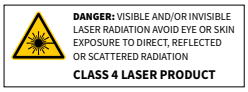


Typical long-term power stability of **ORPHEUS-NEO** at 800 nm

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 [1]	Up to 2 MHz	
Tuning range	640 – 1000 nm (Signal) 1050 – 2600 nm (Idler)	1350 – 2000 nm (Signal) 2100 – 4500 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	80 – 220 cm^{-1} @ 700 – 960 nm	60 – 150 cm^{-1} @ 1450 – 2000 nm
Pulse duration [2]	120 – 250 fs	100 – 300 fs
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); > 0.4% at 250 nm	640 – 1000 nm and 1050 – 1350 nm (VIS–NIR); > 1% at 700 nm
	320 – 500 nm (SHS) and 525 – 640 nm (SHI); > 1.2% at 350 nm	
	2500 – 4500 nm (DFG1); > 3% at 3000 nm	4500 – 16000 nm (DFG); > 0.3% at 10000 nm (for > 40 µJ pump)
	4500 – 16000 nm (DFG2); > 0.2% at 10000 nm	

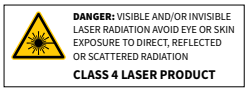
[1] *Second repetition rate pump option (up to 20 µJ) is available for signal and extension range in HP configuration; contact sales@lightcon.com*
[2] *Output pulse duration depends on selected wavelength and pump laser pulse duration.*
[3] *FW 1/e², measured at laser output, using maximum pulse energy.*
[4] *Expressed as NRMSD (normalized root mean squared deviation).*



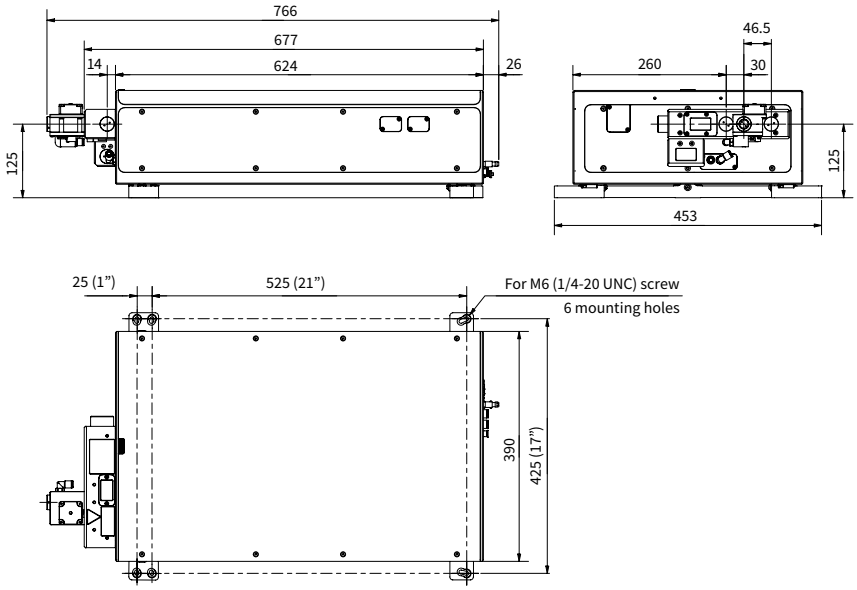
ORPHEUS-NEO-UP SPECIFICATIONS NEW

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 [1]	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 – 250 cm^{-1} @ 700 – 2600 nm	150 – 250 cm^{-1} @ 1500 – 1900 nm & 2200 – 3500 nm [2]
Pulse duration [3]	< 100 fs @ 700 – 1000 nm < 120 fs @ 1060 – 2000 nm	< 100 fs @ 1500 – 1900 nm
Beam quality (M^2)	< 1.3 @ 800 nm	< 1.3 @ 1550 nm
Beam diameter [4]	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 [5]	< 1% @ 800 nm	< 1% @ 1550 nm
Pulse-to-pulse energy stability, 1 min [5]	< 1% @ 800 nm	< 1% @ 1550 nm
Wavelength extension options; conversion efficiency	210 – 320 nm (THS); > 0.2% at 250 nm	640 – 1000 nm and 1050 – 1450 nm (VIS–NIR); > 1% at 700 nm
	320 – 500 nm (SHS) and 525 – 640 nm (SHI); > 1.2% at 350 nm	
	2500 – 4500 nm (DFG1); > 3% at 3000 nm	4500 – 14000 nm (DFG); > 0.2% at 10000 nm
	4500 – 14000 nm (DFG2); > 0.1% at 10000 nm	

[1] *Second repetition rate pump option (up to 20 µJ) is available for signal and extension range in HP configuration; contact sales@lightcon.com*
[2] *Spectral bandwidth is equal to 150 – 250 cm^{-1} @ 5000 – 12000 nm.*
[3] *Output pulse duration depends on selected wavelength and pump laser pulse duration.*
[4] *FW 1/e², measured at laser output, using maximum pulse energy.*
[5] *Expressed as NRMSD (normalized root mean squared deviation).*



DRAWINGS



ORPHEUS-NEO / ORPHEUS-NEO-UP drawings