

Next-Generation Optical Parametric Amplifiers

Wavelength range from
UV to MIR, 210 – 16 000 nm

Continuous power monitoring
and diagnostics

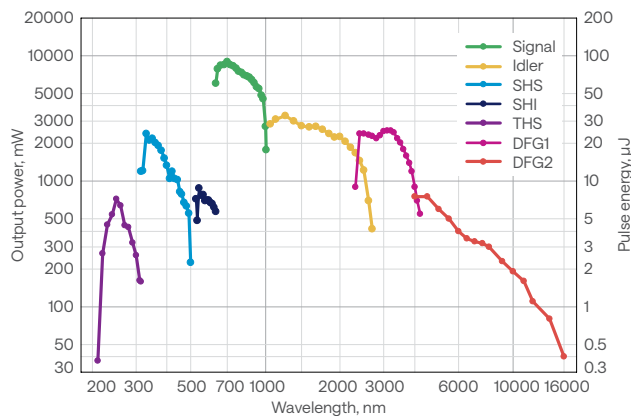
Pumped by PHAROS-UP
for 100 fs pulses

Supports up to 80 W,
800 μ J pump at 2 MHz

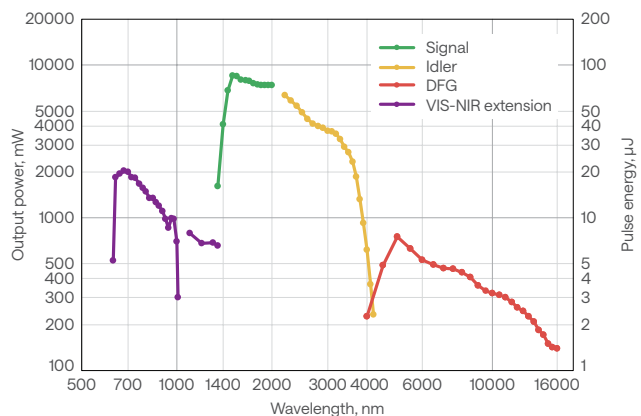
Fully integrated wavelength extensions



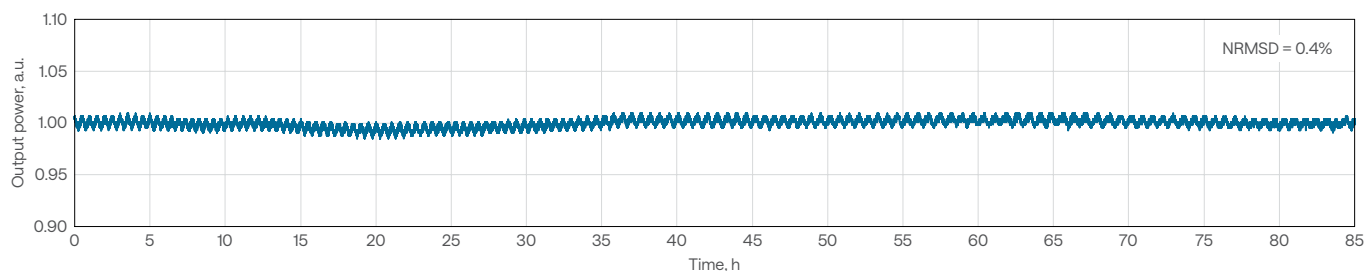
ORPHEUS-NEO typical tuning curves
Pump: 80 W, 800 μ J, 100 kHz



ORPHEUS-NEO-ONE typical tuning curves
Pump: 80 W, 800 μ J, 100 kHz



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



ORPHEUS-NEO specifications

Model	ORPHEUS-NEO	ORPHEUS-NEO-ONE	ORPHEUS-NEO-UP	ORPHEUS-NEO-ONE-UP
Configuration	ORPHEUS	ORPHEUS-ONE	ORPHEUS	ORPHEUS-ONE
Pump laser	CARBIDE or PHAROS		PHAROS-UP	
Pump power	Up to 80 W		Up to 20 W	
Pump pulse energy	20 – 800 µJ		20 – 400 µJ	
Repetition rate	Up to 2 MHz		Up to 1 MHz	
Tuning range	640 – 1000 nm (signal) 1050 – 2600 nm (idler)	1400 – 2000 nm (signal) 2100 – 4200 nm (idler)	640 – 1000 nm (signal) 1050 – 2600 nm (idler)	1450 – 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)	> 7% @ 700 nm	> 9% @ 1550 nm
	> 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	120 – 300 cm ⁻¹ @ 700 – 2600 nm	150 – 300 cm ⁻¹ @ 1500 – 1900 nm; 2200 – 3500 nm ¹⁾
Pulse duration ²⁾	120 – 400 fs	100 – 400 fs	< 110 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	< 1.3 @ 800 nm	< 1.3 @ 1550 nm
Beam diameter ³⁾	2.1 ± 0.9 mm @ 800 nm	2.1 ± 0.9 mm @ 1550 nm	2.1 ± 0.9 mm @ 800 nm	2.1 ± 0.9 mm @ 1550 nm
Beam divergence (full-angle)	< 2 mrad @ 800 nm	< 4 mrad @ 1550 nm	< 2 mrad @ 800 nm	< 4 mrad @ 1550 nm
Long-term power stability, 8 h ⁴⁾	< 1% @ 800 nm	< 1% @ 1550 nm	< 1% @ 800 nm	< 1% @ 1550 nm
Pulse-to-pulse energy stability, 1 min ⁴⁾	< 1% @ 800 nm	< 1% @ 1550 nm	< 1% @ 800 nm	< 1% @ 1550 nm

WAVELENGTH EXTENSIONS

Conversion efficiency	210 – 320 nm (THS) > 0.4% @ 250 nm	n/a	210 – 320 nm (THS) 0.2% @ 250 nm	n/a
	320 – 500 nm (SHS) and 525 – 640 nm (SHI) > 1.2% @ 350 nm		320 – 500 nm (SHS) and 525 – 640 nm (SHI) 1.2% @ 350 nm	
	n/a	640 – 1000 nm and 1050 – 1350 nm > 1% @ 700 nm	n/a	640 – 1000 nm and 1050 – 1450 nm > 1% @ 700 nm
	2500 – 4200 nm (DFG1) > 3% @ 3000 nm	4000 – 16 000 nm (DFG) ⁵⁾ > 0.3% @ 10 000 nm (for > 40 µJ pump)	2500 – 4500 nm (DFG1) 3% @ 3000 nm	4500 – 14 000 nm (DFG) ⁵⁾ 0.2% @ 10 000 nm
	4000 – 16 000 nm (DFG2) ⁵⁾ > 0.2% @ 10 000 nm		4500 – 14 000 nm (DFG2) ⁵⁾ 0.1% @ 10 000 nm	

PUMP LASER, ENVIRONMENTAL & UTILITY REQUIREMENTS

Refer to lightcon.com

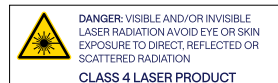
¹⁾ Spectral bandwidth is equal to 150 – 250 cm⁻¹ @ 5000 – 12 000 nm.

²⁾ Output pulse duration depends on the selected wavelength and the pump laser pulse duration.

³⁾ FW 1/e², measured at laser output, using maximum pulse energy.

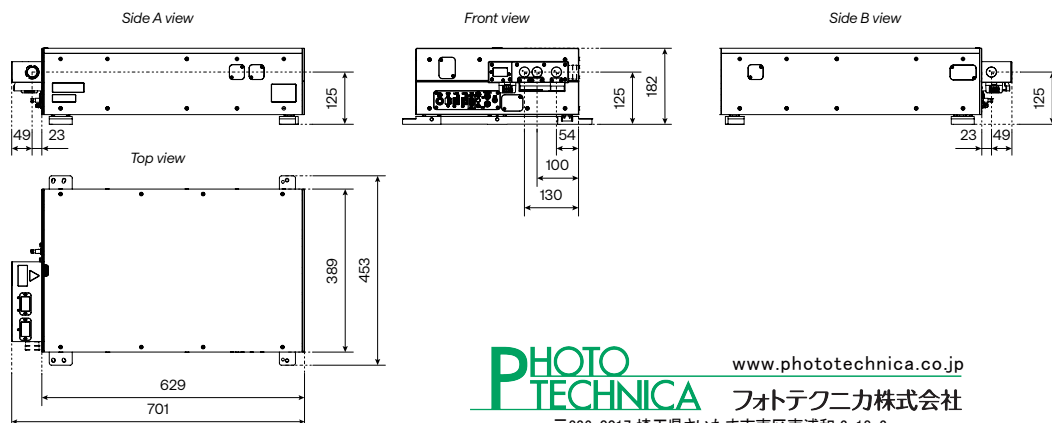
⁴⁾ Expressed as normalized root mean squared deviation (NRMSD).

⁵⁾ Pre-installed output window limits the tuning range to 12 µm. The window is used for dust protection and output power diagnostics, but it can be removed to access the full wavelength range.



Drawings

ORPHEUS-NEO / ORPHEUS-NEO-UP



**PHOTO
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