

Next-Generation Optical Parametric Amplifier

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

Continuous power monitoring and diagnostics

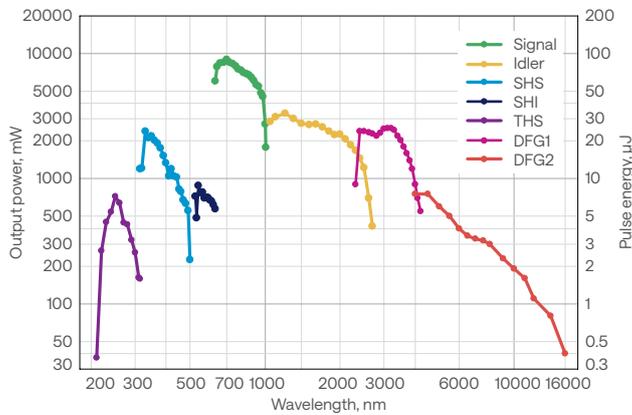
Pumped by PHAROS-UP for 100 fs pulses

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

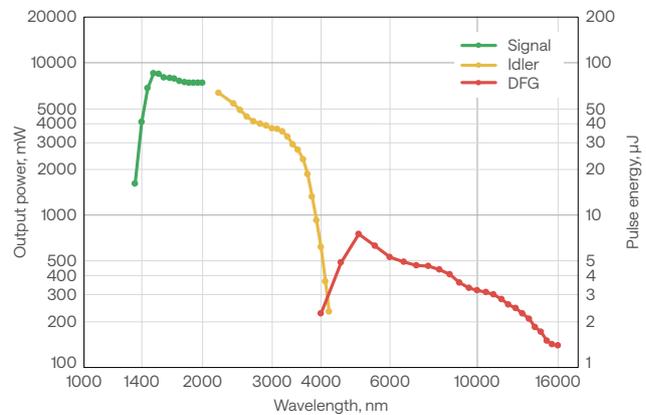
Fully integrated wavelength extensions



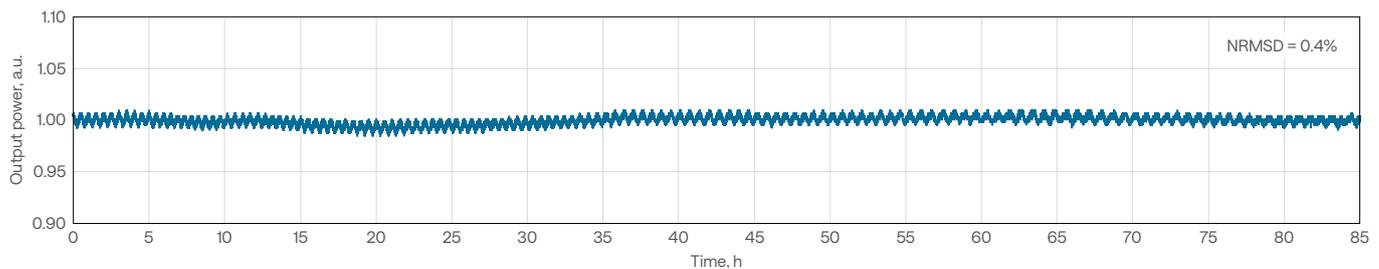
ORPHEUS-NEO typical tuning curves
Pump: 80 W, 800 μ J, 100 kHz



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 μ J | | 20 – 400 μ J | |
| 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 μ J pump; up to 1 MHz) | > 9% @ 1550 nm (40 – 800 μ J pump; up to 1 MHz) | > 7% @ 700 nm | > 9% @ 1550 nm |
| | > 3.5% @ 700 nm (20 – 40 μ J pump; up to 2 MHz) | > 6% @ 1550 nm (20 – 40 μ J 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 \pm 0.9 mm @ 800 nm | 2.1 \pm 0.9 mm @ 1550 nm | 2.1 \pm 0.9 mm @ 800 nm | 2.1 \pm 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

| | | | | |
|----------|--|---|--|--|
| THS | 210 – 320 nm; > 0.4% @ 250 nm | n/a | 210 – 320 nm; > 0.2% @ 250 nm | n/a |
| SHS, SHI | 320 – 500 nm; 525 – 640 nm; > 1.2% @ 350 nm | | 320 – 500 nm; 525 – 640 nm; > 1.2% @ 350 nm | |
| DFG | 2500 – 4200 nm; > 3% @ 3000 nm | 4000 – 16 000 nm ⁵⁾ ; > 0.3% @ 10 000 nm (for > 40 μ J pump) | 2500 – 4500 nm; > 3% @ 3000 nm | 4500 – 14 000 nm ⁵⁾ ; 0.2% @ 10 000 nm |
| | 4000 – 16 000 nm ⁵⁾ ; > 0.2% @ 10 000 nm | | 4500 – 14 000 nm ⁵⁾ ; > 0.1% @ 10 000 nm | |

PUMP LASER, ENVIRONMENTAL & UTILITY REQUIREMENTS

Refer to lightcon.com

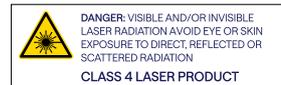
¹⁾ Spectral bandwidth is equal to 150 – 250 cm^{-1} @ 5000 – 12 000 nm.

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

³⁾ $FW 1/e^2$, 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 μ m. 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

