ORPHEUS | MIR

Broad-Bandwidth MIR Optical Parametric Amplifier

- Broad-bandwidth MIR pulses at high repetition rates
- Continuously tunable from 2500 to 15 000 nm
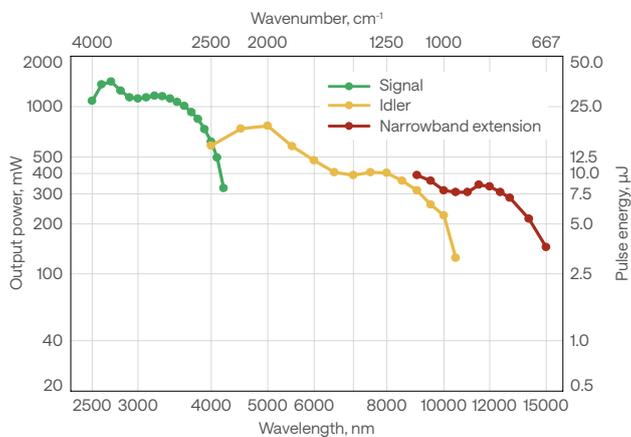- Pumped by industrial-grade lasers for high stability
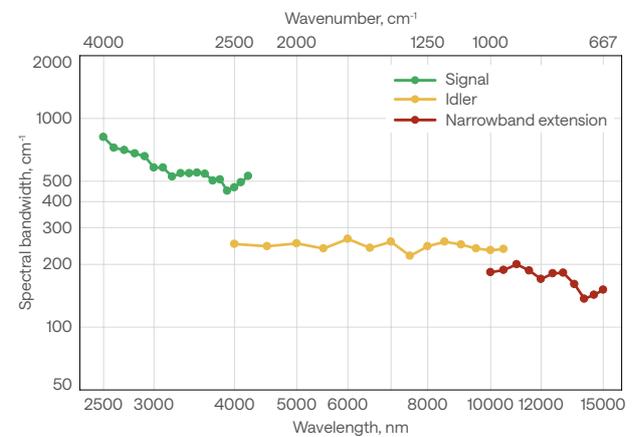- CEP-stable option
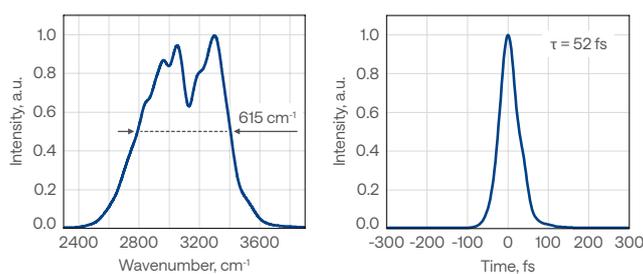- **NEW** New housing for high output stability

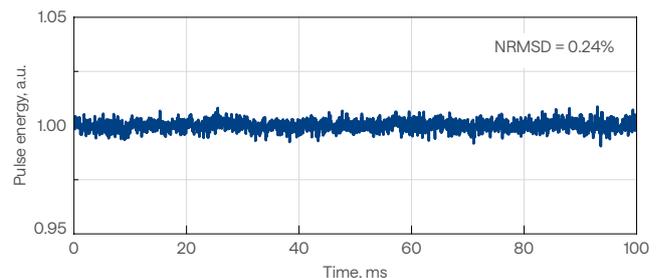**ORPHEUS-MIR** typical tuning curves
Pump: 80 W, 2 mJ, 40 kHz

ORPHEUS-MIR typical spectral bandwidth

ORPHEUS-MIR typical output spectrum (left) and pulse duration (right) measured at ≈ 3000 nm

τ = 52 fs

615 cm⁻¹

ORPHEUS-MIR pulse-to-pulse energy stability measured at ≈ 3000 nm

NRMSD = 0.24%

LIGHT CONVERSION

Specifications

MAIN OUTPUT (2500 – 10 000 nm)

Mode of operation	Non-collinear	Collinear [1]
Tuning range	2500 – 4000 nm (signal) 4000 – 10 000 nm (idler)	2500 – 4500 nm (signal) [2] 4500 – 10 000 nm (idler)
Maximum pump power	80 W	
Pump pulse energy	200 µJ – 3 mJ	
Maximum repetition rate	100 kHz	
Pulse duration	< 100 fs	< 400 fs (< 100 fs with dispersion compensation) [1]
Conversion efficiency [3]	> 1.2% @ 3000 nm > 1.0% @ 3500 nm > 0.6% @ 5000 nm > 0.3% @ 9000 nm	
Spectral bandwidth [4]	> 300 cm^{-1} @ 3000 – 4000 nm > 200 cm^{-1} @ 4000 – 10 000 nm	
Long-term power stability, 8 h [5]	< 2% @ 5000 nm	
Pulse-to-pulse energy stability, 1 min [5]	< 2% @ 5000 nm	

AUXILIARY OUTPUT (2000 nm)

Output wavelength [6]	2000 ± 100 nm
Pulse duration	< 50 fs
Conversion efficiency [3]	> 8%
Spectral bandwidth	> 350 cm^{-1}

WAVELENGTH EXTENSION (10 000 – 15 000 nm)

Tuning range	10 000 – 15 000 nm	
Conversion efficiency [3]	> 0.2% @ 12 000 nm	n/a
Spectral bandwidth	> 100 cm^{-1}	

PUMP LASER, ENVIRONMENTAL & UTILITY REQUIREMENTS

Refer to lightcon.com

[1] Collinear mode is achieved with an additional external separator box. Dispersion compensation is optional.

[2] Signal output is realized in non-collinear configuration.

[3] Specified as a percentage of pump power.

[4] Full width at half maximum (FWHM).

[5] Expressed as normalized root mean squared deviation (NRMSD)

[6] Not tunable, optimized for best overall performance. Not simultaneous to OPA output.

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

Drawings

ORPHEUS-MIR

Side view — 39 22 · 783.5 · 26.5 · 125

Front view — 382 · 50 · 26 · 125 · 179

Top view — 1" (25.4) · 458 · 502 · 25 · 827.5 · 871