

# CRONUS | 2P



## Three-Channel Wavelength-Tunable Femtosecond Laser

### FEATURES

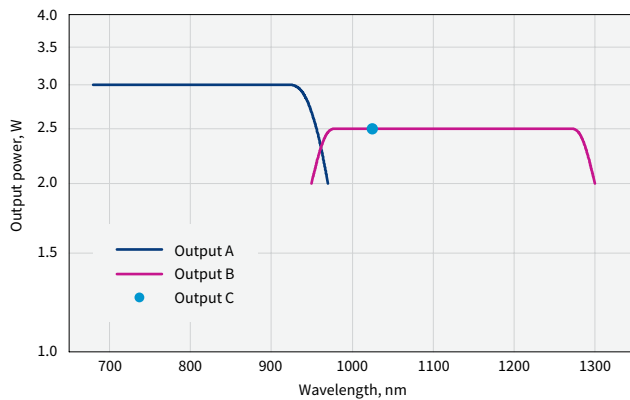
- Watt-level output at high repetition rate for fast imaging
- Two tunable and one fixed output for simultaneous multibeam excitation
- Automated GDD control for shortest pulses at the sample
- Industrial-grade design for high power and beam stability



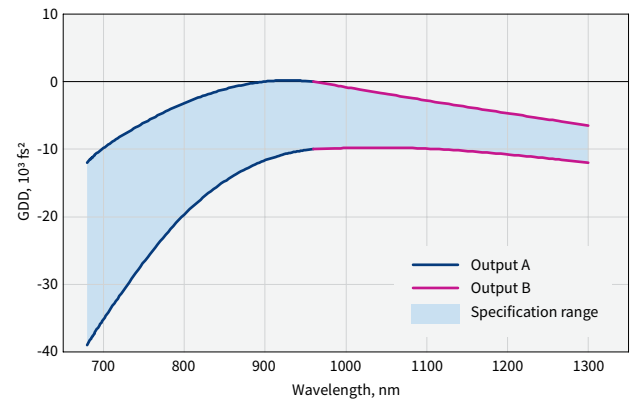
CRONUS-2P is a femtosecond laser providing watt-level three synchronized outputs with high repetition rate, short pulse duration, and GDD control, making it the ultimate source for nonlinear microscopy. In standard configuration, the two independently tunable outputs, operating separately or simultaneously, cover 680 – 960 nm and 960 – 1300 nm, respectively, while the third is fixed at 1025 nm and is accessible in parallel. Thus, the CRONUS-2P can be used for simultaneous excitation of multiple fluorescent probes, calcium indicators, or opsins at their absorption maxima,

whereas second- and third-harmonic emission (SHG and THG) can be spectrally shifted for ease of detection or resonant enhancement.

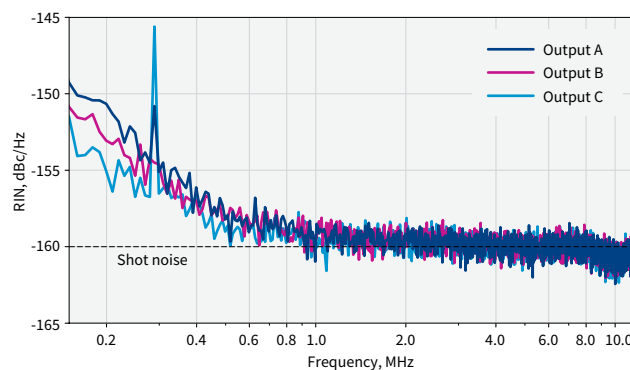
The two tunable and simultaneous channels also enable advanced coherent anti-Stokes and stimulated Raman scattering (CARS and SRS) applications with dual-band imaging, a broader selection of vibrational resonance frequencies, constant-difference dual-beam tuning, resonant enhancement, and more.



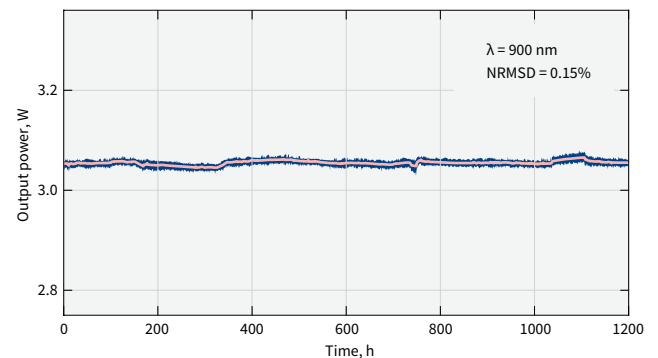
CRONUS-2P tuning curve



GDD control range



CRONUS-2P relative intensity noise (RIN)



Typical output power stability of CRONUS-2P at 900 nm

## SPECIFICATIONS

Model	CRONUS-2P		
	Output A	Output B	Output C
Tuning range <sup>1)</sup>	680 – 960 nm	960 – 1300 nm	1025 nm (fixed)
Output power <sup>2)</sup>	> 3 W @ 920 nm	> 2.5 W @ 1100 nm	> 2.5 W
Pulse duration <sup>3)4)</sup>	< 160 fs		
Repetition rate	77 ± 1 MHz		
Beam quality, M <sup>2</sup> <sup>3)</sup>	< 1.2		
Polarization	Linear, horizontal		
Beam divergence, full angle	< 1 mrad		< 1.5 mrad
Beam diameter <sup>3)</sup> (1/e <sup>2</sup> )	3.0 ± 0.4 mm	3.2 ± 0.4 mm	2.8 ± 0.4 mm
Beam ellipticity <sup>3)</sup>	> 0.8		
Beam astigmatism <sup>3)</sup>	< 20%		
Beam pointing stability <sup>5)</sup>	< 200 µrad		n/a
Long-term power stability, 24 h <sup>3)6)</sup>	< 1%		
GDD control range	-10000 to -35000 fs <sup>2</sup> @ 700 nm -3000 to -20 000 fs <sup>2</sup> @ 800 nm 0 to -10 000 fs <sup>2</sup> @ 960 nm	0 to -10 000 fs <sup>2</sup> @ 960 nm -3000 to -10 000 fs <sup>2</sup> @ 1100 nm -6 000 to -12 000 fs <sup>2</sup> @ 1300 nm	n/a

### OPTIONAL WAVELENGTH EXTENSIONS (UV – VIS)

Second harmonic tuning range	340 – 480 nm	480 – 650 nm	n/a
Conversion efficiency at peak	> 30%		

### ENVIRONMENTAL REQUIREMENTS

Altitude	< 2000 m
Temperature, operating	18 – 30 °C
Temperature, storage	10 – 35 °C
Relative humidity, operating	< 80% (non-condensing)
Electrical requirements	Laser: 95 V AC, 16 A – 240 V AC, 7 A; 50 / 60 Hz Chiller: 100 – 230 V AC; 50 / 60 Hz
Rated power	Laser: 1700 W; Chiller: 1400 W

### DIMENSIONS

Laser head (L × W × H)	806 × 528 × 311 mm
Rack for power supply and chiller (L × W × H)	642 × 553 × 673 mm

<sup>1)</sup> Configuration with dual-output A or dual-output B is also available.

<sup>2)</sup> Simultaneous mode: > 1 W @ 920 nm, > 1 W @ 1100 nm, and > 2.5 W @ 1025 nm.

<sup>3)</sup> Specified at 920 nm, 1100 nm, and 1025 nm, respectively.

<sup>4)</sup> IR pulse duration determined assuming sech<sup>2</sup> shape.

<sup>5)</sup> Beam pointing deviation over the entire tuning and GDD control range.

<sup>6)</sup> Expressed as NRMSD (normalized root mean squared deviation); with less than ±1 °C temperature change after 1 h warm up.

