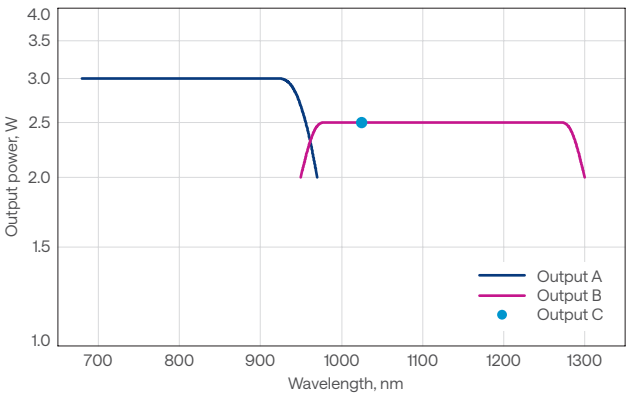
CRONUS | 2P

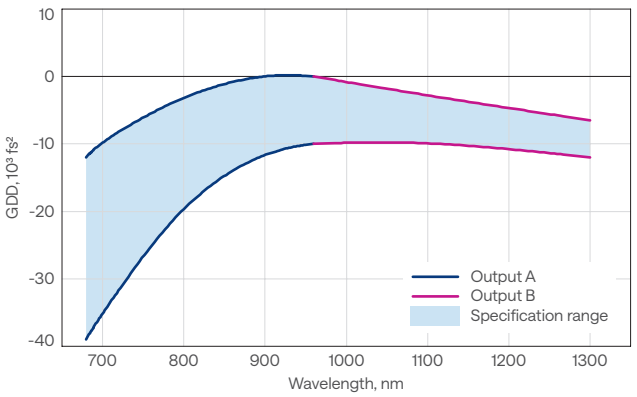
High-Repetition-Rate Wavelength-Tunable Femtosecond Laser

- Watt-level output at high repetition rates for fast imaging
- NEW — One or two tunable and one fixed output for simultaneous multibeam excitation
- Automated GDD control for the shortest pulses at the sample
- Feedback-based output power and wavelength stabilization
- Beam steering & power locking

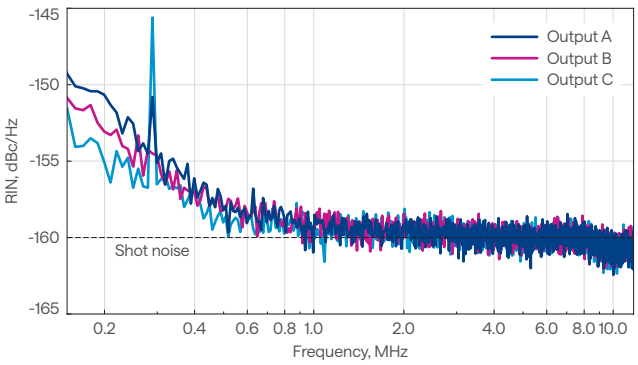
CRONUS-2P-DUAL tuning curve



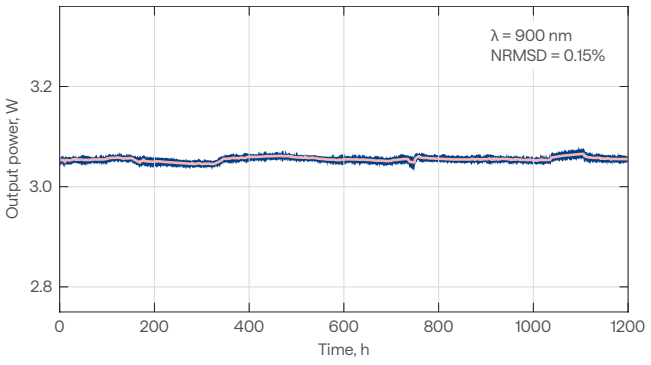
CRONUS-2P-DUAL GDD control range



CRONUS-2P-DUAL relative intensity noise (RIN)



CRONUS-2P-DUAL typical output power stability at 900 nm



Specifications

Model	CRONUS-2P		CRONUS-2P-XR	
Output	Tunable	Fixed	Tunable	Fixed
Tuning range	700 – 1100 nm	1025 ± 10 nm	680 – 1300 nm	1025 ± 10 nm
Output power [1]	> 2.5 W @ 900 nm	> 1.5 W	> 1.5 W @ 700 nm > 2 W @ 800 nm > 2.5 W @ 900 nm > 2 W @ 1100 nm > 1.7 W @ 1200 nm > 1.2 W @ 1300 nm	> 2 W
Pulse duration [2] [3]	< 120 fs	< 130 fs	< 100 fs	< 130 fs
Repetition rate	80 ± 0.5 MHz			
Beam quality, M^2 [3]	< 1.2			
Polarization	Linear, horizontal			
Beam divergence, full angle [3]	< 1.5 mrad			
Beam diameter, $1/e^2$ [3]	1.2 ± 0.2 mm			
Beam ellipticity [3]	> 0.8			
Beam astigmatism [3]	< 20%			
Beam pointing stability [4]	< 200 µrad	n/a	< 200 µrad	n/a
Long-term power stability, 8 h [3] [5]	< 1%			
GDD control range	–5000 to –40 000 fs^2 @ 710 nm –3000 to –25 000 fs^2 @ 800 nm 0 to –15 000 fs^2 @ 900 nm –3000 to –10 000 fs^2 @ 1000 nm –3000 to –10 000 fs^2 @ 1100 nm	n/a	–5000 to –40 000 fs^2 @ 700 nm 0 to –15 000 fs^2 @ 900 nm 0 to –10 000 fs^2 @ 1100 nm 0 to –8000 fs^2 @ 1300 nm	n/a

OPTIONAL POWER CONTROL

Output power [6]	> 2 W @ 900 nm	> 1.5 W	> 1 W @ 700 nm > 1.5 W @ 800 nm > 2 W @ 900 nm > 1.7 W @ 1100 nm > 1.5 W @ 1200 nm > 1 W @ 1300 nm	> 2 W
Rise/fall time [7]	< 300 ns	n/a	< 300 ns	n/a
Contrast ratio	1000 : 1	n/a	1000 : 1	n/a
GDD control range	0 to –40 000 fs^2 @ 710 nm 0 to –20 000 fs^2 @ 800 nm 0 to –10 000 fs^2 @ 900 nm 0 to –7000 fs^2 @ 1000 nm 0 to –5000 fs^2 @ 1100 nm	n/a	0 to –40 000 fs^2 @ 700 nm 0 to –10 000 fs^2 @ 900 nm 0 to –5000 fs^2 @ 1100 nm 0 to –4000 fs^2 @ 1300 nm	n/a

OPTIONAL WAVELENGTH EXTENSIONS (UV – VIS)

Second harmonic tuning range [8]	375 – 550 nm	n/a	375 – 600 nm	n/a
Conversion efficiency at peak	> 30%	n/a	> 30%	n/a

ENVIRONMENTAL & UTILITY REQUIREMENTS

Altitude		< 2000 m
Temperature, operating		18 – 30 °C
Temperature, storage		10 – 35 °C
Relative humidity, operating		< 80% (non-condensing)
Electrical requirements	Laser	100 – 240 V AC; 50 – 60 Hz; 12 A max
	Chiller	100 – 230 V AC; 50 – 60 Hz
Rated power	Laser	1000 W
	Chiller	1400 W
Power consumption	Laser	300 W
	Chiller	1000 W

DIMENSIONS

	Refer to lightcon.com

Specifications

Model	CRONUS-2P-DUAL [9]		
Output	Tunable A	Tunable B	Fixed
Tuning range	680 – 960 nm	940 – 1300 nm	1025 ± 10 nm
Output power [1]	> 3 W @ 900 nm [10]	> 2.5 W @ 1100 nm [10]	> 2.5 W
Pulse duration [2] [11]	< 160 fs		
Repetition rate	77 ± 1 MHz		
Beam quality, M^2 [11]	< 1.2		
Polarization	Linear, horizontal		
Beam divergence, full angle [11]	< 1 mrad		< 1.5 mrad
Beam diameter, $1/e^2$ [11]	3.0 ± 0.4 mm	3.2 ± 0.4 mm	2.8 ± 0.4 mm
Beam ellipticity [11]	> 0.8		
Beam astigmatism [11]	< 20%		
Beam pointing stability [4]	< 200 µrad		n/a
Long-term power stability, 8 h [5] [11]	< 1%		
GDD control range	–10 000 to –35 000 fs^2 @ 700 nm –3000 to –20 000 fs^2 @ 800 nm 0 to –10 000 fs^2 @ 920 nm	0 to –10 000 fs^2 @ 960 nm –3000 to –10 000 fs^2 @ 1100 nm –8000 to –12 000 fs^2 @ 1300 nm	n/a

OPTIONAL POWER CONTROL [12]

Output power	> 3 W @ 900 nm	> 2.5 W @ 1100 nm	> 2 W
Rise/fall time [7]	< 300 ns		
Contrast ratio	1000 : 1		
GDD control range	–10 000 to –35 000 fs^2 @ 700 nm –3000 to –20 000 fs^2 @ 800 nm 0 to –10 000 fs^2 @ 920 nm	0 to –10 000 fs^2 @ 960 nm –3000 to –10 000 fs^2 @ 1100 nm –8000 to –12 000 fs^2 @ 1300 nm	n/a

OPTIONAL WAVELENGTH EXTENSIONS (UV – VIS)

Second harmonic tuning range [8]	375 – 480 nm	480 – 600 nm	n/a
Conversion efficiency at peak	> 30%		n/a

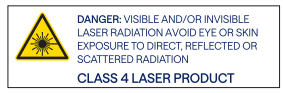
ENVIRONMENTAL & UTILITY REQUIREMENTS, DIMENSIONS

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
Power consumption	Laser	400 W
	Chiller	1000 W

DIMENSIONS

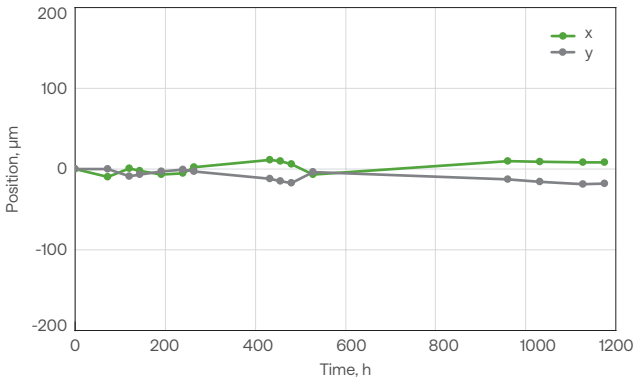
	Refer to lightcon.com

[1] *Power control using AOM is applicable, see the affected specifications below.*
[2] *Pulse duration determined assuming sech2 shape.*
[3] *Specified at 900 nm and 1025 nm for CRONUS-2P and CRONUS-2P-XR, respectively.*
[4] *Beam pointing deviation over the entire tuning and GDD control range.*
[5] *Expressed as normalized root mean squared deviation (NRMSD), with less than ±1 °C temperature change after 1 h warm up.*
[6] *AOM not available for fixed outputs.*
[7] *Specified from 5% to 95%.*
[8] *Extended second harmonic tuning range available upon request. For more information contact sales@lightcon.com.*
[9] *Configurations with either dual-output A or dual-output B are also available for CRONUS-2P-DUAL model. A and B channels can be tuned independently.*
[10] *Simultaneous mode: > 1 W @ 900 nm, > 1 W @ 1100 nm, and > 2.5 W @ 1025 nm.*
[11] *Specified at 900 nm, 1100 nm, and 1025 nm.*
[12] *Power control module for CRONUS-2P-DUAL is external.*

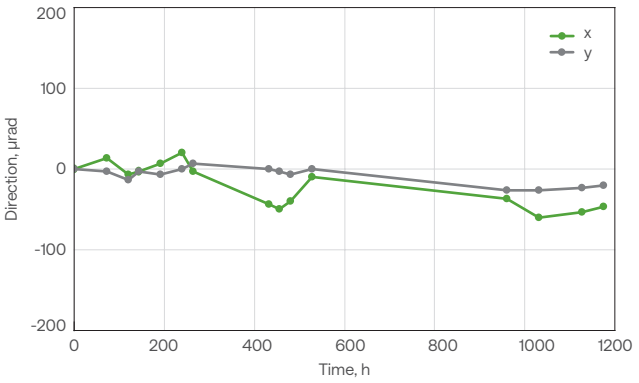


Stability

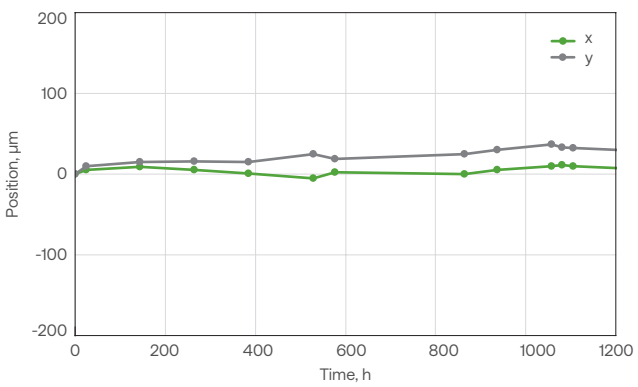
CRONUS-2P-DUAL
Long-term beam position stability at 950 nm



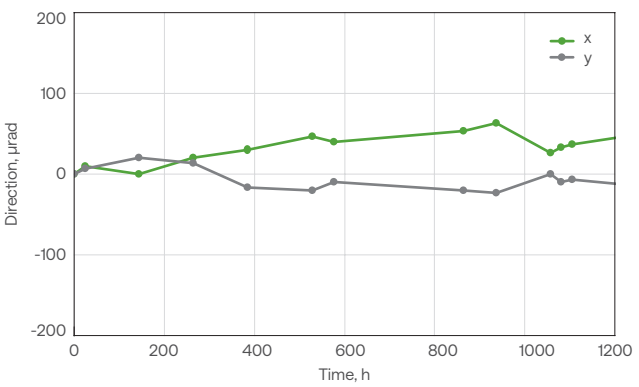
CRONUS-2P-DUAL
Long-term beam direction stability at 950 nm



CRONUS-2P-DUAL
Long-term beam position stability at 1100 nm

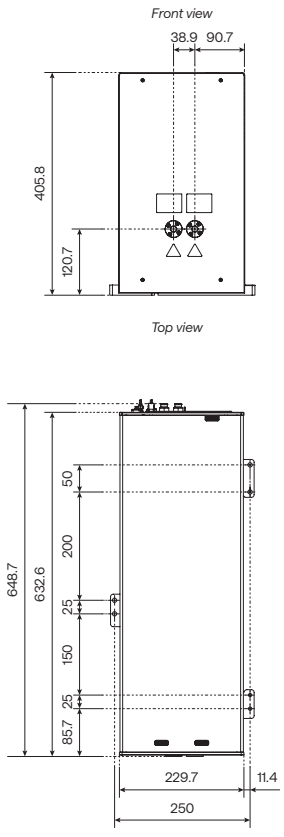


CRONUS-2P-DUAL
Long-term beam direction stability at 1100 nm

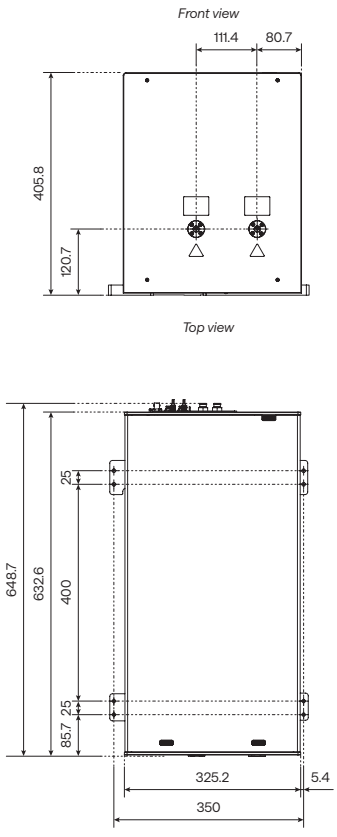


Drawings

CRONUS-2P



CRONUS-2P-XR



CRONUS-2P-DUAL