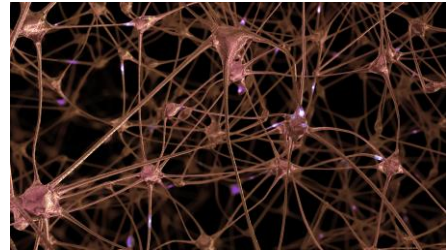


Two-photon microscopy



Neuroscience



## COMPACT HIGH-POWER FEMTOSECOND LASER

780, 920, 1040 and 1064 nm / < 100 fs / Up to 5 W

Spark Lasers' ALCOR has been specifically designed for two-photon excitation. It offers clean femtosecond pulses with the highest guaranteed peak power on the market, in an unprecedented compact format and with fixed wavelengths at 780, 920, 1040 or 1064 nm.

The ALCOR compact laser head incorporates the widest range of computer controlled GDD precompensation on the market and, optionally, a fully aligned and turn-key AOM for fast power modulation and power adjustment. ALCOR can also be coupled to an optical fiber to deliver femtosecond pulses as close as possible to samples. ALCOR is air-cooled and can easily be integrated with the possibility to install the laser head in any orientation. ALCOR's innovative fiber-based design offers high stability, high reliability without any maintenance, making it the perfect industrial laser for scientific applications.

# TECHNICAL SPECIFICATIONS\*

General	ALCOR 780	ALCOR 920-1	ALCOR 920-2	ALCOR 920-4	ALCOR 1064-2 or ALCOR 1040-2	ALCOR 1064-5 or ALCOR 1040-5
Wavelength	780 nm	920 nm			1064 nm or 1040 nm	
Average power	0.8 W	1.5 W	2.5 W	4 W	2 W	5 W
Pulse duration (1)	< 150 fs	< 100 fs		< 130 fs	< 100 fs	< 120 fs
Group Delay Dispersion	Computer controlled from 0 to -60 000 fs <sup>2</sup>					
Repetition rate (2)	80 +/- 2 MHz					
Energy per pulse	10 nJ	> 18.7 nJ	> 31.2 nJ	> 50 nJ	> 25 nJ	> 62.5 nJ
<b>Beam parameters</b>						
M <sup>2</sup> (3)	< 1.2	< 1.2		< 1.3	< 1.2	
Beam diameter (4)	1.2 +/- 0.2 mm	1.4 +/- 0.2 mm	1.2 +/- 0.2 mm	1.8 +/- 0.2 mm	1.5 +/- 0.2 mm	
Divergence (5)	< 1 mrad					
Ellipticity (6)	> 0.9	> 0.8		> 0.8	> 0.8	
Output beam	Collimated					
Polarization	> 100:1, vertical					
<b>Stability</b>						
Power stability RMS (7)	< 1%					
Pulse to pulse stability RMS	< 1%					
<b>Electrical</b>						
External interfaces	RS-232, USB, TCP/IP					
Synchronization output	TTL					
Software interfaces	GUI, serial communication protocol					
Power consumption	< 150 W					
Cooling	Air					
<b>Mechanical</b>						
Laser head dimensions	286 x 165 x 79 mm					
Laser head weight	5 kg					
Control unit	19" / 3U height					
Control unit weight	12 kg					
Umbilic length	3 m		1.5 m		3 m	
<b>Environmental</b>						
Operational temp. range	19-30°C					
Storage temp. range	0-40°C					
Operational max altitude	2000 m					
Operational humidity	Non condensing					
Storage humidity	80% RH					
<b>Option XSight (Integrated AOM for fine power control and fast power modulation)</b>						
Transmission	85%					
Beam diameter	1.0 +/- 0.2 mm	1.2 +/- 0.2 mm	1.0 +/- 0.2 mm			
Beam divergence	< 1 mrad					
ON/OFF response time	< 1 μs (rise or fall time < 200 ns)					
Analog modulation bandwidth	> 1 MHz (input : 0-5 Volts, 1 kOhm)					
Power control	Computer controlled from 0 to 100%, alignment mode					
<b>Other options</b>						
DUAL	N/A	2 independently controlled laser heads operating at 920 and 1064 or 1040 nm				
FLeX Fiber delivery	2 meter long fiber with < 120 fs pulse duration and 60% transmission					
GDD extension	From 0 to -90 000 fs <sup>2</sup>					
Wavelength	Other wavelengths on request					
Repetition rate (8)	Any fixed frequency: from 30 MHz to 80 MHz				from 40 MHz to 80 MHz	
Frequency conversion	N/A	460 nm			532 or 520 nm	

(1) Sech<sup>2</sup> fit, autocorrelator measurement

(2) Other value upon request

(3) M<sup>2</sup> measurement according to ISO method

(4) Beam diameter at laser output at 1/e<sup>2</sup>

(5) Half divergence, ISO method

(6) Minor over major diameter ratio

(7) Over 12 hours, at room temperature +/- 1°C

(8) Change in repetition rate affects average output power. Energy will be unchanged

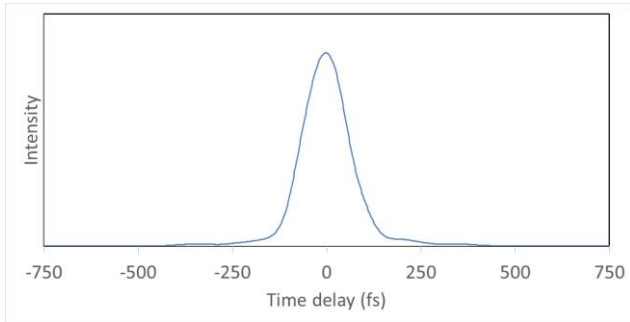
\* This information is subject to modifications without prior notice.



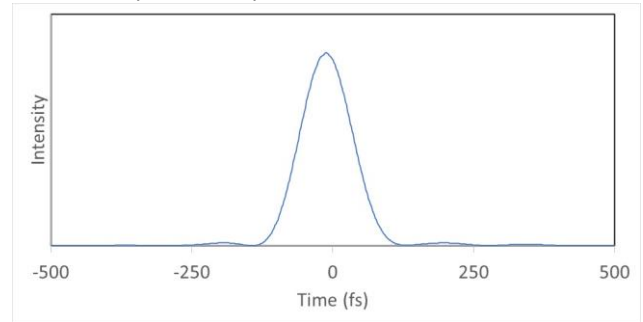
## TYPICAL MEASURED DATA

### ALCOR 920

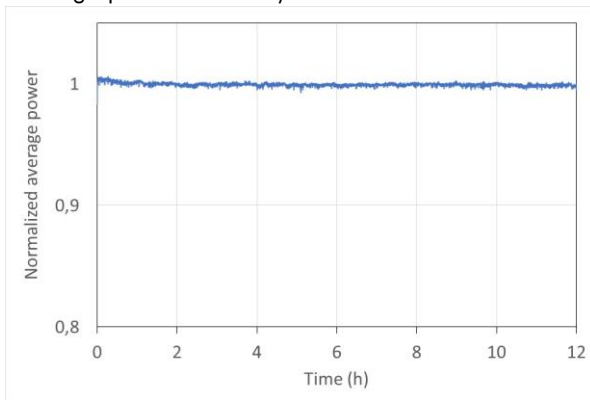
Autocorrelation trace of ALCOR 920



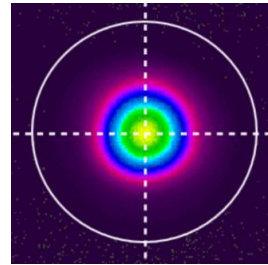
Retrieved pulse shape of ALCOR 920



Average power stability of ALCOR 920

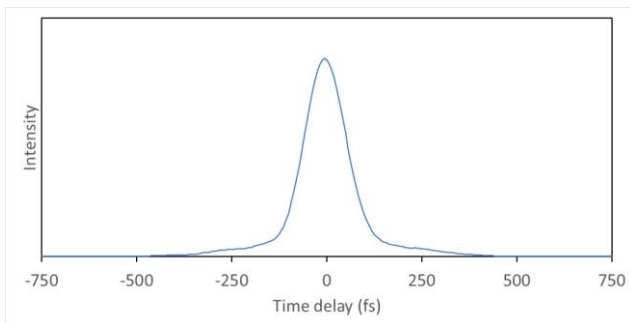


Far field beam profile of ALCOR 920

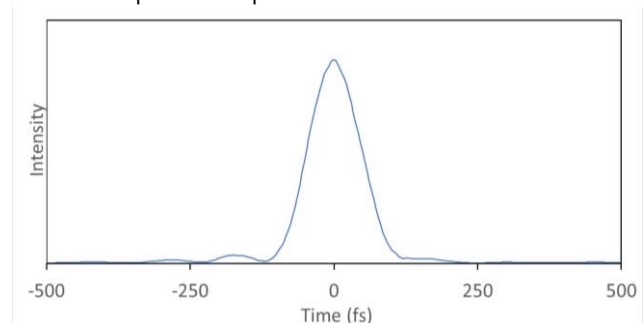


### ALCOR 1064

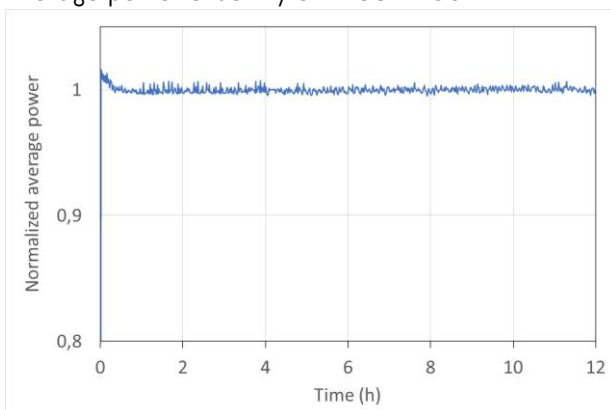
Autocorrelation trace of ALCOR 1064



Retrieved pulse shape of ALCOR 1064



Average power stability of ALCOR 1064



Far field beam profile of ALCOR 1064

