SPARK LASERS

Alcor product range

All-in-one compact femtosecond fiber laser for multiphoton excitation

SPARK LASERS' INNOVATION

COMPACT ULTRAFAST ALCOR SERIES

SMALL SIZE

CUTTING-EDGE PERFORMANCES

5-MIN SET-UP & EASY USE

LOW MAINTE-NANCE COSTS

SPARK LASERS

WWW.SPARK-LASERS.COM

Alcor SERIES

FEMTOSECOND FIBER LASER

KEY FEATURES

- 100 fs
- up to 80 MHz
- 1 W or 2 W
- 920 nm and/or 1064 nm (single or dual)
- Frequency synchronization (SYNC-OUT)
- Computer controlled GDD precompensation
- Power control and fiber delivery

APPLICATIONS

- MULTIPHOTON EXCITATION
- NEUROSCIENCE

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Alcor 920 or 1064nm

FEMTOSECOND FIBER LASER

- Pulse duration of 100 fs
- Repetition rate : 80 MHz
- Average power : 1 W or 2 W
- 920 nm or 1064 nm
- Frequency synchronization (SYNC-OUT)
- Computer controlled GDD precompensation adjustable from 0 to -60000 fs² (standard)
- Air-cooled
- Robust compact laser head
- Low maintenance
- Various mounting configurations

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Alcor Dual : 920 and 1064 nm

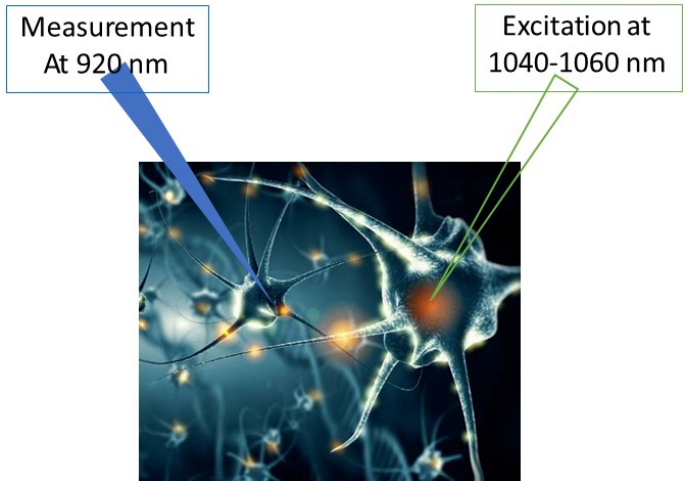
FEMTOSECOND FIBER LASER

- Pulse duration of 100 fs
- Repetition rate : 80 MHz
- Average power : 1 W or 2 W
- 920 nm and 1064 nm
- Frequency synchronization (SYNC-OUT)
- Computer controlled GDD precompensation

adjustable from 0 to -60000 fs^2 (standard)

- Air-cooled
- Robust compact laser head
- Low maintenance
- Various mounting configurations
- Two laser heads and 1 rack controller with 2 x 3-m

long umbilicals



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Alcor Xsight : fine and fast power control

FEMTOSECOND FIBER LASER

- fine and fast control on Alcor:
  - External module for 920 or 1064 nm
  - Pulse duration 100 fs
  - Fine power adjustment
  - Fast gating wih TTL signal (<1µs response time)
  - Fast power modulation with analog signal (<1µs response time)
  - Average power > 1.5 W

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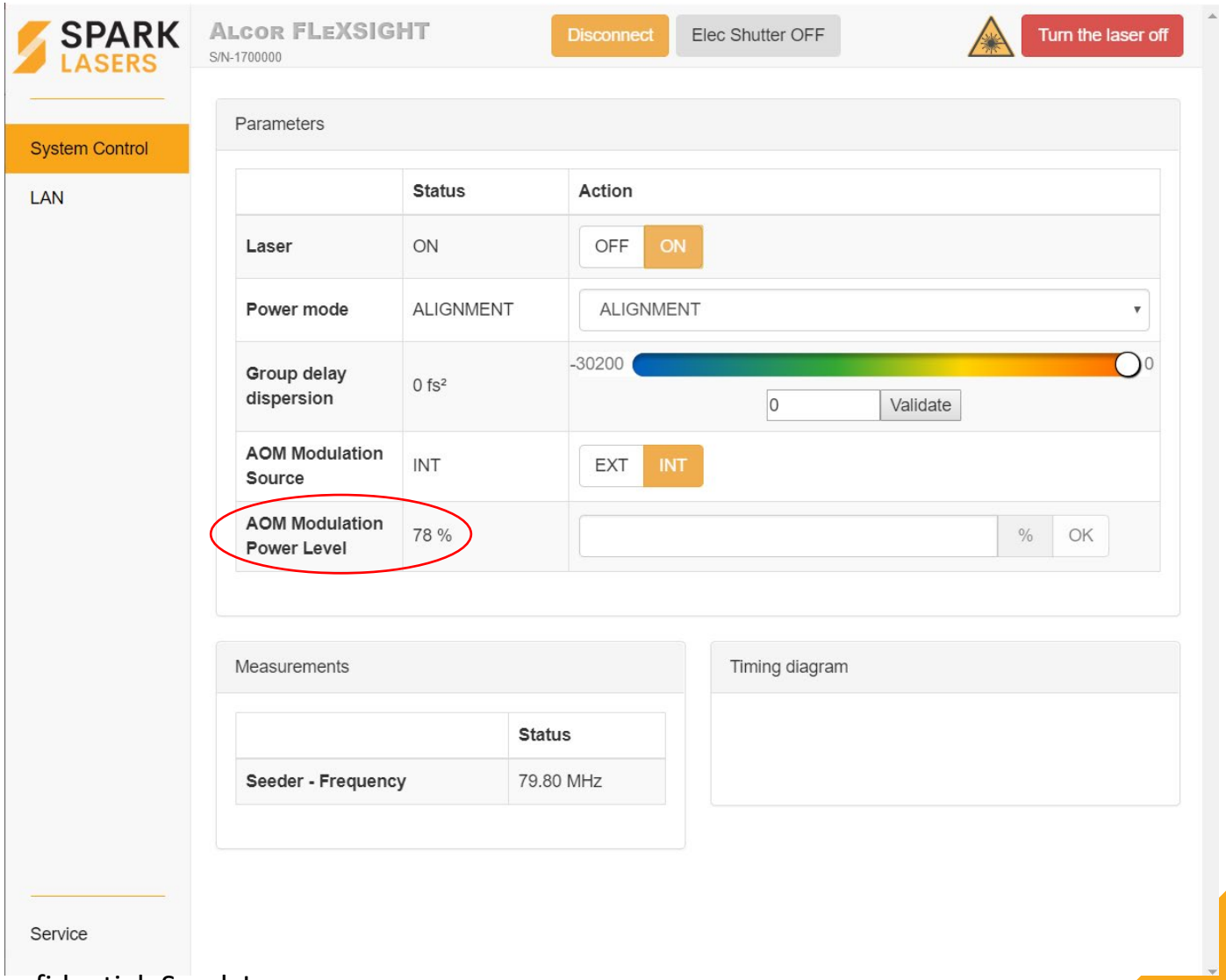
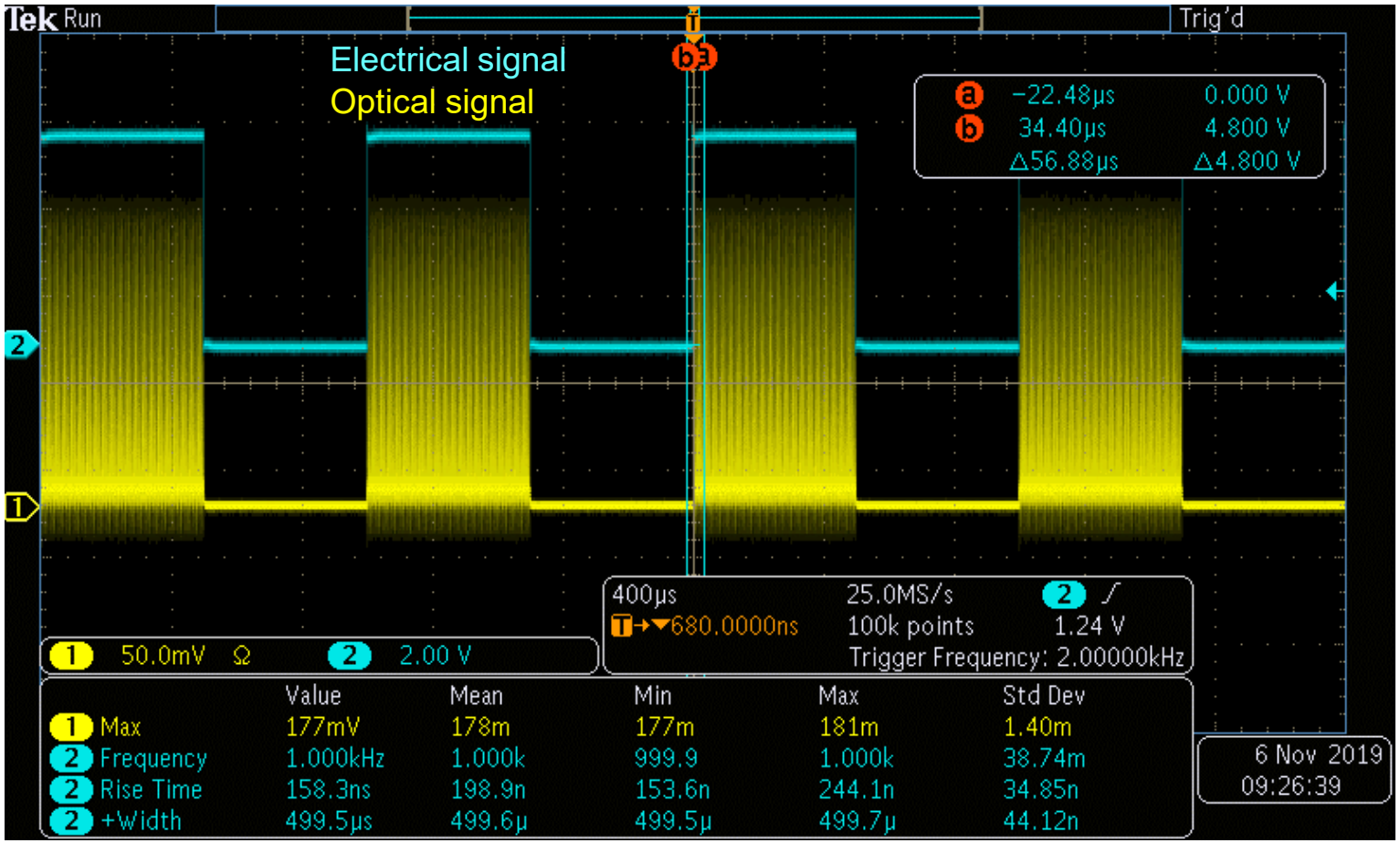
Fine power control

- Change output power level in percentage of total power
- Change power level of modulated signal
- Through GUI or Serial communication Protocole



Fast TTL modulation : « Gate in »

Electrical interface



Laser is switched on and off in <1µs

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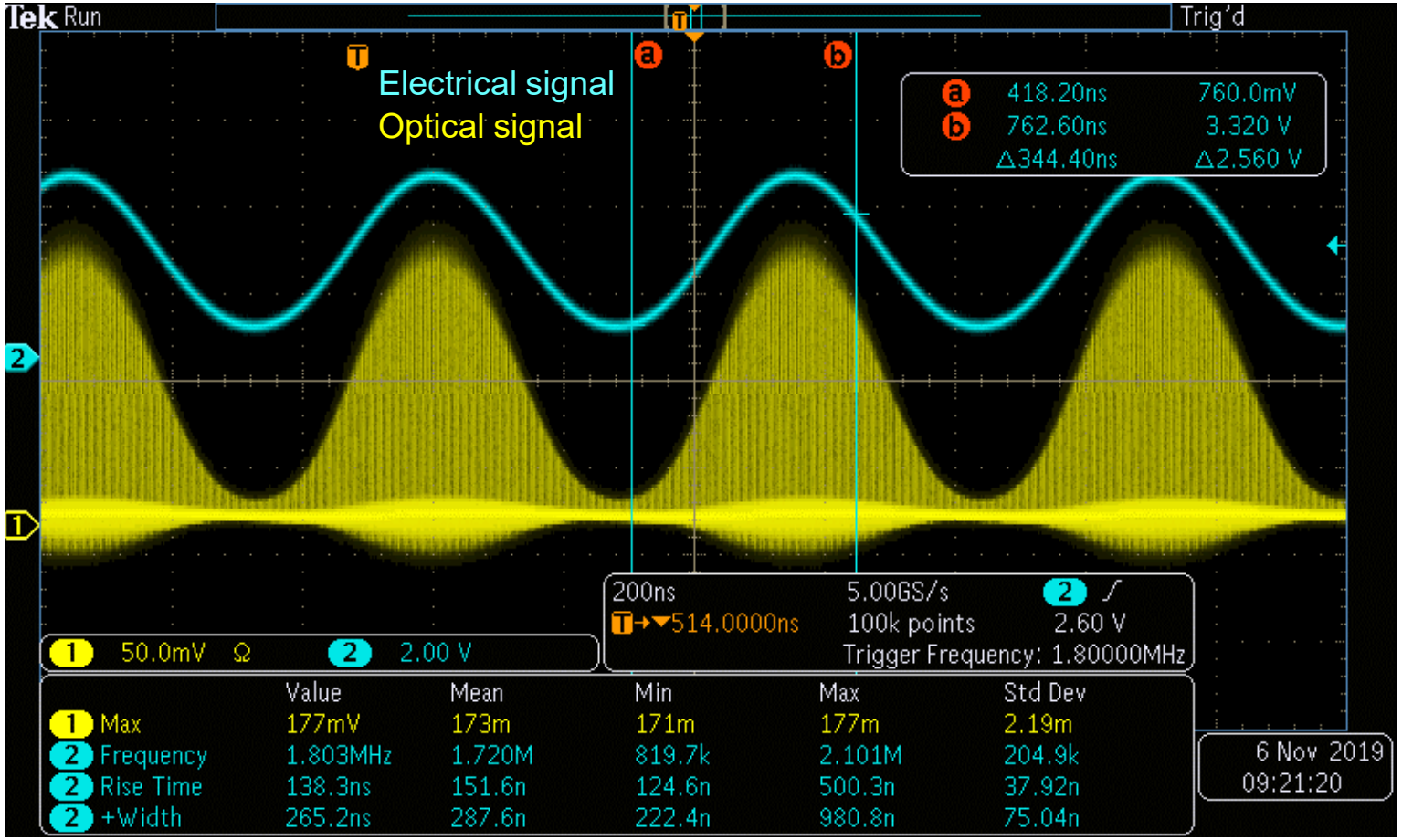
Fast analog modulation : « Mod In »

Electrical interface



Pulse intensity follows your signal (here Sine wave)

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New : Alcor FLeXSight with power control and fiber delivery

Alcor FLeXSight:

- Wavelength: 920nm or 1064nm
- Repetition rate = 80 MHz
- Average power > 0.8 W
- Pulse duration < 120 fs
- Fiber length = 2 m
- GDD precomp. from 0 to -20000 fs^2
- Single mode fiber : stable and clean output beam profile
- Linear polarization
- Fast power modulation < 1 µs response
- Air-cooled

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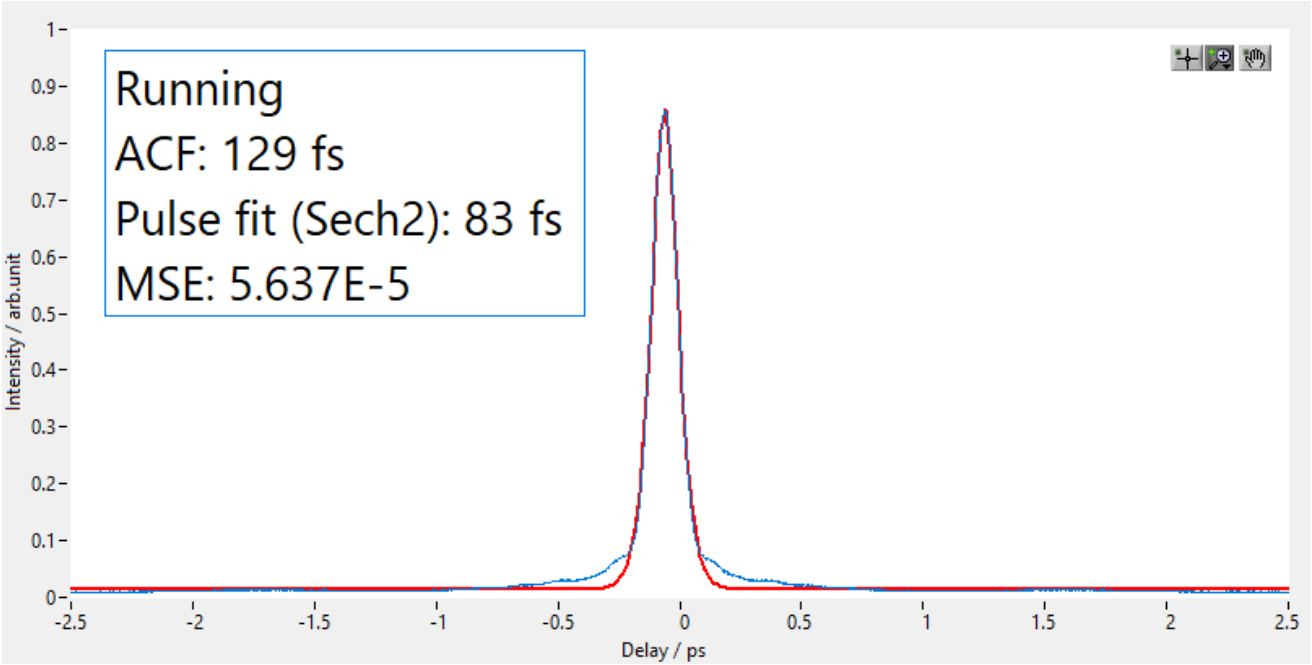
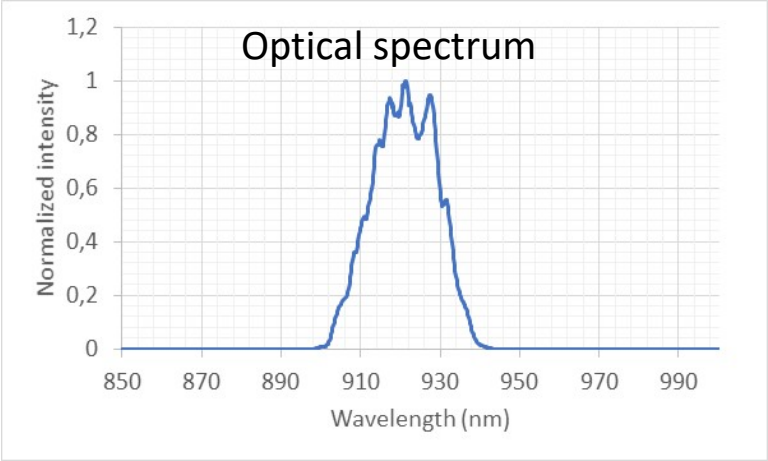
Pulse characteristics at fiber output

- 2m long fiber cable
- Pulse duration < 120 fs assuming Sech² pulse shape (here 83 fs)
- Pulse shape not affected by bending or twisting of the fiber
- GDD precompensation adjustable from 0 to -30000 fs²

Autocorrelation trace





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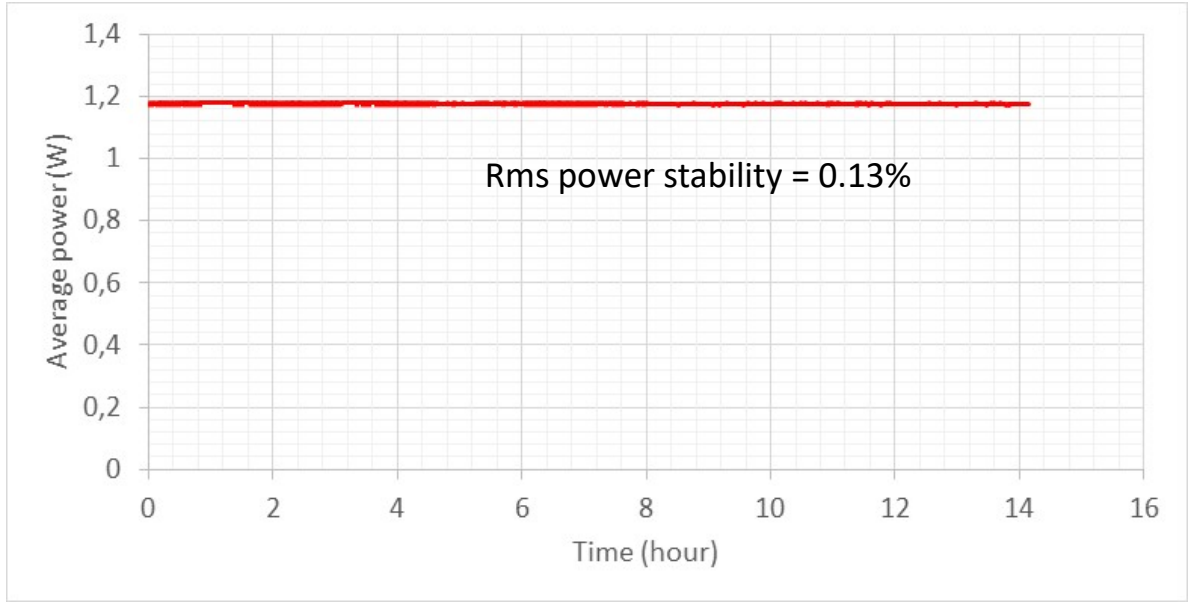
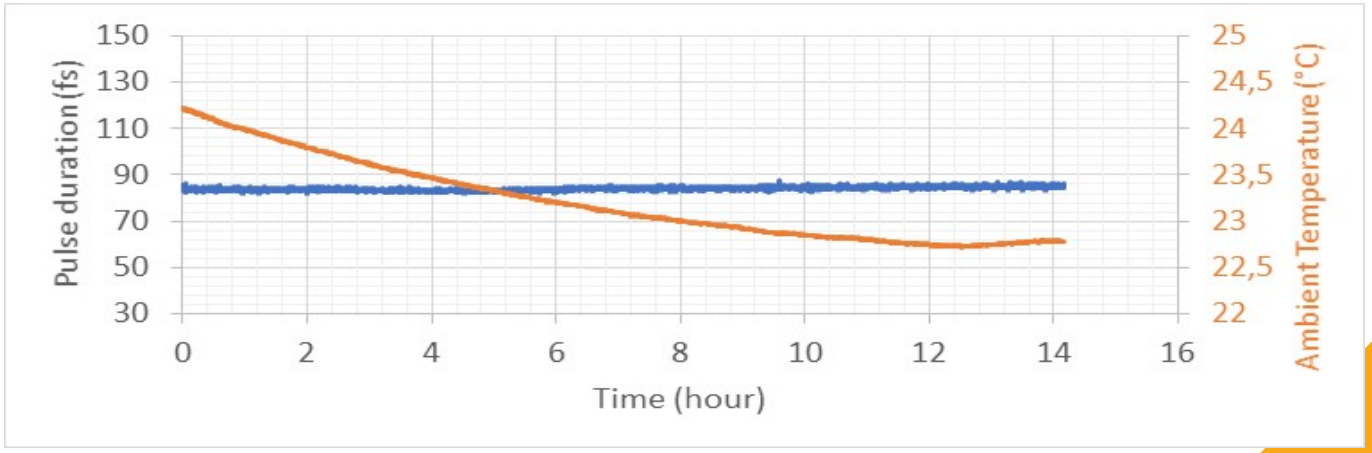
Power and pulse stability at fiber output

- > 1W tested under various environmental conditions
- Highly stable average power with rms stability of 0.13%
- Stable pulse duration and average power as a function of ambient temperature





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Alcor series : summary

- **Alcor 920 or 1064** : compact femtosecond fiber laser at 920 or 1064 nm with up to 2W average power
- **Alcor Dual** : 2 independently controlled laser heads for 920 and 1064 nm excitation
- **Alcor XSight** with fine and fast power control :
  - Fine power adjustment
  - Fast gating wih TTL signal (<1µs response time)
  - Fast power modulation with analog signal (<1µs response time)
  - Average power > 1.5 W
- **Alcor FLeXSight,** fiber delivered femtosecond pulses with total pulse control :
  - Fine and fast power control (Xsight)
  - Computer controlled GDD precompensation
  - Average power > 0.8 W at fiber output

Alcor

Alcor Dual

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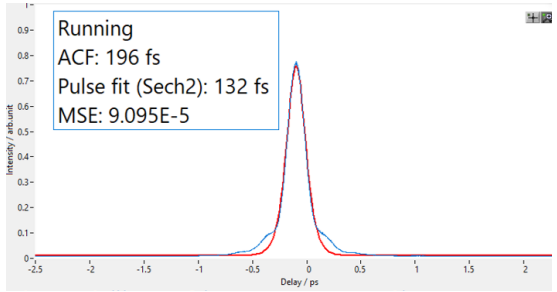
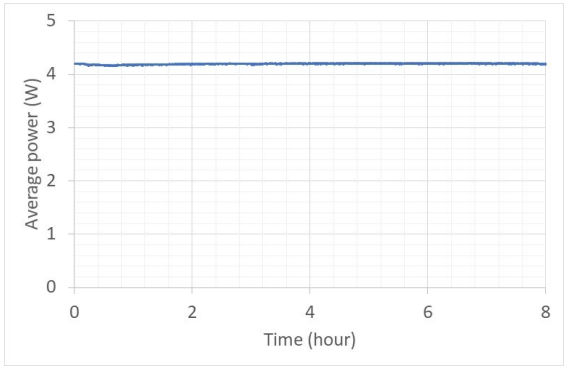
ALCOR 920-4W & ALCOR XSight 920-3W

- **ALCOR 920-4W**
  - < 140 fs
  - up to 80 MHz
  - 4 W
  - 920 nm
  - Frequency synchronization (SYNC-OUT)
  - Computer controlled GDD precompensation – 60 000fs²
  - Same form factor as standard ALCOR



- **APPLICATIONS**
  - MULTIPHOTON EXCITATION
  - NEUROSCIENCE



- **ALCOR XSight 920-3W**

  fine and fast control on Alcor:
  - External module for 920 nm
  - Fine power adjustment
  - Fast gating wih TTL signal (<1µs response time)
  - Fast power modulation with analog signal (<1µs response time)
  - Average power 3W

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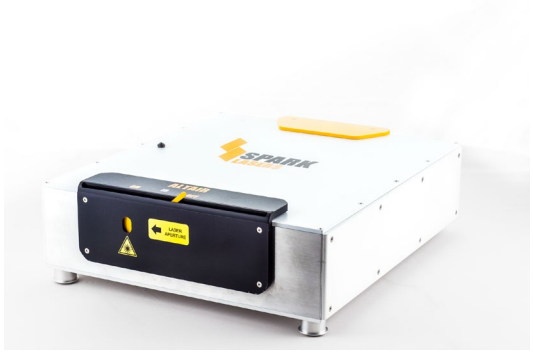
Additional ranges of lasers for biophotonics applications

FOR HIGHER POWER:

Application: 2-photon microscopy light stimulation

- **ALTAIR**



1040 nm (1064 nm optional)
Up to 20 W @ 80 MHz
Or 10 W @ 40 MHz
< 160 fs
Up to 1.5 MW peak power
Up to 250 nJ per pulse
Standard GDD precomp. – 30 000 fs²
Remote control through TCP/IP
Options:
AOM for pulse picking
AOM for fine and fast power modulation

FOR OPTOGENETICS:

Application: Optogenetics stimulation, individual neuron excitation, OPA pumping

- **DIADEM**

1030 nm (1064 nm optional)
From single shot to up to
30 W @ 2 MHz (optional at 40 MHz)
350 fs (other optional)
Up to 115 MW peak power
Up to 40 µJ energy per pulse
Negative GDD precompensation beyond – 130 000 fs²
Standardly embedding:
AOM for pulse picking and fine and fast power modulation
Remote control through TCP/IP

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