

LightWire

SERIES

Ultrafast
Fiber
Lasers



The LightWire series fiber lasers feature turn-key operation, monolithic all-in-fiber design and require no maintenance making it a preferred alternative to the solid state counterparts in the industrial settings and multidisciplinary research laboratories. Different versions, featuring femtosecond and picosecond pulse durations are available.

LightWire FF series femtosecond fiber lasers are compact, robust and simple to use. They are excellent choice for non-linear microscopy, terahertz spectroscopy, femtosecond pump-probe experiments or seeding femtosecond solid state amplifiers. Models with the average power ranging from 40 mW to 4 W and pulse energy from 1 nJ to 1 μ J are available.

LightWire FP picosecond laser line is designed for researchers and OEM integrators who require bandwidth limited picosecond pulses. Compact, cost efficient models deliver 2–7 ps pulses with the average output power up to 300 mW and pulse energy up to 30 nJ. LightWire FP lasers offer a fine-tuning possibility of the central wavelength at either 1064 nm, 1053 nm or 1030 nm making them an excellent tool for seeding solid state amplifiers (Nd:YAG, Nd:YLF, Yb:YAG) as well as for metrology applications.

GENERAL SPECIFICATIONS

For Your convenience, table contains all available options and highest parameter values. Not all output specifications are available at the same time simultaneously. Please refer to the catalog page for exact specifications and available options.

Model	Pulse duration	Central wavelength	Output power	Repetition rate	Max pulse energy
LightWire FF50	< 150 fs	1064 nm	40 mW	40 MHz	1 nJ
LightWire FF200	< 120 fs	1064 nm	200 mW	40 MHz	5 nJ
LightWire FF3000	< 300 fs	1030 nm	4 W at 40 MHz 3 W at 3 MHz	40 MHz (0–10 MHz with AOM)	1 μ J
LightWire FP10	2–7 ps	1064/1053/1030 nm, tunable \pm 0.3 nm	2–5 mW	30 MHz	>0.1 nJ
LightWire FP100	6 ps	1064/1053/1030 nm, tunable \pm 0.3 nm	80 mW	30 MHz (0–10 MHz with AOM)	>2 nJ
LightWire FP300	7 ps	1064/1053/1030 nm, tunable \pm 0.3 nm	300 mW at 30 MHz 30 mW at 1 MHz	30 MHz (0–10 MHz with AOM)	30 nJ

LightWire FF50/FF200

Compact Femtosecond Fiber Lasers



LightWire FF50 is a cost effective turn-key femtosecond fiber laser with fiber delivery of the pulses all the way to your sample. Based on a well-established MOPA scheme, LightWire FF50 model laser ensures a reliable hands free operation due to its all-in-fiber construction.

LightWire FF200 is a higher power and shorter pulse version of the sister model from still very compact and cost effective package. It is especially suited for nonlinear microscopy applications.

FEATURES

- ▶ Pulse duration down to 120 fs
- ▶ Up to 200 mW output power
- ▶ 40 MHz repetition rate
- ▶ Fiber delivery
- ▶ Compact, rugged design
- ▶ Low maintenance

APPLICATIONS

- ▶ Ultrafast spectroscopy
- ▶ Time-domain terahertz spectroscopy
- ▶ Nonlinear microscopy

OPTIONS

- ▶ Dual fiber option is designed for TD-THz spectroscopy which allows a direct fiber coupling to both a detector and an emitter

SPECIFICATIONS ¹⁾

Model	LightWire FF50	LightWire FF200
Central wavelength	1064 nm	
Compressed pulse duration	150 fs	120 fs
Output power	40 mW	200 mW
Pulse repetition rate	40 MHz	
Max pulse energy	1 nJ	5 nJ
Bandwidth	15 nm	30 nm
Optical output	FC/APC connector or collimated beam	
Beam quality	$M^2 < 1.5$	
Pulse train monitoring	electrical SMA connector	
Dimensions (L×W×H)	228×104×56 mm	228×104×85 mm
Weight	< 2 kg	< 3 kg
Power supply	100–240 V, 50–60 Hz AC or 12 V DC	
Operating conditions	10–30 °C, humidity – not condensing	

¹⁾ Due to continuous improvement all specifications are subject to change without notice.

LightWire FF3000

Femtosecond Fiber Laser



LightWire FF3000 femtosecond fiber laser provides optimal solution for the applications where power of the standard femtosecond oscillators is not enough. Flexible repetition rate

and higher pulse energy can give your non-linear experiments a required boost to achieve better results. Single box configuration makes the system very easy to install and operate.

FEATURES

- ▶ Up to 4 W output power
- ▶ Up to 1 μ J pulse energy
- ▶ Repetition rate from 1 MHz to 40 MHz
- ▶ 300 fs pulse duration
- ▶ 1030 nm central wavelength
- ▶ Low maintenance

APPLICATIONS

- ▶ Ultrafast spectroscopy
- ▶ Nonlinear microscopy
- ▶ Photopolymerization
- ▶ Pump for femtosecond OPO
- ▶ Seeding high power Yb amplifiers

SPECIFICATIONS ¹⁾

Model	LightWire FF3000
Central wavelength	1030 nm
Compressed pulse duration	< 300 fs ²⁾
Output power	> 4 W at 40 MHz > 3W at 3 MHz
Pulse repetition rate	1–40 MHz
Max pulse energy	1 μ J
Optical output	collimated beam
Beam quality	$M^2 < 1.3$
Synchronization output	TTL signal with low jitter (< 20 ps)
Dimensions (L×W×H)	460×314×151 mm
Weight	< 15 kg
Power supply	100–240 V, 50–60 Hz AC
Operating conditions	10–30 °C, humidity – not condensing

¹⁾ Due to continuous improvement all specifications are subject to change without notice.

²⁾ Other pulse durations are available on request. Please contact Ekspla.

OPTIONS

- ▶ External pulse picker for the control of the output pulse train (0–10 MHz)

LightWire FP series

Compact Picosecond Fiber Lasers



FP300 is the highest power version in the family. It boosts the average power up to 300 mW. Integrated pulse picker and control of nonlinearity allows achieving transform limited pulses with the energy up to 30 nJ at lower repetition rates. Ideal for seeding linear amplifiers.

OPTIONS

- ▶ Integrated fiber pulse picker option (repetition rate 0–10 MHz) with separate control electronics box and TTL synchronization interface is available for all models.
- ▶ Chirped pulse option is available for FP100 model with bandwidth up to 6 nm and pulse compressibility down to 300 fs for seeding CPA systems.

FEATURES

- ▶ 2–7 ps pulse duration
- ▶ 1064 nm, 1053 nm or 1030 nm output wavelength; tunable ± 0.3 nm
- ▶ 30 MHz repetition rate
- ▶ Up to 300 mW output power
- ▶ Spectral bandwidth close to transform limit

FP10 is cost effective seeding solution for solid state regenerative amplifiers. Monolithic polarization maintaining oscillator design ensures turn-key operation with no alignment and no adjustment ever required. Wavelength tunability ensures that seed pulses are always spectrally overlapped with the amplification spectrum of your amplifier.

FP100 is an amplified version of FP10 model. It is optimized for high repetition rate solid state regenerative amplifiers which require higher seed power. MOPA design makes laser very stable and reliable.

APPLICATIONS

- ▶ Seeding of solid state amplifiers (Nd:YAG, Nd:YLF, Yb:YAG)
- ▶ Metrology



FP100-AOM picosecond fiber laser with Acusto-Optic Modulator driver unit

SPECIFICATIONS ¹⁾

Model	LightWire FP10	LightWire FP100	LightWire FP300
Central wavelength ²⁾	1064 nm, 1053 nm or 1030 nm; tunable ± 0.3 nm		
Pulse duration ²⁾	2–7 ps	6 ps	7 ps
Bandwidth	< 0.4 nm for 6 ps	< 0.6 nm	< 0.4 nm
Pulse repetition rate ²⁾	30 MHz		
Output power	> 4 mW at 6 ps	> 80 mW	> 300 mW at 30 MHz > 30 mW at 1 MHz
Max pulse energy	0.16 nJ	2.6 nJ	30 nJ
ASE level (in 1 nm spectral window at central wavelength)	< -100 dB peak power; < -60 dB average power	< -85 dB peak power; < -45 dB average power	< -85 dB peak power; < -45 dB average power
Polarization	linear, >100 : 1 extinction		
Optical output	FC/APC connector or collimated beam		
Beam quality	$M^2 < 1.1$		
Pulse train monitoring	electrical SMA connector		
Dimensions (L×W×H)	228×104×56 mm		
Weight	< 2 kg		
Power supply	100–240 V, 50–60 Hz AC or 12 V DC		
Operating conditions	10–30 °C, humidity – not condensing		

¹⁾ Due to continuous improvement all specifications are subject to change without notice.

²⁾ Other pulse durations, wavelengths and repetition rates are available on request. For the exact combination of repetition rate, pulse duration and power please contact EKSPILA.



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