



Y-Fi™ Series - High Power and Repetition Rate Near-IR Ultrafast Fiber Lasers

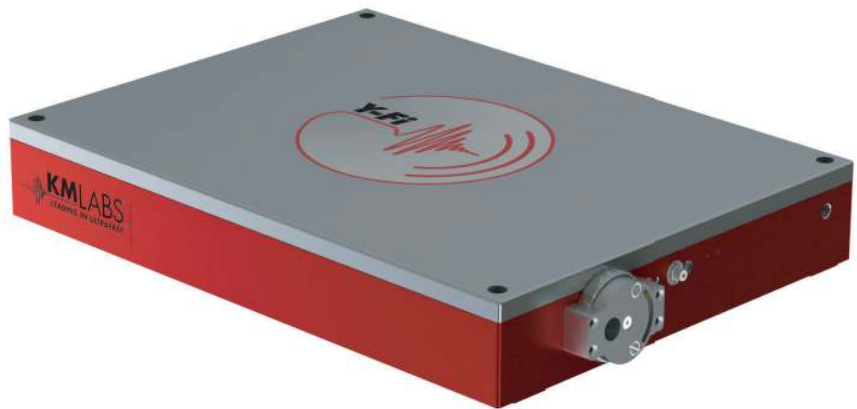
Ultra-compact μ J-class femtosecond fiber laser with unprecedented performance: clean pulses with duration as short as <150 fs

Applications

- OPCPA seeding
- OPA pumping
- Multiphoton microscopy
- Chemical spectroscopy
- Precision micromachining of tissues, glass, and plastics

Features

- Average power: 5W / 20 W / 50 W (Y-Fi™ / Y-Fi™ HP / Y-Fi™ Ultra)
- $< 150/170/190$ fs pulse length with low pulse pedestal gives improved performance for driving nonlinear optical interaction: optimum efficiency at lower pulse energy / average power
- Tunable repetition rate (0.5-15, 60 MHz)
- Fully integrated, ruggedized, hands-free laser source
- Stable over large temperature range ($16-26^\circ\text{C}$)
- Graphical, intuitive software control with integrated diagnostics
- Computer controlled pulse width precompensation: optimize your experiment with no external prisms or gratings
- No manual adjustments on head
- Small optical head footprint ($\sim 30 \times 45$ cm) for Y-Fi™ and Y-Fi™ HP



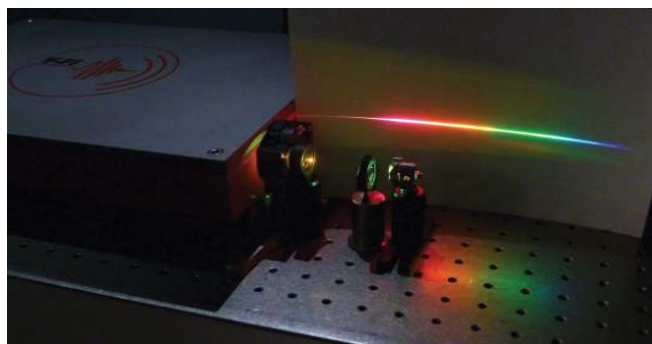
The Y-Fi™ laser series is a family of high average power, high repetition rate near-IR ultrafast fiber lasers. Y-Fi™ products are based on a single rugged opto-mechanical platform and are engineered for hands-free operation.

Y-Fi™ Outstanding Characteristics

The Y-Fi™ system employs a patented all normal dispersion (ANDi) modelocked fiber laser coupled with a fiber amplifier. This configuration offers numerous unique advantages, including:

- Bandwidth supporting sub-100 fs pulses
- High output energy from oscillator requires less amplification for shorter, low temporal pedestal pulses
- Robust long-term operation

The short, clean pulses of the Y-Fi™ laser series deliver more peak intensity per μ J than competing products. KMLabs guarantees both pulse duration and pedestal energy content, verified with a FROG pulse measurement, to ensure each laser pulse is free of picosecond background that robs energy from the main short pulse. Thus, more of the laser output is truly usable, requiring less energy/average power and decreasing the probability of seeing collateral damage and other detrimental interactions.



Bulk White-Light Generation

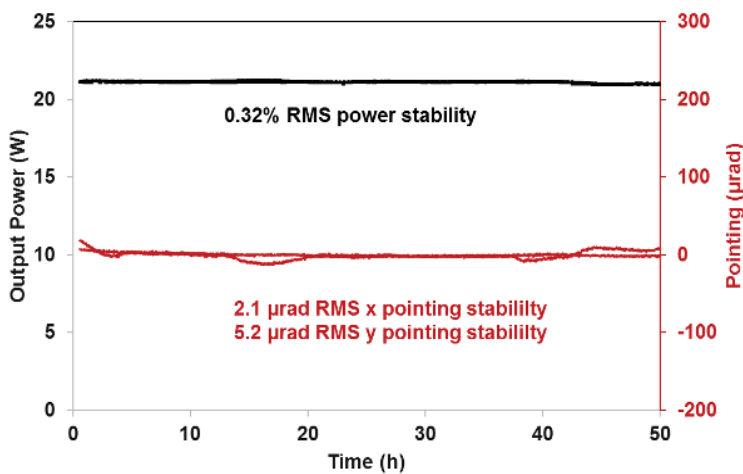


Key Specifications

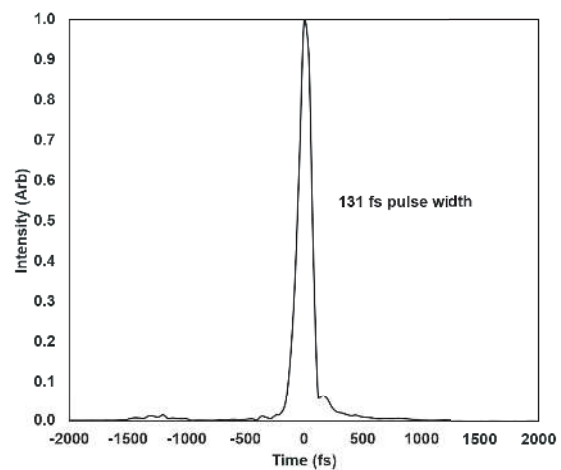
Parameter	Y-Fi™	Y-Fi™ HP	Y-Fi™ HP Ultra
Pulse Width	<150 fs (<120 fs typical)	<170 fs	<190 fs
Compressor Dispersion Pre-compensation	$\pm 20,000 \text{ fs}^2$	$\pm 10,000 \text{ fs}^2$	Inquire
Center Wavelength	$1035 \pm 5 \text{ nm}$	$1035 \pm 5 \text{ nm}$	$1035 \pm 5 \text{ nm}$
Pulse Energy	$> 0.45 \mu\text{J} @ 10 \text{ MHz}$	$> 3 \mu\text{J} @ 1 \text{ MHz}$	$> 40 \mu\text{J} @ 1 \text{ MHz}$
Beam Quality	$M^2 < 1.2$	$M^2 < 1.2$	$M^2 < 1.2$
Average Power	$> 4.5 \text{ W} @ 10 \text{ MHz}$	$> 20 \text{ W} @ 10 \text{ MHz}$	$> 50 \text{ W} @ 10 \text{ MHz}$
Repetition Rate	0.5 - 15, 60 MHz	0.5 - 15, 60 MHz	0.5 - 15, 60 MHz
Auto-Correlation Pedestal Content	< 12%	< 15%	< 20%
Background content	< 1.0%	< 1.0%	< 2.0%
Pre-Pulse Contrast	< 0.5%	< 0.5%	< 1%
Post-Pulse Contrast	< 0.5%	< 0.5%	< 1%
Power Stability*	<1% RMS over 12 hours after 30 min warm-up	<1% RMS over 12 hours after 30 min warm-up	<1% RMS over 12 hours after 30 min warm-up
Pointing Stability*	< 10 μRad RMS after 30 min warmup	< 10 μRad RMS after 30 min warmup	Inquire
Operational Temp. Range	16 – 26 °C	16 – 26 °C	16 – 26 °C
Physical Configuration	12"x16"x2.4" (optical head)	12"x16"x2.4" (optical head)	24"x48"x8" (optical head)
Computer Interface	Laptop provided, w/GUI	Laptop provided, w/GUI	Laptop provided, w/GUI
SHG Power	Inquire	$> 8 \text{ W} @ 10 \text{ MHz}$	Inquire
SHG Pulse Duration	Inquire	< 150 fs	Inquire

* Ambient $\pm 0.5 \text{ C}$

Y-Fi™ and Y-Fi™ HP Example Data

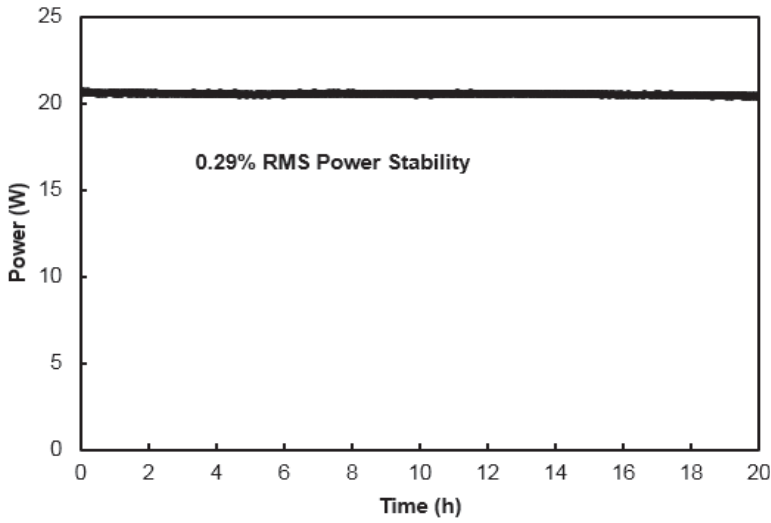


Y-Fi™ HP power and pointing stability over 50 hours, in typical lab conditions

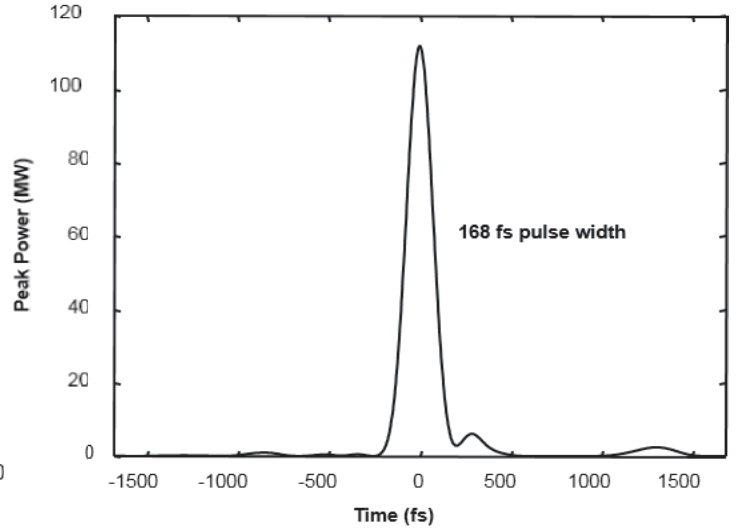


Y-Fi™ HP clean 131 fs pulses at 20W output (2 μJ , 10 MHz), measured with frequency resolved optical gating (FROG).

Y-Fi™ HP Ultra Example Data:



Average power measured over 20h showing fluctuations < 0.3% RMS



Measured temporal pulse with a duration of 168 fs FWHM operating at 22 μ J at 1 MHz

Mechanical Dimensions, Y-Fi™ / Y-Fi™ HP Optical Head:

