

FEMTOSOURCE™
fusion™

| 1.2 MW peak power |

16 nJ |

1200 mW |

sub-9 fs |

Applications

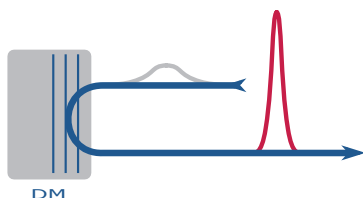
- Amplifier and OPCPA seeding
- THz spectroscopy & imaging
- Optical coherence tomography
- Ultrafast spectroscopy
- Pump-probe measurements
- Materials processing
- Two-photon polymerization
- Thin-film metrology
- Nonlinear optics
- (multiplex) CARS
- Surface enhanced HHG



The FEMTOSOURCE™ fusion™ family is a range of Ti:sapphire oscillators generating pulse durations from sub-9 to sub-20 fs, and setting the benchmark for outstanding performance, stability and ease of operation.

With the largest variety of models on the market, we do have a fusion™ version for your ultrafast application: average powers ranging from 150 mW to 1.2 W and pulse durations of sub-9 fs yield peak powers of over 1 MW. Low cost of ownership is guaranteed by outstanding efficiency. State-of-the-art laser parameters are offered at lower pump power levels when compared to all its counterparts.

The fusion™ features an integrated pump laser and GREENALIGN™, an active opto-mechanical component developed for our industrial grade INTEGRAL™ oscillators. This combination sets the leading level of stability and allows for generation of ultrafast laser pulses with ease of operation.



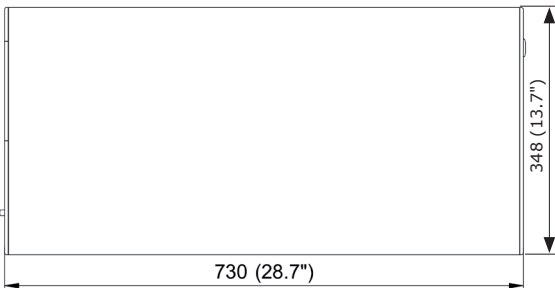
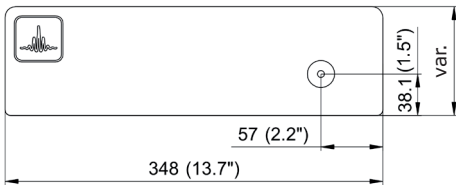
Extraordinary Features

Ultrafast pulses | Extreme peak power
 Dispersive mirror cavity | Ultra low noise
 GREENALIGN™ stabilization | Ease of operation
 Outstanding pulse quality | Highest contrast

Options

FEMTOLOCK™ repetition rate stabilization
 BEAMALIGN™ active beam pointing stabilization
 FEMTOMETER™ ultrafast autocorrelator
 Custom specifications available on request

fusion™ - FRONT VIEW. Dimensions in [mm] ([in])



fusion™ - TOP VIEW, Dimensions in [mm] ([in])

Reliability, Ultra Low Noise & Ease of Operation

At the heart of every fusion™, the Dispersive Mirror (DM) based oscillator cavity rests on our thermally stabilized base plate. Highest quality, ultra low-loss optics and compact mechanical components offer unsurpassed pulse duration, power levels and efficiency.

The Extra Cavity Dispersion Control guarantees ultrafast pulses arriving at your target undistorted. The DM cavity exhibits rock-solid passive stability, ultra low noise and superior performance due to the radical reduction in the number and size of components.

Extreme Performance & Flexibility

For applications in which the shortest pulses, the largest bandwidth or highest peak power are required, FEMTO-LASERS offers the unique fusion™ BB and M1 systems. Our proprietary DM technology enables both models to reliably sustain the largest bandwidth with a near Gaussian shape or the highest level of peak power guaranteed from a commercial femtosecond oscillator.

Should your application require parameters not offered by the standard fusion™ models, custom tailored systems with distinct spectral shape, pulse duration, power and repetition rate are available upon request. To ensure this outstanding performance over its lifetime, FEMTOLASERS is dedicated to providing the highest level of customer care for your fusion™ integrated ultrafast oscillator system.

FEMTOSOURCE™	fusion™ PRO	fusion™ 20	fusion™ M1	fusion™ XPRO	fusion™ BB (Broadband)	fusion™ XBB (Broadband)
Pulse duration	< 10 fs	< 20 fs	< 10 fs	< 9 fs	< 9 fs	< 9 fs
Bandwidth (FWHM) @ 800 nm	> 100 nm	> 40 nm	> 80 nm	> 90 nm	> 125 nm	> 150 nm
Mode locked output power (avg.) ¹⁾	150 - 800 mW	150 - 1200 mW	1000 mW	800 mW	150 - 500 mW	300 mW
Repetition rate ¹⁾	75 ± 3 MHz ²⁾	75 ± 3 MHz ²⁾	75 ± 3 MHz	75 ± 3 MHz	75 ± 3 MHz ²⁾	75 ± 3 MHz
Pulse energy @ 75 MHz ¹⁾	2 - 10.6 nJ	2 - 16 nJ	12 - 14 nJ	10 nJ	1.2 - 7 nJ	4 nJ
Peak power @ 75 MHz ¹⁾	200 - 1000 kW	100 - 775 kW	> 1.2 MW	> 1.1 MW	130 - 750 kW	> 440 kW
Beam diameter (1/e ²)	< 2 mm					
Beam divergence	< 2 mrad					
Spatial mode	TEM ₀₀ (M ² < 1.3)					
Polarization	> 100:1 (horiz.)					
Noise (measured at 10 Hz - 100 kHz)	< 0.05 % rms					
Power stability ³⁾	± 1%					

1) Factory set
 2) Optional 70 - 120 MHz available
 3) Measured over 8 hours after 30 min. warmup at constant environmental conditions



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FEMTOLASERS' laser products are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by Center of Devices and Radiological Health on all systems ordered for shipment after October 1, 2003.