

FEMTOSOURCE™

synergy™

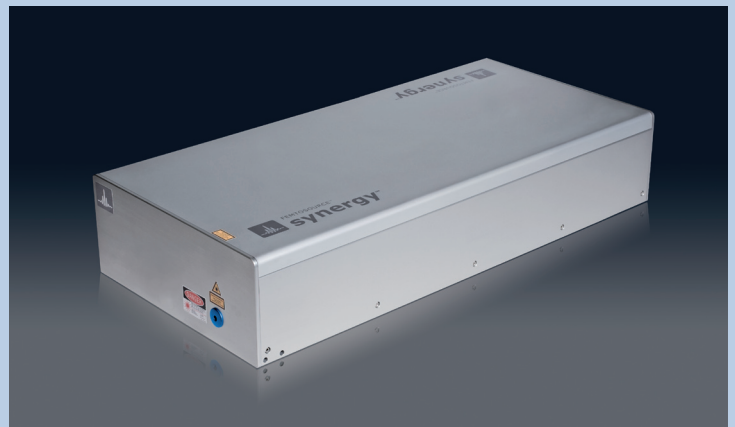
| sub-10 fs or sub-20 fs |

| > 16 nJ |

| sub-10 fs or sub-20 fs |

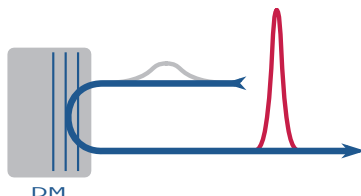
Applications

- 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™ synergy™ family is a range of Ti:sapphire oscillators generating pulse durations from sub-10 to sub-20 fs. Based on FEMTOLASERS experience gained from the largest installed base of ultrafast oscillators in this class they are setting the benchmark for reliability and performance.

With the largest variety of models on the market, we do have a synergy™ version for your ultrafast application: average powers ranging from 500 mW to 1.2 W and pulse durations of sub-10 fs yield peak powers of over 1 MW. Low ownership costs are guaranteed by superior efficiency at lower pump power levels when compared with all its counterparts.



Extraordinary Features

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

Options

- FEMTOLOCK™ repetition rate stabilization
- GREENALIGN™ stabilization & ease of operation
- BEAMALIGN™ active beam pointing stabilization
- FEMTOMETER™ femtosecond autocorrelator
- Custom specifications available on request

SYNERGY™ - FRONT VIEW, Dimensions in [mm] ([in])



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

Reliability & Ultra Low Noise

At the heart of every synergy™, 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. When equipped with GREENALIGN™, active opto-mechanical component developed for our industrial grade INTEGRAL™ oscillators, this design sets the leading level of active stability and ease of operation. The DM cavity exhibits rock-solid passive stability, ultra-low noise and superior performance due to the radical reduction in the number of components.

Extreme Performance & Flexibility

For applications where shortest laser pulses or highest peak power are required, FEMTOLASERS offers the unique synergy™ M1 system. Our proprietary DM technology enables the M1 models to sustain the largest bandwidth with a near Gaussian shape and the highest level of peak power guaranteed from a commercial femtosecond oscillator.

Should your application require parameters not offered by the standard synergy™ 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 synergy™ ultrafast oscillator.

FEMTOSOURCE™	synergy™					
	PRO	PRO HP	M1	20	20 HP	20 UHP
Pulse duration	< 10 fs	< 10 fs	< 10 fs	< 20 fs	< 20 fs	< 20 fs
Bandwidth (FWHM) @ 800 nm	> 100 nm	> 100 nm	> 80 nm	> 40 nm	> 40 nm	> 40 nm
Mode locked output power (avg.) ¹⁾	> 500 mW @ 5 W	> 800 mW @ 8 W	> 1000 mW @ 10 W	> 500 mW @ 5 W	> 1000 mW @ 8 W	> 1200 mW @ 10 W
Pulse energy @ 75 MHz	> 6.6 nJ	> 10.6 nJ	> 13.3 nJ	> 6.6 nJ	> 13.3 nJ	> 16 nJ
Peak power @ 75 MHz	> 660 kW	> 1060 kW	> 1330 kW	> 330 kW	> 665 kW	> 800 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 10 Hz - 100 kHz)	< 0.05 % rms					
Power stability ²⁾	± 1%					

1) Pump power level given @ 532 nm
 2) Measured over 2 hours after 30 min. warmup at constant environmental conditions

All specifications are subject to change without notice



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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.