

FEMTOSOURCE™
twin synergy™

| sub-10 fs

| ASOPS

| two resonators

| time window 12 ns

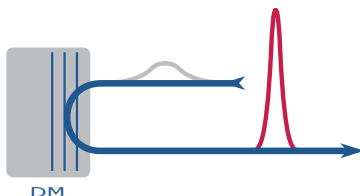
Applications

Amplifier / OPCPA seeding
Coherent THz generation
Multiphoton microscopy
Ultrafast spectroscopy
Asynchronous optical sampling



FEMTOSOURCE™ twin synergy™ is the combination of two FS synergy™ oscillators on one temperature stabilized base plate, sharing one pump source. This setup results in extremely stable repetition rates of both lasers relative to each other (*Optics Express, Vol. 13, No. 22, pp. 9029, October 31, 2003*). Each FS synergy™ can be configured individually. The ultrafast Ti:Sapphire oscillators employ our patented Dispersive Mirror (DM) technology, which is specifically designed for broadband intracavity group delay dispersion compensation.

The system generates shortest optical pulses with unprecedented quality, stability, and reproducibility. DM systems constitute the ideal solution for a wide range of scientific, industrial, and medical applications.



twin synergy™

Extraordinary Features

- Minimal drift between both cavities
- Extremely broad spectrum
- Extremely low noise
- Excellent long term output stability
- Ultrashort pulses | Compact footprint

Options

- Length stabilisation with FEMTOLOCK™
- Custom repetition rate
- CE-Phase stabilisation

Ultrashort Pulses

Intracavity high order dispersion can be eliminated to an extent that high quality, bandwidth limited sub-10 fs pulses can be generated from a Ti:Sapphire oscillator (*Optics Letters, Vol. 20, No. 6, pp. 602, March 15, 1995*). An Extra Cavity Dispersion Control (ECDC) unit provides precise control of dispersion outside of the oscillator to transmit pulses with these extraordinary parameters to your target.

Compactness

DM systems contain no intracavity elements other than the gain medium resulting in an extremely compact and simple setup.

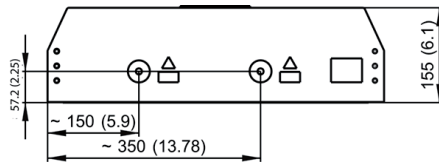
Stability & Reproducibility

The intracavity dispersion is not sensitive to cavity alignment, in strong contrast to prism controlled systems. Hence the day-to-day reproducibility as well as the stability of the laser output parameters is excellent in the sub-10 fs regime. Owing to the compact DM resonator design the system features the lowest energy noise and timing jitter demonstrated in the sub-10 fs regime to date.

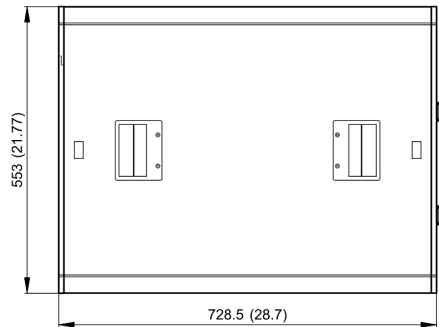
Flexibility

Custom designed systems are available with repetition rates between 65 and 125 MHz. The center wavelength can be chosen and factory set to your specifications. Each oscillator can be configured as FS synergy™ PRO or as FS synergy™ 20. The output power for each oscillator can be chosen at factory depending on pump power distribution.

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



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



FEMTOSOURCE™	twin synergy™ PRO	twin synergy™ 20
Pulse duration	< 10 fs	< 20 fs
Bandwidth (FWHM) @ 800 nm	> 100 nm	> 40 nm
Total mode-locked output power (avg.)	> 500 mW @ 5 W (532 nm) ²⁾	> 500 mW @ 5 W (532 nm) ²⁾
Pulse energy @ 75 MHz	> 6 nJ	> 6 nJ
Peak power @ 75 MHz	> 600 kW	> 300 kW
Beam diameter (1/e ²)	< 2 mm	
Spatial mode	TEM ₀₀ (M ² < 1.3)	
Polarization	> 100:1 (horiz.)	
Noise (measured 10 Hz - 100 kHz)	< 0.05 % rms	
Power stability ¹⁾	± 1%	
1) Measured over 2 hours after 30 min. warmup at constant environmental conditions 2) Higher output power available with higher pump power	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.