



Amplifiers



Ti:Sapphire Multipass

- Rigid design
- Compact single-box design
- >1 mJ/pulse
- Upgradeable up to 150 mJ
- <35 fs pulse duration



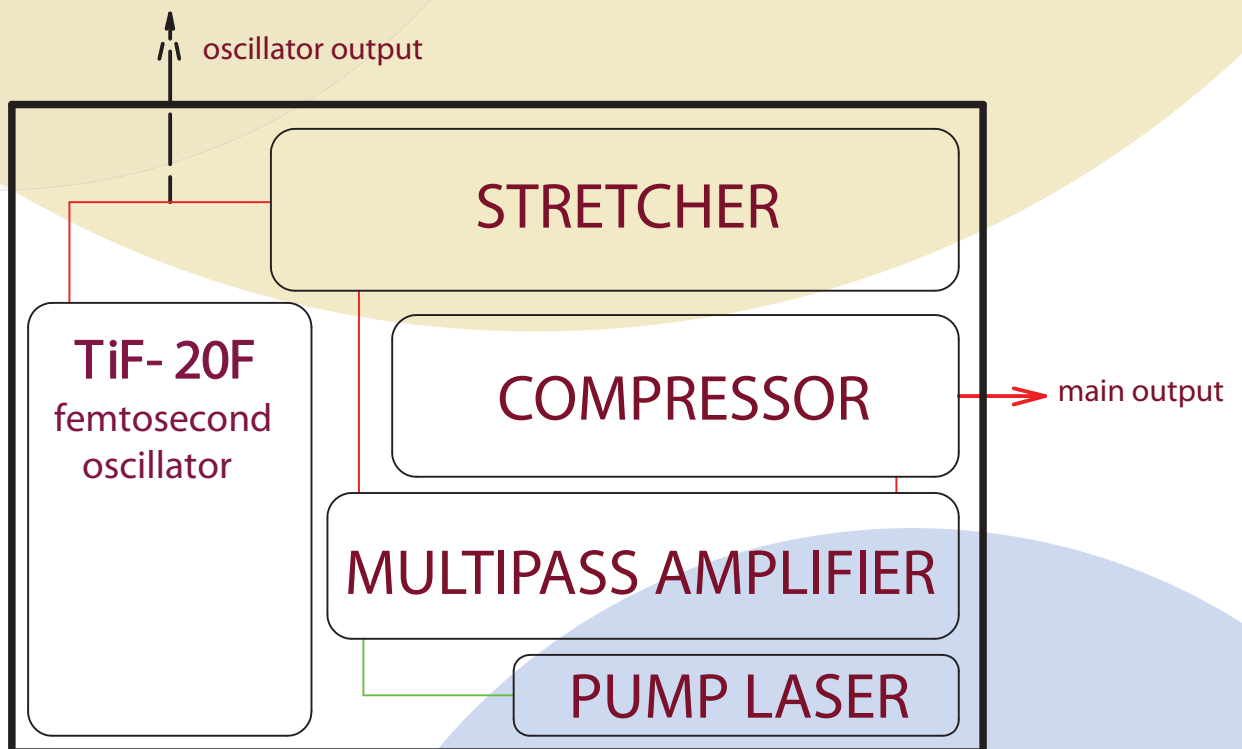
Femtosecond multipass Ti:Sapphire amplifier

Product overview

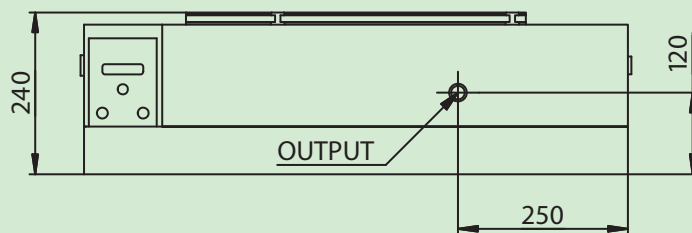
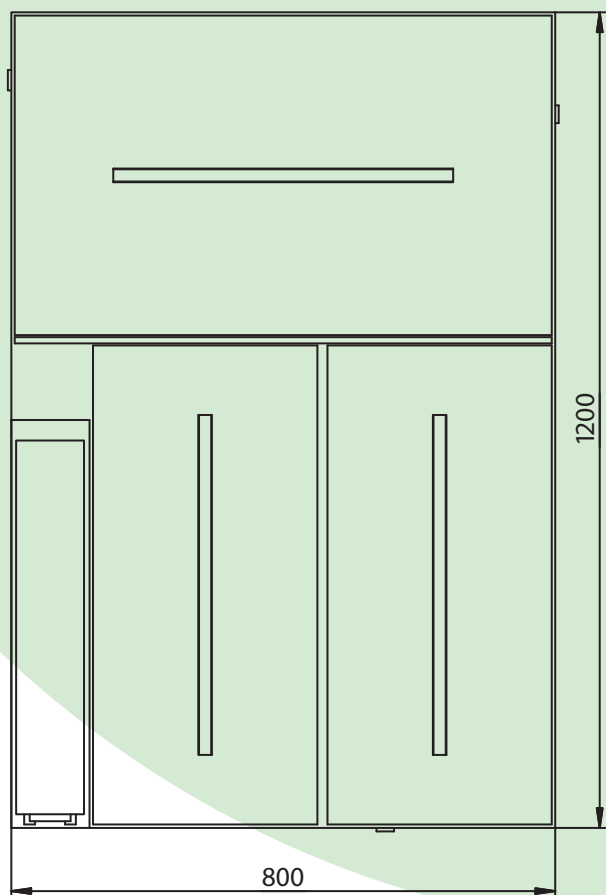
The MPA Ti: Sapphire multipass amplifier system is designed to amplify single pulses from a CW mode-locked Ti: Sapphire laser. Typically an input pulse with energy of only a few nanojoules can be amplified to over 1mJ. This represents an overall amplification of greater than 10^6 . The amplification takes place as the optical pulse passes 8 times through a Ti: Sapphire laser rod, which has been optically excited by a laser pulse from the Q-switch pump laser. Multipass amplifiers offer less pulse broadening and better contrast between the amplified pulse and amplified stimulated emission (ASE) than regenerative amplifiers. Because the pulse only makes one pass through the pulse picker, dispersion is reduced and <30 fs pulses from seed source can be highly amplified with little or no pulse broadening.

The MPA family of amplifiers comprise a femtosecond seed oscillator (TiF-20F or fiber EFOA-SH), stretcher, Faraday isolator, Pockels cell with control and synchronization unit, multipass amplifier, pulsed amplifier pump laser and compressor. All elements are gathered into a single box, thus providing reliable and stable generation and hands-free operation. Upon customer request the system can be upgraded to deliver up to 150 mJ per pulse by adding further stages of multipass power amplifiers.

The MPA family is an ideal source for fundamental research, femtosecond micromachining systems, terahertz imaging, OPA pumping, remote sensing and ultrafast spectroscopy.



Amplifier layout



MPA technical specifications

	MPAPOP	MPAPOF	MPAPOP-1000
Seed oscillator	TiF-20F	EFOA-SH (fiber)	TiF-20F
Pulse repetition rate, Hz	10, 20 or 50		1000
Output energy, mJ	>1*		>0.6
Pulse duration, fs	<35	<120	<35
Central wavelength, nm	800+/-15	780+/-15	800+/-15
M ²	<1.3		
Beam diameter (1/e ²), mm	6		
Stability, % rms	<3		
Contrast ratio	>10 ³ :1 @ 10 ns >10 ³ :1 @ 1 ps >10 ⁶ :1 @ 5 ps >5x10 ⁷ :1 @ 10-20 ps >5x10 ⁷ :1 @ ASE		
Spatial mode	TEM ₀₀		
Output polarization	horizontal		
Dimensions, mm	1200x800x240		
Water cooling	the package includes closed-loop water chiller		

* - up to 150 mJ custom systems are available upon request