



HIGH-POWER ULTRAFAST SOURCES AT 2 μm

A central emission wavelength of 2 μm generated by Thulium-doped amplifiers has enabled a multitude of new applications. AFS offers the highest performance among commercially available 2- μm fiber-based ultrafast laser systems.

APPLICATIONS

- Materials processing
- Micro- and nano-machining
- Pumping of optical parametric amplifiers (mid-IR OPA)
- Generation of high harmonics (water-window HHG)

MORE INFORMATION

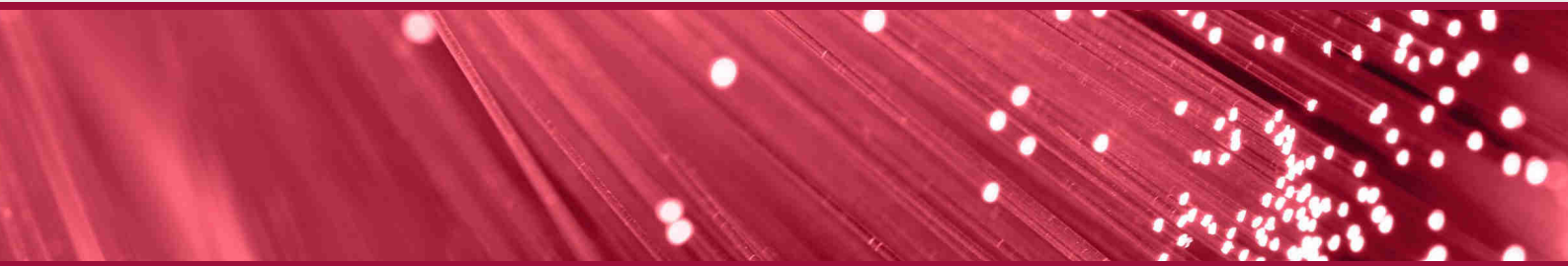
www.afs-jena.de | sales@afs-jena.de

	Ultra-compact version	Single-channel version	Multi-channel version
Central wavelength	1950 nm		
Repetition rate	25 MHz	Tunable from 50 kHz ... 25 MHz	
Pulse energy	150 nJ	up to 50 μJ	up to 200 μJ
Peak power	> 3 MW	up to 250 MW	up to 1 GW
Average power	20 W	up to 80 W	up to 200 W
Pulse duration	50 fs	150 fs ... 5 ps adjustable	
Polarization	linear		
Beam quality	close to diffraction-limited, $M^2 < 1.3$		
Average power stability	< 0.5% RMS		< 1% RMS
Pulse energy stability	< 1% RMS		
Beam pointing	< 10 μrad RMS	< 20 μrad RMS	
Dimensions laser (W \times D \times H)	56 \times 41 \times 14 cm ³	112 \times 41 \times 20 cm ³	200 \times 100 \times 35cm ³
Mass	approx. 50kg	approx. 100 kg	approx. 250kg
Add-ons	Mid-IR (5-18 μm)	Nonlinear compression	Nonlinear compression, FAST SWITCH
Additional features	Turnkey reliability, all parameters software-controlled, temperature-stabilized and dust-sealed housing		

Performance overview



MID-IR ADD-ON FOR 2- μ m SYSTEMS



Frequency combs in the molecular finger-print region have enabled applications in metrology, spectroscopy and medicine. All these applications benefit from higher average powers that allow for faster acquisition rates and an improved signal-to-noise ratio. This extension complements the compact 50fs-Thulium-doped ultrafast fiber laser system and provides a high-power frequency comb in the mid-IR.

The ultrafast mid-IR pulses are achieved through intra-pulse difference-frequency generation, which guarantees passive carrier-envelope-offset stability. The complete frequency-comb nature of the source can be achieved by controlling and stabilizing the fundamental pulse-repetition frequency of the driving laser.

Central wavelength	5-18 μ m (tunable)
Pulse repetition rate	20 MHz, others on request
Average power	up to 100 mW
Polarization	linear
Beam quality	close to diffraction-limited, $M^2 < 1.3$
Average power stability	< 1% RMS
Pulse energy stability	< 1% RMS
Beam pointing	< 10 μ rad RMS
Additional features	Turnkey reliability, all parameters software-controlled, temperature-stabilized and dust-sealed housing

Performance overview