



ANTAUS. Yb-Doped Amplified Femtosecond Fiber Laser



ANTAUS-20W-20u/1M femtosecond fiber laser with its control unit

- Average power >20 W at 1030 nm
- Pulse energy >20 uJ at 1 MHz
- Passive air cooling
- Output pulse slicer option
- Tunable pulse duration option
- Small footprint and 24/7 turn-key operation

Product overview

The ANTAUS microjoule ultrafast fiber laser system features high pulse energy along with fast repetition rate, which is an ideal combination for subtle material processing applications, as well as for many kinds of scientific research. Unlike most of the competition, the ANTAUS features short pulse duration and near-perfect AC trace with almost no pulse pedestal. The system is an all-Yb-doped-fiber oscillator + amplifier with a free-space final pulse compressor. Such design architecture ensures greater stability and true turn-key operation with no maintenance as well as the highest possible output pulse energy and spatial beam quality.

There are three basic models of the ANTAUS system:

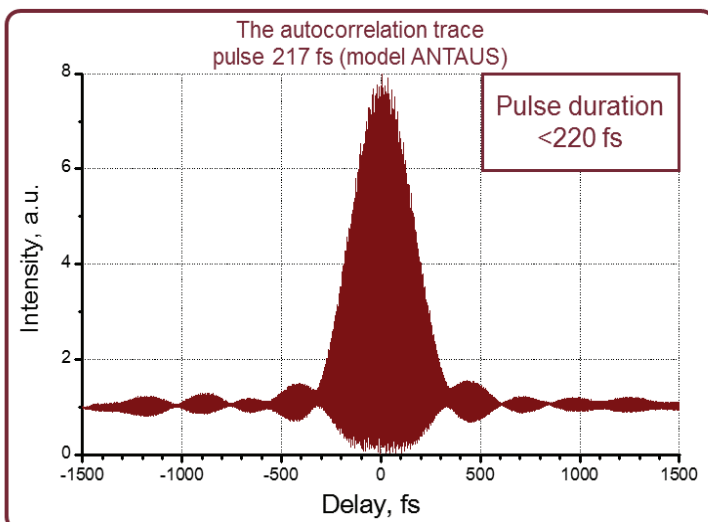
The **ANTAUS-10W-2u/5M** has the smallest single pulse energy from the three, however, it features the novel dense-burst mode in which it can produce a burst of closely spaced pulses (~20 ns intrapulse distance) with total burst energy being much higher than the energy of a single pulse. This mode is beneficial for certain micromachining and surface structuring applications. The average power of the system is still on par with the other two models and offer high flexibility of application, while the output repetition rate is the highest of all three systems. The output repetition rate of the system is also user-adjustable in a certain range of frequencies.

The **ANTAUS-8W-8u/1M** has the optimal set of output parameters: significant output power, higher pulse energy and fast repetition rate. This is the most versatile unit.

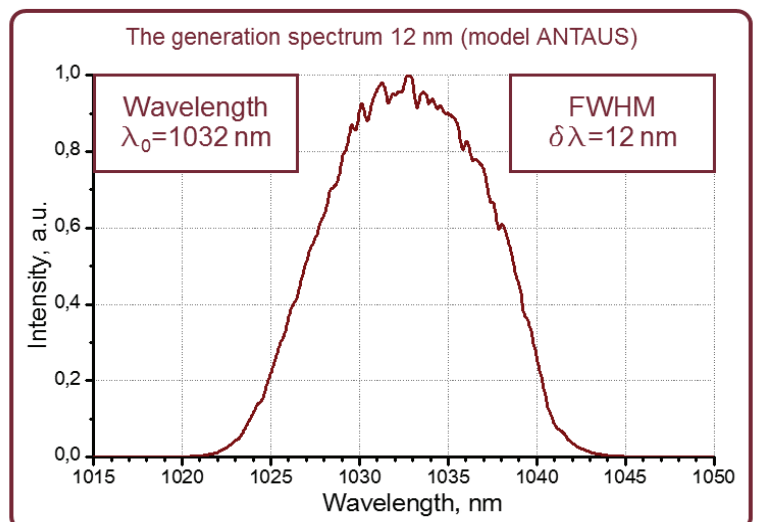
The **ANTAUS-20W-20u/1M** features the highest output power and pulse energy of all the three units and is suitable for the most power-demanding and energy-eating solutions.

The repetition rate of any model may be modulated from single-shot via an optional output AO pulse slicer.

The laser is already being used by our customers as an OEM laser source in ophthalmology (in LASIK-type eyesight correction apparatus), as well as for THz studies, surface modification, two-photon polymerization techniques and many more. The system does not require any water-cooling and features convective cooling of the power supply unit which facilitates integration in any other equipment.



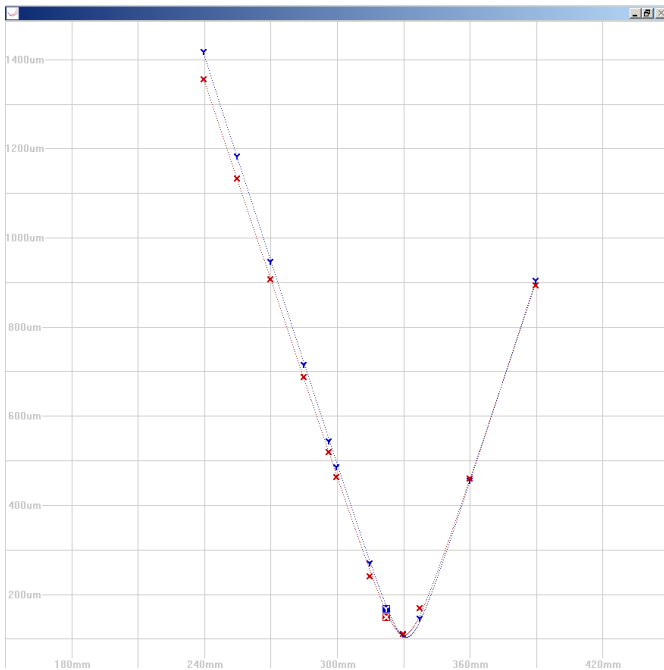
ANTAUS-8W-8u/1M autocorrelation trace



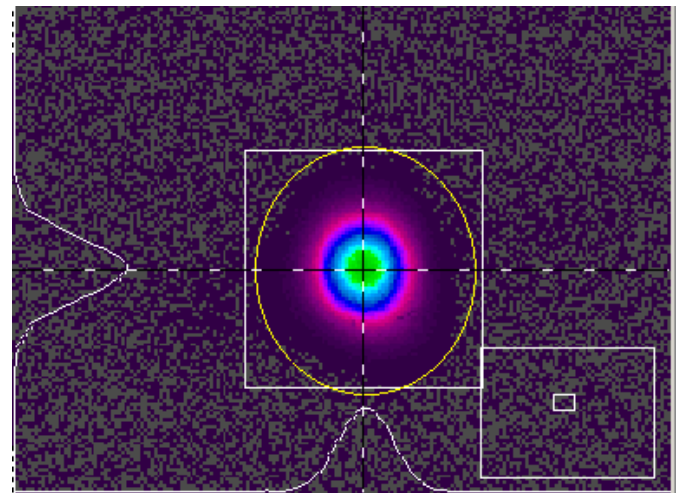
ANTAUS typical output spectrum

	ANTAUS-10W-2u/5M	ANTAUS-8W-8u/1M	ANTAUS-20W-20u/1M
Pulse duration* (FWHM)	<250 fs		
Central wavelength** (fixed)	1030±5 nm		
Average output power	>10 W	>8 W	>20 W
Pulse energy	>2 uJ	>8 uJ	>20 uJ
Pulse repetition rate***	1...5 MHz (user-adjustable)	1 MHz (fixed)	1 MHz (fixed)
Modulation of repetition rate by built-in pulse selector (optional)	single-shot...2 MHz	single-shot...1 MHz	single-shot...1 MHz
Dense-burst mode (~20 ns between pulses)	up to 6 pulses	n/a	n/a
Total energy per burst	up to 12 uJ	-	-
Spatial mode	TEM00, M ² <1.2		
Polarization	linear, vertical		
Output type	free-space		
Long-term stability	<1% rms (24 hours)		
Optical unit dimensions (LxWxH)	341x172x115 mm	350x270x130 mm	350x270x130 mm
Control unit dimensions (LxWxH)	450x315x140 mm	450x315x140 mm	450x315x140 mm

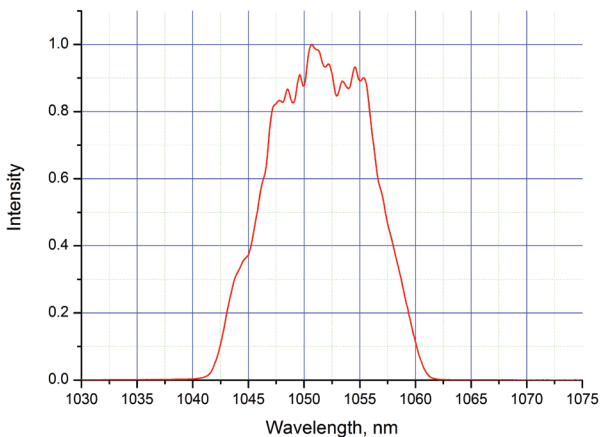
* - pulse duration tuning to several ps upon request;
 ** - 1040 or 1050 nm upon request;
 *** - without pulse slicer or with the pulse slicer bypassed.



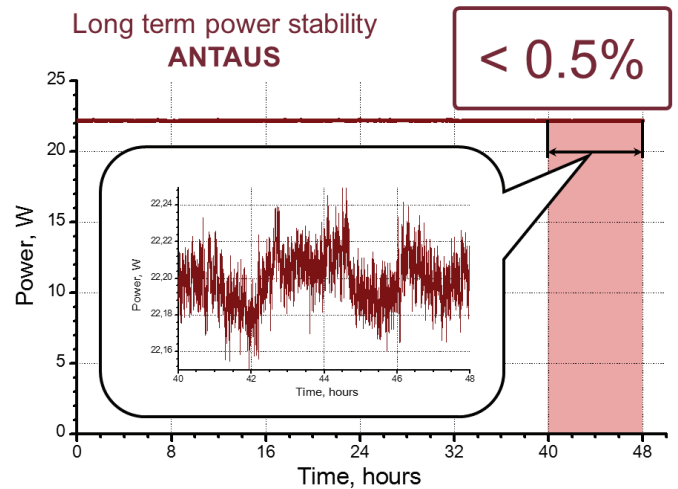
ANTAUS-8W-8u/1M M² data

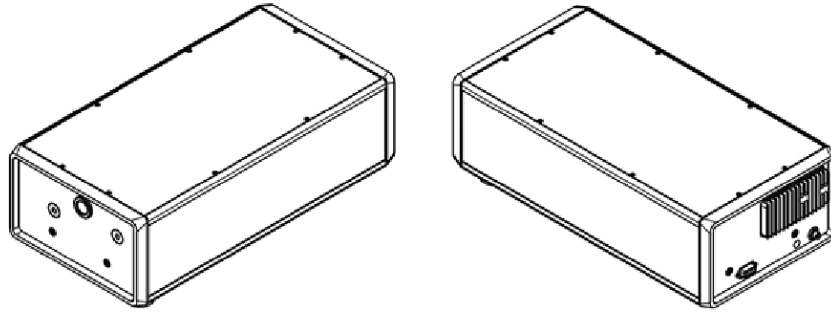
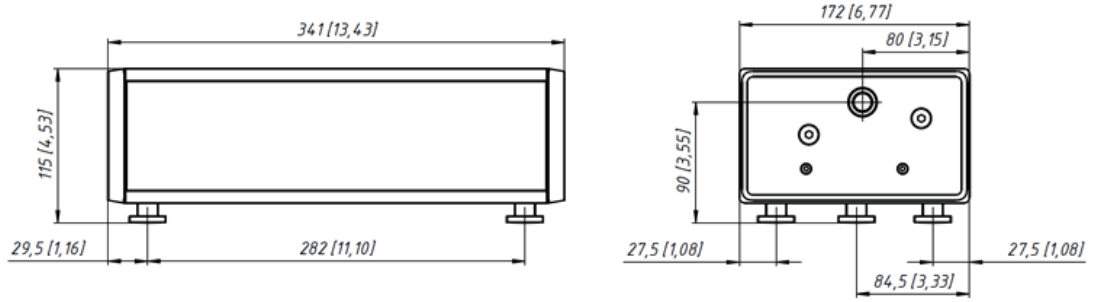


ANTAUS-8W-8u/1M beam profile



Output spectrum of a customized 1050-nm system





ANTAUS-10W-2u/5M laser head in mm



ANTAUS control unit in mm