

## GIGAJET SERIES

femtosecond oscillators



### Overview

The GIGAJET SERIES femtosecond oscillators offer uniquely high repetition rates up to 1 GHz and deliver up to 2 W of average power in pulses that can be as short as 15 fs. They offer a remarkable compactness and the robust design allows them to serve as reliable tools in scientific and industrial applications.

### Applications

**Precision metrology and spectroscopy** – At 1 GHz repetition rate, the GIGAJET oscillators offer a ten times larger mode spacing and power per mode than conventional systems and thus support higher signal to noise ratios. Our products have supported a true revolution in precision optical metrology and serve as clockworks in novel optical atomic clocks.

**Ultra-rapid and precise time-domain spectroscopy** - Unprecedented signal-to-noise ratios and data acquisition rates are achieved in time-resolved and THz spectroscopy. The GIGAJET oscillators are proven sources for high-speed ASOPS, the superior ultrafast time-domain and THz spectroscopy technology without mechanical delay pioneered by Gigaoptics.

**Nonlinear microscopy** - The ability to reduce pulse energy and maintain the same level of non-linear signal is key to reduced dye bleaching and cell damage needed for nonlinear microscopy.

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### Optional features

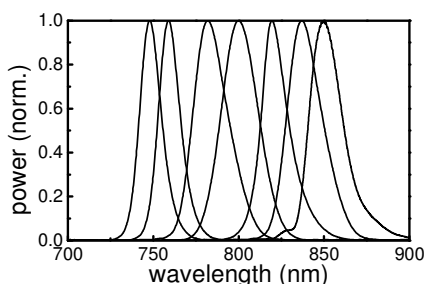
**Cavity length control** – Control of the repetition rate and active feedback is enabled by cavity mirrors mounted on a fast and/or slow piezo crystal. The piezos can be driven by our TL-1000 unit or customer supplied electronics.

**Repetition rate stabilisation** – The repetition rate stabilisation units TL-1000 and TL-1000-ASOPS permit stabilisation to an external signal with timing jitter below 100 fs or offset stabilisation to a second oscillator from the GIGAJET SERIES to enable high-speed ASOPS with <60 fs time resolution.

**High power extension** - The GIGAJET SERIES oscillators can be configured to operate with 10 W of pump power, capable of delivering up to 2 W of output power.

**Installation and training** - Installation and training can be provided in the customer lab.

Protected by U.S. patent 6,618,423 and European patents.



Typical output spectra of GIGAJET 20C

### Specifications

	GIGAJET 20	GIGAJET 20C	GIGAJET 30S
repetition rate	333 MHz, 500 MHz or 1 GHz <sup>1</sup>	1 GHz	1 GHz
pulse duration	≤30 fs <sup>2</sup>	≤50 fs <sup>2</sup>	≤15 fs <sup>2</sup>
output power	>850 mW	>700 mW	>750 mW
central wavelength	810 nm fix (-10 nm/+15 nm)	750–850 nm (tunable <sup>3</sup> )	810 nm fix (-10 nm/+15 nm)
beam quality	$M^2 \leq 1.2$	$M^2 \leq 1.2$ (sag.) $M^2 \leq 1.2$ (tan.)	$M^2 \leq 1.2$
dimensions	320 mm × 200 mm × 106 mm		
weight	13 kg		
operating temp.	21°C ±5°C		
pump laser req.	5.5W, 532 nm in TEM <sub>00</sub> beam, vertical pol.		
electrical power req.	not required		
cooling water req.	flow 0.5 – 1.5 l/min. temp. ~20°C, stable to ±0.5°C		

<sup>1</sup>select when ordering

<sup>2</sup>after appropriate extracavity dispersion compensation (not included)

<sup>3</sup>tuning accomplished manually, suitable spectrometer for monitoring must be provided by customer

### contact information

GIGA OPTICS GmbH  
Max-Stromeyer-Str. 116

D-78467 Konstanz | Germany  
phone +49 7531 368371  
fax +49 7531 368372  
e-mail: info@gigaoptics.com  
www.gigaoptics.com

Japan Electronics Optics Research, Ltd.  
www.eor.jp

China PulsePower Technologies Ltd.  
www.pulsepower.cn

Korea Jinsung Laser  
www.jinsunglaser.com