

GIGAJET TWIN

dual femtosecond oscillator



Overview

The GIGAJET SERIES highspeed femtosecond oscillators with repetition rates between 333 MHz and 1 GHz and pulse durations down to 15 fs are available in a dual oscillator version. Any two oscillators can be combined on a single temperature-stabilized monolithic platform to form a GIGAJET TWIN version. The repetition rate of a single oscillator is long-term stable to within 500 Hz. Residual repetition rate fluctuations of the free-running oscillators are highly synchronous. Thus, if required, active stabilization at equal repetition rates or at a fixed detuning is straightforward and easy. This allows for an extraordinarily compact realization of spectroscopy techniques that use two femtosecond lasers.

Applications

High-speed asynchronous optical sampling (ASOPS) - High speed ASOPS is a superior ultrafast time-domain and THz spectroscopy technology without mechanical delay pioneered by Gigaoptics. GIGAJET TWIN enables high-speed ASOPS with <60 fs time resolution in combination with our TL-1000-ASOPS offset stabilization unit.

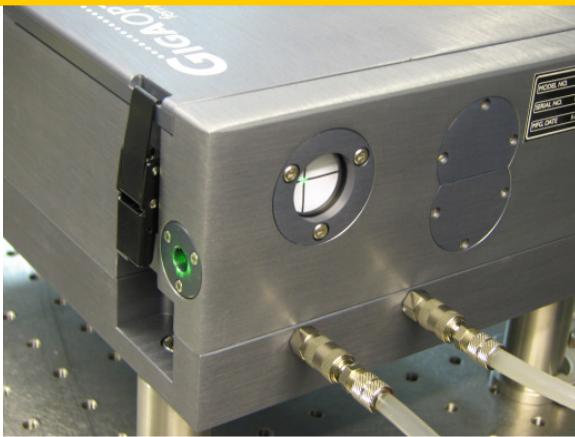
Fourier-transform infrared spectroscopy (FTIR) - Similar to high-speed ASOPS, dual comb FTIR is a Fourier-transfer spectroscopy method without mechanical delay permitting faster and more precise data acquisition.

Two-color ultrafast time-domain spectroscopy - Employing two GIGAJET 20C oscillators in combination with the TL-1000 repetition rate stabilization unit, GIGAJET TWIN supports two-colour pump-probe spectroscopy.

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. GIGAJET TWIN permits simultaneous excitation at two different colours.

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Optional features

Cavity length control – Control of the repetition rates 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 synchronisation among the two oscillators with timing jitter below 100 fs or offset stabilisation to enable high-speed ASOPS with <60 fs time resolution.

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

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

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

Specifications

Any two of the below GIGAJET SERIES oscillators can be combined at equal repetition rate to form a GIGAJET TWIN.

	GIGAJET 20	GIGAJET 20C	GIGAJET 30s
repetition rate	333 MHz, 500 MHz or 1 GHz ¹	1 GHz	1 GHz
pulse duration	≤30 fs ²	≤50 fs ²	≤15 fs ²
output power	>850 mW	>700 mW	>750 mW
central wavelength	810 nm fix (-10 nm/+15 nm)	750–850 nm (tunable ³)	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 ₀₀ 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		

contact information

GIGA OPTICS GmbH
Blarerstraße 56

D-78462 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

JTEKK, Ltd.
www.j-tekk.co.jp

Korea

Jinsung Laser
www.jinsunglaser.com

¹select when ordering

²after appropriate extracavity dispersion compensation (not included)

³tuning accomplished manually, suitable spectrometer for monitoring must be provided