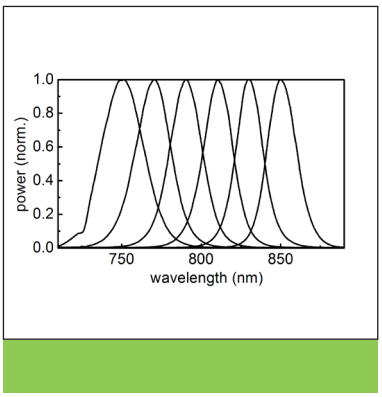
gigajet twin

- Dual femtosecond oscillator
- Repetition rates between 333MHz and 1GHz
- High speed ASOPS

TECHNICAL DATA SHEET



Laser Quantum

INNOVATIVE RELIABLE INTELLIGENT

gigajet twin

Dual femtosecond oscillator

Overview

The **gigajet** series high-speed femtosecond oscillators with repetition rates between 333MHz and 1GHz and pulse durations down to 15fs are available in a dual oscillator version. Any two oscillators can be combined on a single temperature-stabilised monolithic platform to form a **gigajet TWIN** version. The repetition rate of a single oscillator is long-term stable to within 500Hz. Residual repetition rate fluctuations of the free-running oscillators are highly synchronous. Thus, if required, active stabilisation at equal repetition rates or at a fixed detuning is straightforward and easy. This allows for an extraordinary compact realisation 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 Laser Quantum GmbH, (formerly Gigaoptics). **Gigajet TWIN** enables high-speed ASOPS with <60fs time resolution in combination with our TL-1000-ASOPS offset stabilisation unit.

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

Two-colour ultrafast time-domain spectroscopy
Employing two **gigajet** oscillators in combination with the TL-1000 repetition rate stabilisation 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.

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 100fs or offset stabilisation to enable high-speed ASOPS with <60fs time resolution.

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

Technical Specifications*

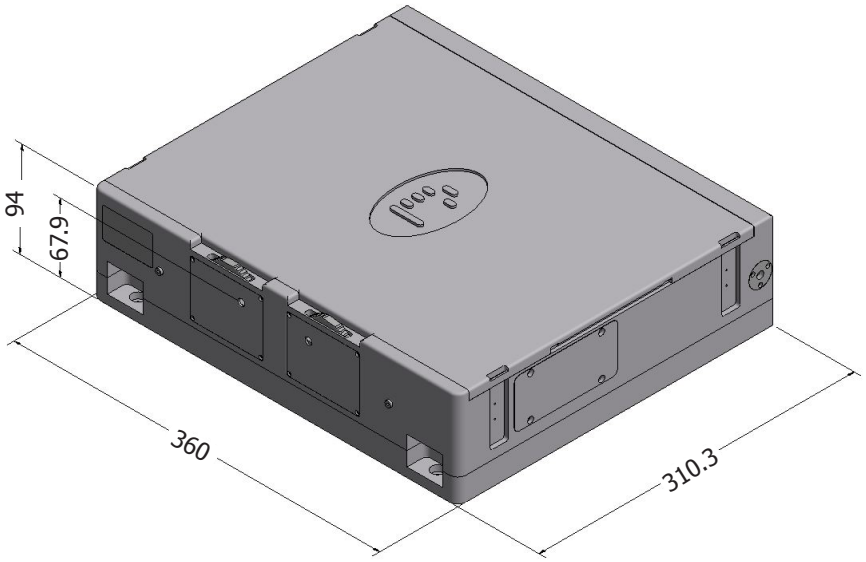
Any two of the below gigajet series oscillators can be combined at equal repetition rate to form a **gigajet TWIN**.

	gigajet twin	gigajet twin c	gigajet twin s
Repetition rate	333MHz 500MHz or 1GHz[1]	1GHz	1GHz
Pulse duration	≤30fs[2]	≤50fs[2]	≤15fs[2]
Output power	0.8-1.8W	0.7-1.4W	0.75-1.5W
Central wavelength	810nm fix (+/- 20nm)	750-850nm (tunable[3])	810nm fix (+/-20nm)
Beam quality	M^2 ≤1.2 (sag) M^2 ≤1.2 (tan)	M^2 ≤1.2 (sag.) M^2 ≤1.6 (tan.)	M^2 ≤1.2 (sag) M^2 ≤1.2 (tan)
Dimensions	310mm x 360mm x 106mm		
Weight	18kg		
Operating temp.	21°C +/- 5°C		
Pump laser req.	5.W, 532nm in TEM_{00} beam, vertical pol.		
Electrical power req.	not required		
Cooling water req.	flow 0.5 - 1.5 I/min. temp. ~20°C, stable to +/- 0.5°C		

[1] select when ordering
[2] after appropriate extracavity dispersion compensation (not included)
[3] tuning accomplished manually, suitable spectrometer for monitoring must be provided by customer
* Subject to change without notice

gigajet twin

Dimensions (mm)



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