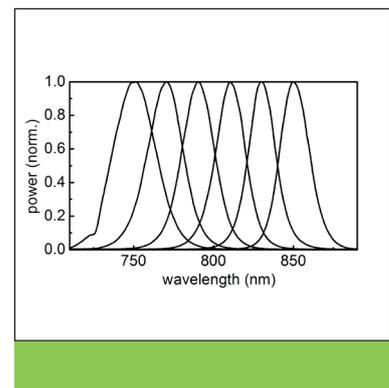


# gigajet twin

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

## TECHNICAL DATA SHEET



# 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 <sup>1</sup>	1GHz	1GHz
Pulse duration	≤30fs <sup>2</sup>	≤50fs <sup>2</sup>	≤15fs <sup>2</sup>
Output power	0.8-1.8W	0.7-1.4W	0.75-1.5W
Central wavelength	810nm fix (+/- 20nm)	750-850nm (tunable <sup>3</sup> )	810nm fix (+/-20nm)
Beam quality	M <sup>2</sup> ≤1.2 (sag) M <sup>2</sup> ≤1.2 (tan)	M <sup>2</sup> ≤1.2 (sag.) M <sup>2</sup> ≤1.6 (tan.)	M <sup>2</sup> ≤1.2 (sag) M <sup>2</sup> ≤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 <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

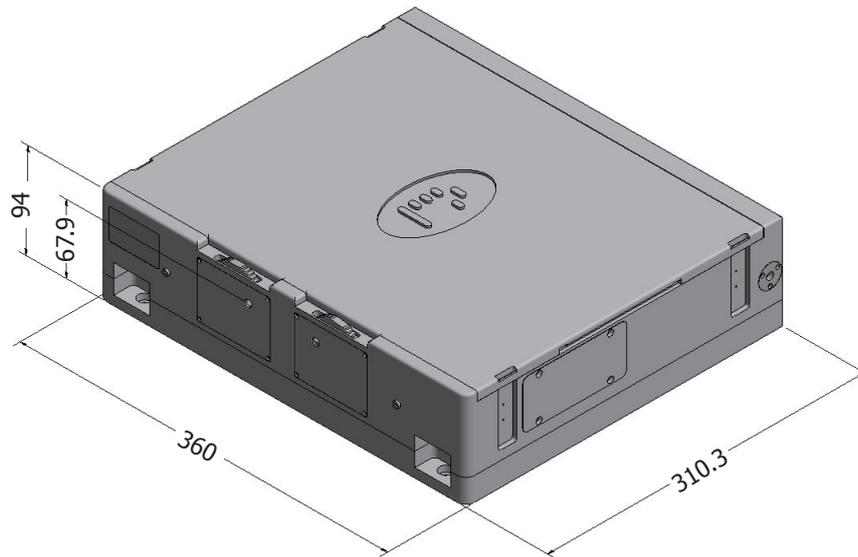
<sup>2</sup> after appropriate extracavity dispersion compensation (not included)

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

\* Subject to change without notice

# gigajet twin

## Dimensions (mm)



• INNOVATIVE • RELIABLE • INTELLIGENT

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