

## GECCO ULTRAFAST FEMTOSECOND LASER DATA SHEET

# SELF-STARTING FEMTOSECOND LASER

Novanta develops photonics solutions specializing in cutting-edge components and sub-systems for laser-based diagnostic, analytical, micromachining and fine material processing applications. Powerful lasers, coupled with advanced beam steering and intelligent sub-systems incorporating software and controls, deliver extreme precision and performance, tailored to our customers' demanding applications.

### DESIGNED FOR INTEGRATION

The gecco is a fully equipped, compact femtosecond laser in a sealed enclosure, offering an average power of >1 W and with a choice of <15 fs or <20 fs pulse durations. The gecco is offered with repetition rates of 80 MHz (70-110) with optional repetition rate locking to an external source.

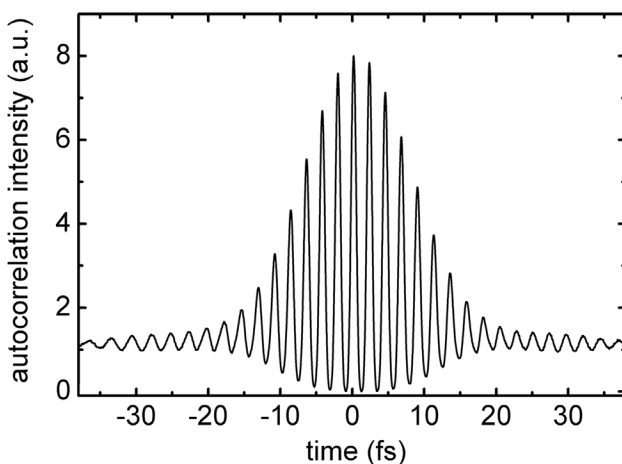
Designed for simple installation and system integration, the gecco oscillator features a highly compact, vibration resistant laser head with integrated pump source, and a separate, fully featured control unit.

This highly stable laser boasts an industry leading lifetime, very low cost of ownership and comes with 2 year/5000 hours warranty covering all operating specifications.

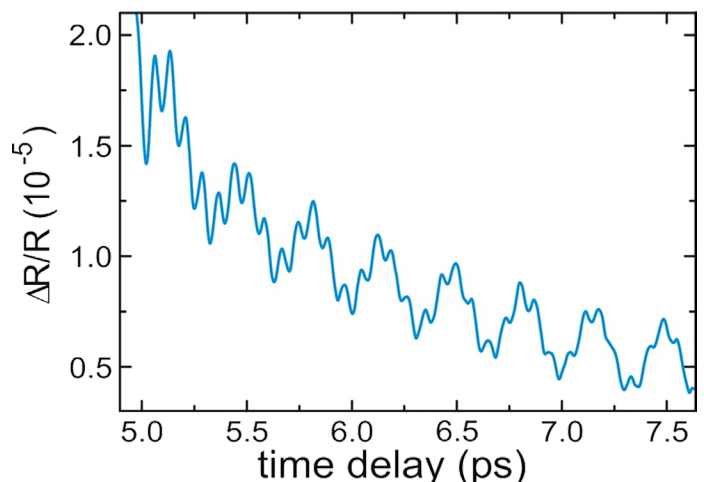


### OPTIONAL REPETITION RATE AND ACTIVE FEEDBACK

If required, active repetition rate control can be implemented for locking to an external signal source. Coarse repetition rate control is enabled by motorized mirror movement, whereas high-speed and large-amplitude feedback is realized using 2 piezomechanic transducers. Regulation through the TL-1000 repetition rate stabilization unit achieves a timing jitter <100 fs (0.1 Hz to 100 kHz). Alternatively, the 2 piezos can be driven by customer supplied electronics.



Autocorrelation trace of gecco indicating emission of pulses with 15 fs duration.



Application example: Pump-probe signature of coherent optical phonons in ZnO measured with the gecco.

## GECCO ULTRAFAST FEMTOSECOND LASER SPECIFICATIONS

Specification*	gecco one
Average Power Output <sup>1</sup>	> 600 mW
Center Wavelength	800 nm ± 20 nm
Pulse Duration <sup>1</sup>	< 20 fs
Spectral FWHM	> 40 nm
Repetition Rate <sup>2</sup>	80 MHz (70 - 110 MHz options)
Pulse Energy <sup>5</sup>	> 7.5 nJ
Beam Size <sup>3,5</sup>	0.8 mm ± 0.3 mm
Divergence <sup>5</sup>	< 3 mrad
M <sup>2</sup>	< 1.2
Power Stability (RMS within 24 hours)	< 1%
RMS Noise <sup>4</sup>	< 0.1%, < 0.05% (with "Pure" option)
Polarization Ratio	> 100:1
Polarization Direction	Horizontal
Operating Temperature	21° C ± 5° C
Warm-Up Time	< 20 minutes
Weight (Head Only)	30 kg

*Notes:*

\* Laser Quantum operates a continuous improvement programme which can result in specifications being improved without notice.

1 After appropriate extra cavity dispersion compensation (not included).

2 Choose repetition rate upon order. Repetition rate accuracy ± 100 kHz.

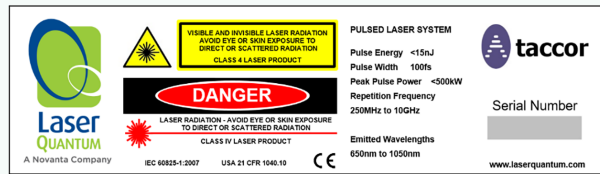
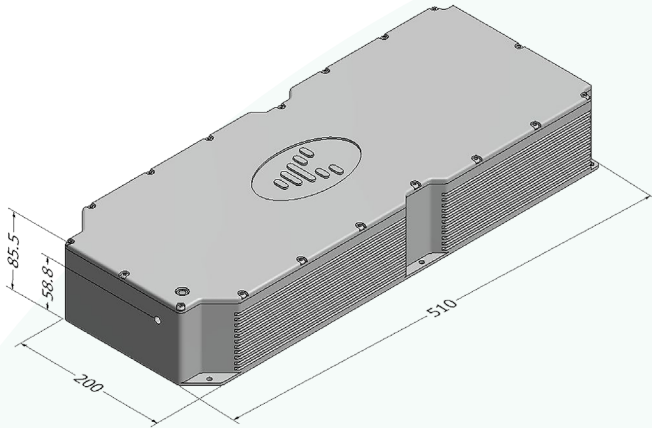
3 FWHM beam diameter at laser exit.

4 Noise bandwidth 1 Hz to 1 MHz.

5 At 80 MHz repetition rate, different at other repetition rates.

# TACCOR ULTRAFAST FEMTOSECOND LASER

## DIMENSIONS (mm)

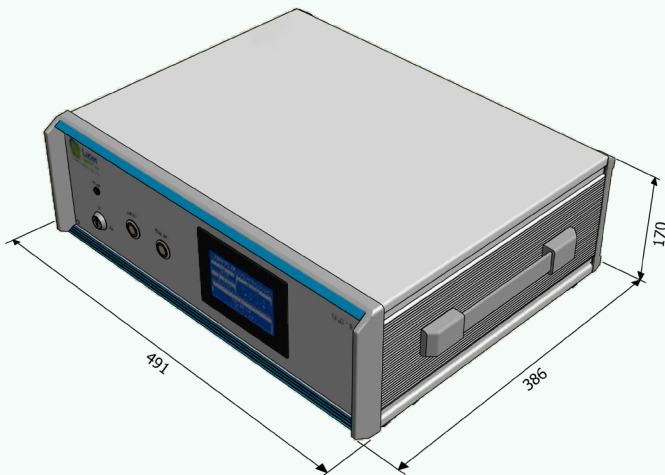


Drawings are for illustrative purposes only, please contact us for complete engineer's drawings

## ADDITIONAL INFORMATION

- Enables two-color pump-probe experiments
- Umbilical length: 2 m
- Head weight: 15 kgs
- Cooling system included
- Warm-up time: 10 minutes
- Self-locking and maintaining
- Stable and robust
- True hands off turn-key system
- Wavelength tunable
- Integrated pump laser
- The taccor is compatible with the Laser Quantum's software that allows connection to the Laser Quantum support team for monitoring laser performance and diagnosing opportunities for carrying out laser optimization.
- Pump power modulation - Modulation access to the pump power with a bandwidth of >100 kHz and modulation depth up to  $\pm 1\%$  is provided for feedback purposes.

## POWER SUPPLY UNIT



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