

# Taccor

- GHz Femtosecond Oscillator
- Self-starting and self-maintaining
- Stable and robust
- Applications: Metrology, Spectroscopy & Microscopy



## OVERVIEW

The Taccor is a unique turn-key femtosecond laser with a repetition rate as high as 1GHz that delivers up to 1W of average power in 15fs pulses. Its innovative design combines a compact, hermetically sealed, vibration-resistant laser head that incorporates the Ti:Sapphire oscillator and pump laser, with a full feature support unit. The support unit houses the field replaceable pump diodes, isolating temperature effects from the head, and provides intelligent control that monitors laser performance and carries out diagnostics analysis. The result is a highly stable and reproducible product with a long lifetime and low cost of ownership, offering a 3 year/9000 hour warranty.

## APPLICATIONS

### **Precision metrology and spectroscopy**

10 years of application leadership has led to the Taccor having direct modulation access to pump power and repetition rate while offering a large mode spacing and high power per mode.

### **Ultra-rapid and precise time-domain spectroscopy**

Asynchronous optical sampling (ASOPS) is an ultra-rapid and precise time-domain spectroscopy technique pioneered by Gigaoptics which out-performs classical approaches by orders of magnitude in measurement speed and noise performance.

### **Nonlinear microscopy (SHG and TPE)**

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.

## OPTIONAL FEATURES

### **Measurement**

An integrated high bandwidth (10GHz) photodiode can be used for repetition rate monitoring and to supply a signal to the TL-1000 units or external electronics.

### **Repetition rate and active feedback**

Control of the repetition rate and active feedback is enabled by cavity mirrors mounted on a fast and/or a slow piezo crystal and in combination with the TL-1000 repetition rate stabilisation unit, timing jitter below 100fs can be achieved. Alternatively, the piezos can be driven by customer supplied electronics.

### **Pump Power Modulation**

Modulation access to the pump power with a bandwidth in excess of 100 kHz and an amplitude of up to 2% is provided for feedback purposes.

## TL-1000 SERIES

TL-1000 enables tight phase-locking of the repetition rate to an external reference with jitter below 100fs

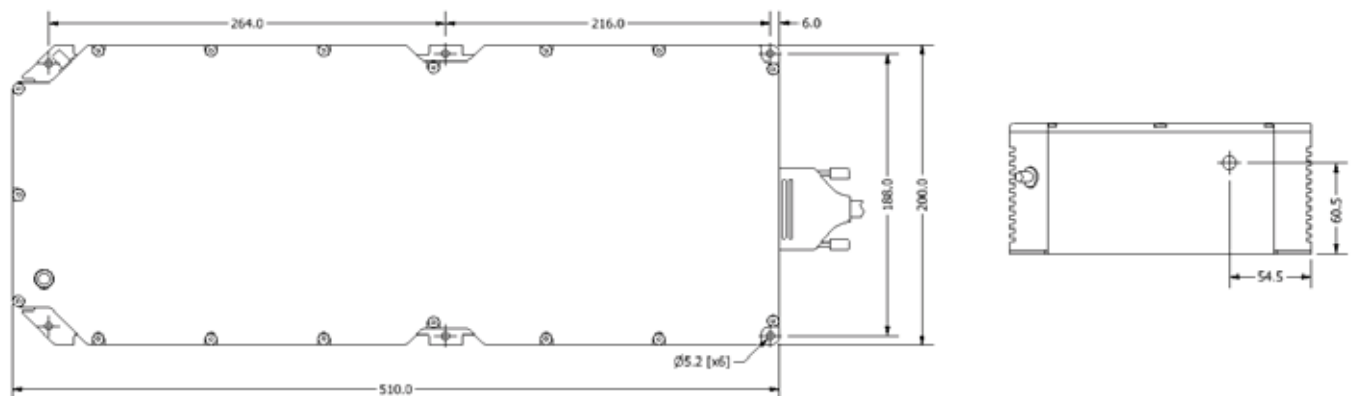
TL-1000-ASOPS enables a repetition offset lock between two GHz oscillators of 2 to 20 kHz allowing ultrafast time-domain spectroscopy without mechanical delay stage.



## SPECIFICATIONS

	TACCOR 4	TACCOR 6	TACCOR 8
power	> 600mW	> 800mW	> 1000mW
stability	± 1.0%		
repetition rate	1 GHz		
wavelength	740nm to 850nm (fixed)		
pulse duration	~ 50fs ~15 fs (only at 810nm nominal wavelength)		
beam diameter (FWHM)	~ 2mm		
spatial mode	near TEM <sub>00</sub>		
m-squared	< 1.2 (sag. plane) < 1.6 (tan. plane)		
beam divergence	2.5 mrad		
polarisation	> 100:1, horizontal		
noise	< 0.1% RMS		
operating temperature	21°C ± 5°C		
head dimensions	510 (L) x 200 (W) x 87 (H) mm <sup>3</sup>		
head weight	~ 12kg		

## DIMENSIONS



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