



SWISS MADE

Origami is an industrial-grade, ultra-compact, mode-locked, **femtosecond** laser that provides the **lowest phase noise** and timing jitter on the market. It has been specifically designed for OEM integration. The Origami families of lasers emit transform-limited soliton pulses, providing diffraction-limited beam quality and excellent pointing stability. It is available at various wavelengths and repetition rates. Origami is an air-cooled, maintenance-free laser module packaged in a sealed and robust enclosure allowing for operation in the harshest environments. It guarantees high stability, low drift and **24/7 operation**.

**THE LOWEST  
 PHASE NOISE  
 ON THE  
 MARKET**

**OPTIONS:**

- + Synchronization to external clock for ultra-low timing jitter
- + Analog pump power control
- + Repetition rate control and tunability
- + Carrier-Envelope-Phase (CEP) stabilization ready
- + Fiber output

**MAIN APPLICATIONS:**

- + Seed for amplifiers
- + Frequency Comb systems
- + Supercontinuum generation
- + Analog-to-Digital converters / Radar systems
- + Clock distribution
- + THz generation

**OUTSTANDING FEATURES :**

- + Lowest phase noise on the market
- + Transform-limited soliton pulses of outstanding cleanliness
- + Diffraction-limited beam quality
- + No Kelly sidebands, no spectral ripple
- + Shot noise limited relative intensity noise (RIN)
- + Maintenance free – no alignment required
- + Plug & Play
- + 24/ 7 operation



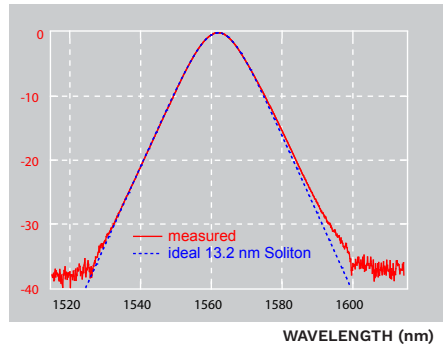
	ORIGAMI - 17	ORIGAMI - 15	ORIGAMI - 10	ORIGAMI - 08	ORIGAMI - 05
<b>CENTER WAVELENGTH</b>	1580 – 1700 nm	1530 – 1580 nm	1025 – 1070 nm	765 – 785 nm	513 – 535 nm
<b>PULSE DURATION</b> <sup>1,2</sup>	<200 – 300 fs	<80 – 500 fs	<70 – 400 fs	<60 – 200 fs	<100 – 230 fs
<b>AVG. OUTPUT POWER</b> [UP TO] <sup>2</sup>	50 mW	120 mW	250 mW	30 mW	100 mW
<b>PULSE ENERGY</b> [UP TO] <sup>2</sup>	1 nJ	2 nJ	5 nJ	0.7 nJ	1.2 nJ
<b>PEAK POWER</b> [UP TO]	3 kW	15 kW	30 kW	4.5 kW	10 kW
<b>PULSE REPETITION RATE</b> <sup>2</sup>	20 MHz – 1.3 GHz				
<b>SPECTRAL BANDWIDTH</b>	transform-limited ( $\tau_p \cdot \Delta\nu \sim 0.32$ )				
<b>BEAM QUALITY</b>	$M^2 < 1.1$ , TEM <sub>00</sub>				
<b>PER</b>	> 23 dB				
<b>AMPLITUDE NOISE</b> [24 H]	< 0.2% rms, < 0.5% pk-pk				
<b>CENTER WAVELENGTH DRIFT</b>	< 0.2% rms, < 0.5% pk-pk				
<b>LASER OUTPUT</b>	collimated free space (fiber output optional)				
<b>ENVIRONMENTAL</b>					
<b>WARM-UP TIME</b>	< 10 minutes				
<b>OPERATION TEMPERATURE</b>	10 °C – 40 °C				
<b>STORAGE TEMPERATURE</b>	- 20 °C – 65 °C				
<b>ON/OFF CYCLES</b>	> 10000				
<b>MECHANICAL</b>					
<b>SIZE LASER HEAD</b> <sup>3</sup>	296 x 112 x 54 mm <sup>3</sup>				
<b>WEIGHT LASER HEAD</b> <sup>3</sup>	2.5 kg				
<b>SIZE CONTROL UNIT</b>	165 x 104 x 44 mm <sup>3</sup>				
<b>WEIGHT CONTROL UNIT</b>	0.65 kg				
<b>ELECTRICAL</b>					
<b>POWER SUPPLY</b>	24 VDC/2.5 A or 90 – 264 VAC, 47 – 63 Hz				
<b>POWER CONSUMPTION</b>	< 15 W				
<b>COOLING</b>					
<b>LASER HEAD</b>	air cooled				
<b>LASER CONTROLLER</b>	air cooled				

1 Tunable (requires external adjustable power supply)  
2 Please inquire for possible combinations of pulse duration, average power and repetition rate  
3 Exact size and weight depend on pulse repetition rate and wavelength



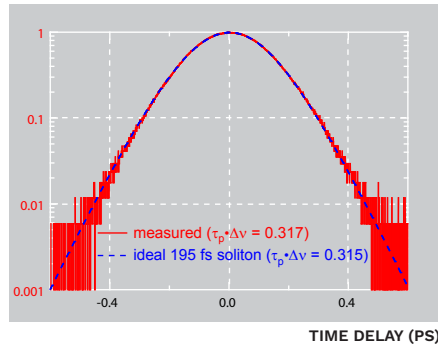
### OPTICAL SPECTRUM

**SPECTRAL POWER DENSITY (dBc/nm)**



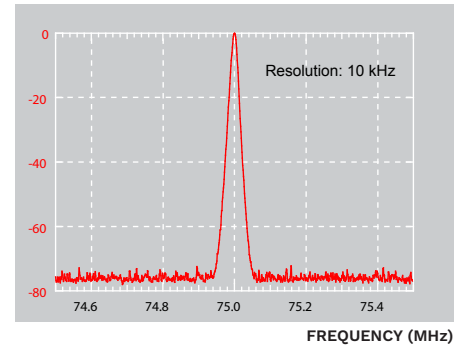
### PULSE PROFILE

**AUTOCORRELATION SIGNAL**



### RF SPECTRUM

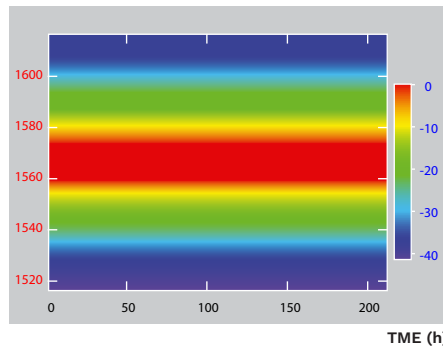
**NOISE SPECTRAL DENSITY (dBc/10kHz)**



### OPTICAL SPECTRUM

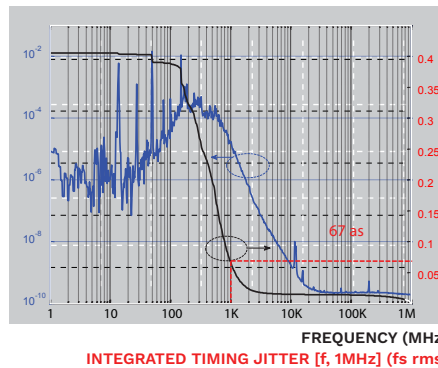
**AS FUNCTION OF TIME**

**WAVELENGTH (nm) SPECTRAL POWER DENSITY (dBc)**



### PHASE NOISE / TIMING JITTER

**TIMING JITTER SPECTRAL DENSITY (fs<sup>2</sup>/Hz)**



### TEMPERATURE CYCLING

**AVERAGE OUTPUT POWER (W) AMBIENT TEMP. (°C)**

