



SWISS MADE

Origami is the industrial-grade, ultra-compact, mode-locked, **femtosecond laser** that provides the **lowest phase noise** and timing jitter available on the market. It has been specifically designed for OEM integration. Origami laser emits transform-limited soliton pulses, provides 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, robust enclosure allowing for operation in the harshest environments. It guaranties 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 (PM of SM)

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 clean soliton pulses
- + Diffraction-limited beam quality
- + No Kelly sidebands, no spectral ripple
- + Shot noise limited relative intensity noise
- + Maintenance free – no alignment required
- + Plug & Play
- + 24/ 7 operation

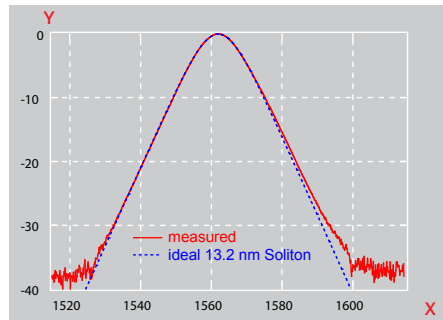


	ORIGAMI - 05	ORIGAMI - 08	ORIGAMI - 10	ORIGAMI - 15	ORIGAMI - 17
CENTER WAVELENGTH	513 – 535 nm	765 – 785 nm	1025 – 1070 nm	1530 – 1580 nm	1580 – 1700 nm
PULSE DURATION ^{1,2}	<100 – 230 fs	<60 – 200 fs	<70 – 400 fs	<80 – 500 fs	<200 – 300 fs
AVG. OUTPUT POWER [UP TO] ²	100 mW	30 mW	250 mW	120 mW	50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

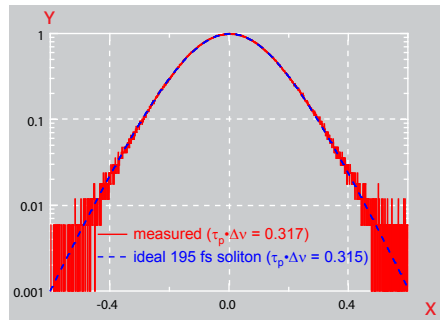


OPTICAL SPECTRUM



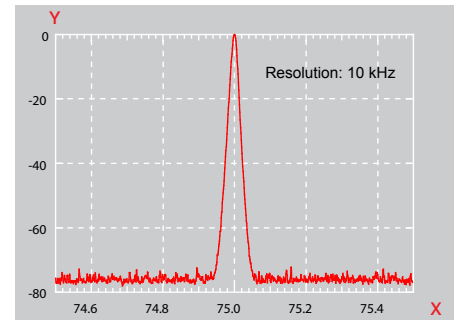
X WAVELENGTH (nm)
Y SPECTRAL POWER DENSITY (dBc/nm)

PULSE PROFILE



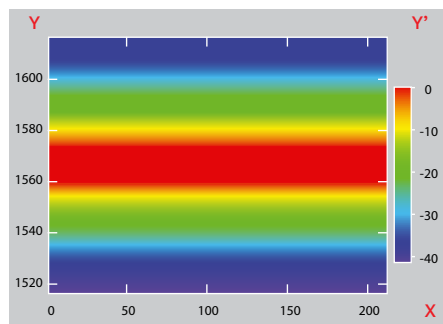
X TIME DELAY (PS)
Y AUTOCORRELATION SIGNAL

RF SPECTRUM



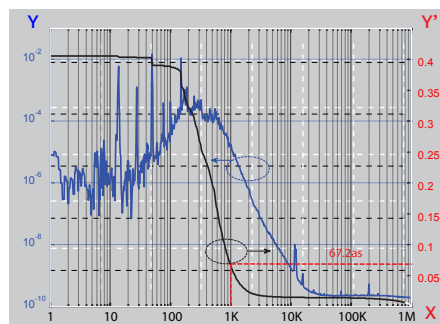
X FREQUENCY (MHz)
Y NOISE SPECTRAL DENSITY (dBc/10kHz)

OPTICAL SPECTRUM AS FUNCTION OF TIME



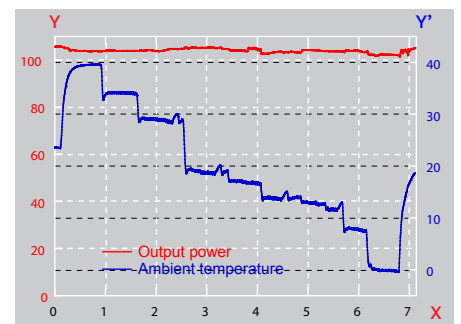
X TIME (h)
Y WAVELENGTH (nm)
Y' SPECTRAL POWER DENSITY (dBc)

PHASE NOISE / TIMING JITTER



X FREQUENCY (MHz)
Y TIMING JITTER SPECTRAL DENSITY (fs²/Hz)
Y' INTEGRATED TIMING JITTER [f, 1MHz] (fs rms)

TEMPERATURE CYCLING



X TIME (h)
Y AVERAGE OUTPUT POWER (mW)
Y' AMBIENT TEMPERATURE (°C)