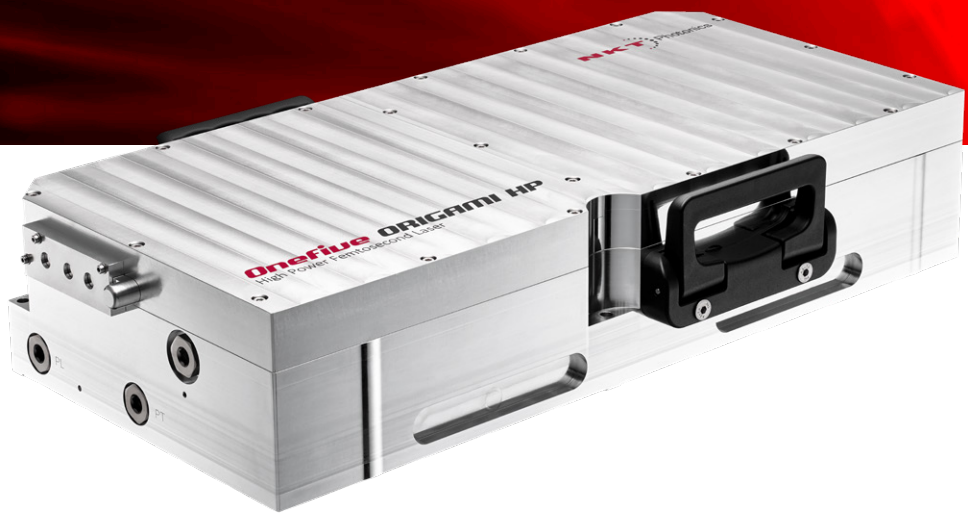
OneFive ORIGAMI HP

High power, high repetition rate femtosecond laser



COMPACT ULTRAFAST LASER WITH CLEAN TRANSFORM-LIMITED PULSES

Ideal for multi-photon excitation as well as micro and nano structuring

This second-generation ORIGAMI HP is an ultra-compact, soliton mode-locked femtosecond laser.

It provides transform-limited output pulses in excess of 4 W with pulse durations down to less than 120 fs and a repetition rate of 80 MHz at 1050 nm.

Applications

- Multi-photon microscopy and imaging
- Multi-photon polymerization
- Micro/nano-structuring
- Supercontinuum generation
- Terahertz generation
- Pump-probe spectroscopy
- Inspection
- Optogenetics
- Seed for amplifiers
- Clock synchronisation for e.g. X-Ray accelerators/FEL

ONEFIVE ORIGAMI HP

High power, clean pulses, and high repetition rate

The second-generation ORIGAMI HP is an ultra-compact soliton mode-locked femtosecond laser. It provides transform-limited output pulses in excess of 4 W with pulse durations down to less than 120 fs and a repetition rate of 80 MHz at 1050 nm.

The market's lowest phase-noise and timing jitter

Based on our monolithic industrial platform, the ORIGAMI HP provides diffraction-limited beam quality with excellent pointing as well as the lowest phase-noise and timing jitter on the market.

Versatile and ideal for many applications

The ORIGAMI HP allows for a broad range of industrial and scientific applications. With clean pulse quality, high peak power and ideal beam profile, the ORIGAMI HP is especially attractive to fields of optogenetics, multi-photon imaging as well as micro and nano structuring.

The clean transform-limited pulses ensure efficient excitation/activation with good penetration in tissue. Together with the excellent power and pointing stability, the ORIGAMI HP is an ideal addition to Ti-Sa lasers for multi-photon processes, or standalone for two-photon polymerisation.

Synchronization to external clocks is an option

By incorporating options for repetition rate control and tunability, the ORIGAMI HP can be synchronised to external clocks for ultra-stable timing applications, exploiting the laser's low-noise performance.

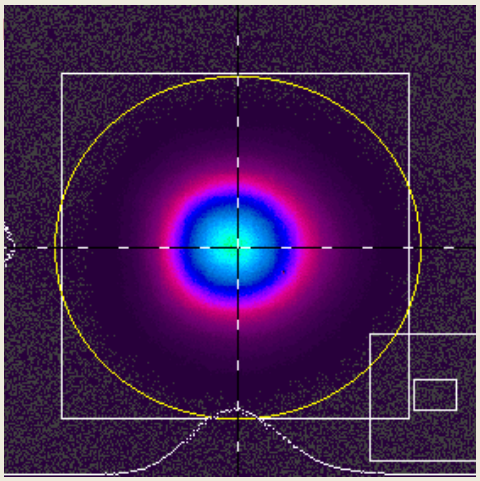
Maintenance-free and OEM-ready

With no alignment required, the ORIGAMI HP guarantees high stability with 24/7 operation and is ideal for OEM integration.

Model	05HP	10HP
Center wavelength	525 nm	1050 nm
Pulse duration	< 120 fs	< 120 fs
Average power	> 2 W	> 4 W
Pulse energy	> 25 nJ	> 50 nJ

Features

- Lowest phase noise on the market
- Diffraction-limited beam quality
- No Kelly sidebands or spectral ripple
- No amplifier built-in/no ASE noise
- Transform-limited soliton pulses of outstanding cleanliness
- Plug and Play
- Maintenance-free 24/7 operation



OPTIONS AND PACKAGES

Options

The ORIGAMI HP is designed as an all-in-one module; containing both laser and control elements in a compact, sealed housing.

The system can be configured to provide additional integrated elements to the laser oscillator, allowing greater choice and flexibility for the application of choice. Choose from [1]:

- Internal optical isolator [2]
- Trigger output
- Motorised variable attenuator
- Dispersion pre-compensation [3]
- Internal power monitor
- SHG switchable
- SHG power monitor
- Synchronization to external clock, low noise
- Synchronization to external clock, drift removal
- Fiber tap output

1) Please note that not all options can be combined together.
2) Pulse duration will be affected.
3) A fixed value to achieve the shortest pulse possible at the target/sample. Dispersion compensation up to 12,000 fs^2. Values known for Zeiss and Leica Microscope Systems.

Preconfigured packages

Choose from three preconfigured packages:

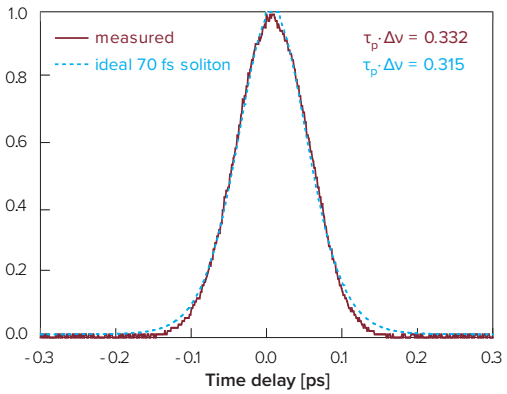
ORIGAMI HP Entry
- ORIGAMI HP laser
- Internal power monitor
- Trigger output

ORIGAMI 10HP for multi-photon imaging
- ORIGAMI 10HP laser
- Integrated isolator
- Dispersion pre-compensation
- Motorized variable attenuator
- Trigger output

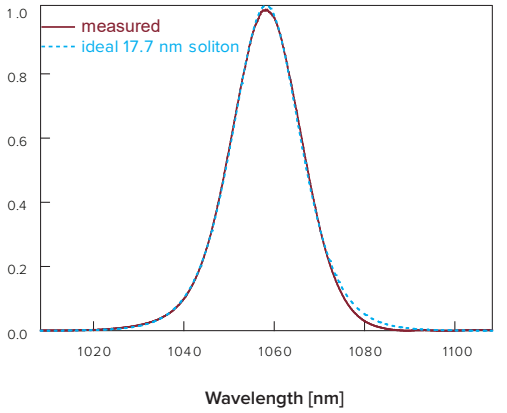
ORIGAMI HP for synchronization applications
- ORIGAMI HP laser
- Synchronization to external clock, low noise *or* Synchronization to external clock, drift removal (please specify required timing jitter)
- Fiber tap output [4]

4) Only applicable to low-noise synchronization.

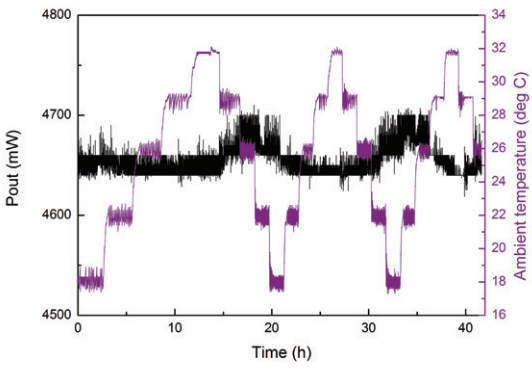
Typical pulse profile - Autocorrolation



Typical optical spectrum - Spectral power density [nm^{-1}]



Power vs temperature change



SPECIFICATIONS

Optical [1)]

Model	05HP	10HP
Center wavelength [nm]	525 ± 2.5	1050 ± 5
Pulse duration [fs]	< 120	< 120
Spectral bandwidth	Transform-limited, soliton shape, no ripples, no pedestals, un-chirped	
Average power [W]	> 2	> 4
Pulse energy [nJ]	> 25	> 50
Peak power [kW]	> 160	> 330
Repetition rate [MHz]	80 ± 2	80 ± 2
Beam quality (TEM_{00})	$M^2 \leq 1.2$	$M^2 \leq 1.1$
Polarization / PER (vertical) [dB]	> 23	> 23
Amplitude noise (RMS) [%]	< 1.0	< 1.0
Timing jitter (1 kHz - 10 MHz) [fs]	< 50	< 50
Output power [%]	0.5 - 100 via variable attenuator	0.5 - 100 via optional variable attenuator
Pointing stability	< 5 µrad / °C , 18 – 35 °C	< 5 µrad / °C , 18 – 35 °C

1) Please inquire for possible combinations of pulse duration, average power, and repetition rate.

SPECIFICATIONS

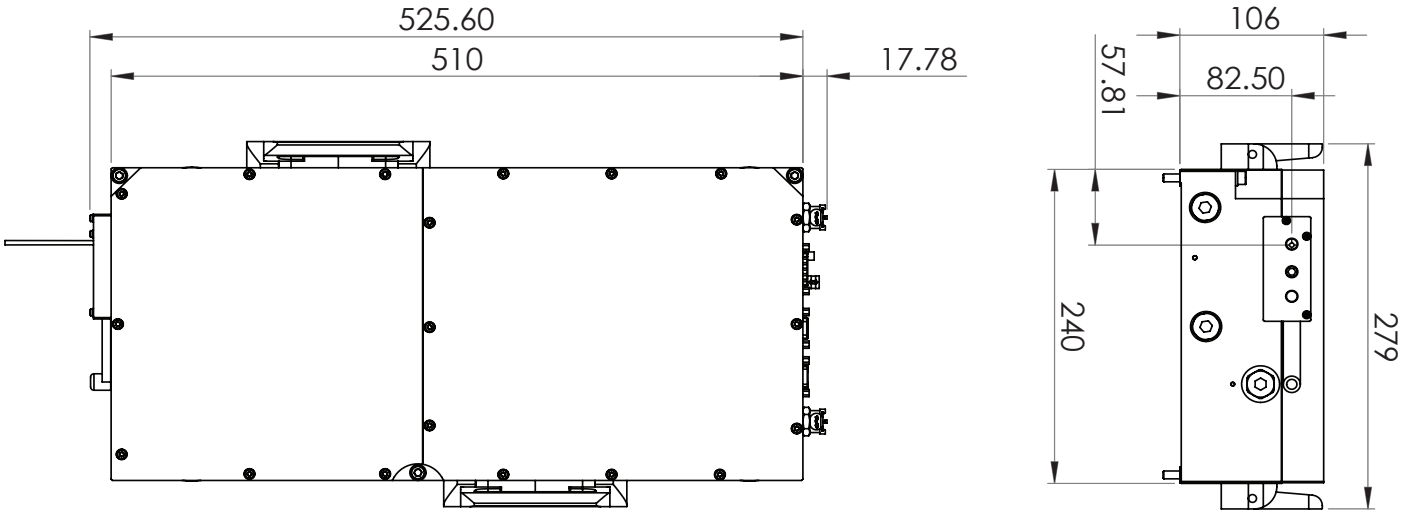
Mechanical/Electrical

Laser output	Collimated free-space
Warm-up time [min.]	< 15
Operation temperature [°C]	18 – 32
Storage temperature [°C]	-20 – 55
Power supply requirements	24 VDC/9A or 90-264 VAC, 47-63 Hz
Power consumption (steady state) [W]	< 50
Laser head dimensions (WxHxL) [mm³]	279 x 106 x 525.6
Laser head weight [kg]	18
Laser head cooling	Water

Support and warranty

All ORIGAMI products come with an industry-leading reliability.

The product is covered by a comprehensive warranty. Service options are available. For details, please enquire.



All ORIGAMI products are produced under our quality management system certified in accordance with the ISO 9001:2015 and ISO 13485:2016 standard.