# OneFive ORIGAMI XP

## High-energy industrial femtosecond laser

## HIGH POWER, SHORT PULSE DURATION

### Ideal for ultra-high precision micromachining

The ORIGAMI XP is the first all-in-one, single-box, microjoule femtosecond laser on the market. The laser head, controller, and air-cooling system are all integrated in one small and robust package with a footprint so small it even fits into a hand luggage.

In the standard configuration the Origami XP has a center wavelength of 1030 nm. Additional outputs at 515 nm and 343 nm can be added by virtue of either the second or third harmonic generation module.

### Applications

- Medical device fabrication
- Femtosecond micromachining
- Thin film patterning
- Sapphire drilling and cutting
- Glass cutting and drilling
- Ceramics drilling and scribing
- Polyimide drilling and cutting
- Multiphoton microscopy
- Ophthalmic applications
- FPD pixel repair

# ONEFIVE ORIGAMI XP

## Based on a monolithic chirped pulse amplification platform

The ORIGAMI system is based on a compact monolithic chirped pulse amplification platform capable of delivering up to 70 µJ pulse energy at 1030 nm, a 5 W average power, and a pulse duration below 400 fs.

## Ultra-short pulses and excellent beam quality

Benefit from clean, ultra-short pulse duration, superior beam quality and unprecedented beam pointing stability due to the monolithic system design. It sets new standards for all-in-one femtosecond lasers in medical device manufacturing and ultra-high precision micromachining applications.

## Get the dual wavelength SHG module

Depending on the model, the field-attachable second-harmonic module (SHG) makes it possible to switch between 20 µJ at 515 nm and 40 µJ at 1030 nm with the ORIGAMI XP, or between 35 µJ at 515 nm and 70 µJ at 1030 nm with the ORIGAMI XP-S. The wavelength is selected via software.

## Or perhaps the dual wavelength THG module

Depending on the model, the attachable third-harmonic generation (THG) module makes it possible to switch between 10 µJ at 343 nm and 40 µJ at 1030 nm with the ORIGAMI XP, or between 17.5 µJ at 343 nm and 70 µJ at 1030 nm with the ORIGAMI XP-S. The wavelength is selected via software.

## Cost-effective and OEM-ready

The ORIGAMI XP has been designed for easy and cost-effective integration. It comes with removable handles and offers full remote control capabilities.

A simple through-hole mounting system and high precision mechanical referencing planes ensure straightforward drop-in installation.

| Model | 10XP | 10XP-S |
|---|---|---|
| Center wavelength | 1030 nm | 1030 nm |
| Pulse duration | < 400 fs | < 400 fs |
| Average power | > 4 W | > 5 W |
| Pulse energy | 40 µJ | 70 µJ |
| Peak power | > 80 MW | > 150 MW |
| Spectral bandwidth | < 5 nm | < 5 nm |

| Model | Dual wavelength SHG 05XP | 05XP-S |
|---|---|---|
| Center wavelength | 515 nm | 515 nm |
| Pulse duration | < 400 fs | < 400 fs |
| Average power | > 2 W | > 2.5 W |
| Pulse energy | 20 µJ | 35 µJ |
| Peak power | > 40 MW | > 75 MW |
| Spectral bandwidth | < 2.5 nm | < 2.5 nm |

| Model | Dual wavelength THG 03XP | 03XP-S |
|---|---|---|
| Center wavelength | 343 nm | 343 nm |
| Pulse duration | < 350 fs | < 350 fs |
| Average power | > 1 W | > 1 W |
| Pulse energy | 10 µJ | 17.5 µJ |
| Peak power | > 20 MW | > 40 MW |
| Spectral bandwidth | < 1 nm | < 1 nm |

# SPECIFICATIONS - SINGLE OUTPUT

## Optical

| Model | 10XP | 10XP-S |
|---|---|---|
| Center wavelength [nm] | 1030 | 1030 |
| Pulse duration [fs] | < 400 | < 400 |
| Average power [W] | > 4 | > 5 |
| Pulse energy [µJ] | 40 | 70 |
| Peak power [MW] | > 80 | > 150 |
| Spectral bandwidth [nm] | < 5 | < 5 |
| Pulse selection options | Single-shot to 1 MHz, Pulse-on-demand | Single-shot to 1 MHz, Pulse-on-demand |
| Beam quality ($TEM_{00}$) | $M^2 \leq 1.2$ | $M^2 \leq 1.2$ |
| Polarization / PER (vertical) [dB] | > 22 | > 22 |
| Power stability (RMS, 12h, constant temp) [%] | < 1 | < 1 |
| Ellipticity | < 1.1 | < 1.1 |
| Pulse-to-pulse stability (RMS) [%] | < 1 | < 1 |
| Pointing stability | < 30 µrad rms (12h), constant temperature<br>< 15 µrad / °C 18 – 28 °C | < 30 µrad rms (12h), constant temperature<br>< 15 µrad / °C 18 – 28 °C |

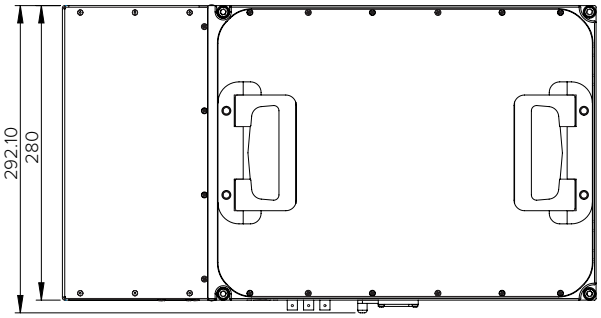
## Features

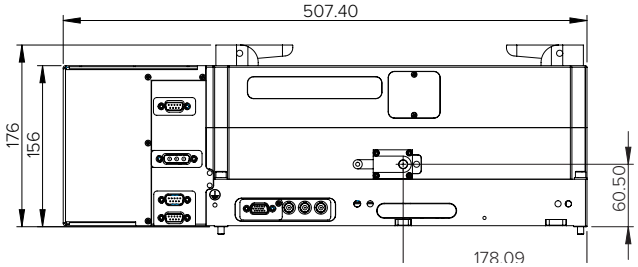
- Air-cooled, single-box for ease of integration
- Single-shot and Pulse-on-Demand
- Outstanding energy and pointing stability
- Water cooling available
- Standard pulse width below 400 fs
- Average power up to 5 W at 1030 nm
- Pulse energy up to 70 µJ at 1030 nm

# SPECIFICATIONS - SINGLE OUTPUT

## Mechanical/Electrical

| | |
|---|---|
| Laser output | Collimated free-space |
| Warm-up time [min.] | < 10 (warm start)<br>< 30 (cold start) |
| Operation temperature [°C] | 18 – 28 |
| Storage temperature [°C] | -20 – 55 |
| Power supply requirements | 24 VDC/20A or 90-264 VAC, 47-63 Hz |
| Power consumption [W] | < 500 |
| Laser head dimensions (WxHxD) [mm] | 507.4 x 176 x 292.1 |
| Power supply dimensions (WxHxD) [mm] | 165 x 85 x 314 |
| Laser head weight [kg] | 28 kg (water-cooled)<br>28 kg (air-cooled) |
| Cooling | Water or air |



# SPECIFICATIONS - DUAL WAVELENGTH SHG

## Optical

| Model | 05XP | 05XP-S |
|---|---|---|
| Center wavelength [nm] | 515 | 515 |
| Pulse duration [fs] | < 400 | < 400 |
| Average power [W] | > 2 | > 2.5 |
| Pulse energy [µJ] | 20 | 35 |
| Peak power [MW] | > 40 | > 75 |
| Spectral bandwidth [nm] | < 2.5 | < 2.5 |
| Pulse selection options | Single-shot to 1 MHz, Pulse-on-demand | Single-shot to 1 MHz, Pulse-on-demand |
| Beam quality ($TEM_{00}$) | $M^2 \leq 1.3$ | $M^2 \leq 1.3$ |
| Polarization / PER (horizontal) [dB] | > 22 | > 22 |
| Power stability (RMS, 12h, constant temp) [%] | < 1 | < 1 |
| Ellipticity | < 1.2 | < 1.2 |
| Pulse-to-pulse stability (RMS) [%] | < 1 | < 1 |
| Pointing stability | < 30 µrad rms (12h), constant temperature<br>< 15 µrad / °C 18 – 28 °C | < 30 µrad rms (12h), constant temperature<br>< 15 µrad / °C 18 – 28 °C |

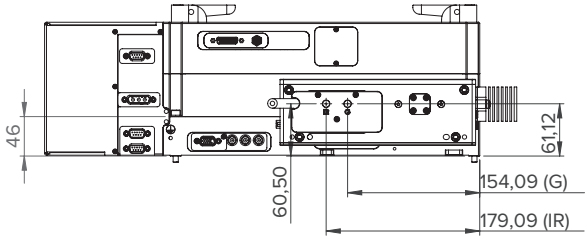
## Features

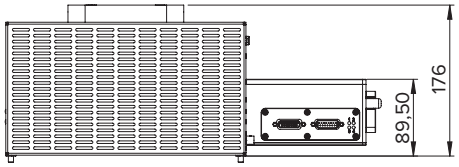
- Air-cooled, single-box for ease of integration
- Single-shot and Pulse-on-Demand
- Dual wavelength SHG module
- Outstanding energy and pointing stability
- Water cooling available
- Standard pulse width below 400 fs
- Average power up to 5 W/2.5 W at 1030 nm/515 nm
- Pulse energy up to 70 µJ/35 µJ at 1030 nm/515 nm

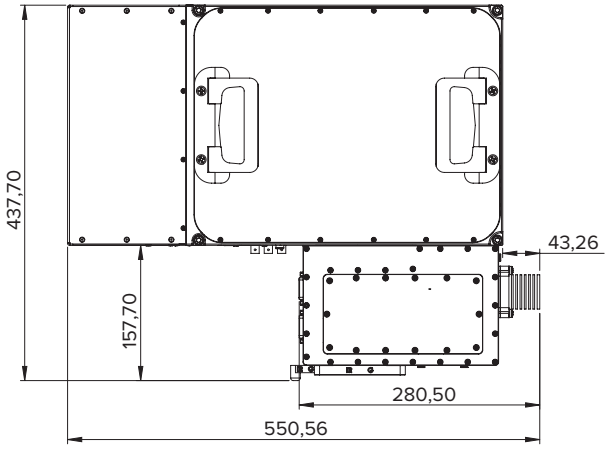
# SPECIFICATIONS - DUAL WAVELENGTH SHG

## Mechanical/Electrical

| | |
|---|---|
| Laser output | Collimated free-space |
| Warm-up time [min.] | < 10 (warm start)<br>< 30 (cold start) |
| Operation temperature [°C] | 18 – 28 |
| Storage temperature [°C] | -20 – 55 |
| Power supply requirements | 24 VDC/20A or 90-264 VAC, 47-63 Hz |
| Power consumption [W] | < 500 |
| Laser head dimensions (WxHxD) [mm] | 550.6 x 176 x 437.7 |
| Power supply dimensions (WxHxD) [mm] | 165 x 85 x 314 |
| Laser head weight [kg] | 32 kg (water-cooled)<br>32 kg (air-cooled) |
| Cooling | Water or air |



# SPECIFICATIONS - DUAL WAVELENGTH THG

## Optical

| Model | 03XP | 03XP-S |
|---|---|---|
| Center wavelength [nm] | 343 | 343 |
| Pulse duration [fs] | < 350 | < 350 |
| Average power [W] | > 1 | > 1 |
| Pulse energy [µJ] | 10 | 17.5 |
| Peak power [MW] | > 20 | > 40 |
| Spectral bandwidth [nm] | < 1 | < 1 |
| Pulse selection options | Single-shot to 1MHz. Pulse-on-demand | Single-shot to 1 MHz, Pulse-on-demand |
| Beam quality ($TEM_{00}$) | $M^2 \leq 1.3$ | $M^2 \leq 1.3$ |
| Polarization / PER (vertical) [dB] | > 20 | > 20 |
| Beam diameter [mm] | 2 | 2 |
| Power stability (RMS, 12h, constant temp) [%] | < 2 | < 2 |
| Ellipticity | < 1.2 | < 1.2 |
| Pulse-to-pulse stability (RMS) [%] | < 2 | < 2 |
| Pointing stability | < 30 µrad rms (12h), constant temp.<br>< 15 µrad / °C 18 – 28 °C | < 30 µrad rms (12h), constant temperature<br>< 15 µrad / °C 18 – 28 °C |

## Features

- Air-cooled, single-box for ease of integration
- Single-shot and Pulse-on-Demand
- Dual wavelength THG module
- Outstanding energy and pointing stability
- Water cooling available
- Standard pulse width below 350 fs
- Average power up to 5 W/1 W at 1030 nm/343 nm
- Pulse energy up to 70 µJ/17.5 µJ at 1030 nm/343 nm

# SPECIFICATIONS - DUAL WAVELENGTH THG

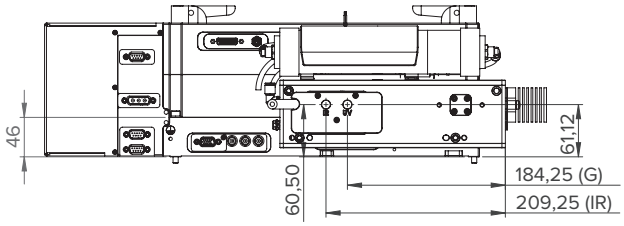
## Mechanical/Electrical

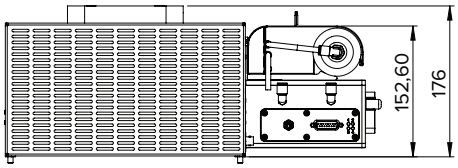
| | |
|---|---|
| Laser output | Collimated free-space |
| Warm-up time [min.] | < 10 (warm start)<br>< 30 (cold start) |
| Operation temperature [°C] | 18 – 28 |
| Storage temperature [°C] | -20 – 55 |
| Power supply requirements | 24 VDC/20A or 90-264 VAC, 47-63 Hz |
| Power consumption [W] | < 500 |
| Laser head dimensions (WxHxD) [mm] | 585.6 x 176 x 438.5 |
| Power supply dimensions (WxHxD) [mm] | 165 x 85 x 314 |
| Laser head weight [kg] | 33 kg (water-cooled)<br>33 kg (air-cooled) |
| Cooling | Water or air |

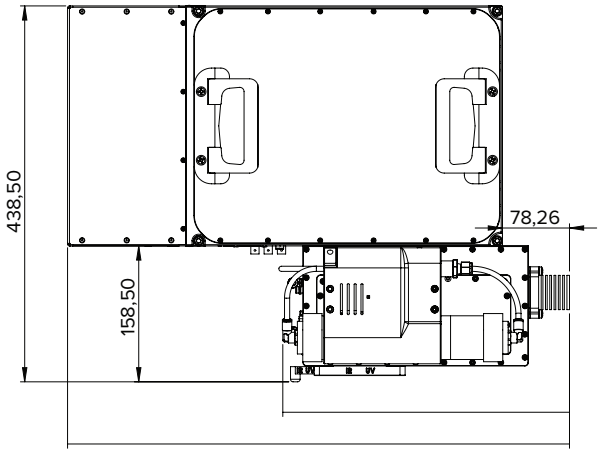
## Support and warranty

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.