

ORIGAMI IRO

Femtosecond Optical Parametric Amplifier



COST-EFFICIENT FS LASER AND OPA

Ideal for pump-probe spectroscopy and material characterization

The ORIGAMI IRO is an advanced Optical Parametric Amplifier (OPA) capable of providing widely tunable, multi- μJ fs pulses ranging from as short as 210 nm up to 11 μm .

Applications

- Optical material & device characterization
- Fs pump probe spectroscopy
- Time-resolved spectroscopy and photoluminescence (TR3, TRPES, TRPL)
- Photoelectron-photoion coincidence spectrometry (PEPICO)
- Coherent anti-Stokes Raman Spectroscopy (CARS)
- Two-dimensional infrared spectroscopy (2D-IR)
- Terahertz emission studies
- Non-linear microscopy

ORIGAMI IRO

Stable and reliable

The OPA is air-cooled and constructed with a sealed and monolithic case design and when coupled with industry-leading pointing stability of the ORIGAMI pump laser, allows for long-term stability and maintenance-free operation.

Fully automated and alignment-free

The ORIGAMI IRO covers a wide wavelength range spanning as wide as 210 nm to 11 μm , while the integrated tuning makes automating experiments simple.

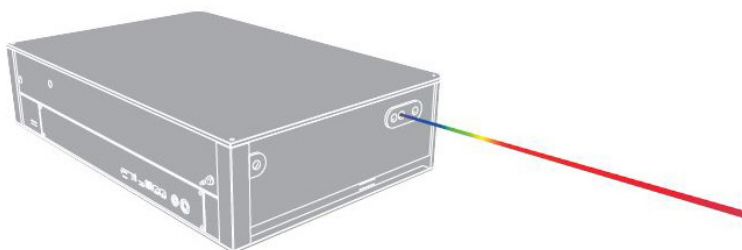
User-friendly by software and hardware design

No need for external beam routing or separation: The integrated tuning and automatic wavelength separation of the ORIGAMI IRO maintain the same beam position and pointing direction for all wavelengths.

Built-in monitoring and PC control

Onboard laser diagnostics and data logging ensure optimal performance and easy troubleshooting. Integrated PC simplifies control in your lab.

210 nm - 2600 nm continuous tunability from a single aperture



Features

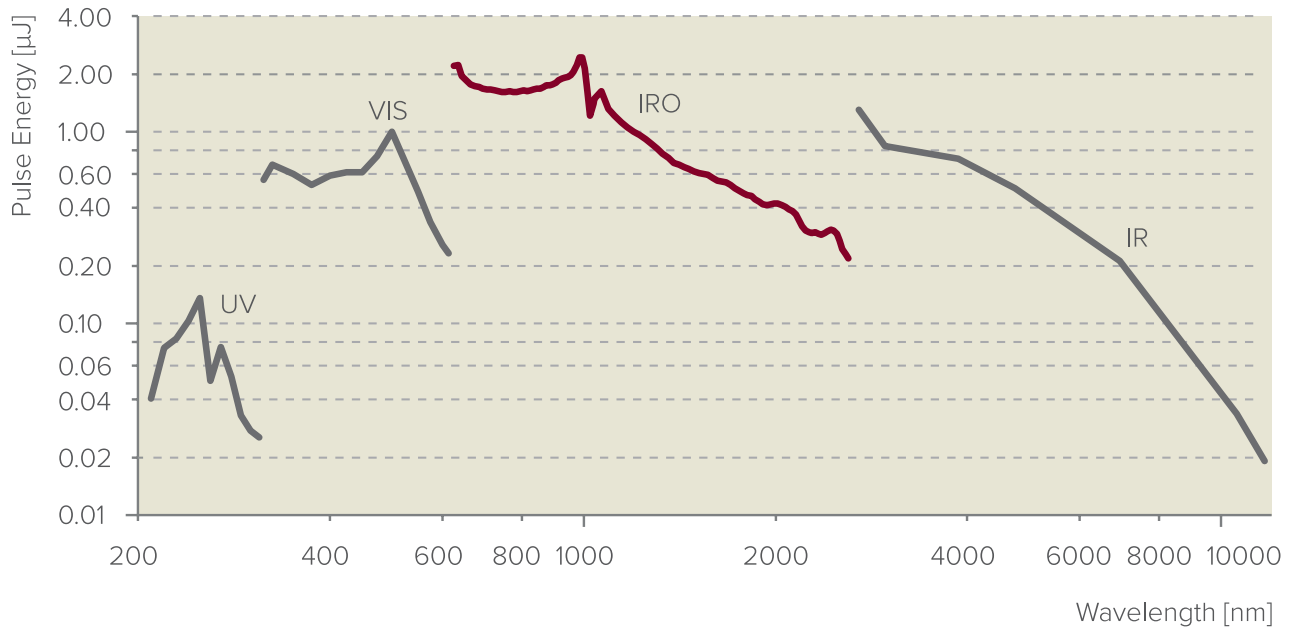
- 8 μJ to 75 μJ pump energy options
- Fully air-cooled laser and OPA
- Available tunability from 210 nm to 11 μm (UV/VIS/IR)
- Single-shot to 600 kHz repetition rate
- Completely automated and fully computer controlled
- Long-life and stable operation with sealed inner case to protect sensitive components
- TCP/IP remote control with standardized command set for easy programming
- 24/7 integrated performance monitoring of both laser system and ORIGAMI IRO
- Optional bypass for SHG beam (green)
- Full UV/VIS/NIR from single aperture
- Industry-leading beam pointing stability maintains alignment in experiments at any wavelength
- Highly stable energy and power for long data collection cycles
- Standard IR bypass with configurable power and simultaneous output capability

Options

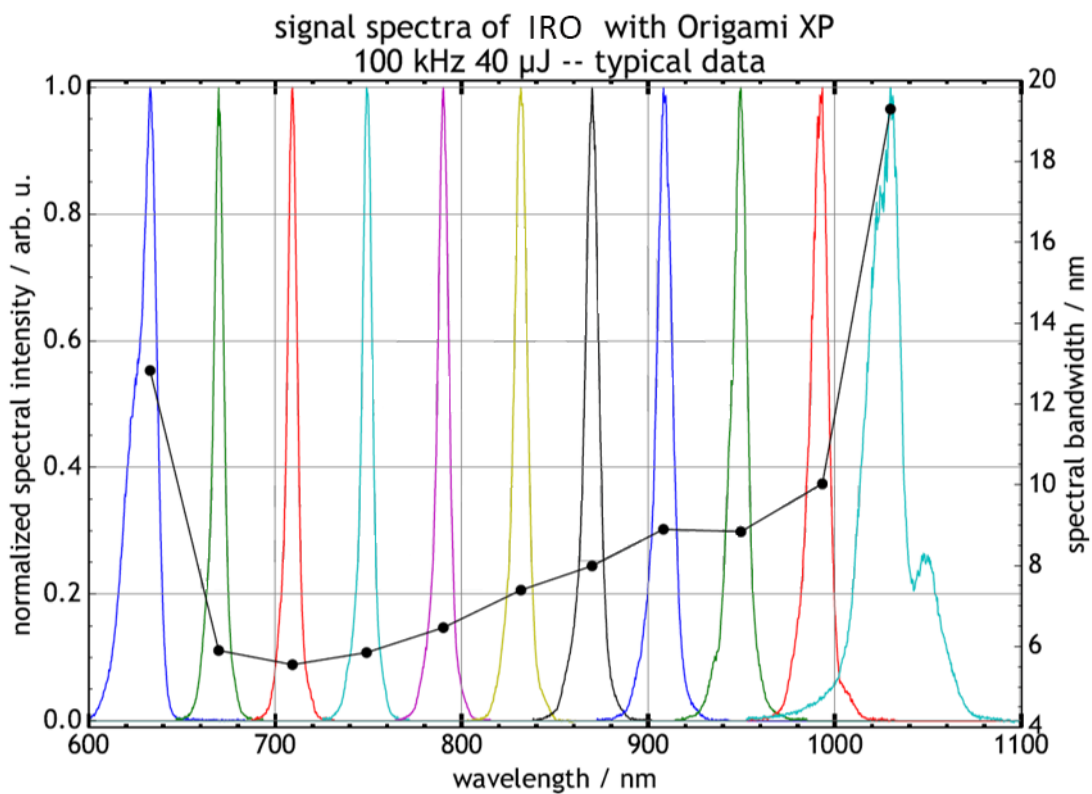
- Up to 50 W pump when used with aero-PULSE fs laser
- Pulse synchronization capability
- Repetition rates to multi-MHz
- Single laser driving dual OPAs
- Short pulse operation (down to < 40fs)
- Built-in dispersion compensation

PERFORMANCE

Typical Pulse Energy vs. Wavelength (40 μ J Pump)



Typical Output Spectra (40 μ J Pump)

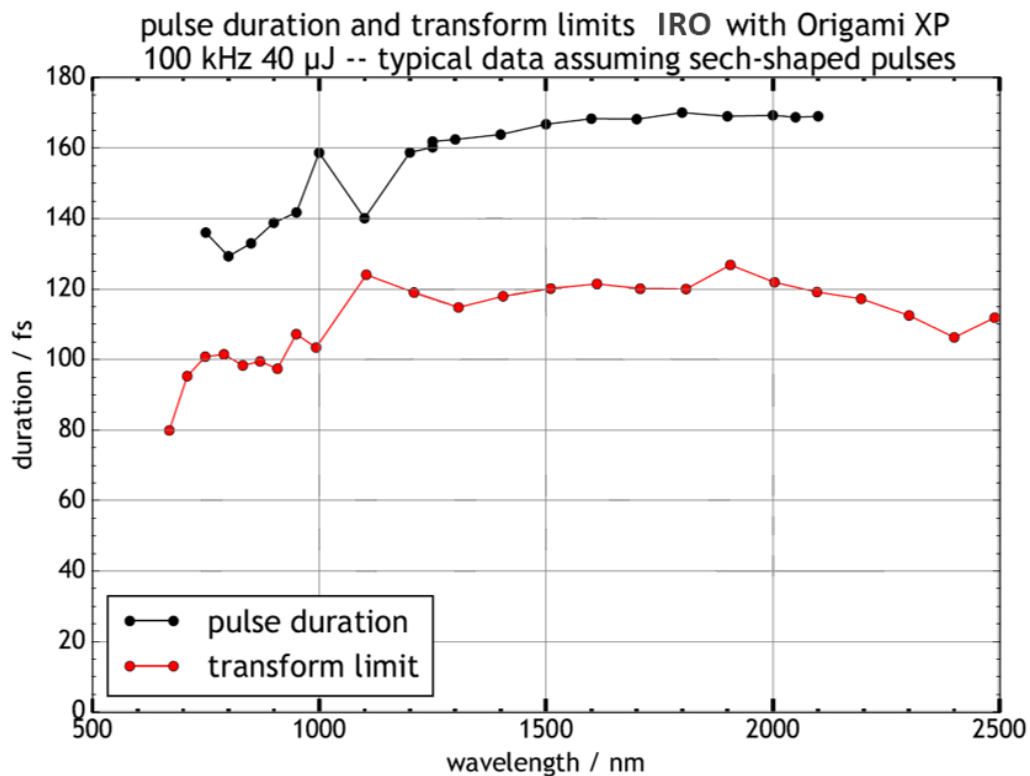


PERFORMANCE

Typical Pulse Duration for <400fs Pump Pulse Including Optional Extensions



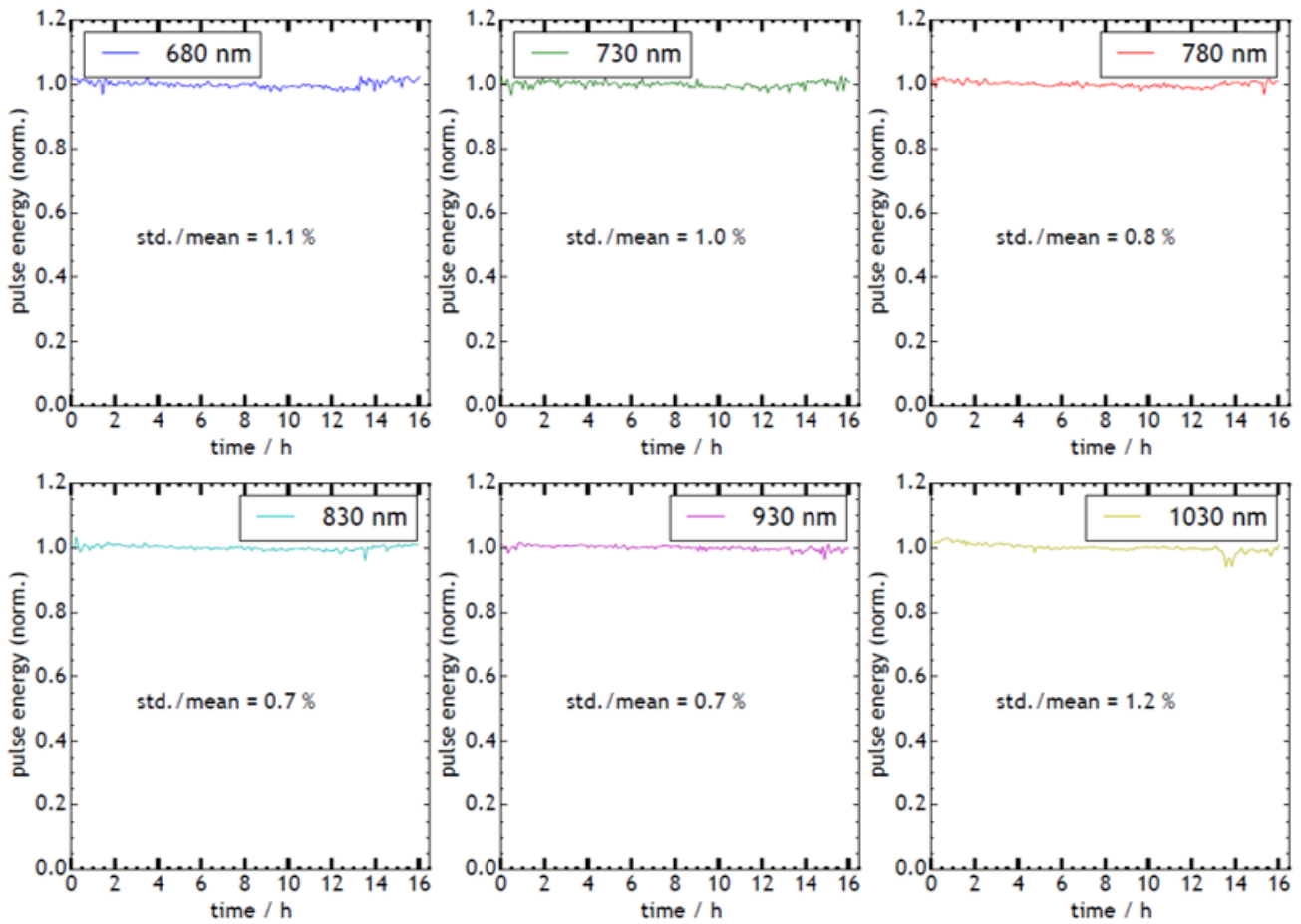
Typical Pulse Duration for <400fs, 40uJ pulse pumped Main OPA



PERFORMANCE

Typical Pulse Energy Stability Over Time

long term stability of IRO with Origami XP
100 kHz 40 μ J -- typical data



SPECIFICATIONS

Pump Laser Parameters

Input Laser Type	ORIGAMI XP or XPS (aeroPULSE FS20/60 by custom request)
Input Power	4 or 5 W
Input Energy	8 - 75 μ J
Input Center Wavelength	1030 nm
Input Polarization	Linear
Repetition Rate	Up to 600 kHz (2 MHz by custom request)
Pulse Width	< 400 fs (350 fs typical)

Main Specifications

Conversion Efficiency at Peak	12 %, Signal + Idler
Time Bandwidth Product	< 1
Pulse Width	< 200 fs
Output Bandwidth	70 - 120 cm^{-1} (typical)
Polarization	210 nm - 2600 nm: Horizontal; IR extension: Vertical
Performance Monitor	Integrated 24/7 monitoring and data logging of both pump laser and OPA conditions (e.g. beam position/pointing, repetition rate, pulse energy)
Wavelength Calibration	Factory calibrated, ± 2 nm at 650 - 950 nm
Beam Routing and Separation	Integrated, fully automated
Mechanical Design	Monolithic OPA and UV/VIS option; IR Option separate; Laser separate
Cooling	Air-cooled; OPA & laser
Software, PC, and Automation	Included (Embedded PC)
Remote Control	Possible via TCP/IP (SCPI command set), Windows Remote Desktop

Tuning Range

Base Unit	630 - 2600 nm
UV/VIS Extension (optional)	210 - 630 nm
IR Extension (optional)	Up to 11 μ m

Dimensions and Power

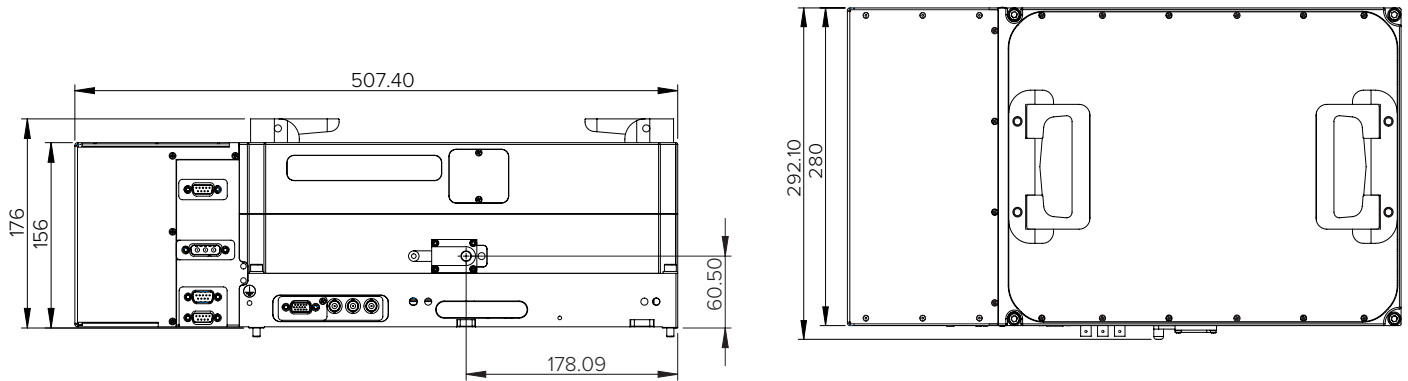
Dimensions	677 mm x 163 mm x 447 mm (See drawings for details; Dimensions may vary depending on options)
Power	100 - 240 V, 50 - 60 Hz, max. 100 W

Environmental Requirements

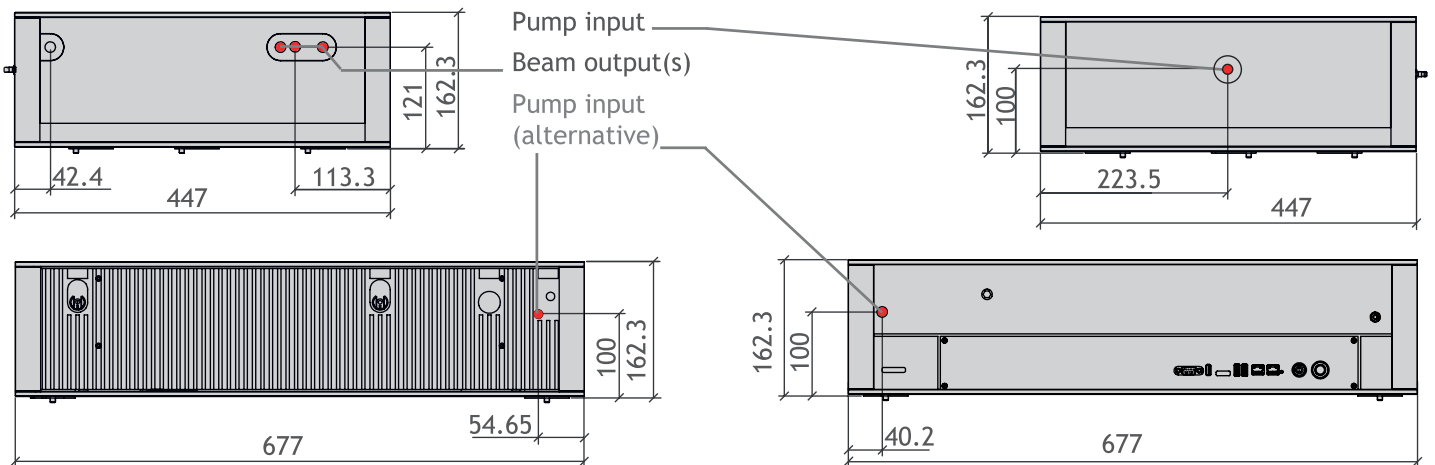
	Ambient temperature	Relative humidity
During Transportation	5 - 50°C	< 80%, non-condensing
During Operation	15 - 25°C	< 60%, non-condensing

TECHNICAL DRAWINGS

Pump dimensions

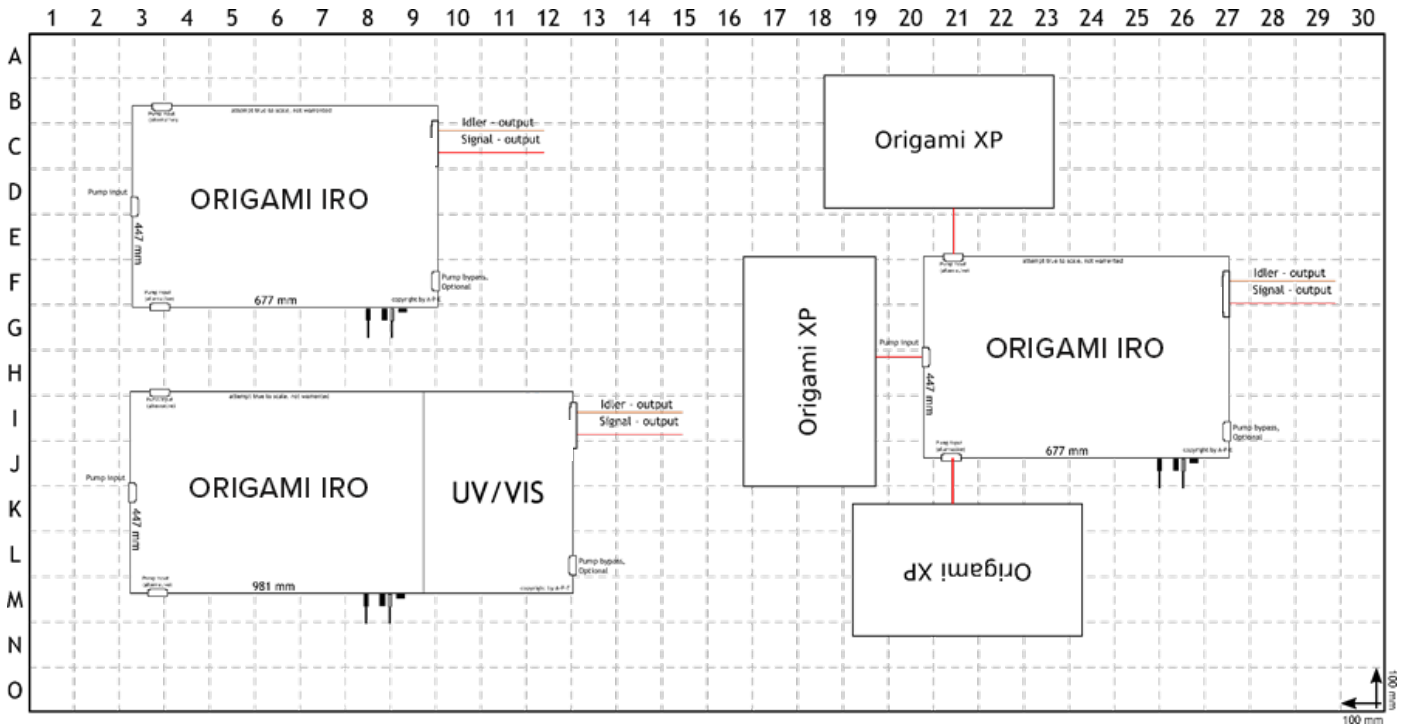


OPA dimensions



TECHNICAL DRAWINGS

Available Pump and OPA configurations



All NKT Photonics products are produced under our quality management system certified in accordance with the ISO 9001:2015 standard.

