

## Applications

- High harmonic generation (HHG) experiments
- Pumping OPAs and HG units
- Materials research
- Femtochemistry
- Laser particle acceleration
- Spectroscopy
- THz generation
- Ultrafast Imaging
- Pump probe experiments

## Features

- Cryogenic cooling enables highest average powers on the market
- Average power >20W from a single box configuration
- Pulse energies up to 9 mJ
- Repetition rates from 1 to 50 kHz
- Pulse duration of <40fs
- Excellent beam quality: M<sup>2</sup> typically 1.1-1.2
- Intuitive control GUI including wavelength, bandwidth, power, and repetition rate control with integrated diagnostics
- One-box configuration with integrated pumps and oscillator
- Combination of clean (low pedestal), short pulses and high energies gives higher peak intensities for nonlinear processes
- Custom configurations available

## Variable repetition rate ultrafast ti:sapphire amplifier

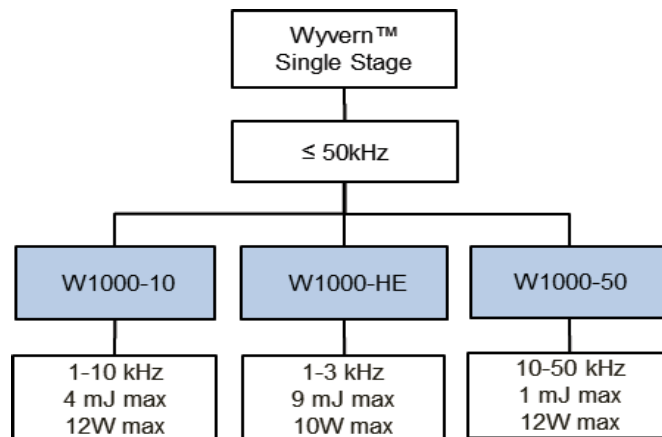


Wyvern-1000™ is KMLabs' single-stage regenerative amplifier. It is a fully engineered and integrated commercial source based on a single rugged opto-mechanical platform. It employs patented (US 6,804,287) cryogenically-cooled amplifier technology, allowing for continuous trade-off between pulse energy and repetition rate. Tailor the laser output to the optimum for your experiment.

### Wyvern-1000 Unique Features

- Optimized for pumping HHG (KMLabs' XUUS product)
- Tunable repetition rate: 1-10 kHz or 10-50kHz in a single instrument
- Clean pulses due to cryogenic thermal management
- Sealed, modular stretcher and compressor

### Wyvern-1000 Product Family



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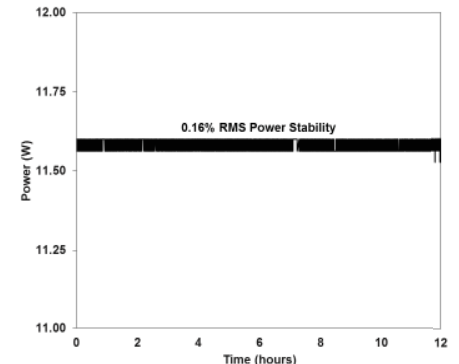
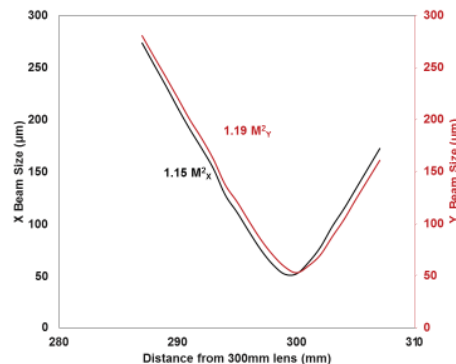
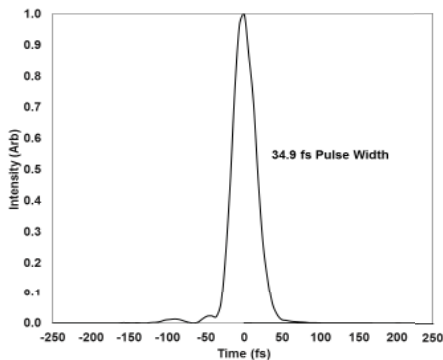
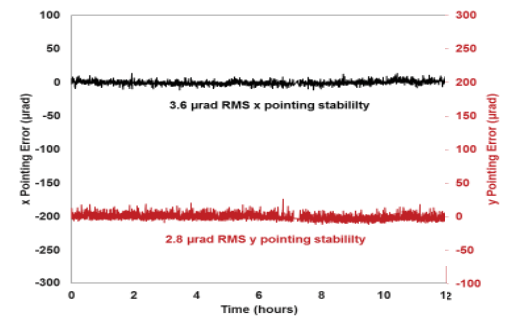
The Wyvern-1000 product family provides 1 to 50 kHz repetition rates with < 40fs pulse duration

- Tunable repetition rate: 1-10 kHz or 10-50kHz in a single instrument
- Clean pulses due to cryogenic thermal management

	W1000-10	W1000-HE	W1000-50
<b>Repetition Rate</b>	1-10kHz	1-3kHz	10-50kHz
<b>Pulse Duration</b>	≤ 40 fs <i>Measured using FROG</i>	≤ 40 fs <i>Measured using FROG</i>	≤ 40 fs <i>Measured using FROG</i>
<b>Pulse Energy [Avg. Power]</b>	4mJ @ 1kHz [4W] 2mJ @ 5kHz [10W] 1.2mJ @ 10kHz [12W]	9mJ @ 1kHz [9W]	1mJ @ 10kHz [10W] 0.4mJ @ 30kHz [12W] 0.2mJ @ 50kHz [10W]
<b>Beam Quality</b>	$M^2 < 1.3$ , Near-TEM <sub>00</sub>	$M^2 < 1.3$ , Near-TEM <sub>00</sub>	$M^2 < 1.3$ , Near-TEM <sub>00</sub>

## Common Specifications

- Pre-pulse Contrast: >250:1 on ns scale
- Post-pulse Contrast: >100:1 on ns scale
- Contrast on sub-ps scale: >1000:1 at ~500 fs, >300:1 at ~270 fs from FROG measurement
- Polarization: Horizontal “p” with >100:1 polarization purity
- Long-term stability: <1% RMS over >12 hours (after warm-up)
- Beam pointing stability: <20 μrad over 12 hours (after warm-up)
- Operational temperature range - full compliance: 23 +/- 0.5 C
- Optical assembly size: 2.5' x 6.5'



## Wyvern-1000 Example Performance Data at 3 kHz