

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 up to 50W
- Pulse energies up to 30 mJ
- Repetition rates from 1 to 10 kHz
- Pulse duration of <40fs
- Excellent beam quality: M^2 typically 1.1-1.2
- Intuitive control GUI including wavelength, bandwidth, power, and repetition rate control with integrated diagnostics
- Combination of clean (low pedestal), short pulses and high energies gives higher peak intensities for nonlinear processes
- Custom configurations available

Variable repetition rate multistage ultrafast ti:sapphire amplifier



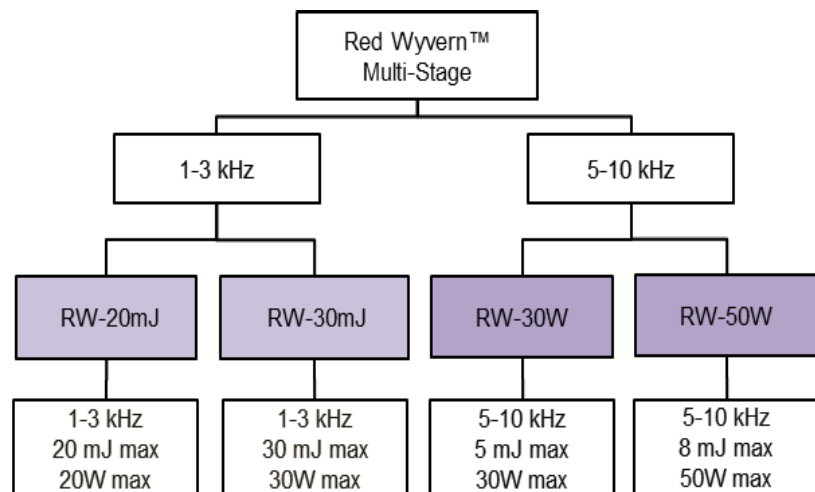
Red Wyvern™ is KMLabs' high-energy system based on a regenerative first stage and power amplifier. It is a fully engineered and integrated commercial source providing up to 30 mJ in a sub-40fs pulse. It employs patented (US 6,804,287) cryogenically-cooled amplifier technology, allowing for continuous trade-off between pulse energy and repetition rate.

Tailor the laser output to the optimum for your experiment.

Red Wyvern™ Unique Features

- Optimized for pumping high-energy OPA systems
- Tunable repetition rate: 1-3 kHz or 5-10kHz in a single instrument
- Clean pulses due to cryogenic thermal management

Red Wyvern™ Product Family



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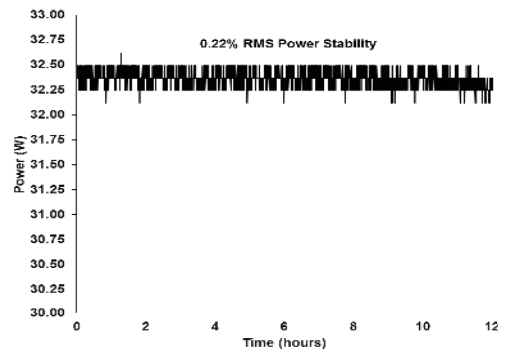
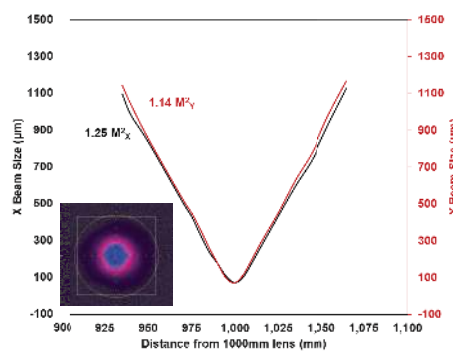
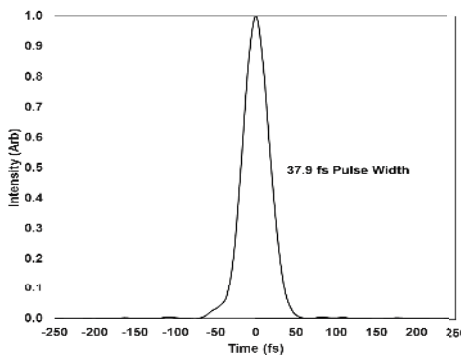
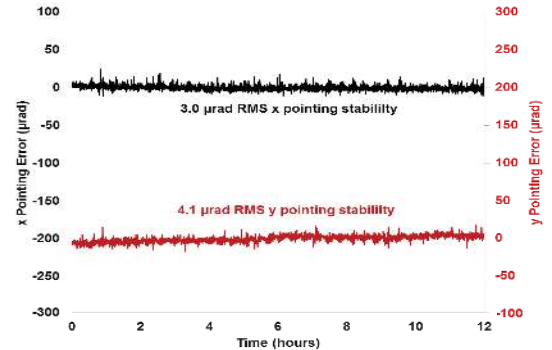
The Red Wyvern™ product family provides 1 to 10 kHz repetition rates with < 40fs pulse duration

- Tunable repetition rate: 1-3 kHz or 5-10kHz in a single instrument
- Clean pulses due to cryogenic thermal management

	RW-20mJ	RW-30mJ	RW-30W	RW-50W
Repetition Rate	1-3kHz	1-3kHz	5-10kHz	5-10kHz
Pulse Duration	≤ 40 fs <i>Measured using FROG</i>	≤ 40 fs <i>Measured using FROG</i>	≤ 40 fs <i>Measured using FROG</i>	≤ 40 fs <i>Measured using FROG</i>
Pulse Energy [Avg. Power]	20mJ @ 1kHz	30mJ @ 1kHz	3mJ @ 10kHz	5mJ @ 10kHz
Beam Quality	$M^2 < 1.4$, Near-TEM ₀₀	$M^2 < 1.4$, Near-TEM ₀₀	$M^2 < 1.4$, Near-TEM ₀₀	$M^2 < 1.4$, Near-TEM ₀₀

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



Red Wyvern™ Example Performance Data at 1 kHz, 30 mJ