

# **IMPULSE™**

## **High-Average-Power Femtosecond Laser**



- Direct diode-pumped Yb-fiber oscillator/amplifier design
- All-diode-pumped, all-solid-state construction
- Robust, one-box design
- > 20 watts average power
- Repetition rate user-selectable from 200 kHz to 25 MHz
- High beam quality
- Low noise, cw-pumped
- High stability and longevity
- Complete computer control including iPhone/iPod App
- Ideal for:
  - Micromachining
  - Photopolymerization
  - Direct-write waveguides
  - High S/N pump/probe
  - OPA/NOPA pumping

**Clark-MXR, Inc.**

IMPULSE™ is an all-diode-pumped, direct-diode-pumped, Yb-doped fiber oscillator/amplifier system capable of producing variable pulse energies up to 10 μJ with user-selectable repetition rate between 200 kHz<sup>1</sup> and 25 MHz. With 20 watts average power output at 2 MHz, IMPULSE™ offers more than an order-of-magnitude higher power than has traditionally been available in a one-box ultrashort pulse laser design.

IMPULSE™ is based on a revolutionary new concept in mode-locked oscillator/amplifier technology. The Yb-doped fiber-oscillator/fiber-amplifier design combines the low noise performance of solid-state operation with high spatial mode quality of fiber lasers.

IMPULSE™ is a compact, robust, one-box source of femtosecond to picosecond pulses with the ease-of-operation, stability and reliability you expect from a fiber source. All major parameters are computer controlled, enabling easy interface to workstation or experiment. IMPULSE™ is even iPhone/ iPod<sup>2</sup> App enabled.

Optional accessories include multi-photon photo-polymerization, waveguide writing, micromachining, harmonic generation, and OPA/NOPA wavelength conversion for high S/N and rapid data acquisition in pump/probe experiments.

Version 08092011  
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For more details, please visit our web site at <http://www.cmxr.com>.

### Performance Parameters:

- Average power output: User adjustable via embedded computer up to 20 watts at  $\geq 2$  MHz repetition rate
- Repetition rate: User adjustable via computer from 200 kHz to 25 MHz (in increments of oscillator repetition rate divided by a whole number<sup>1</sup>)
- Pulse energy: User adjustable via computer from 100 nJ to 10 μJ (eg.,  $>0.8\mu\text{J}$  at 25MHz,  $>10\mu\text{J}$  at  $<2$  MHz)
- Pulse width: User adjustable via computer between  $< 250$  fs and  $> 8$  ps
- Transverse mode: TEM<sub>00</sub>
- $M^2 < 1.2-1.5$  depending on pulse energy
- Noise:  $< 1\%$  rms
- Center Wavelength: 1.03 microns
- Electrical: 220 VAC (110 VAC Optional), 20 Amps
- Head dimensions 103Lx62.5Wx26H cm<sup>3</sup>
- Control cabinet 123Hx53.5W x81D cm<sup>3</sup>

<sup>1</sup>Optional pulse picker available to additionally adjust repetition rate in the range of 200 kHz to single shot.

<sup>2</sup>iPhone and iPod are Trademarks of Apple Inc.



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