Clark-MXR, Inc.

IMPULSE-HE

High-Average-Power High-Energy version of Model IMPULSE

Innovative Ultrafast Laser Solutions

ADVANTAGES

- Direct diode-pumped Yb-fiber oscillator/amplifier design
- All-diode-pumped, all-solid-state construction
- Robust, one-box design
- >20 watts average power
- User-adjustable repetition rate from single-shot to 25MHz
- High beam quality
- Low noise, cw-pumped
- High stability and longevity
- Fully computer controlled with remote operation/diagnostic capabilities

APPLICATIONS

- High harmonic generation
- Ultrafast electron spectroscopy & microscopy (4D-UEM/SUEM)
- Ultrafast Cathodoluminescence microscopy
- Photoemission spectroscopy (PEEM/ARPES)
- High signal to noise ratio pump/probe spectroscopy & microscopy
- NOPA/OPA pumping
- Synchrotron/FEL synchronization
- Micromachining
- Photopolymerization
- Direct-write waveguides
- Nanopatterning
- MHz femtosecond SERS

IMPULSE-HE is the second generation laser from the Model IMPULSE family that provides more pulse energy with the same salient features that our Model IMPULSE is famous for. It is built on the same all-diode-pumped, direct-diode-pumped Yb-doped fiber oscillator/amplifier system architecture capable of producing variable pulse energies in excess of 40μJ with user-adjustable repetition rates between single-shot[1] and 25MHz.

IMPULSE-HE 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 the high spatial mode quality of fiber lasers.

IMPULSE-HE is a second generation, compact, robust, one-box source of femtosecond to picosecond pulses with ease-of-operation, stability, and reliability. All major parameters are fully computer controlled, enabling easy interface to a workstation or experimental setup. IMPULSE-HE is remotely accessible for control of all laser parameters and diagnostics.

Ideal for NOPAs/OPAs pumping including UV to Mid-IR NOPAs to generate extremely short pulses, harmonic generators (2nd, 3rd and 4th), MHz high harmonic generation, electron microscopes, pump/probe and nonlinear spectrometers and micro-machining workstations.

Specifications:

Pulse Energy	>40 µJ
Repetition Rate	Single-shot[1] to 25 MHz, user adjustable
Pulse Duration	Sub-250fs, user adjustable between <250 fs and >8ps
Traverse Mode	TEM00
Average Power	>20 watts
Beam Quality (M2)	<1.2
Noise	<1% RMS
Central Wavelength	1030 nm
Beam pointing stability	<25 µrad/degC
Electrical	110V (40A) or 220V (20A)
Polarization	Linear, Horizontal
Cooling requirements	None
Laser Head Dimensions	40.5”L x 21”W x 9”H
Control Cabinet Dimensions	22.5”W x 25.5”D x 33.5”H
User Interface/Connectivity	Touchscreen, Ethernet

Notes:

- Other pulse energies are available
- IMPULSE-HE can be used to pump two NOPAs/OPAs simultaneously
- Pump source for UV-NOPA with tunability from ~200nm to 1600nm
- Synchronization options are available for FEL and Synchrotron applications
- Custom configurations available. Please contact us for details
- Optional harmonic generation (2nd, 3rd & 4th) modules are available
- 1-year system warranty with 5-year full replacement warranty on oscillator

1. May need additional PulsePicker for repetition rates below 200kHz

Where your imagination of the very small is realized

Clark-MXR, Inc.
7300 West Huron River Dr.
Dexter, MI 48130 USA
Tel: 1(734) 426-2803
Fax: 1(734) 426-6288

sales@cmxr.com
www.cmxr.com

Version: 12.2023