



## Innovative Ultrafast Laser Solutions

# CPA-Series

## Fiber-seeded Ultrashort Pulse Ti:Sapphire Regenerative Amplifier

### ADVANTAGES

- Drift-free, NO TWEAK™ performance
- Er-doped, frequency-doubled fiber seed
- Smallest footprint in the industry
- Transportable
- Fully-integrated plug-and-play design
- Built-in computer control with embedded .Net DLL files
- Remote operation and monitoring capabilities
- Built-in electronic shutter for “pulse-on-demand” delivery of single or multiple pulses up to 64,000
- Over 10,000 hours of proven utility in micromachining applications

### APPLICATIONS

- Nonlinear spectroscopy
- Micromachining
- Pumping OPA/NOPA
- Laser ablation spectroscopy/ mass-spectrometry



Our field-proven CPA-Series Ti:Sapphire lasers redefine user-friendliness in a low cost-of-ownership source of ultrashort pulses of light. It is a complete, fully-integrated, ultrashort pulse oscillator/amplifier system that can be controlled by an embedded touch-screen computer or from any Windows-based computer with a network connection.

The included software provides control of laser performance parameters such as power output, pulsewidth, pump power, timing, and selection of single pulse or groups of multiple pulses. A suite of diagnostics is also included to monitor laser performance. The simple, intuitive, user-friendly interface provides both status information and control from external network enabled devices. Resident .Net DLL files allow interfacing with your existing application-specific, custom software (LabView, MatLab, VisualBasic, etc.)

The CPA-Series provides the best of both worlds by combining the long life of telecom-qualified single-emitter pump diode with the low cost of operation of a single cw-lamp. The result is a laser with the lowest cost-of-ownership on the market today.

It is fully compatible with our NOPA series of optical parametric amplifiers providing tunable sub-50 fs pulses, TOPAS series of OPAs, STORC Harmonic Generators, and ShapeShifter ultrashort pulse nonlinear spectrometers (transient absorption, pump/probe, CARS, surface-specific SFG, SHG, THG, etc.)

**Specifications:**

|                                | CPA-2101     | CPA-2110                         | CPA-2161   | CPA-2210                         |
|--------------------------------|--------------|----------------------------------|--|----------------------------------|
| Pulse Energy                   | >0.8mJ       | >1mJ at 1kHz<br>>0.6mJ at 1-2kHz | 2.5W, <i>Constant average power from 3 to 6kHz (customer chosen factory setting)</i> | >2mJ at 1kHz<br>>1.5mJ at 1-2kHz |
| Beam Quality (M <sup>2</sup> ) | <1.5         | 1.2 +/- 0.1                      | 1.2 +/- 0.1  | 1.2 +/- 0.1                      |
| Repetition rate                | Up to 1kHz   | Up to 2kHz                       | 3-6kHz fixed   | Up to 2kHz                       |
| Electrical                     | 220VAC (20A) |                                  |  |                                  |

|                       |                                |                         |                    |
|-----------------------|--------------------------------|-------------------------|--------------------|
| Pulsewidth            | <150fs                         | Wavelength              | 775nm              |
| TBP                   | <1.4 x TL (sech <sup>2</sup> ) | Polarization            | Linear, Horizontal |
| Aspect Ratio          | 100:1                          | Transverse Mode         | TEM <sub>00</sub>  |
| Energy Stability      | <1% RMS                        | Beam divergence         | <100 microradians  |
| Laser Head Dimensions | 48"L x 20"W x 12"H             | Power supply Dimensions | 28"L x 23"W x 38"D |
| Controller Interface  | Touchscreen, Ethernet          | Electrical              | 220VAC (40A)       |

**Notes:**

- Er-doped, frequency doubled fiber seed oscillator
- Electronic shutter for pulses on demand and burst mode
- Optional oscillator output at 1550nm and 775nm
- Optional harmonic generation modules (Model STORC) are available
- Can pump several NOPAs for tunable output between 400-1600nm providing pulse duration down to 14fs (T. Wilhelm, J. Piel, and E. Riedle, "Sub-20-fs pulses tunable across the visible from a blue-pumped single-pass noncollinear parametric converter," *Opt. Lett.* 22, 1494, 1997)
- 1-year system warranty with 5-year full replacement warranty on oscillator



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