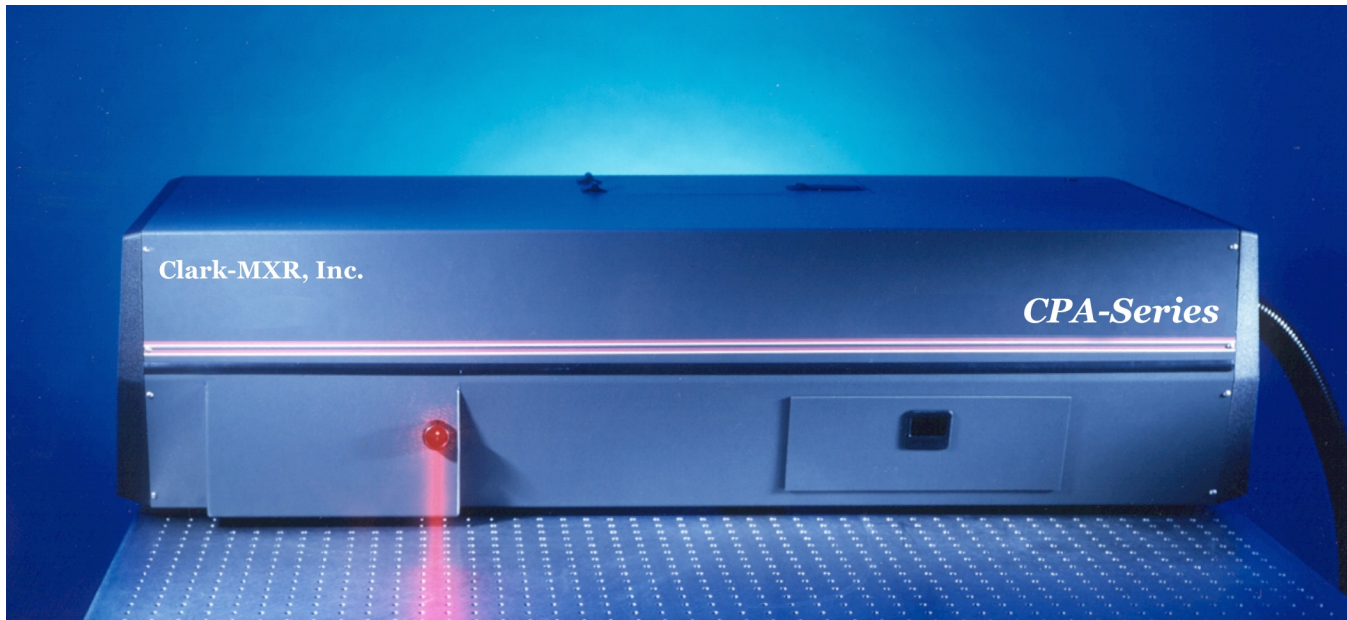# CPA-Series Ti:Sapphire Ultrashort Pulse Laser



- **Drift-free, NO TWEAK™ performance**
- **Smallest footprint in the industry**
- **Transportable**
- **Fully-integrated plug-and-play design**
- **Built-in computer control with embedded .Net DLL files accessible from LabView, MatLab (R2009a & later), C#, VisualBasic**
- **Apple iPod Touch with iLase CPA client app for remote operation and monitoring**
- **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**
- **Ideal for**
  - **Pumping OPA (NOPA, TOPAS)**
  - **Nonlinear spectroscopy**
  - **Micromachining**

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 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 devices such as the included Apple iPod Touch preloaded with our iLase CPA software app. Resident .Net DLL files allow interfacing with your existing application-specific, custom software (LabView, MatLab, VisualBasic, etc.)

The Model 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.)

## Performance Parameters:

| Model: | Pulse energy: | $M^2$: | Repetition Rate: |
|---|---|---|---|
| CPA-2101 | > 0.8 mJ at ≤ 1 kHz | < 1.5 | Up to 1 kHz |
| CPA-2110 | > 1mJ at 1 kHz | 1.2 +/- 0.1 | Up to 2 kHz |
| | > 0.6 mJ at 1-2 kHz | | |
| CPA-2161 | Constant average power of | 1.2 +/- 0.1 | 3 to 6 kHz fixed |
| | 2.5 W from 3 kHz to 6 kHz | | |
| | (Customer-chosen factory setting) | | |
| CPA-2210 | > 2 mJ at 1 kHz | 1.2 +/- 0.1 | Up to 2 kHz |
| | > 1.5 mJ at 1-2 kHz | | |

Pulsewidth:  < 150 fs
Wavelength: 775 nm
TBWP:        < 1.4 x transform limit (sech$^2$)
Polarization: Linear, horizontal

Aspect Ratio:          100:1
Transverse mode:       $TEM_{00}$
Energy stability:      < 1% rms
Beam diameter (FWHM):  4 – 6 mm
Beam divergence:       < 100 microradians

Additional Output Options:
Amplifier pump laser:    Up to 10 mJ/pulse at circa 200 ns pulsewidth at 532 nm
Oscillator wavelength:   Average power output > 10 mW at 1550 nm
                         or > 3 mW at 775 nm at nominal repetition rate of 30 MHz

Picosecond Option for CPA-2101:
Pulse energy:> 0.6 mJ at rep. rates ≤ 1 kHz        Linewidth:    < 8 cm$^{-1}$
TBWP:        < 1.2 x transform limit (Gaussian)

Physical Dimensions:
Laser head:      48" L x 20" W x 12" H
Power supply:    28" H x 23" W x 38" D

Utility Requirements:
Electric: 110 VAC, 60 or 50 Hz, 10 A and
          208 VAC, 60 or 50 Hz, 40 A
Water:  Tap water, 4 gpm, 15-20°C, 30-50 psi

Warranty:

Oscillator parts, including the diode laser, are warranted for 40,000 hours or five (5) years, whichever comes first. Please contact us for further details.

These products protected under US patent numbers:
5,530,582; 5,572,358; 5,592,327; 5,594,256



DANGER

VISIBLE and/or INVISIBLE LASER RADIATION
AVOID EYE OR SKIN EXPOSURE TO
DIRECT OR SCATTERED RADIATION
775 nm to 1550 nm
100 fs to 20 ns
4 mJ max – 4 watts max
CLASS IV LASER PRODUCT

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Wikipedia: http://en.wikipedia.org/wiki/Clark-MXR