



PAL™ PULSED ALEXANDRITE LASER SYSTEM BY LIGHT AGE, INC.

Modular in design and based on a sophisticated, yet simple, flashlamp pumped Solid-state source, the PAL™ laser system is extremely reliable as well as versatile

“ It's actually simpler than the fixed wavelength lasers used to pump other tunable laser sources.

It is extremely low-maintenance. Nearly all of the PAL™ laser systems sold since 1989 are still in productive operation today, as are most of the OEM laser systems from Light Age. Based on alexandrite ($\text{Cr}^{\pm}:\text{BeAl}_2\text{O}_4$), the most robust, tunable solid-state laser medium, the PAL™ laser system can tune continuously or operate at any fixed wavelength. The PAL™ laser system produces light at high peak and average power across fundamental wavelength range between 720 and 800 nm.

Applications

- Spectroscopy
 - Atmospheric Lidar
 - Lidar
 - Photoacoustic Imaging
 - Tissue Imaging
 - Combustion Diagnostics
 - Advanced Lithography
 - Illumination
 - Nanotube Manufacture
 - Tumor Detection
 - Trace Element Assays
 - Material Processing
 - LIBS
 - Fiber Bragg Gratings
 - Metrology
 - Mercury Detection
 - Nonlinear Processes
 - Photochemistry
 - Plasma Diagnostics
 - Fiber Optic Testing
 - Laser Eye-wear Testing
 - Quantum State Preparation
 - LED Development
 - Oceanography
 - Wafer Testing
 - Holography
 - Pollutant Monitoring
 - Analytic Chemistry
 - Standoff Detection
 - CARS
 - LIF
 - Projectile Tracking
 - Communication R&D
 - T-Jump Measurements
 - Interferometry
 - Multispectral Imaging
 - Chemical Dynamics
 - Photophysics
 - Process Control
 - Sterilization
 - Medical Research
 - Biostimulation
- ... and much more

SPECIFICATIONS			OPTIONS*	
TUNING RANGE	Fundamental	Nominal 720 - 800 nm	Extended	720 - 800 nm
	Harmonics	2nd 360 - 400 nm	Extended	320 - 410 nm
		3rd 240 - 266 nm		240 - 270 nm
		4th 192 - 200 nm	Raman	170 - 18000 nm
LINEWIDTH	Nominal	=< 0.3 nm	With Etalon	=< 0.5 nm
			Narrowed with PAL/PRO™	
			available with DLIS option	=< 100 Mhz
			available with SLM option	=< 10 Mhz

PULSE ENERGY	Oscillator Only	Up to 500 mj		
	With Amplifier	Up to 1 Joule		
PULSE DURATION	Long Pulse	120 ?s	PTM	=< 6 ns
	Q-Switched	15 - 100 ns	Modelocked	100 - 500 ps
POLARIZATION	Linear			
SPATIAL MODE	TEM₀₀ Or Highly Multi-mode Options			
PULSE RATE		10 - 30 Hz		Up to 100 Hz
EXTERNAL COOLING	Water - to - Air		Water - to - Water	
DIMENSIONS (nominal)	Control Console	125 x 56.5 x 79 cm		151.5 x 56.5 x 79 cm
	Laser Head	27 x 22 x 123 cm		27 x 22 x 153 cm
USER INTERFACE	Advanced Computer User Interface			
ELECTRICAL POWER REQUIREMENTS	3-phase	208 V, 60 Hz, 30 Amp/phase	Single phase	240 V, 50 Hz, 30 - 60 Amp

* Additional Customizations Available Upon Request



Efficient nonlinear frequency conversion processes provide complete spectral coverage from the VUV to the deep IR. Second, third and fourth harmonic generators provide light in the 360-400 nm, 240-270 nm, and 190-200 nm wavelength ranges, respectively.

All other wavelengths throughout the UV, visible, and IR are readily achievable utilizing Light Age's patented high power ARC™ (Advanced Raman Convertor) accessories.



ARC™ Advanced Raman Convertor



The Light Age 101 PAL-RCs (ARC™) are a family of state-of-the-art, compact, high pressure Raman Convertors capable of extending the tuning range of Light Age PAL™ tunable lasers in the UV, VIS and IR. They also extend the wavelength range of pulsed Dye lasers, Excimer lasers, Nd:YAG lasers, Ruby lasers, Ti:Sapphire lasers, and OPO's. A unique gas recirculation system minimizes thermo-optic effects, permitting operation at power levels unachievable in any other commercial Raman Shifter.

Diode Laser Injection Seeder










LAI 101 Pulse Stretcher

2nd, 3rd, 4th Harmonic Generators

Acousto-optic Mode Locker

Q-switch and Driver

High Power Etalon

 Pulse Slicer 
 Amplifier module 
 High resolution tuner 
 Fiber optic coupler 
 Laser Pulse selector 