

Credo

HIGH REPETITION RATE DYE LASER

The Credo Advantage

- Wide tunable wavelength coverage from 370 nm to 900 nm¹
- Built-in optional doubler for wavelength coverage down to 206 nm
- Built-in optional amplifier for pulse energies of up to 3.3 mJ²
- Compact all-in-one box operation with the Credo-YHP model
- Up to 200 kHz operation with the Credo-Pulseo model
- User-friendly open source LabView® enabled software

1. 370–545 nm requires a 355 nm pump laser.
2. Requires external pump lasers.



The Credo high repetition rate dye laser systems build upon the designs of the popular Cobra pulsed dye laser series. German engineered by our partner firm Sirah GmbH for precision, stability, and reliability, the Credo dye laser system has a resonator optimized for low energy, high repetition rate pumping. The Credo system can have an optional built-in pump laser or optional doubling resulting in a sophisticated and compact system-ideal for laser induced fluorescence (LIF) and combustion studies.

The Credo-YHP model is configured with a built-in Spectra-Physics Navigator™ 532-9 pump laser integrated into the laser box, resulting in assured alignment, smaller footprint and portability.

The new Credo-Pulseo model is pumped by a Spectra-Physics Pulseo® 532-34 laser and produces tunable UV radiation with repetition rates up to 200 kHz making it the highest repetition rate narrow linewidth dye laser on the market.

The Credo systems offer:

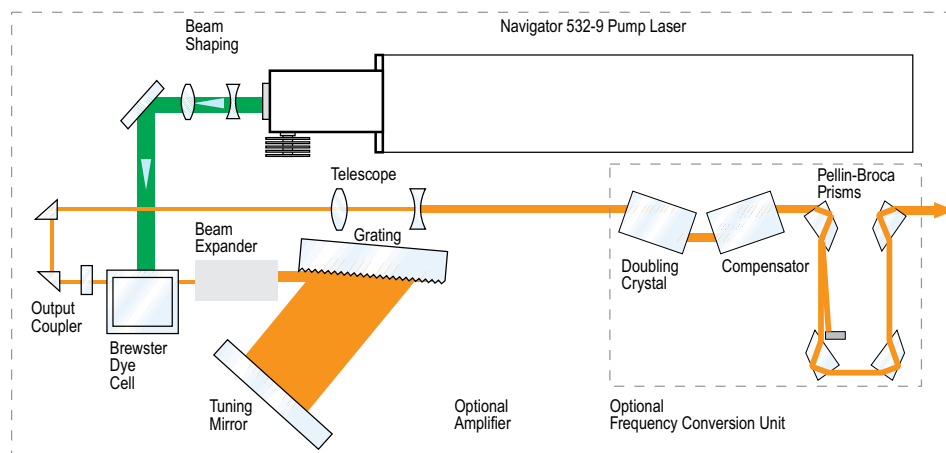
- Top mount adjusters for easy alignment. The top cover simply flips up and the adjusters can be accessed from both sides of the laser.
- Optimized oscillator design to minimize pump thresholds, including cuvettes with Brewster angle windows, and a high efficiency grating-arm design.
- Newly designed high flow rate cuvettes for efficiently replenishing spent dye in the gain region. Special care was taken to remove any impediment to flow in order to provide the smoothest, fastest transfer of dye.
- Removable cuvettes for rapid dye changes. No need to flush out and clean the dye circulator system. The entire dye circulator system can be removed in seconds without tools and changed out for another autonomous system already filled with the dye for the next wavelength region of interest.
- With the optional integrated doubler, the Credo dye lasers offer coverage at popular wavelengths such as 226 nm and 283 nm.

Reliability is inherent in the Credo system design. All of the Credo oscillator components are mounted on a solid block of low thermal expansion stainless steel, mechanically and thermally isolated from the outer laser housing. By removing virtually all mechanical and thermal stress and by using opto-mechanics optimized for easy and reproducible operation, Credo lasers achieve a wavelength resettability for the oscillators of <5 pm, a limit set primarily by the laser's spectral resolution.

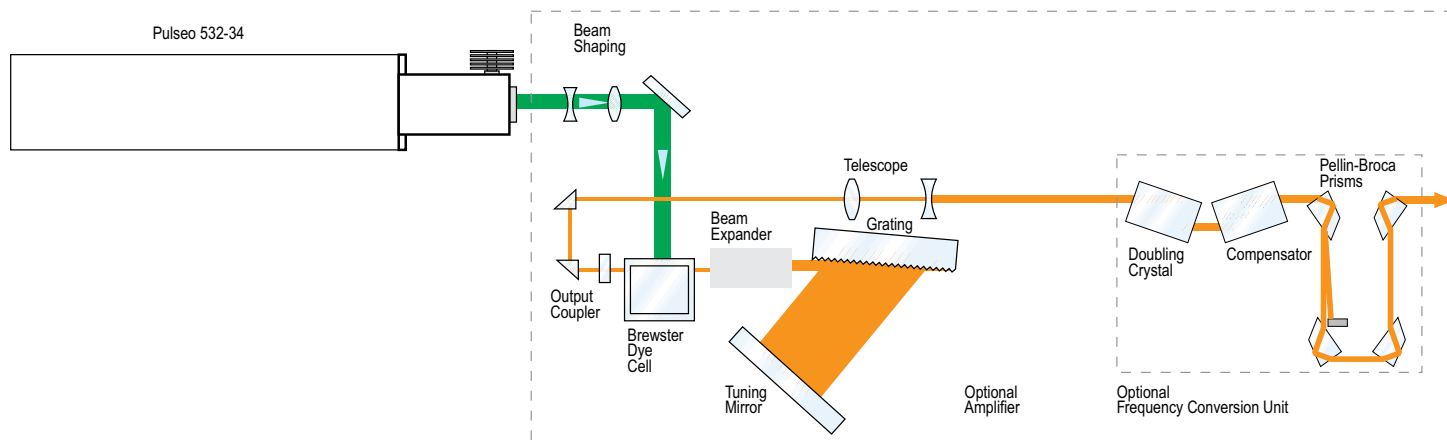
Applications

- Laser induced fluorescence
- Combustion and atmospheric studies
- Pump probe for chemical interaction research
- Laser spectroscopy
- CARS

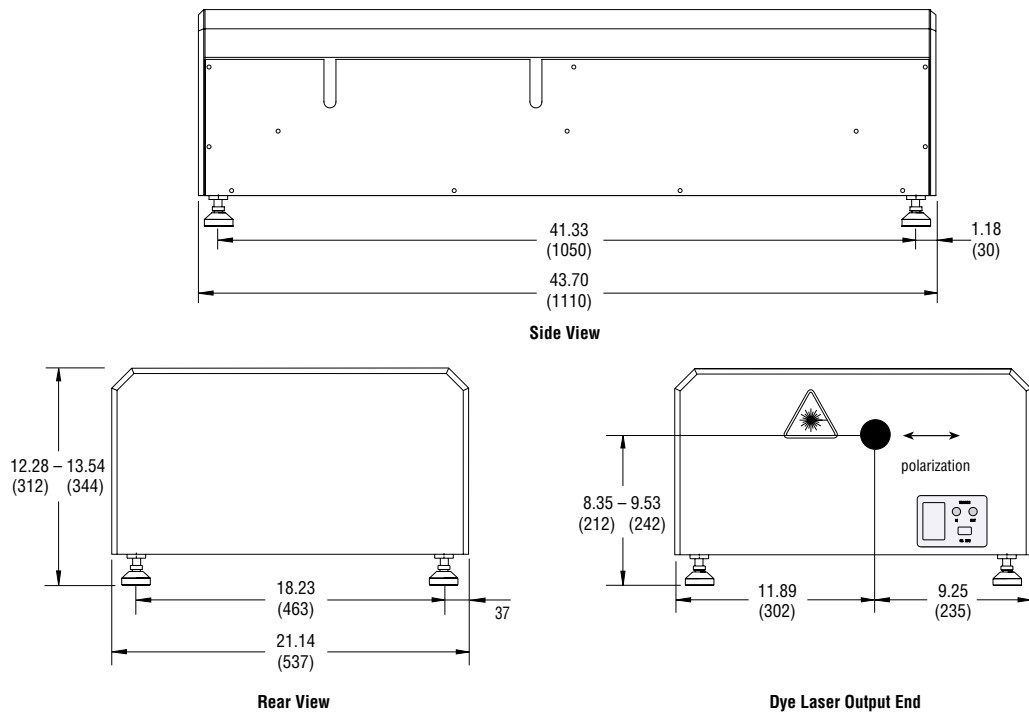
Credo-YHP Optical Layout



Credo-Pulseo Optical Layout

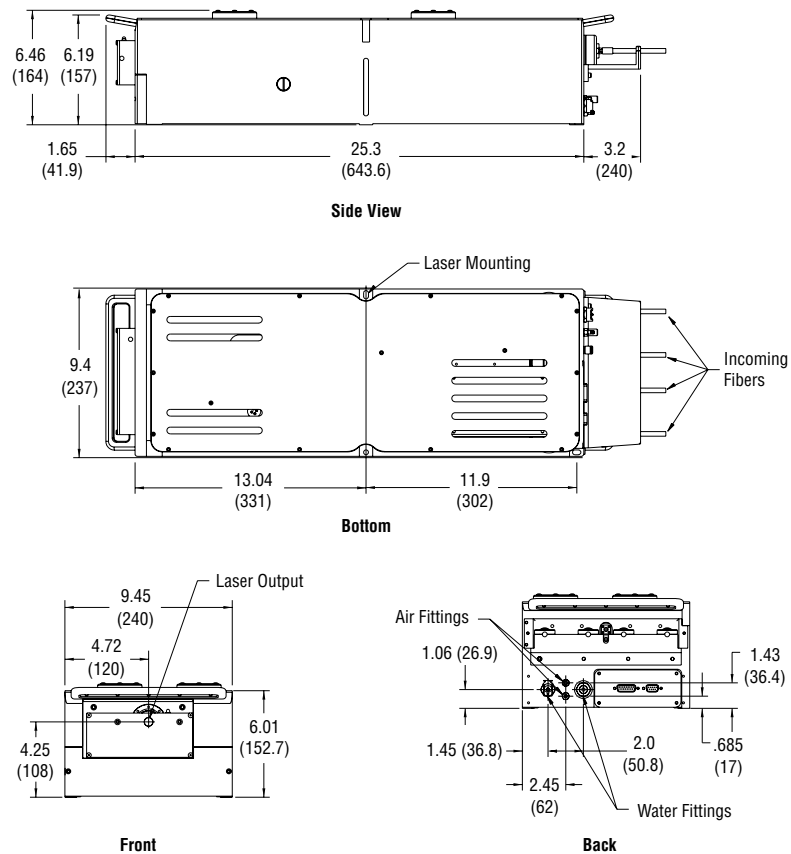


Credo Dimensions



Dimensions in inch (mm)

Pulseo Dimensions



Dimensions in inch (mm)

Specifications

Linewidth Specifications		
Dispersion Option	Tuning Range	Linewidth
1800 lines / mm, 90 mm	570–900 nm	0.08 cm ⁻¹ @ 595 nm
2400 lines / mm, 90 mm	545–750 nm	0.06 cm ⁻¹ @ 570 nm
Output Characteristics	Credo-Pulseo	Credo-YHP
Absolute Wavelength Accuracy	<30 pm	
Wavelength Resetability	<5 pm	
Wavelength Stability	<2 pm/°C	
Divergence (typical)	0.5 mrad	
Beam Size (typical)	0.8 mm (horizontal) x 2 mm (vertical)	
Polarization	>98% (vertical)	
ASE	<0.5%	
Repetition Rate	10–200 kHz	10 kHz
Efficiency (570 nm) ²	>15% for 10–100 kHz	>15%
SHG Efficiency (285 nm) ²	>10% of fundamental for 10–100 kHz	>10% of fundamental
Requirements		
Cooling for Dye Laser	300 W, resonator only	
Voltage	110–230 V, single phase, 50 Hz/60 Hz	
Computer	USB	
Operating System	Windows XP / Windows Vista / Windows 7	

1. Pulse duration shortest at the lowest repetition rates
2. After 100 kHz, efficiency straight line declines to 1.5% for R6G at 200 kHz