

Legend Elite Duo HE+

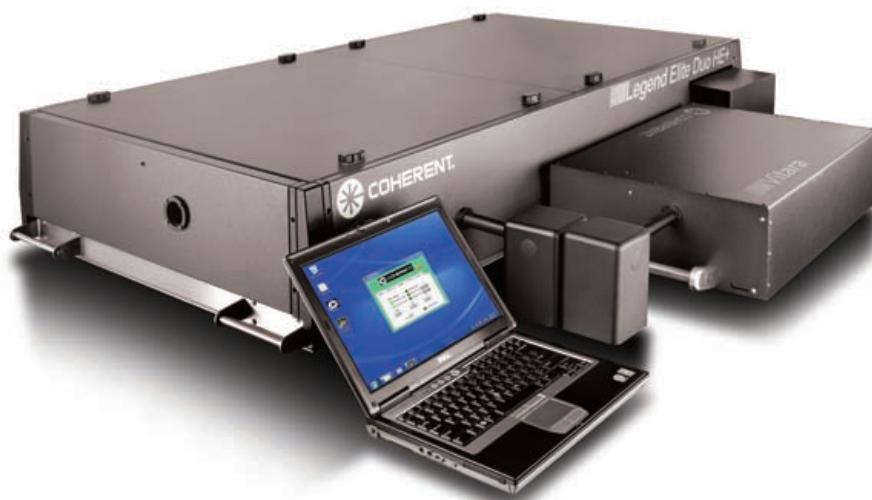
Ultrafast Ti:Sapphire Amplifier

The Legend Elite series of ultrafast amplifiers offers a market-leading combination of performance, stability and reliability. The Legend Elite Duo HE+ delivers outputs to >13 mJ or >16W from a regenerative amplifier stage plus single-pass power amplifier, with pulse widths available at <25 fs, <35 fs, <130 fs and 1 ps.

The Legend Elite series utilizes technology unique to Coherent, e.g. slab Ti:Sapphire rod design for enhanced cooling and optimal beam quality, temperature stabilized baseplate and CEP-grade hardware for superior stability.

Powered by an integrated Revolution pump laser, the Legend Elite Duo HE+ is very compact and when seeded by a Vitera ultrafast oscillator the small footprint of this 2-box, high-performance amplifier system allows sophisticated experimental setups on a single optical table. Higher energy systems are offered with a second, external Revolution pump laser. These subsystems are built to Coherent's exacting manufacturing standards using our advanced HASS verification to ensure the highest level of quality and reliability.

The Legend Elite Duo design enables numerous upgrade pathways, for example to higher energy or CEP stabilization, making it the most flexible, high-performance amplifier on the market.



Superior Reliability & Performance

Legend Elite Duo HE+ Features:

- **High energy, high efficiency design (up to >13.0 mJ)**
- **Integrated Revolution pump laser**
- **Thermally stabilized E-2 Engine regenerative amplifier platform**
- **One, single-pass TE-cooled power amplifier**
- **Unsurpassed stability – energy, pointing, pulse width**
- **Pulse widths from <25 fs to 1 ps**
- **Multiple upgrade pathways up to >20 mJ, >25W**

Legend Elite Duo HE+ Applications:

- **Time-resolved Spectroscopy**
- **Multidimensional Spectroscopy**
- **THz Spectroscopy**
- **fs Micromachining**
- **Surface SFG/SHG**
- **Stimulated Raman Scattering**
- **High Harmonic Generation**

www.Coherent.com/LegendEliteDuoHE+

Legend Elite Duo HE+

Ultrafast Ti:Sapphire Amplifier

System Specifications¹

Legend Elite Duo HE+

Center Wavelength ² (nm)	795 to 805		780 to 820	
Pulse Width Configuration				
Pulse Width (fs)(FWM)	USX <25 ^{3,4}	USP <35 ^{5,6}	F <110 ⁵	P 500 to 1000 ^{4,5}
Repetition Rate ⁷ (kHz)	1, 5 or 10			
Contrast Ratio ⁸				
Pre-pulse	>1000:1			
Post-pulse	>100:1			
Power Stability ^{9,10} (%) (rms)	<0.5			
Beam Pointing Stability ^{9,10} (μrad)(rms)	<10			
Spatial Mode	TEM ₀₀ , M ² <1.35 ¹¹			
Polarization	Linear, horizontal			
Pump Configuration				
Pump Laser ¹²	-I REVOLUTION-80	-II REVOLUTION-80 + REVOLUTION-50 ¹³	-III REVOLUTION-80 + REVOLUTION-65 ¹³	
Energy per Pulse (mJ)	>8.0 at 1 kHz >2.5 at 5 kHz >1.0 at 10 kHz	>10.0 at 1 kHz >3.0 at 5 kHz >1.2 at 10 kHz	>13.0 at 1 kHz >3.2 at 5 kHz >1.4 at 10 kHz	

¹ Specifications are given at 800 nm unless otherwise mentioned. Please contact factory for specifications at other wavelengths.

² Factory set, must be specified when ordered and will be optimized prior to shipment.

³ When seeded by Vitara-T. For other seed lasers, please contact factory. An FFT of the pulse spectrum is used to calculate the transform-limited pulse width and a deconvolution factor which is then used to determine the real pulse width from an autocorrelation signal measured by a Coherent SSA (Single-Shot Autocorrelator).

⁴ Not available in -III pump configuration.

⁵ When seeded by Vitara. For other seed lasers, please contact factory. A Gaussian pulse shape deconvolution factor (0.7) is used to determine the pulse width from an autocorrelation signal measured by a Coherent SSA (Single-Shot Autocorrelator).

⁶ <40 fs in -III pump configuration.

⁷ Repetition rate must be specified when ordered and will be optimized prior to shipment. Options for more than one repetition rate available. Please contact factory for other repetition rates.

⁸ Contrast ratio is defined as the ratio between the peak intensity of the output pulse to the peak intensity of any other pulse that occurs greater than 1 ns before or after the output pulse.

⁹ Under stable environmental conditions.

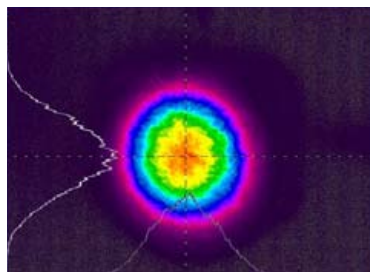
¹⁰ Over 24 hours.

¹¹ M² <1.45 at 5 and 10 kHz in -III pump configuration.

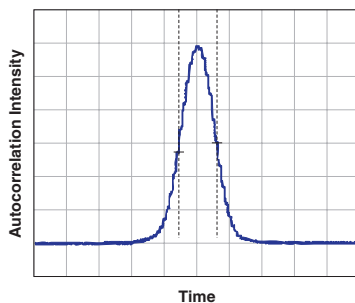
¹² Sold separately.

¹³ Mounted external to amplifier enclosure.

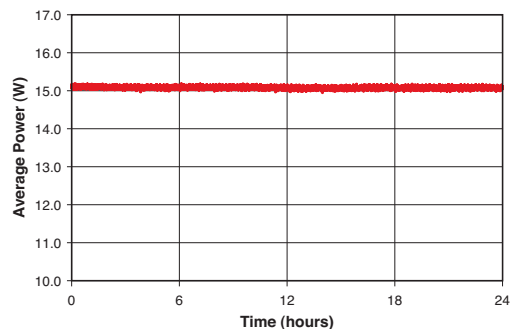
**Near-Field Beam Profile
(Duo HE+ USP)**



**Typical Pulse Width
~23 fs (Duo HE+ USX)**



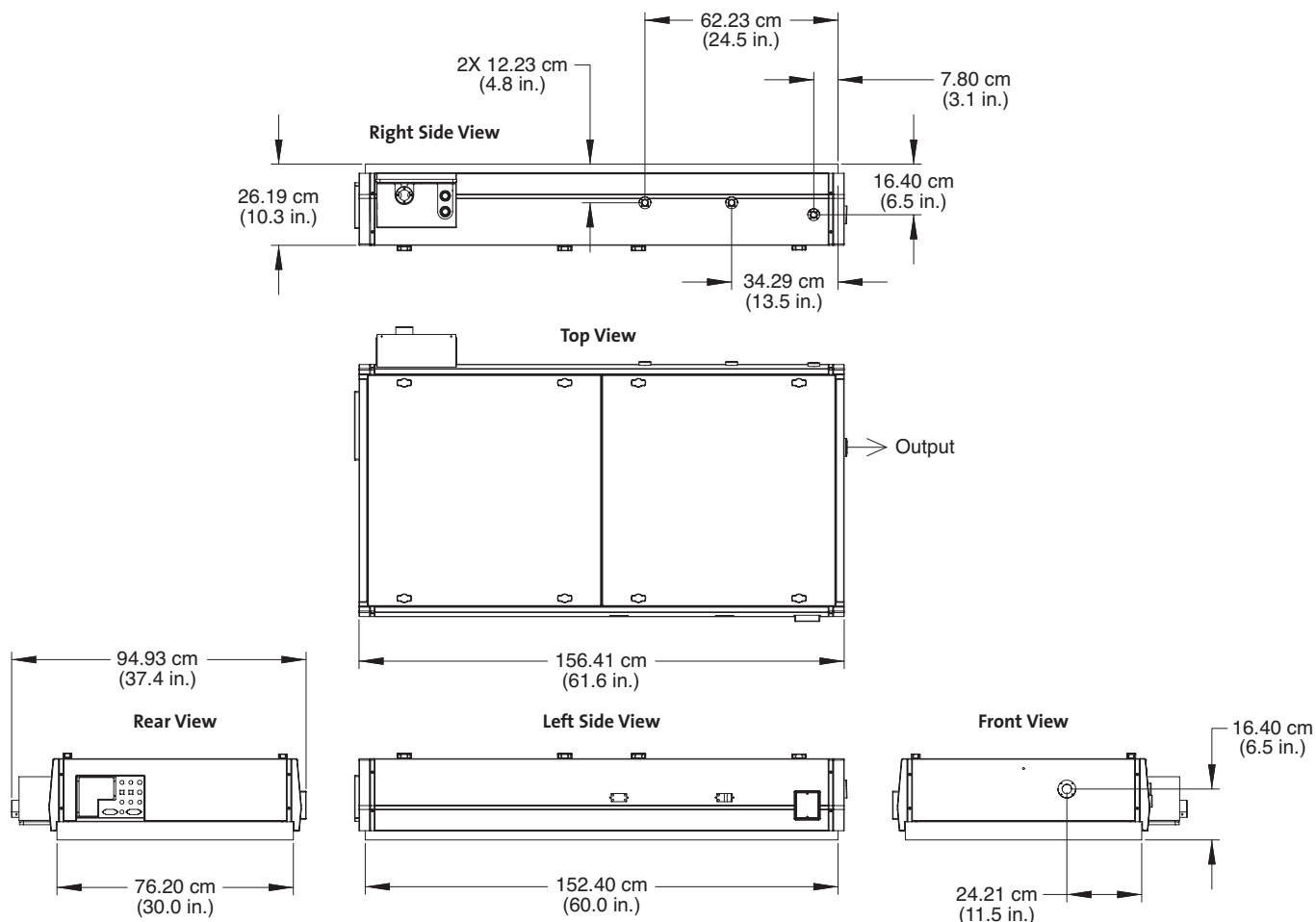
**10 kHz Legend Elite Duo HE+
Power Stability (0.22% rms)**



Legend Elite Duo HE+

Ultrafast Ti:Sapphire Amplifier

Mechanical Specifications



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Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent's scientific and industrial lasers are certified to comply with the Federal Regulations (21 CFR Subchapter J) as administered by the Center for Devices and Radiological Health on all systems ordered for shipment after August 2, 1976.

Coherent offers a limited warranty for all Legend Elite Duo HE+ Ti:S amplifiers. For full details of this warranty coverage, please refer to the Service section at www.Coherent.com or contact your local Sales or Service Representative.

