

# Legend Elite 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 HE+ delivers output power up to 8W from a single regenerative amplifier stage, 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 HE+ is very compact and when seeded by a Vitara ultrafast oscillator the small foot print of this 2-box, high-performance amplifier system allows sophisticated experimental setups on a single optical table. 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 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 HE+ Features:**

- **High energy, high efficiency design (up to >7.0 mJ)**
- **Integrated Revolution pump laser**
- **Thermally stabilized E-2 Engine regenerative amplifier platform**
- **Unsurpassed stability – energy, pointing, pulse width**
- **Pulse widths from <25 fs to 1 ps**
- **Multiple upgrade pathways up to >20 mJ, >25W**

### **Legend Elite HE+ Applications:**

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

[www.Coherent.com/LegendEliteHE+](http://www.Coherent.com/LegendEliteHE+)

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## System Specifications<sup>1</sup>

	Legend Elite HE+			
	795 to 805	780 to 820		
Center Wavelength <sup>2</sup> (nm)				
Pulse Width Configuration				
Pulse Width (fs)(FWHM)	<b>USX</b> <25 <sup>3,4</sup>	<b>USP</b> <35 <sup>5</sup>	<b>F</b> <110 <sup>5</sup>	<b>P</b> 500 to 1000 <sup>5,6</sup>
Repetition Rate <sup>7</sup> (kHz)			1,5 or 10	
Contrast Ratio <sup>8</sup>				
Pre-pulse			>1000:1	
Post-pulse			>100:1	
Power Stability <sup>9,10</sup> (%) (rms)			<0.5	
Beam Pointing Stability <sup>9,10</sup> (μrad) (rms)			<10	
Spatial Mode			TEM <sub>00</sub> , M <sup>2</sup> <1.3	
Polarization			Linear, horizontal	
Pump Configuration				
Pump Laser <sup>11</sup>	<b>-I</b> REVOLUTION-20	<b>-II</b> REVOLUTION-50	<b>-III</b> REVOLUTION-65	
Energy per Pulse (mJ)	>1.5 at 1 kHz >0.3 at 5 kHz >0.15 at 10 kHz	>5.0 at 1 kHz >1.0 at 5 kHz >0.45 at 10 kHz	>7.0 at 1 kHz >1.6 at 5 kHz >0.7 at 10 kHz	

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

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

<sup>3</sup> 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).

<sup>4</sup> Not available in -I configuration, limited to 4 mJ in -II and 5 mJ in -III configurations.

<sup>5</sup> 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).

<sup>6</sup> Limited to 6 mJ in -III configuration. For longer pulse width, please contact factory.

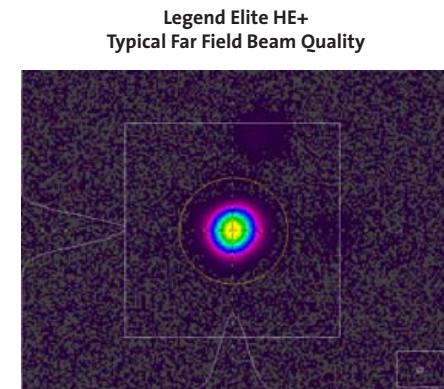
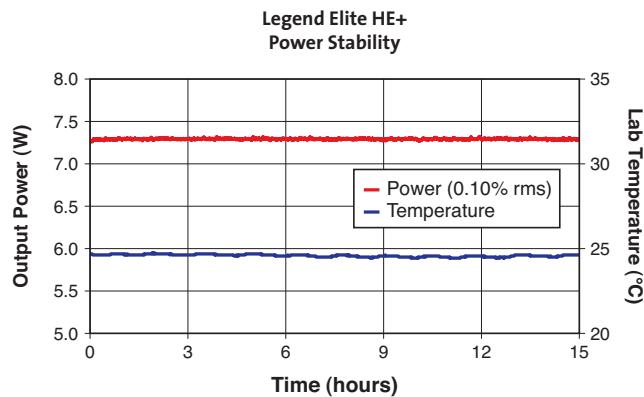
<sup>7</sup> Repetition rate must be specified when ordered and will be optimized prior to shipment. Options for more than one repetition rate available. Please contact factory for other repetition rates.

<sup>8</sup> 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.

<sup>9</sup> Under stable environmental conditions.

<sup>10</sup> Over 24 hours.

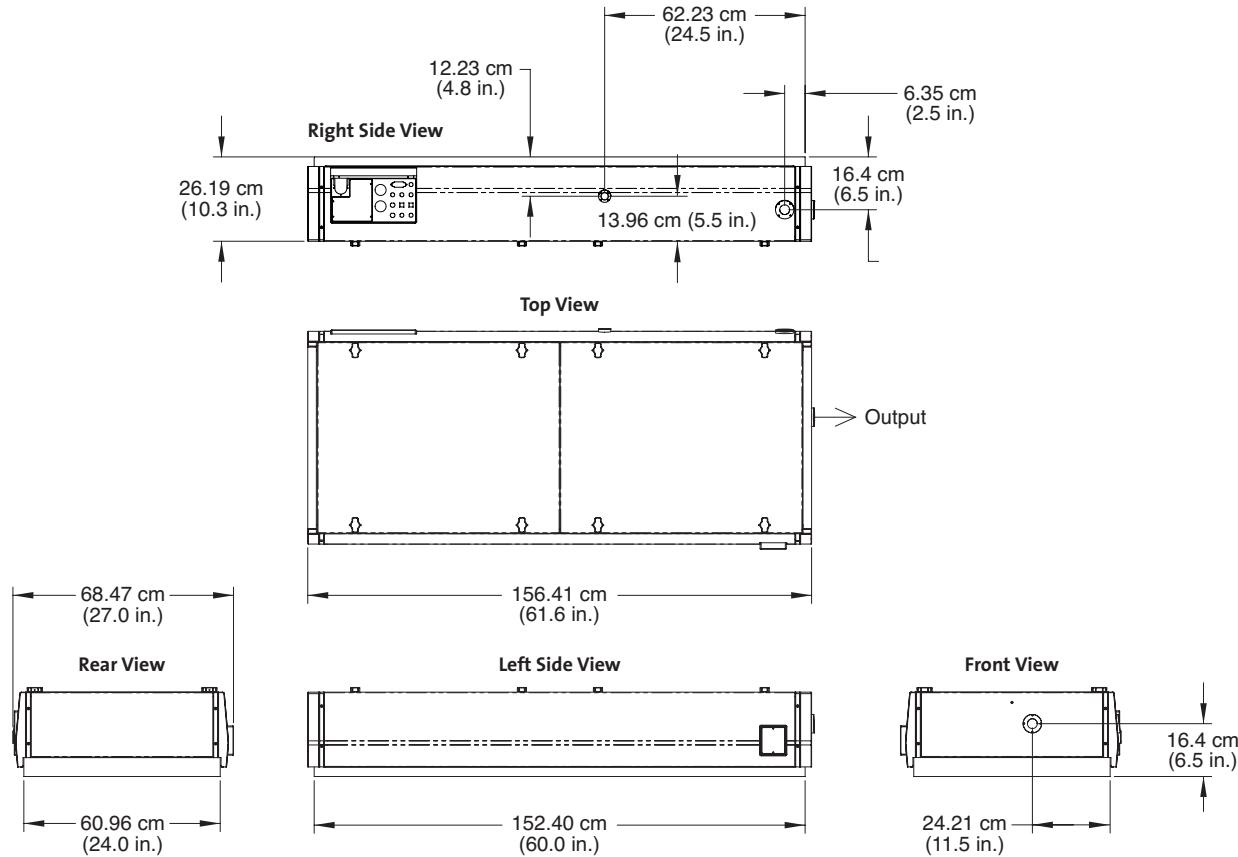
<sup>11</sup> Sold separately.



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## Mechanical Specifications



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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 HE+ Ti:S amplifiers. For full details of this warranty coverage, please refer to the Service section at [www.Cohere nt.com](http://www.Cohere nt.com) or contact your local Sales or Service Representative.

