

Legend Elite Duo Series

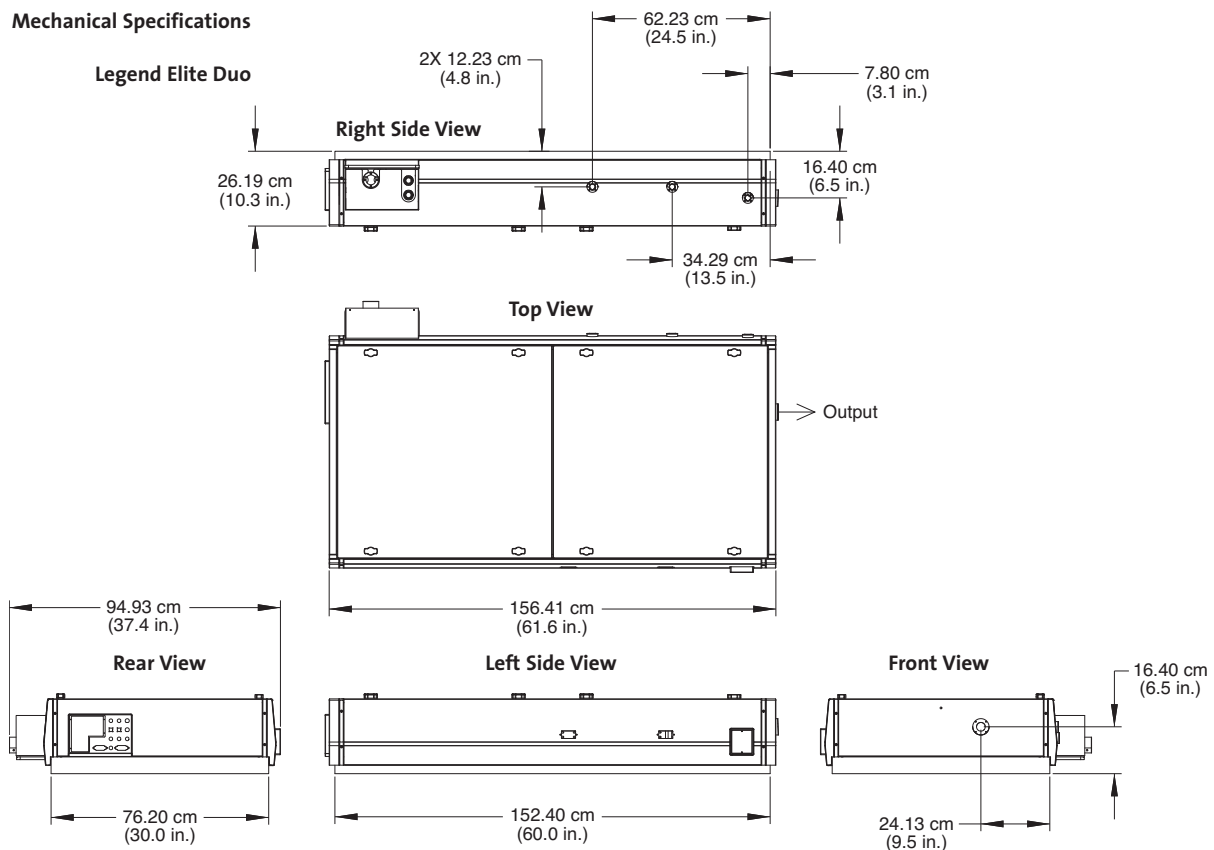
High-Power Ti:Sapphire Amplifiers

Features

- High energy, high efficiency system design (to >10 mJ, >15W)
- Integrated Evolution pump laser
- Thermally stabilized E-2 Engine regenerative amplifier platform
- One, single-pass, TE-cooled power amplifier
- High reliability, high contrast ratio optical design
- Unsurpassed stability – energy, pointing, pulse width
- Pulse widths from <25 fs to 2 ps
- Repetition rates to 1, 5, 10 kHz (user adjustable) high power models
- Multiple upgrade paths up to >15 mJ, >20W



Mechanical Specifications



Superior Reliability & Performance

Legend™ Elite Duo Series

High-Power Ti:Sapphire Amplifiers

System Specifications

| Legend Elite Duo | Duo-F | Duo-F-HP | |
|--|--|--|---|
| Center Wavelength (nm)(nominal) | 800 | 800 | |
| Tunability ¹ (nm) | 770 to 845 | 770 to 845 | |
| Repetition Rate ² (kHz) | 1 or 5 | 1, 5 or 10 | |
| Pulse Duration (fs)(FWHM) | <130 ³ | <130 ³ | |
| Energy-per-Pulse (mJ) | >7.5 at 1 kHz >1.5 at 5 kHz | >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 |
| Contrast Ratio ⁶ | >1000:1 pre-pulse >100:1 post-pulse | >1000:1 pre-pulse >100:1 post-pulse | |
| Energy Stability ⁷ (rms)(8 hours) | <0.75% | <0.75% | |
| Spatial Mode | TEM ₀₀ , M ² <1.35 | TEM ₀₀ , M ² <1.5 | |
| Polarization | linear, horizontal | linear, horizontal | |
| Pump Laser | Evolution-HE | Evolution-HE | Evolution-HE plus Evolution-30 ⁸ |

¹ The system is tunable without an optics change (seed laser must be tuned). Please contact factory for other wavelengths.

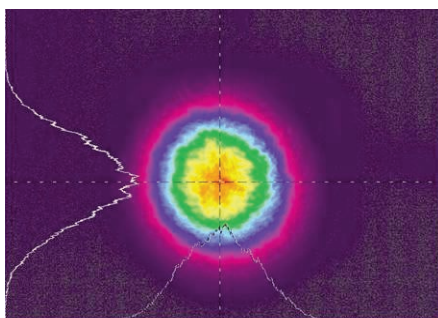
² Contact factory for other repetition rates. Repetition rate must be specified when ordered and will be optimized prior to shipment.

³ When seeded by Micra, Mantis, Mira or Vitesse. For other seed lasers please contact factory. A gaussian pulse shape de-convolution factor (0.7) is used to determine the pulse width from an autocorrelation signal measured by a Coherent SSA (Single Shot Autocorrelator).

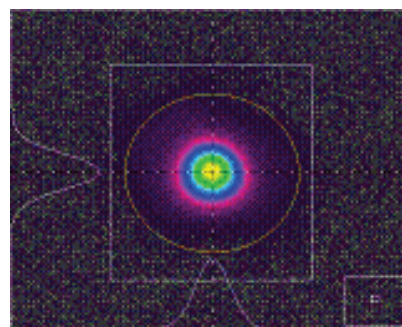
⁴ When seeded by Micra or Mantis. For other seed lasers please contact factory. A gaussian pulse shape de-convolution factor (0.7) is used to determine the pulse width from an autocorrelation signal measured by a Coherent SSA (Single Shot Autocorrelator).

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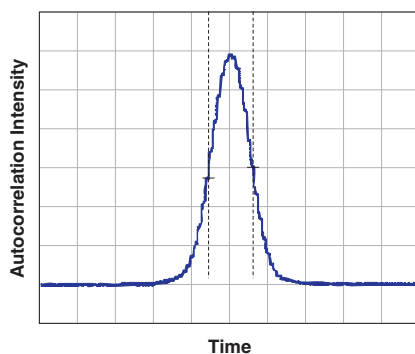
Near-Field Beam Profile (Duo-USP)



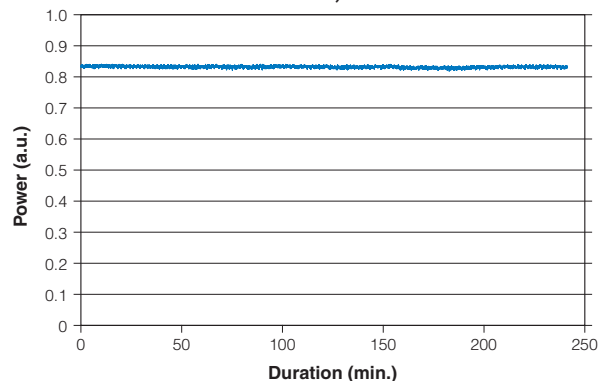
Far-Field Beam Profile (Duo-USP-HP)



Typical Pulse Width ~23 fs (Duo-USX)



THG (266 nm) Power Stability (Duo-USP)
0.35% rms, >4 hours



Legend™ Elite Duo Series High-Power Ti:Sapphire Amplifiers

| Duo-USP | | Duo-USP-HP | | Duo-USX | | Duo-USX-HP | |
|--|--|---|--|---|--|---|--|
| 800 | | 800 | | 800 | | 800 | |
| - | | - | | - | | - | |
| 1 or 5 | | 1, 5 or 10 | | 1 or 5 | | 1, 5 or 10 | |
| <40 ⁴ | | <40 ⁴ | | <25 ⁵ | | <25 ⁵ | |
| >7.5 at 1 kHz >1.5 at 5 kHz | | >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 | | >5.0 at 1 kHz >1.0 at 5 kHz | |
| >1000:1 pre-pulse >100:1 post-pulse | | >1000:1 pre-pulse >100:1 post-pulse | | >1000:1 pre-pulse >100:1 post-pulse | | >1000:1 pre-pulse >100:1 post-pulse | |
| <0.75% | | <0.75% | | <0.75% | | <0.75% | |
| TEM ₀₀ , M ² <1.35 | | TEM ₀₀ , M ² <1.5 | | TEM ₀₀ , M ² <1.35 | | TEM ₀₀ , M ² <1.5 | |
| linear, horizontal | | linear, horizontal | | linear, horizontal | | linear, horizontal | |
| Evolution-HE | | Evolution-HE Evolution-HE plus Evolution-30 ⁸ | | Evolution-HE | | Evolution-HE Evolution-HE plus Evolution-30 ⁸ | |

⁵ When seeded by Micra. An FFT of the pulse spectrum is used to calculate the transform limited pulse width and a de-convolution factor which is then used to determine the pulse width from an autocorrelator signal measured by a Coherent SSA (Single-Shot Autocorrelator).

⁶ 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 1ns before or after the output pulse.

⁷ Under stable environmental conditions.

⁸ Evolution-30 mounted external to amplifier enclosure.

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 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.



www.Coherent.com

Coherent, Inc.
5100 Patrick Henry Drive
Santa Clara, CA 95054
phone (800) 527-3786
(408) 764-4983
fax (408) 764-4646
e-mail tech.sales@Coherent.com

Benelux +31 (30) 280 6060
China +86 (10) 6280 0209
France +33 (0)1 6985 5145
Germany +49 (6071) 968 333
Italy +39 (02) 34 530 214
Japan +81 (3) 5635 8700
Korea +82 (2) 460 7900
UK +44 (1353) 658 833

