Element™

SEALED, BROAD BANDWIDTH ULTRAFAST OSCILLATORS

Element™ is a single box, hands-free ultrafast oscillator which features state-of-the-art parameters and the highest stability commercially available. The femtosecond oscillator is based on a low threshold Ti:Sapphire cavity powered by an integrated Millennia® eV™ solid state green laser. Active feedback loops, in combination with the compact and robust design, enable output parameters of unprecedented quality, stability and reproducibility.

Element's various models span a broad range of pulse durations (10–100 fs) and average powers up to 1.5 W. For applications that require parameters not covered by the standard versions, we will work with you on your custom-tailored system.

Ultrashort Pulses

Element employs the Femtolasers' patented Dispersive Mirror (DM) technology for precise intracavity dispersion management. The addition of an Extra Cavity Dispersion Control (ECDC) unit guarantees high quality, outstanding peak power and true ultrafast pulses with extraordinary spectro-temporal characteristics for your application.

Stability and Reliability

Drawing on the compact and sturdy DM resonator, sealed cavity and active stabilization of system parameters, Element's dispersion management is virtually insensitive to cavity alignment, resulting in excellent laser output stability and day-to-day reproducibility.

Element offers ultimate laser performance for everyday use in industrial, medical or scientific environment.

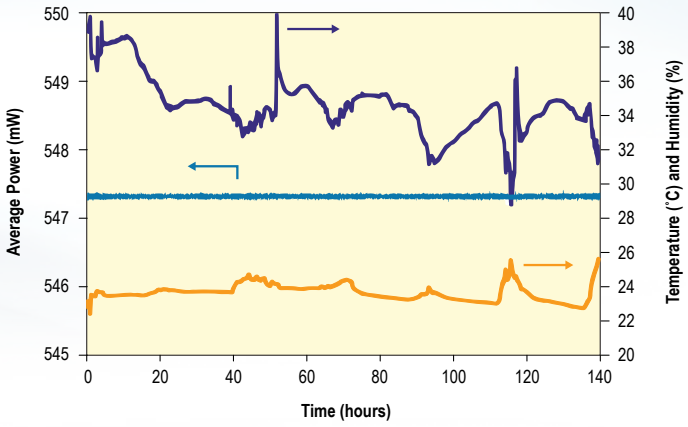
The Element Advantage

- *Ultrashort pulses and MW-level peak power*
- *Ultra low noise*
- *Superior power stability*
- *Hands-free operation; sealed cavity*
- *Active system parameter stabilization*
- *Integrated diagnostics*
- *Accurate repetition rate stabilization (Femtolock™ option)*
- *SHG, fiber delivery and OCT-MPM modules available*

Applications

- *Amplifier seeding*
- *THz generation*
- *Multiphoton microscopy*
- *Time-resolved spectroscopy*
- *Materials processing*
- *Thin-film metrology*

Element PRO Power Stability[1]



Element average power (blue) shows impressive long term stability of 0.004% rms and ±0.02% peak-to-peak over 140 hours in a non-stabilized environment. Relative humidity (purple); temperature (orange).

1. Typical performance; not a guaranteed or warranted specification.

Spectra-Physics®
A Newport Company

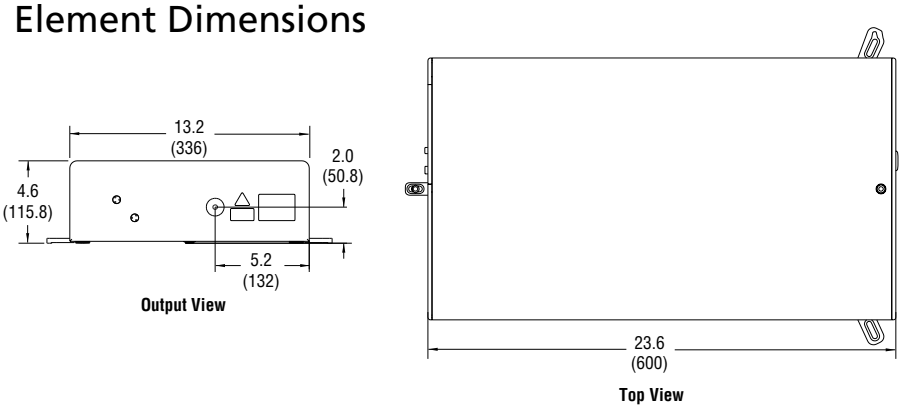
Element™

Specifications[1,2,5]

	Element PRO		Element 20		Element 50		Element 100	
Pulse Duration	<10 fs		<20 fs		<50 fs		<100 fs	
Bandwidth (FWHM)	>100 nm		>40 nm		>15 nm		>10 nm	
Average Power	>600 mW	>1000 mW	>600 mW	>1200 mW	>600 mW	>1200 mW	>800 mW	>1500 mW
Pulse Energy	>7 nJ	>11.7 nJ	>7 nJ	>14.1 nJ	>7 nJ	>14.1 nJ	>9.4 nJ	>17.6 nJ
Peak Power	>700 kW	>1100 kW	>350 kW	>700 kW	>140 kW	>280 kW	>70 kW	>176 kW
Central Wavelength[3] (standard)	800 nm ±10 nm							
Repetition Rate[3] (standard)	85 MHz							
Noise (1 Hz–100 kHz)	<0.05% rms							
Power Stability[4] (peak-to-peak)	±0.05 %							
Beam Diameter (1/e²)	<2 mm							
Beam Divergence	<2 mrad							
M^2	<1.3							
Polarization	>100:1 (horizontal)							
Femtolock 2	Optional							

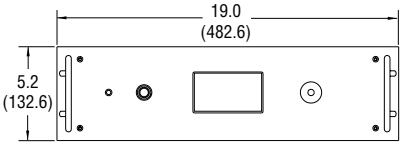
1. Due to our continuous product improvement program, specifications may change without notice.
2. Specifications apply to standard wavelength and standard repetition rate.
3. For other values, please contact Spectra-Physics.
4. Measured over 24 hours at constant environmental conditions.
5. The Element is a Class IV – High Power Laser, whose beam is, by definition, a safety and fire hazard. Take precautions to prevent exposure to direct and reflected beams. Diffuse as well as specular reflections can cause severe skin damage.

Element Dimensions



Dimensions in inch (mm)

User Interface Dimensions



Dimensions in inch (mm)

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