

Vanguard™ One™

Mode-Locked Quasi-CW Lasers



The Spectra-Physics Vanguard One UV125 is a compact, all-in-one, quasi-CW laser delivering >125 mW of UV power. The new laser operates air-cooled with low noise of <1% rms and delivers a long-operating life and low cost of ownership. Vanguard One is ideal for applications in bio-instrumentation, including flow cytometry, microscopy, cell sorting, and semiconductor wafer inspection.

Based on the highly successful Vanguard laser family, Vanguard One UV125 is an all-in-one laser, combining electronics, laser cavity, and cooling in a single housing for easy integration and bench-top tools. The quasi-CW

operation ensures high fluorescence signal-to-noise ratio while preventing cell damage in bio-instrumentation. The laser firmware enables closed-loop power control, ensuring long-term stability with less than 2% power variation for consistent measurement results. Vanguard One lasers pass extensive environmental qualification testing to deliver high reliability and low cost-of-ownership needed for bio-instrumentation and demanding industrial applications.

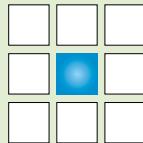
The Vanguard One Advantage

- Low noise quasi-cw output of <1% rms
- Air-cooled design with <100 W heat dissipation
- Excellent beam quality $M^2 < 1.2$
- Durable, reliable, and rugged
- Compact all-in-one design
- Closed-loop power control



Applications

- Flow Cytometry
- Cell Sorting
- Wafer Inspection
- Electron Microscopy
- Confocal Microscopy
- Laser-induced Fluorescence



It's in the Box™

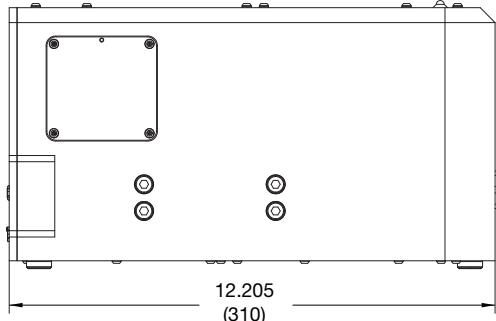
Vanguard One Specifications^{1, 2}

Vanguard One UV125	
Output Characteristics	
Wavelength	355 \pm 1 nm
Power	125 mW
Repetition Rate	80 \pm 2 MHz
Average Power Stability	<2%
Pulse Energy Noise	<1% rms
Beam Pointing Stability	<25 μ rad/°C
Polarization Ratio	>100:1
Beam Parameter	
Beam Quality (M ²)	<1.2 TEM ₀₀
Circularity	0.8–1.2
Beam Diameter (1/e ²)	1 \pm 0.2 mm
Beam Divergence	<1 mrad
Dimensions	
Laser Head (L x W x H)	313 x 259 x 169 mm
Cooling	
Ambient Temperature	20–27°C
Cooling	Air
Heat Dissipation Maximum	160 W (typical 100 W)

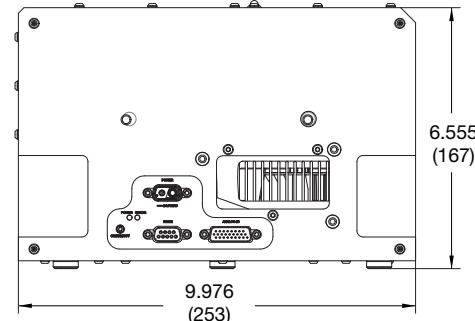
1. Due to our continuous product improvement program, specifications may change without notice.

2. Vanguard One is a Class IV - High-Power Laser, whose beam is, by definition, a safety and fire hazard. Take precautions to prevent exposure to the direct and reflected beams. Diffuse as well as specular reflections can cause severe skin or eye damage.

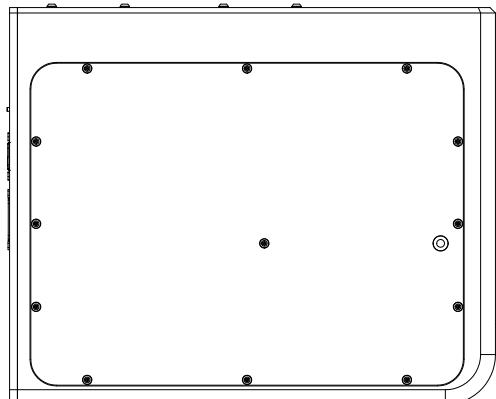
Vanguard One Dimensional Drawing



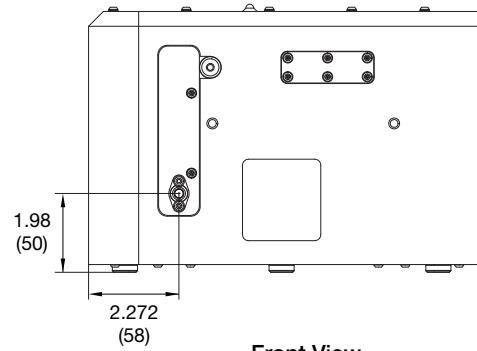
Side View



Back View



Top View



Front View

Dimensions in inch (mm)

Vanguard One Laser Dimensions