Sales and Service Contact: Laser Innovations 805.933.0015
1150 E. Main ST, Santa Paula, CA 93060 337nm.com

VSL Series

Nitrogen Lasers and 350–950 nm Dye Laser Accessories

Spectra-Physics VSL337 Nitrogen Laser

The VSL Nitrogen Laser Advantage

- 337 nm UV pulses for MALDI mass spectrometry
- Up to 260 μJ for use in a wide range of applications
- Simple operation with no alignment necessary
- Sealed plasma cartridge with no flowing or external gas connections required
- Field-replaceable plasma cartridge lowers total cost of ownership
- Built-in adjustable trigger rate and external trigger input adds versatility
- Low EMI versions available for noise-sensitive measurements
- Available diffraction-limited beam focuses to spots under 3 μm
- Easy integration with a variety of dye lasers with simple tunability from 350 nm to 950 nm

The nitrogen laser is the most economical source of high-peak-power UV laser light available. The Spectra-Physics VSL nitrogen laser series also provides a hard-to-find wavelength range for researchers with ever-changing requirements and for manufacturers with needs for consistent power and convenient operation.

Designed for constant pulse shape and a good pulse-to-pulse stability, Spectra-Physics nitrogen lasers suit the needs of both OEM and research applications. A user-replaceable plasma cartridge regenerates like-new performance at end of life for a fraction of the original laser cost and a lower cost of service.

The Spectra-Physics VSL nitrogen lasers produce 337 nm wavelengths and 4 ns pulse lengths. For more flexibility, the pulse repetition rate may be triggered with an internal adjustable frequency generator, or with an external TTL signal.

VSL337ND-S Laser

The Spectra-Physics VSL337ND-S is a versatile laser providing up to 260 μJ pulses at up to 30 Hz continuously, and in bursts of up to 60 Hz. The output is near-diffraction-limited and produces a collimated beam than can be focused to a <3 μm diameter spot with an energy density of 4.5 kJ/cm^2 for precise micro-dissection. It comes with a burst-mode input for gating the trigger signal, plus a sync-signal output. For precise timing requirements, it has an OptoSync TTL output derived from the detected laser pulse itself, with sub-nanosecond jitter. The VSL337ND-S laser may be used with one of the dye laser accessories from the Spectra-Physics DUO family for IR to UV tunable output.

VSL337 Laser

For more modest energy requirements with simple triggering needs, the Spectra-Physics VSL337 provides 120 μJ pulses at up to 20 Hz continuously. Its low energy consumption enables operation from either an external 12 V battery, or with the supplied external voltage adapter, making it ideal for field applications. The VSL337 may also be used with one of the Spectra-Physics DYE family lasers for IR to UV tunable output.

Applications

- MALDI mass spectrometry
- Laser-induced fluorescence
- Cell ablation and micro-dissection
- Medical diagnostics
- Materials research
- Manufacturing

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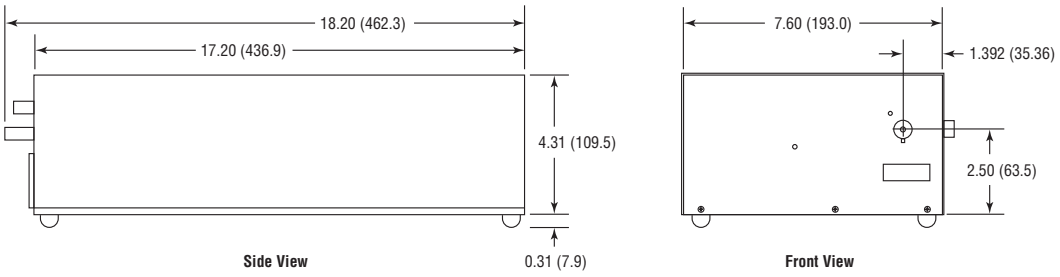
Nitrogen Laser Specifications

Output Characteristics	VSL337ND-S	VSL337
Wavelength	337.1 nm	337.1 nm
Spectral Bandwidth	0.1 nm	0.1 nm
Repetition Rate	<1–30 Hz, up to 60 Hz burst mode	Up to 20 Hz
Pulse Width, FWHM	<4 ns	<4 ns
Pulse Energy	260 μJ at 10 Hz	120 μJ at 10 Hz
Pulse-to-Pulse Energy Stability	<4.5% standard deviation typical	<4.5% standard deviation typical
Peak Power	75 kW	30 kW
Average Power	6 mW at 20 Hz	2.4 mW at 20 Hz
Beam Size	8 x 8 mm typical	3 x 7 mm typical
Beam Divergence, full angle	0.5 mrad typical	3 x 8 mrad
Electrical Characteristics		
External Trigger	TTL	TTL
Trigger In to Optical Pulse Out	1000 ns delay nominal ≤90 ns standard deviation jitter	1000 ns delay nominal ≤40 ns standard deviation jitter
Power Consumption	150 W at 10 Hz	15 W at 10 Hz
Optosync Output	TTL 50 ohms	N/A
Optical Pulse to Optosync Delay	50 ns delay <500 ps standard deviation jitter	N/A
Burst Input	TTL, high = disabled	N/A
Equipment Requirements		
Air Flow Requirements	12 CFM (internal fan)	None
Voltage	110 or 220 VAC (universal input)	110 or 220 VAC using external supply +12 VDC using direct voltage
Current	1.5 A @ 110 VAC; 1.0 A @ 220 VAC	1.6 A average 3.2 A peak at 20 Hz (12 VDC)
Frequency	50/60 Hz	50/60 Hz for external supply
Phase	Single	Single
Temperature Range	4–40°C (40–105°F)	4–40°C (40–105°F)
Humidity, non-condensing	0–95%	0–95%
Altitude	0–3000 m (0–9800 ft)	0–3000 m (0–9800 ft)
Other		
Dimensions (L x W x H)	463 x 193 x 117 mm (18.2 x 7.6 x 4.6 in)	270 x 117 x 69 mm (10.6 x 4.6 x 2.7 in)
Weight	7.3 kg (16 lb)	2.3 kg (5 lb)
Certificates	CDRH CE Mark	CDRH
Warranty	>185 μJ through first of 1 year or 20 million pulses	>85 μJ through first of 1 year or 20 million pulses
Laser Safety Classification	3B (400 μJ maximum)	3B (400 μJ maximum)

VSL337ND-S Laser



Dimensions in inches (mm)

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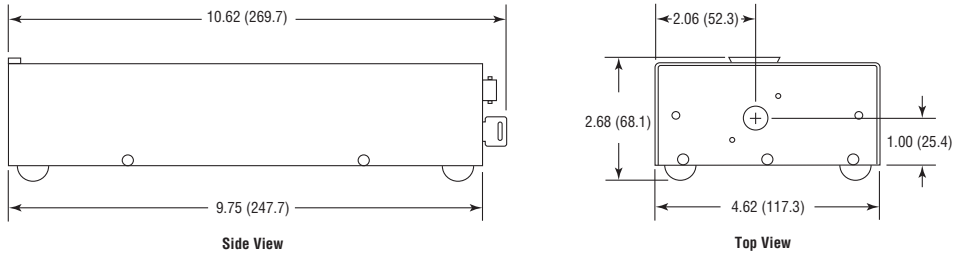
VSL337 Laser



Dimensions in inches (mm)

Accessories for the VSL Family of Nitrogen Lasers

The Spectra-Physics DUO and DYE families of dye lasers are designed to be optically pumped by one of the VSL family of nitrogen lasers. These dye lasers produce a tunable, polarized output from about 360 to 950 nm, depending on the chosen dye and the laser model.

The accompanying chart shows typical wavelength versus relative output energy for various dyes. All dye laser accessories come with a cuvette for holding the dye solution in the pump chamber, but the dye itself must be ordered separately from Exciton.

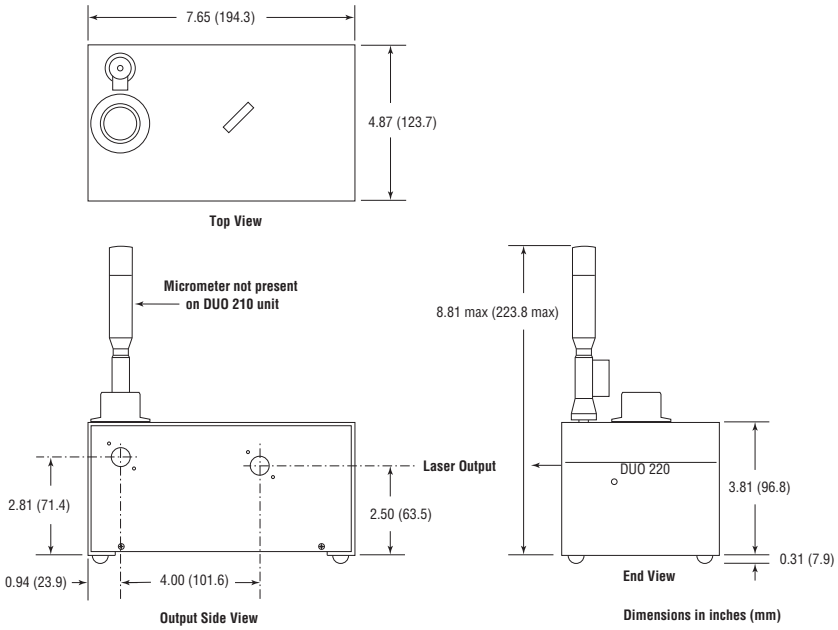
In addition, the DUO series has dual-beam exit ports and a six-position beam-selector wheel that can hold one-inch optical components. This allows the nitrogen laser beam to bypass the dye laser pump chamber, be directed completely into the pump chamber, or split to provide both the dye laser output and some of the pump beam. The DUO series also includes a magnetic stirrer for agitating the dye solution in the cuvette.

VSL337ND-S nitrogen laser with DUO 220 dye laser accessory

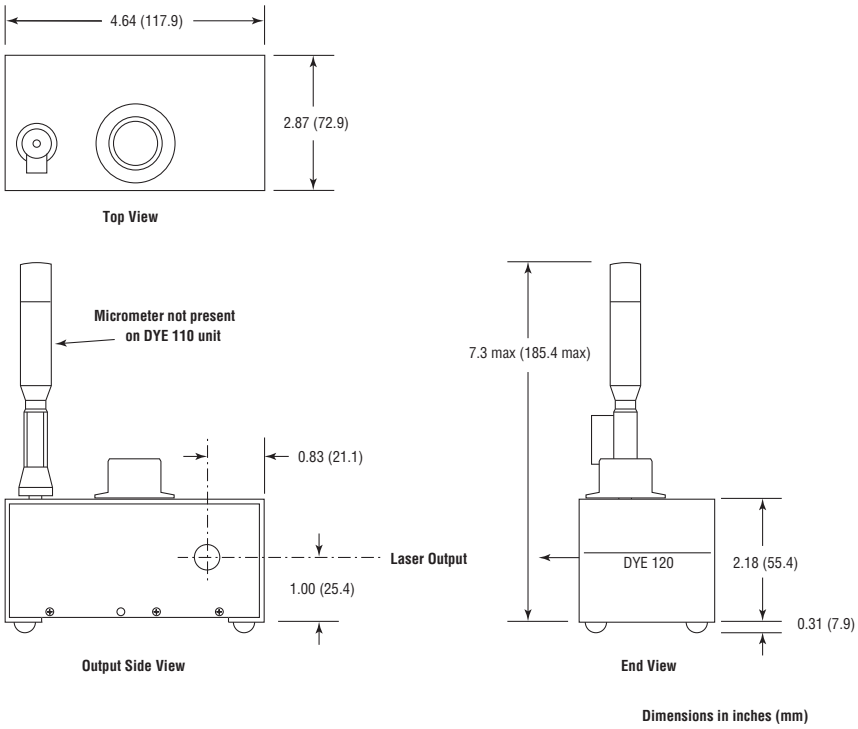
Accessories Specifications

Output Characteristics	Tunable Visible Output	Tunable IR Output	Fixed Output
Spectral Range	360–700 nm	600–950 nm	360–950 nm
Spectral Bandwidth	0.3 nm	0.6 nm	3–10 nm
Beam Size	2 x 3 mm	2 x 3 mm	2 x 3 mm
Beam Divergence, full angle	4 mrad	4 mrad	4 mrad
Pulse-to-Pulse Energy Stability	6% standard deviation	6% standard deviation	6% standard deviation
Dye Laser Model Pumped with VSL337ND-S	**DUO 220**	**DUO 221**	**DUO 210**
Pulse Energy	>70 μJ at 500 nm	>25 μJ at 800 nm	>90 μJ at 500 nm
Peak Power	>18 kW at 500 nm	>6 kW at 800 nm	>22 kW at 500 nm
Average Power	>1.4 mW at 500 nm	>0.5 mW at 800 nm	>1.8 mW at 500 nm
Dye Laser Model Pumped with VSL337	**DYE 120**	**DYE 121**	**DYE 110**
Pulse Energy	>25 μJ at 500 nm	>10 μJ at 800 nm	>40 μJ at 500 nm
Peak Power	7.0 kW at 500 nm	2.5 kW at 800 nm	10 kW at 500 nm
Average Power	0.56 mW at 500 nm	0.2 mW at 800 nm	0.8 mW at 500 nm

DUO Laser



DYE Laser



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