Explorer®

Reliable IR DPSS Lasers

mks | Spectra-Physics®

The Spectra-Physics Explorer 1064 nm laser delivers reliability and versatility in a compact footprint through its innovative diode-pumped solid state architecture. The Explorer laser is easy to use and supplies excellent mode quality. Its nearly diffraction-limited TEM_{00} output beam allows for tight focusing and high spatial resolution. High reliability, high repetition rate, Gaussian beam parameters and superior pulse-to-pulse stability make the Explorer laser the ultimate economic solution for demanding applications.

The Explorer 1064 nm Vanadate-based (Nd:YVO4) laser provides more than 2.5 W power and is targeted for memory repair, selective ablation in thin film processes and marking applications.

The Explorer's compact laser head and state-of-the-art power supply deliver exceptional versatility. Customers can interface with the Explorer L-Series power supply either through RS 232 software interface or via analog TTL control signals. Advanced circuitry measures single pulse energies or average output power. This extensive pulse monitoring enables Burst Mode and First-Pulse Suppression, allowing pulse bursts with constant energies.

Sophisticated software algorithms and supporting multiple software command sets ensure straight forward product integration. Finally, the Explorer system's rugged design enables integrating the compact laser head into a motion control system to simplify complex optical layouts.

The Explorer Advantage

- Proven rugged industrial design
- Compact and versatile DPSS platform
- High-speed processing with up to 150 kHz pulse repetition frequencies
- Short pulse width and high peak power – ideal for micromachining applications
- TEM_{00} beam quality M^2 <1.3
- Excellent pulse to pulse stability; pulse energy noise <3%
- Feature rich software functions

Applications

- MALDI mass spectrometry
- Laser microdissection
- Micromachining
- Memory repair
- Si wafer marking
- Selective ablation in thin film photovoltaic
- Laser-induced breakdown spectroscopy

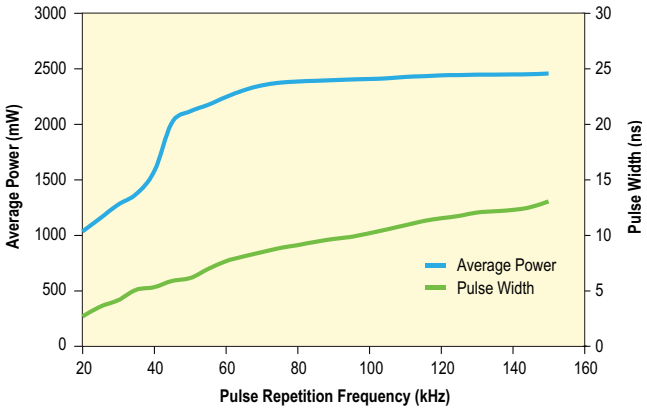
Explorer Specifications[1]

	Explorer 1064-3
Output Characteristics	
Wavelength	1064 nm
Gain Medium	Nd:YVO_4
Pulse Energy[2, 3]	50 µJ
Output Power[2]	>2.5 W
Pulse Width (FWHM)	<12 ns
Pulse-to-Pulse Stability (1 σ, absolute value)	<2%
Long Term Stability (rms)	<2%
Repetition Rate	Single shot to 150 kHz
Spatial Mode	M^2 <1.3, TEM_{00}
Beam Diameter, at waist ($1/e^2$)	0.28 mm ±10%
Beam Divergence, full angle ($1/e^2$)	6 mrad ±10%
Warm-up Time (cold start to >95% full power)	<10 min
Polarization Ratio	>100:1 (vertical)
Operating Voltage	24 VDC ±2 V
Maximum Inrush Current	<4 A
Maximum Power Consumption	<75 W
Typical Power Consumption	<50 W at 25°C
Laser Head Thermal Heat Dissipation	<50 W
Operating Temperature	
Laser Head	18–35°C (<80% relative humidity)
Power Supply	18–35°C (<80% relative humidity)
Storage Temperature Range	-20 to 60 °C (<90% relative humidity, non-condensing)
Dimensions (L x W x H)	24 VDC ±2 V
Laser Head	6.50 x 3.74 x 2.13 in (165 x 95 x 54 mm)
Power Supply	6.46 x 5.12 x 2.56 in (164 x 130 x 66 mm)
Cable–Laser Head	2 m; up to 8 m flex cable available upon request
Static Alignment Tolerance	
Beam Position	<±0.25 mm
Beam Angle	<±1 mrad

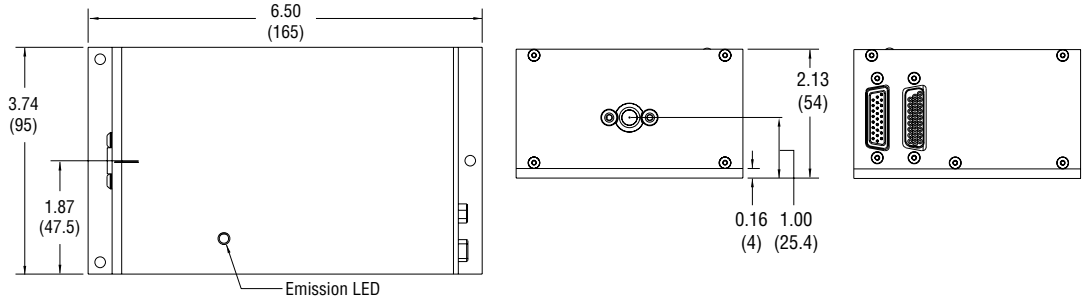
1. Due to our continuous product improvement program, specifications may change without notice.
2. Repetition rate at 100 kHz.
3. Maximum power energy up to 50 µJ from single shot to 30 kHz.

Explorer

Explorer 1064-3 Performance[1]

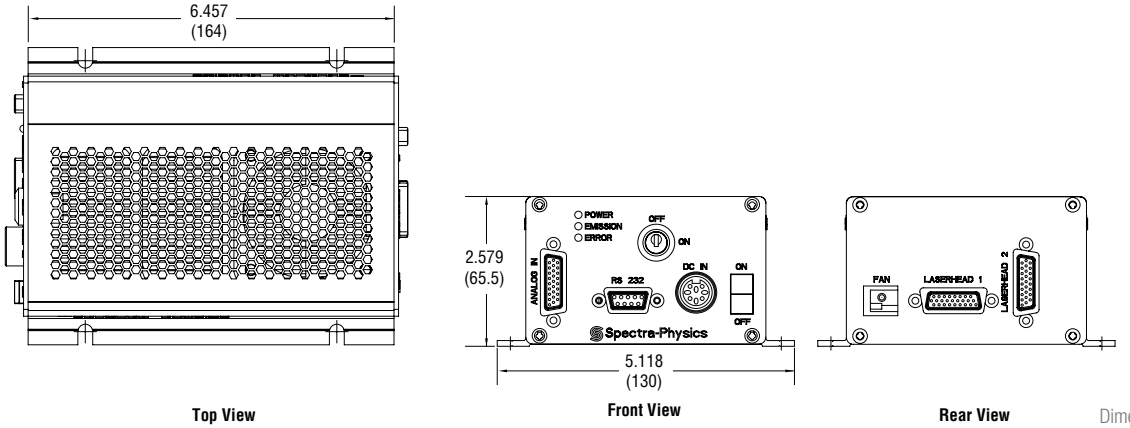


1. Typically measured performance; not a guaranteed or warranted specification.



Dimensions in inch (mm)

Explorer OEM Laser Head



Dimensions in inch (mm)

Explorer Power Supply

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