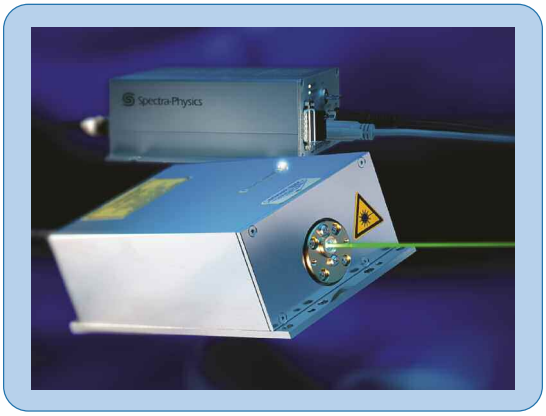
# Explorer®

## RELIABLE UV, GREEN, AND IR DPSS LASERS




### The Explorer Advantage

- Proven rugged industrial design for hands-off operation
- 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%
- Individual pulse energy measurements up to 60 kHz
- Integrated E-Pulse, BURST-Mode and First-Pulse-Suppression
- RS 232 or TTL interface
- Highly reliable fiber coupled single emitter technology integrated into laser head

Spectra-Physics
A Newport Corporation Brand

The Spectra-Physics Explorer® 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 family uses three different types of gain medium. Nd:YLF is the active laser gain medium of choice for applications that rely on high pulse energy and high pulse peak power at low repetition rates. The Explorer 532-2Y uses Nd:YAG as active laser gain medium to generate very high pulse energy values in the range of 5–30 kHz. The Explorer Vanadate ($Nd:YVO_4$) models are used in applications that rely on high average power in high throughput applications.

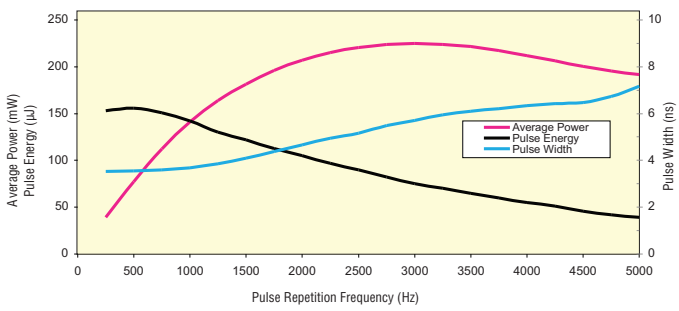
The Explorer's compact laser head and state-of-the-art power supply deliver exceptional versatility. Customers can interface with the Explorer L-Series power supply either through RS 232 software interface or via analog TTL control signals. Advanced circuitry measures single pulse energies or average output power. This extensive pulse monitoring enables BURST-Mode and First-Pulse Suppression, allowing pulse bursts with constant energies. In addition the E-Pulse™ feature provides constant pulse energy while applying random external trigger pulses. 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.

### APPLICATIONS

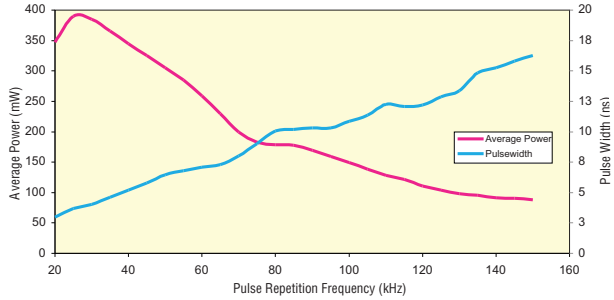
- MALDI mass spectrometry
- Laser microdissection
- Micromachining
- Stereolithography
- Memory repair
- UV titling
- ITO patterning
- Intra-glass or glass surface marking
- Glass drilling
- Si wafer marking
- Selective ablation in thin film photovoltaic
- Laser-induced breakdown spectroscopy

# Explorer®

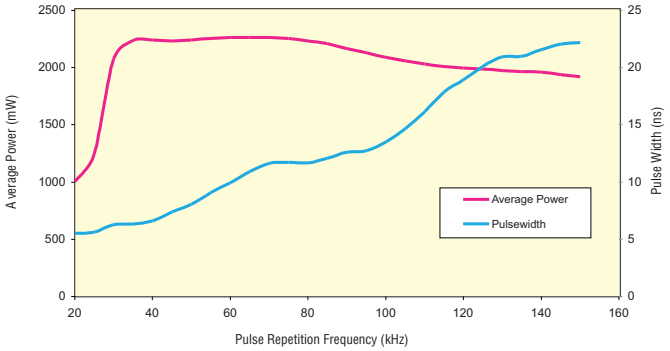
## Explorer 349-120 Performance



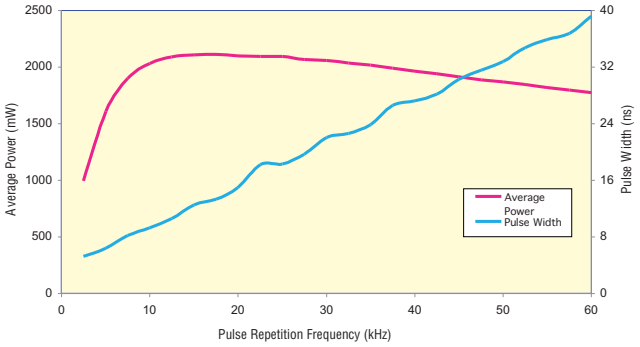

## Explorer 355-300 Performance



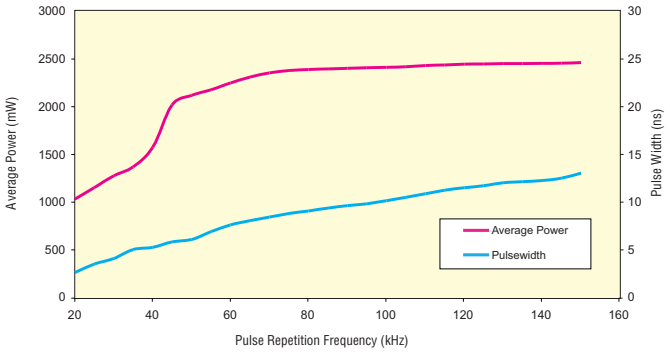

## Explorer 532-2 Performance

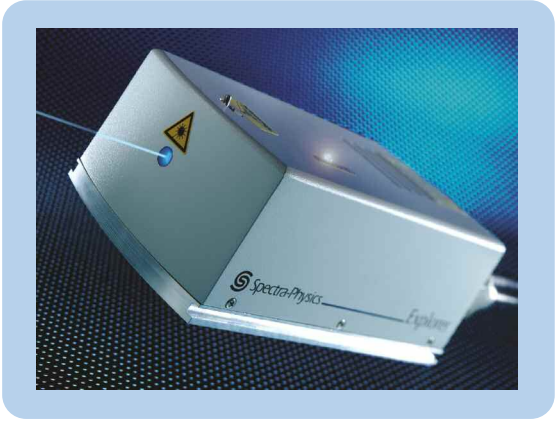



## Explorer 532-2Y Performance




## Explorer 1064-3 Performance



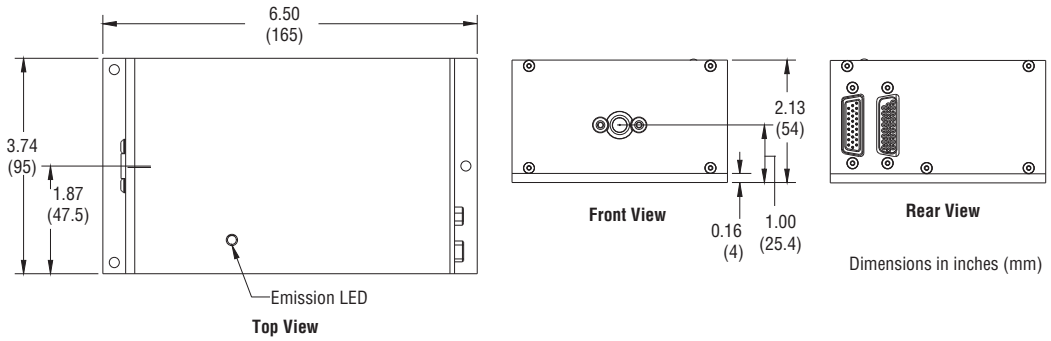



## Specifications[1]

| | Explorer 349 | Explorer 355 | Explorer 532-1 | Explorer 532-2 | Explorer 532-2Y | Explorer 1064-3 |
|---|---|---|---|---|---|---|
| Wavelength | 349 nm | 355 nm | 532 nm | 532 nm | 532 nm | 1064 nm |
| Gain Medium | Nd:YLF | Nd:$YVO_4$ | Nd:$YVO_4$ | Nd:$YVO_4$ | Nd:YAG | Nd:$VYO_4$ |
| Pulse Energy[2, 5, 6] | 60 μJ or 120 μJ | — | — | — | 200 μJ | 50 μJ |
| Output Power[3, 4, 5] | — | 300 mW | 1 W | >2 W | >2 W | >2.5 W |
| Pulse Width (FWHM) | <5 ns | <10 ns at 50 kHz | <20 ns | <15 ns | <12 ns | <12 ns |
| Pulse-to-Pulse Stability (1 σ, absolute value)[2, 3, 4, 5] | <3% | <4% | <3% | <3% | <3% | <2% |
| Long Term Stability (rms) | <2% | | | | | |
| Repetition Rate | Single shot to 5 kHz | 20–150 kHz | 20–150 kHz | 20–150 kHz | Single shot to 60 kHz | Single shot to 150 kHz |
| Jitter (Laser Pulse to OptoSync) | <±0.5 ns | — | — | — | — | — |
| Spatial Mode | $M^2$ <1.3, $TEM_{00}$ | | | | | |
| Beam Diameter, at waist ($1/e^2$) | 0.175 mm ±10% (X)<br>0.150 mm ±10% (Y)<br>0.140 mm ±10% (Y)[7] | 0.18 mm ±10% | 0.21 mm ±10% | 0.21 mm ±10% | 0.185 mm ±10% | 0.28 mm ±10% |
| Beam Divergence, full angle ($1/e^2$) | <3.5 mrad ±10%<br><3.7 mrad ±10%[7] | <3 mrad ±10% | 3.6 mrad ±10% | 3.6 mrad ±10% | 3.8 mrad ±10% | 6 mrad ±10% |
| Warm-up Time (cold start to >95% full power) | <10 min | | | | | |
| Polarization Ratio | >100:1 (vertical) | >100:1 (vertical) | >100:1 (horizontal) | >100:1 (horizontal) | >100:1 (horizontal) | >100:1 (vertical) |
| Operating Voltage | 24 VDC ±2 V | | | | | |
| Maximum Inrush Current | <4 A | | | | | |
| Maximum Power Consumption | <75 W | | | | | |
| Typical Power Consumption | <60 W at 25°C | | | | | <50 W at 25°C |
| Laser Head Thermal Heat Dissipation | <30 W | <30 W | <30 W | <50 W | <50 W | <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)** | | | | | | |
| 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 | | | | | |

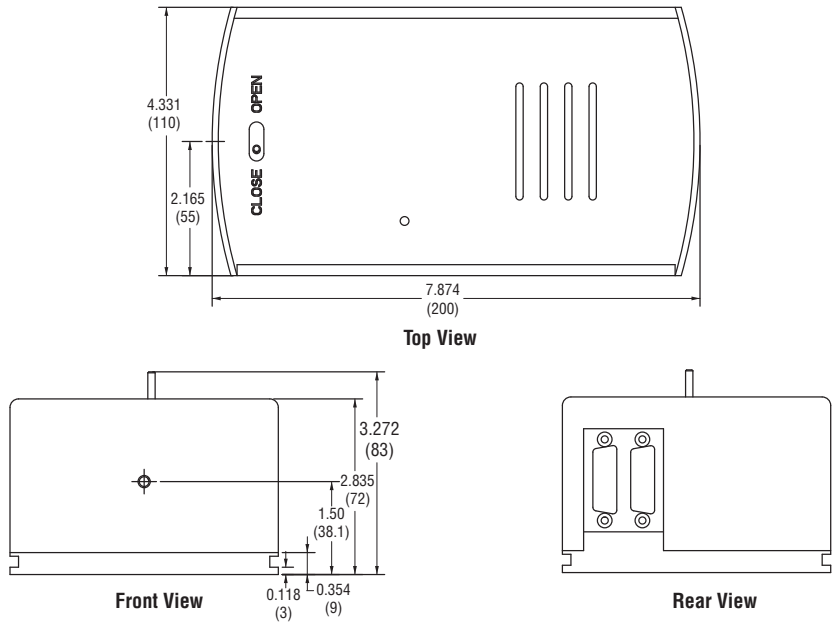
1. Due to our continuous product improvement program, specifications may change without notice.
2. Nd:YLF repetition rate 1 kHz.
3. Nd:$YVO_4$ (Vanadate) repetition rate at 50 kHz.
4. Nd: YAG repetition rate at 10 kHz.
5. Explorer 1064 repetition rate 100 kHz.
6. Explorer 1064 maximum power energy up to 50 μJ from single shot to 30 kHz.
7. Applies to Explorer 349-60 model.

## Explorer OEM Laser Head



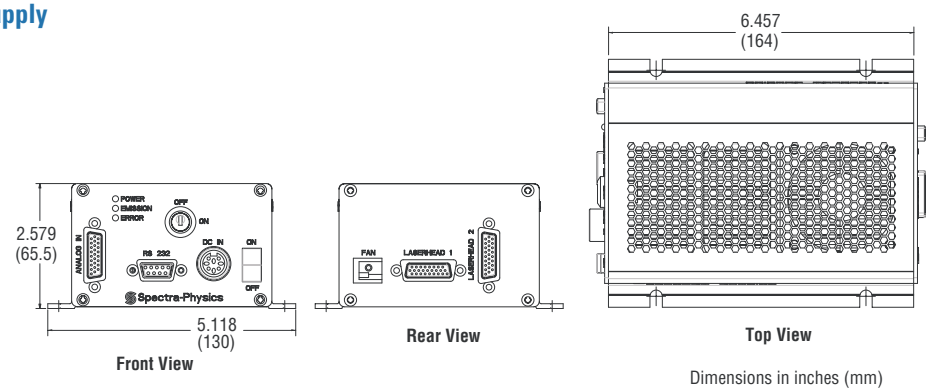

Dimensions in inches (mm)

## Explorer Scientific Laser Head




Dimensions in inches (mm)

## Explorer Power Supply




Dimensions in inches (mm)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