

# Wavelength-Swept Laser – $\lambda$ -Sweep™



The WSL-1000 is a high-speed swept laser source for fiber sensor and OCT applications. The laser's wavelength can be swept at a frequency of up to 16 kHz across a spectral range of up to 150 nm, with an output optical power of up to 20 mW. The device outputs two  $\lambda$ -trigger (TTL) signals to indicate the exact starting and ending wavelengths of each wavelength sweep. In combination with a sweep profile lookup table, this allows the absolute frequency or wavelength of the laser to be known at each instant during a wavelength sweep. In addition, a power monitoring output is included to indicate the instantaneous laser output power at each wavelength. The WSL-1000 is also equipped with a built-in variable optical attenuator (VOA). Other laser health parameters, such as laser average power, driving current, and chip temperature, are also provided via digital interfaces. Finally, the laser incorporates automatic polarization optimization to guarantee long term stability. The WSL-1000 is available with either a linearly polarized output (aligned to the slow axis of a PM fiber) or a depolarized output. This combination of features makes it a flexible tool for research in fiber sensing, optical coherence tomography (OCT), or similar applications.

## Specifications:

|                                                         |                                                                                    |
|---------------------------------------------------------|------------------------------------------------------------------------------------|
| Center Wavelength Range                                 | 1060, 1310, 1550 $\pm$ 20 nm                                                       |
| Spectral Range @ -10dB Cutoff Point <sup>1</sup>        | 1310/1550 nm: 100 to 150 nm;<br>1060 nm: ~ 60 nm,<br>(specify when ordering)       |
| Repetition Rate                                         | 1, 5, or 10 kHz standard<br>Up to 16 kHz available                                 |
| Sweep Average Power <sup>1</sup>                        | > 10 mW                                                                            |
| Static Peak Output Power <sup>1</sup>                   | > 20 mW                                                                            |
| Coherence Length (3 dB)                                 | > 6.5 mm                                                                           |
| Signal-to-Spontaneous Emission Noise Ratio <sup>2</sup> | 40 dB                                                                              |
| Polarization Extinction Ratio (PM Output Option)        | > 20 dB                                                                            |
| Degree of Polarization (Depolarized Output Option)      | < 5%                                                                               |
| Optical Connector                                       | FC / APC                                                                           |
| Variable Optical Attenuation Range                      | 20 dB                                                                              |
| Reference Wavelength Triggers                           | TTL pulse at start ( $\lambda_{\min}$ ) and end ( $\lambda_{\max}$ ) of each sweep |
| Reference Wavelengths                                   | $\lambda_{\min}$ and $\lambda_{\max}$ , standard or custom values available        |
| Sweep Sync Signal                                       | TTL levels                                                                         |
| Instantaneous Power Monitor                             | Analog, 0 – 3.5 V                                                                  |
| Communication Interface                                 | USB, Ethernet, RS-232, and GPIB                                                    |
| Operating Modes                                         | Static wavelength output<br>Swept wavelength output                                |
| Display                                                 | 2 x 20 Character LCD                                                               |
| Power Supply                                            | 100 – 240 VAC, 50 – 60 Hz                                                          |
| Operating Temperature                                   | 0 to 50 °C                                                                         |
| Storage Temperature                                     | -20 to 70 °C                                                                       |
| Dimensions                                              | 2U, 3/4 of 19" rack width 14" (L) x 14" (W) x 3.5" (H)                             |

## Features:

- Polarization stabilized output
- Fast sweep speed (up to 16 kHz)
- High output power (20 mW)
- Sweep start and end trigger (TTL)
- Built-in VOA
- Power monitoring function

## Applications:

- Fiber sensor interrogation
- Optical Coherence Tomography (OCT)
- Medical imaging
- Test & measurement
- Spectrum analysis
- R&D

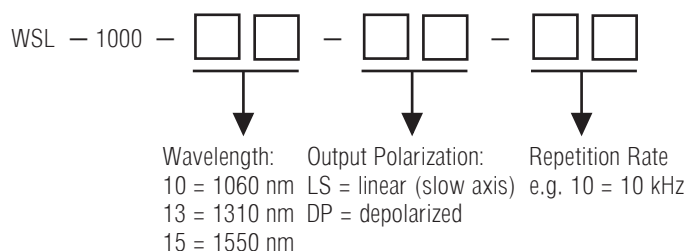
Tech Info: p. 223  
FAQ: p. 236

## Notes:

1. Typical values for 1310 nm 10 kHz version. Values may be different at other wavelengths or sweep rates.

2. Measured with static wavelength output.

## Ordering Information:



## Related Product:

WSL-001 p.68 (See WSL-001 page for typical performance data)