

Polarization Stabilized Wavelength-Swept Laser: λ -Sweep™ WSL-1000

The WSL-1000 is a high-speed tunable laser 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 λ -trigger (TTL) signals to indicate the exact starting and ending wavelengths of each wavelength sweep. It also outputs an optical frequency clock (TTL) with a spacing down to 20 GHz as the laser is swept to give users instantaneous relative optical frequency marks. In combination with the λ -trigger, this allows the absolute frequency or wavelength of the laser to be known at each instant during each 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 nm \pm 20 nm
Spectral Range @ -10dB Cutoff Point ¹	1310/1550 nm: 120~ 150 nm; 1060 nm: ~ 60 nm, (specify when ordering)
Repetition Rate	up to 16 kHz (specify when ordering)
Sweep Average Power	10-20 mW (specify when ordering)
Static Peak Output Power	>20 mW
Coherence Length (3 dB)	>7 mm
Signal-to-Spontaneous Emission Noise Ratio ²	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 (λ_{min}) and end (λ_{max}) of each sweep
Reference Wavelengths	λ_{min} and λ_{max} , user selectable
Optical Frequency Clock Trigger Type and Spacing	TTL, 20, 25, 30, 35, 40, 45, 50 GHz, user selectable
Sweep Sync Pulse	TTL, each sweep
Instantaneous Power Monitor	Analog, 0-5 volts
Communication Interface	RS-232, Ethernet, USB, GPIB
Operating Modes	Static wavelength output Swept wavelength output
Display	2-line by 20 character LCD display
Power Supply	Universal power supply, 100-240 V
Operating Temperature	0 ~ 50 °C
Storage Temperature	-20 ~ 70 °C
Dimensions	2U, 3/4 of 19" rack width 3.5"(H) x 14" (W) x 14" (L)

1. Typical values for 10 KHz version. Values may be different at higher sweep rates.

2. Measured with static wavelength output.

Applications:

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

Unique Features:

- Polarization stabilized output
- Fast sweep speed (up to 16 KHz)
- High output power (20 mW)
- Sweep start and end triggers (TTL)
- Optical frequency clock output (TTL)
- Built-in VOA
- Power monitoring function
- RS-232, Ethernet, USB, GPIB

Ordering Information:

WSL - 1000 - XX - XX

Wavelength:
 10=1060 nm
 13=1310 nm
 15=1550 nm

Output Polarization:
 LS = Linear (slow axis)
 DP = Depolarized

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