Stabilized Laser System SLS-INT-1550-100-3

THIS TURNKEY 3HZ LINEWIDTH STABILIZED LASER OFFERS excellent stability in a convenient rackmount box. We've integrated a high-finesse Fabry-Perot cavity, a temperature-controlled vacuum housing, vacuum pump, optics, input laser, and control electronics into a 3U high rackmount box, while maintaining the frequency stability for which our products are known. With a frequency noise linear spectral density of 1Hz/√Hz, this system is suitable for applications such as microwave generation and laser radar. Once the laser has been tuned to be coincident with the cavity frequency, a single-switch lock function engages the loop filter to stabilize the laser. An easy-to-read front panel displays laser current and temperature, cavity temperature, reflected power from the cavity, and loop filter & vacuum parameters, with analog outputs for transmitted cavity power, error signal, and ramp sync signal. Everything about this integrated frequency stabilized laser has been designed to deliver the best performance in the most convenient way, from the low power consumption and battery backup to the onboard display. We put all of our experience into each system so that you can spend your time on your experiments, not your equipment. Our systems give you the frequency you need — guaranteed.

PRODUCT NOTES

Auto-lock is in development to eliminate manual tuning of the laser to the cavity frequency. Should the unit be bumped or jarred, automatic re-lock will engage to re-stabilize the laser.

The system will arrive aligned and under vacuum. The ion pump is equipped with battery backup to minimize the need for additional pumps after shipping or movement of the system.

A 1Hz linewidth system is available upon request in a 5U high rackmount box.

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STABLELASERS.COM

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SPECIFICATIONS

PERFORMANCE

Wavelength range	1530 – 1565 nm
Output power	> 10 mW
Stabilized Laser Linewidth	3 Hz (measured over integration times of 1s, in a beat or self-heterodyne system with linear drift removed)
Daily laser drift	< 100 kHz for operating temperature range
Frequency Noise Linear Spectral Density	1 Hz/√Hz
Acceleration coefficient	$\Delta v/v \sim 10^{-11}/g$
Operating temperature range	18 – 25°C

ELECTRICAL

Operating voltage	100/115/230 VAC
Power consumption	< 16 W
Power frequency	50 – 60 Hz
Battery backup for ion pump	3-day lifetime

MECHANICAL

Laser output connector	FC/APC
Dimensions	19" rack mountable housing, 3U high (42.3 x 45.8 x 13.5 cm)
Weight	8 kg

FRONT PANEL DISPLAY

Reflected power from the cavity
Laser current & temperature (set and actual)
Cavity temperature (set and actual)
Vacuum pressure
Vacuum housing temperature
Loop filter proportional gain
Loop filter time constant

ANALOG OUTPUTS

PDH Error signal
Transmitted power from the cavity
Ramp sync signal

FIGURE 1: The Allan Deviation of a single laser from a heterodyne beat.

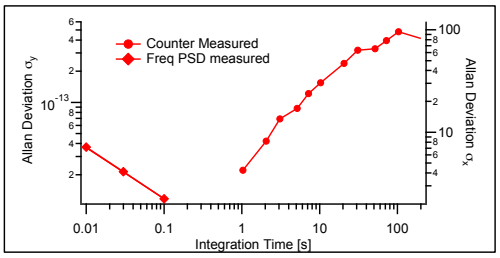
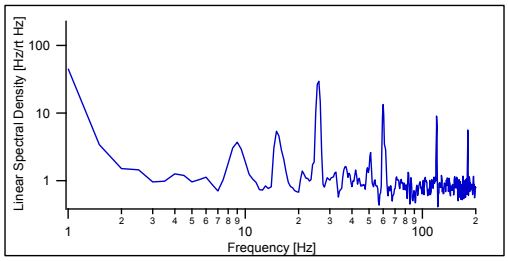


FIGURE 2: The Frequency Noise Linear Spectral Density of the laser.



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