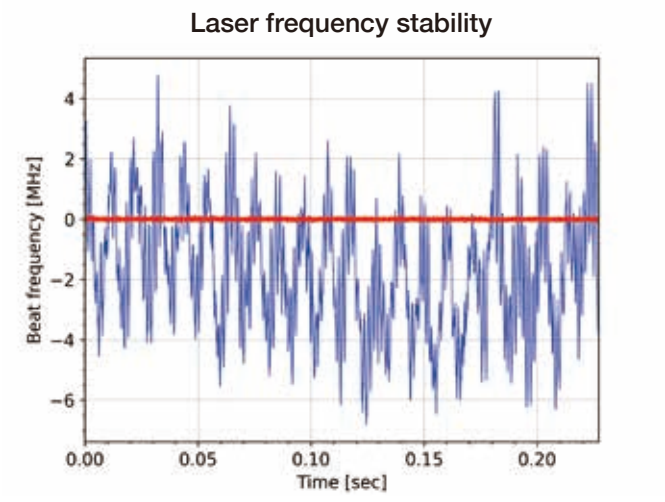
LLP-100

Laser Lock Pro

Product Overview

The Laser Lock Pro (LLP-100) is designed to complement Santec's external cavity tunable lasers, as a servo controller to stabilize the laser's oscillating frequency. LLP-100 locks the laser wavelength to an external reference. The LLP-100 is software controlled to easily adjust and lock the frequency to a desired reference such as a gas absorption cell, Fabry-Perot cavities or other frequency reference. Frequency locking supports both the Pound-Drever-Hall (PDH) method and the side-fringe locking methods. The LLP-100 coupled with the TSL-570 is an ideal system for applications requiring both wavelength tunability and frequency stability; for example: continuous comb generation using a microcavity on a silicon photonics chip as well as quantum applications to stabilize the laser at arbitrary wavelengths.

Measurement Data



Red: Cavity-locked TSL-570
Blue: Stand-alone TSL-570

Features

- Significant improvement in laser stability
- Advanced simultaneous control using the dedicated software
- Various locking sequences selectable for your application
- Equipped with essential adjustment functions

Applications

- Microcavity locking for Silicon photonics
- Absorption spectrum locking for Quantum photonics
- Continuous comb generation using a microcavity on a silicon photonics chip
- Quantum applications to stabilize the laser at arbitrary wavelengths

Specifications (LLP-100)

Category	Parameter		Unit	Performance
PID controller *1	Bandwidth (-6 dB)		kHz	> 100
	Input Offset		V	± 1.25
Analog Input characteristics	Main In	Voltage	V	± 2.5
		Impedance	Ω	50*2 or 100 k
	Aux In	Voltage	V	± 2.5
	Ramp In	Voltage	V	± 1.5
Analog Output charactersitcs	Main Out	Voltage (typ.)	V	± 2.0
	Aux Out	Voltage (typ.)	V	± 1.5
	Error Monitor	Voltage (typ.)	V	± 3.75
Trigger charactersitcs	Trig Input	TTL Voltage	V	3.3 or 5.0
		Delay	μs	< 1
	Trig Output	TTL Voltage	V	3.3
		Delay	μs	< 1
Environmental Conditions	Operating Temperature		°C	15 to 35
	Power Supply		-	AC100-120 to 200-240 V, 50/60 Hz
Hardware	Dimensions (W) x (D) x (H)		mm	118 x 240 x 361
	Weight		kg	5.4
	Communication		-	USB
Software	OS		-	Windows 11/10 (64 bit)

* All specifications are quoted after 1 hour warm-up period.
*1: Integrator crossover frequency and Differentiator crossover frequency can also be adjusted.
*2: Use with the attachment accessory.

Typical Performance*1 (LLP-100 attached TSL-570)

Category	Parameter	Unit	Performance
Frequency Characteristics	Frequency Stability (50 ms, RMS)	MHz	< 0.04
	Linewidth*2	kHz	50

1: Evaluated with a Fabry-Perot cavity (designed peak spectral width 4 MHz FWHM) locked by the Pound-Drever-Hall method.
2: Evaluated with the self-delayed heterodyne method with a 5 km delayed fiber.

Ordering Code

Tunable Laser Ordering code can be found on the brochure of TSL-570.

Laser Lock Pro **LLP-100**

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