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The Wayback Machine - https://web.archive.org/web/20010217235049/http://www.lightwaveelectronics.com:80/solutions/model_101.htm

Model 101 Injection-Seeding System



Injection Seeding of Lamp-Pumped Q-Switched Nd:YAG Lasers. Diode-pumped Model 101 systems provide stable, narrow linewidth CW laser output and the necessary locking electronics for injection seeding of Q-switched Nd:YAG host lasers.

- Single longitudinal mode output
- Smooth temporal profile pulses
- 10 GHz continuous tuning range
- Pulse equalizer

Nearly 1000 Lightwave injection-seeding systems have been installed since the first shipment in 1986. Lightwave injection seeders have been incorporated into all major commercially-available Q-switched host lasers. Additionally, numerous scientists have incorporated Lightwave injection seeders into their breadboard system.

Key Specifications

Model	101-1064-002	101-1064-010
Wavelength	1064 nm	1064 nm
CW Power	2 mW	10 mW
Spatial Mode	TEM_{00}	TEM_{00}
Longitudinal Mode	Single Frequency	Single Frequency
Linewidth, over msec.	<5 kHz	<5 kHz
Coherence Length	>1000 m	>1000 m

(Specifications subject to change without notice.)

Single-Longitudinal Mode Operation

The primary benefit of injection seeding is the single-longitudinal-mode nature of the output pulses. Applications benefiting from or requiring a single-longitudinal-mode pulse include high resolution spectroscopy (such as CARS), coherent radar, and pumping optical parametric oscillators [OPO's].

Smooth Temporal Profile Pulses

Since all the energy in a seeded pulse is extracted in a single longitudinal mode, beating between resonator modes does not occur. This results in

pulses with smooth temporal profiles. A smooth pulse provides pulse shape consistency, eliminates peak power spiking caused by mode beating, and the resulting near-Gaussian pulse shape simplifies modeling. These characteristics can be critical for applications such as non-linear material experimentation or pumping dye lasers.

Frequency Tuning

The Model 101 output frequency can be tuned continuously over 10 GHz, and can be tuned a total of 30 GHz. Tuning is accomplished simply by applying a voltage to the front panel of the Model 101 power supply, and is useful for applications such as differential absorption, lidar [DIAL], high resolution spectroscopy, and coherent heterodyne lidar.

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