Fiber Noise Cancellation System

FNCS-1000-1

Stable Laser Systems

Stable Laser Systems now offers a **fiber phase noise cancellation** system for the distribution of stabilized laser light to **remote locations**. This system has the advantage of merging existing laboratory solutions into a single box with a dramatically reduced footprint. Multiple noise cancelation systems can be implemented in parallel to supply many end users with stabilized light from a single stabilized laser. Whether stable light is needed down the hall or several kilometers away, this system ensures that your light will not acquire unwanted phase noise.*

FEATURES

- All digital control and signal processing via dual DDS's, digital phase detector, digital loop filter, and an FPGA for supervisory and servo control
- Real-time phase error trace and servo performance metrics displayed on a 4.3" touchscreen
- 1 W AOM driver included
- External RF reference input
- NIST-inspired topology
- Extremely compact size; packaging options: 8" x 11" x 4" box or 1U-high, half-width rack mount enclosure
- Optional integration of fiber components
- Optional remote AOM to eliminate sensitivity to stray reflections (splices, dirty connections, etc.)

*Transfer stability depends on loop gain (transport fiber length) and open loop noise. L.S. Ma, et. al., Opt. Lett. 19, pp. 1777-9 (1994), N.R. Newbury, et.al., Opt. Lett. 32, pp. 3056-8 (2007).

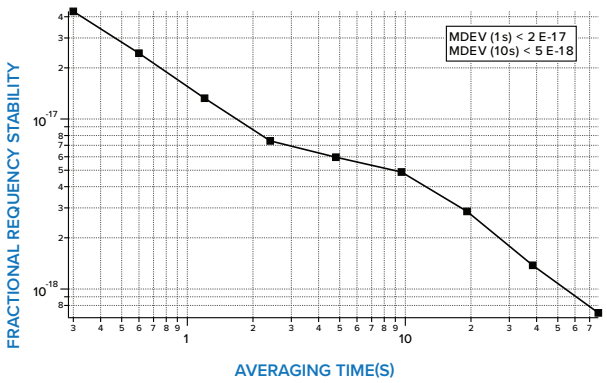
PERFORMANCE CHARACTERISTICS

Operating voltage	100/115/230 VAC
Power consumption	25 W
Power frequency	50-60 Hz
Cooling requirements	Internal fan
Servo Loop Bandwidth	100 kHz
Phase Noise Floor	<10 mrad rms
Typical System Performance	$\sigma(\tau = 1\,s) \approx 5 \times 10^{-17}$, $\lambda = 1550$ nm

Inputs	Wall plug power
	Photodetector (BNC)
	Optional external RF reference at 5, 10, or 100 MHz (BNC)
Outputs	1 W AOM drive
	User-selectable AOM drive frequency (up to 400 MHz)
	Phase error signal monitor

Additional inputs/outputs upon request. AOM drive power can be modified.

IN-LOOP MODIFIED ALLAN DEVIATION



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