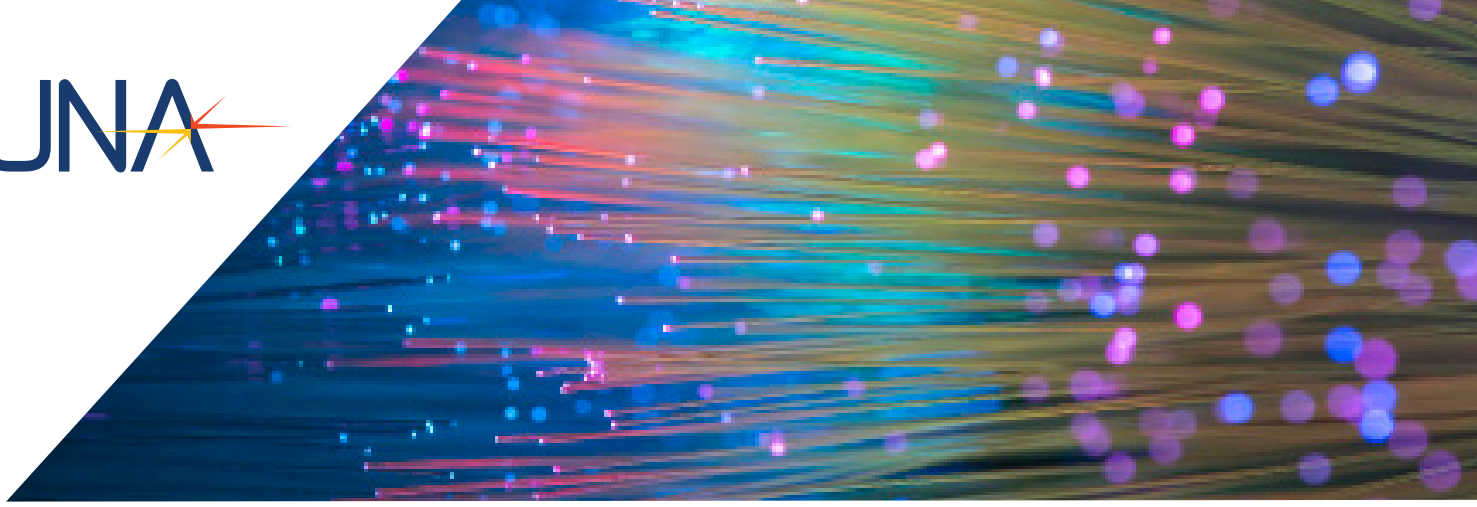

NRT-2500

Polarization Control Platform

The Luna NRT-2500 is a versatile Polarization Control Platform, offering seven built-in polarization control functions for optical transponder, device and sub-system development and manufacturing.

The 2500 combines an integrated-optic Lithium Niobate ($LiNbO^3$) waveguide polarization-controller device for super-fast polarization response driven by a customizable digital signal processing for functional flexibility. Together they enable Luna to provide a seven different polarization functions: Acquirer, Depolarizer, Paddles, Randomizer, Scrambler, Spinner, and Tracker in a single bench-top instrument.

A Versatile Polarization Platform for Multiple Lab Purposes.

Key Features

Acquirer adjusts polarization to maximize or minimize feedback for silicon photonics chip testing.

Depolarizer offers a faster Scrambler to average over PDL and PDG at detector

Paddles offers electronic fiber polarization paddles to manually set polarization

Randomizer creates ultrafast SOP impulse events to imitate lighting induced dSOP/dt events for coherent receiver testing. Also used in fiber loop testing.

Scrambler provides stochastic, Rayleigh distributed, general purpose SOP scrambling up to 10,000rad/sec (mean)

Spinner generates precise SOP speed, up to 940,000 rad/sec, for quantifying polarization demultiplexing capability of coherent receivers

Tracker offers a fast, robust and endless tracker/ stabilizer to capture and hold moving polarization for test and system prototyping

Applications

General lab use

Coherent receiver and DSP testing

PLD and **Si-Photonic** device testing

Testing lightning effects on coherent communication systems

Directed energy, Coherent Beam Combination, LIDAR system prototyping

Properties

Key Specification	NRT 2500
Insertion Loss	< 3 dB
PDL	< 0.3 dB
Optical Return Loss	> 50 dB
Optical Power Handling	< 20 dB
Operating Wavelength	1.55 microns (C- and L- Brands), 1.31 and 1.064 micron windows
Optical Connectors	FC/UCP, FC/ACP, SC
Scrambler Mode SOP Speed	up to 3,400 rad/sec for $r_{mode}b^{0.5}$ of a Rayleigh distribution[2]
Spinner Mode Rate	940,000 rad/sec on great circle orientation for 75 kHz drive
Randomizer Mode SOP Speed	up to 2,250,000 rad/sec[3]
Depolarizer Mode SOP Speed	over 3,000,000 rad/sec[4]
Tracker Mode Update Time	~20 microseconds[5]
Power Supply	12 VDC from 100-240 VAC, 50 – 60 Hz, AC-DC converter
Communication Interfaces	RS-232[6]
Dimensions	H=4.04" (102.6 mm), W=10.12" (257 mm), D=12.32" (313mm)

NRT's polarization control platform combines an integrated-optic Lithium Niobate waveguide polarization-controller device for super-fast polarization response driven by a customizable control platform for functional flexibility. Together they enable the NRT-2500 to provide a wide range of polarization operations in one product.

Notes

1. Subject to change at any time by Luna Innovations, LLC.
2. For a Rayleigh distribution: rmode is the statistical mode of the distribution, r is the mean SOP change, and 99.9% of all SOP changes occur before rmax = 3 r ~ 3.76rmode
3. Calculated assuming radians on Poincaré sphere.
4. Non-stochastic dSOP/dt distribution from 0 to >3 Mrad/sec completely covering Poincaré sphere.
5. This speed is the closed loop feedback/update algorithm loop time based on reading A/DCs and DSP speed and updating polarization controller voltages. The feedback signal detector response time and customization of the algorithm may slow system response.
6. RS-232-to-USB dongle provided with each NRT-2500.

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