



MPX 2010

Multifunction Polarization Controller

The MPX 2010 is a general-purpose, all-fiber design, lossless polarization controller.

The Luna MPX 2010 is a cutting-edge fiber-optic-based multifunction polarization controller. With its versatile operational modes, this platform offers complete control over polarization for a wide range of applications. It comes with four different polarization scrambling profiles, each serving a unique purpose. First, the “Tornado scrambling” allows the SOP to trace out a spiral pattern around a static or rotating axis, providing a nearly uniform SOP variation rate. Next, the “Rayleigh scrambling” generates a continuous trace with a Rayleigh distribution of the SOP variation rate, emulating the SOP variation in a fiber link. The “Triangle scrambling” generates a continuous trace with uniform sphere coverage, perfect for PDL measurement. Lastly, the “Discrete scrambling” method evenly covers the Poincaré sphere with discrete, random points at a uniform rate, best suited for randomizing SOP and mitigating polarization sensitivity.

In SOP modulation mode, each polarization control axis can be selectively controlled using sine, square, or triangle waves with user-defined frequency and amplitude. Additionally, manual control is possible by setting the input voltage through a remote-control interface. For applications that require synchronization with other devices, the MPX 2010 offers an externally triggered scrambling mode. In this mode, discrete, random SOPs are generated in response to a trigger input, making it ideal for recirculating loop applications.

Experience the power and versatility of the Luna MPX 2010 and unlock new possibilities in polarization control.

KEY FEATURES

- Multiple operation modes
- Low IL, RL, PDL, PMD and activation loss (AL)
- Improved GUI software interface and communication speeds
- USB 2.0, Ethernet 100BASE-TX
- SCPI command, C/C++ API, PC GUI
- Trigger in/out

APPLICATIONS

- SOP variation emulation
- Polarization scrambling
- Polarization sensitivity mitigation
- Circulating loop studies
- PDL/DOP measurements
- System polarization studies

SPECIFICATIONS

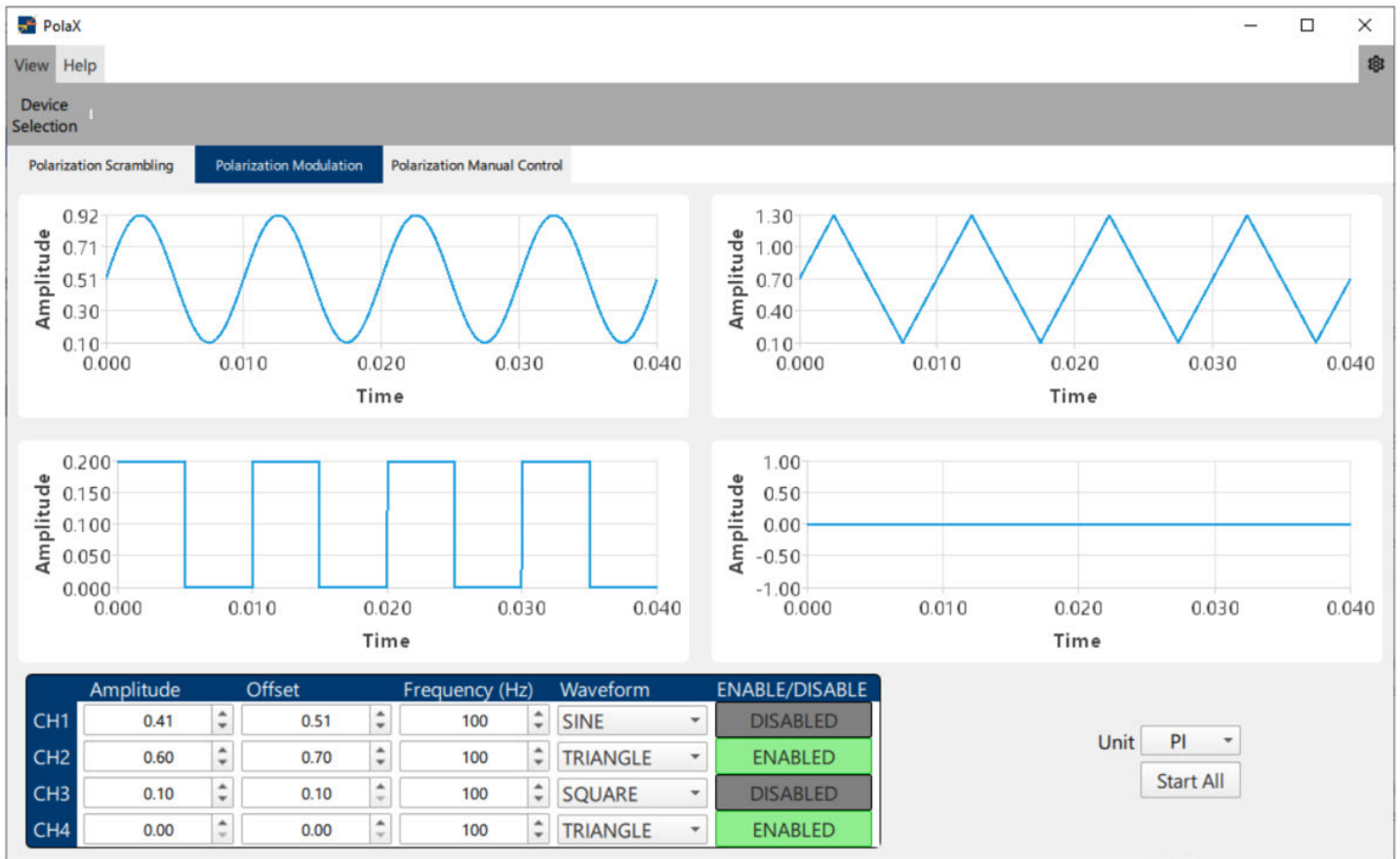
PARAMETER	SPECIFICATION			UNITS
	Min.	Typical	Max.	
Optical Characteristics				
MPX 2010 – 1 (standard)	1260	1550	1620	nm
MPX 2010 - 2	980		1310	nm
Power handling	0		1000	mW
Insertion Loss (IL) ¹			0.5	dB
Polarization Dependent Loss (PDL) ²			0.05	dB
Polarization Mode Dispersion (PMD)			0.1	ps
Activation Loss (AL) ²			0.05	dB
Return Loss (RL) ³	50			dB
Controlling Modes				
Polarization Scrambling	Discrete random states: 0.00 to 40,000			points/s
	Triangle: 0.00 to 4000 x 2 π			rad/s
	Rayleigh rate distribution: 0.00 to 4000 (mean)			rad/s
	Tornado (quasi-uniform rate distribution): 0.00 to 4000			revolutions/s
Manual Control	# of channels: 4 Range: 0 – 4 π each channel			-
Polarization Modulation (Each Channel)	Waveforms: Sine, Triangle, Square Frequency: 0.00 to 2000 Amplitude: 0 to 3 π peak-to-peak			- Hz Peak-to-peak
External Trigger Mode	Input trigger: Random SOP per TTL trigger pulse, up to 40,000			Points/s
Controlling Modes				
Communication Interfaces	USB 2.0, Ethernet 100BASE-TX			dB
Remote Control	SCPI command, C/C++ API, PC GUI			dB
Electrical Triggers	Connectors: SMA Output trigger: TTL pulse per SOP generated in discrete scrambling mode or TTL pulse per one period in Polarization modulation mode. Input trigger: One random SOP generated per TTL pulse received in trigger mode			dB
Electrical				
Power Supply	100-240 VAC, 50 ~ 60 Hz, 65W maximum			
Input/Output Triggers	TTL pulse, SMA connector			
Communication Interfaces	USB, Ethernet			
Physical				
Dimensions	13.3 (L) x 9.5 (W) x 2.5 (H)			inch
Operating Temperature	0	25	50	°C
Storage Temperature	-20	25	70	°C
Weight	2.65 kg			
Fiber Type	Single Mode Fiber			
Fiber Input/Output Connectors	FC/APC			

NOTES

Specifications in this table apply for the standard 1260 to 1620nm version over a temperature range of 23 \pm 5°C with connectors.

1. Intrinsic without connectors < 0.1 dB.
2. A low PDL/activation loss version (0.01 dB intrinsic) is available upon request for PDL measurement applications.
3. Intrinsic without connectors > 65 dB.

MPX 2010 GUI



MPX 2000 GUI Interface Software (PolaX)

ORDERING

Catalog #	Description	Includes
MPX 2010-1-0-FC/APC	Multifunction Polarization Controller, 1260 nm to 1620 nm, FC/APC connectors.	MPX 2010 main frame for C and L band. Power cable, USB 2.0 A to B cable, USB drive for GUI and documents.
MPX 2010-1-L-FC/APC	Multifunction Polarization Controller, 1260 nm to 1620 nm, FC/AP connectors, low PDL/Activation loss.	MPX 2010 main frame for C and L band. Power cable, USB 2.0 A to B cable, USB drive for GUI and documents.
MPX 2010-2-0-FC/APC	Multifunction Polarization Controller, 980 nm to 1310 nm, FC/APC	MPX 2010 main frame for 1um band. Power cable, USB 2.0 A to B cable, USB drive for GUI and documents.
MPX 2010-2-L-FC/APC	Multifunction Polarization Controller, 980 nm to 1310 nm, FC/APC connectors, low PDL/Activation loss.	MPX 2010 main frame for 1um band. Power cable, USB 2.0 A to B cable, USB drive for GUI and documents.