

# Multifunction Polarization Controller - PolaMight™ (MPC-201)



Controlling the state of polarization (SOP) of an optical signal has never been easier: This multifunction polarization controller has four operational modes for complete polarization control: variable rate polarization scrambling, manual polarization adjustment, polarization modulation, and externally triggered random SOP generation. Four different polarization scrambling methods enable the SOP to a) trace out a spiral pattern about a static or rotating axis with a nearly uniform SOP variation rate for system stress tests (Tornado scrambling); b) generate a continuous trace with a Rayleigh distribution of SOP variation rate, for emulation of the SOP variation in a fiber link (Rayleigh scrambling); c) generate a continuous trace with uniform sphere coverage for PDL measurement (Triangle scrambling); or d) evenly cover the Poincaré sphere with discrete, random points at a uniform rate (Discrete scrambling). In the SOP modulation mode, each polarization control axis can be selectively controlled with a sine, square, or triangle wave of user defined frequency and amplitude. Each polarization control axis can also be controlled manually, by setting the input voltage either from the front panel controls or through a remote control interface. In externally triggered scrambling mode, discrete, random SOPs are generated in response to a trigger input, a feature desirable for recirculating loop applications or other applications requiring synchronization with other devices. Finally, the MPC-201 can emulate the Agilent 11896A polarization scrambler function, allowing it to act as a plug-in replacement for this popular but discontinued device, while offering many more advanced features. PolaMight puts the user in control.

## Specifications:

Operating Wavelength Range	1260 to 1620 nm (standard) or 980 to 1310 nm
Polarization Scrambling	Discrete random states: 0.00 to 20,000 points/s Triangle: 0.00 to 2000 x 2π rad/s Rayleigh rate distribution: 0.00 to 2000 rad/s (mean) Tornado (quasi-uniform rate distribution): 0.00 to 2000 revolutions/s.
Agilent 11896A Scrambling Emulation	Speed settings 1 – 8, matched to Agilent 11896A settings
Manual Polarization Control	# of channels: 4 Range: 0 – 4π each channel
Polarization Modulation (Each Channel)	Waveforms: Sine, Triangle, Square Frequency: 0.00 to 1000 Hz Amplitude: 0 to 3π peak-to-peak
External Trigger Mode	Random SOP per TTL trigger pulse, up to 20,000 points/s
Insertion Loss	< 0.5 dB with connectors (< 0.1 dB intrinsic)
PDL <sup>1</sup>	< 0.05 dB with connectors
Activation Loss <sup>1</sup>	< 0.05 dB with connectors
Return Loss	> 50 dB with connectors (> 65 dB intrinsic)
PMD	< 0.1 ps with connectors
Optical Power Handling	1000 mW
Operating Temperature	0 °C to 50 °C
Storage Temperature	-20 °C to 70 °C
Communication Interfaces	USB, Ethernet, RS-232, and GPIB
Electrical Triggers	Connectors: BNC Output trigger: TTL pulse per SOP generated in discrete scrambling mode Input trigger: One random SOP generated per TTL pulse received in trigger mode
Front Panel Display	OLED graphic display
Power Supply	100 – 240 VAC, 50 – 60 Hz
Dimensions	2U, 19" half rack width 14" (L) x 8.5" (W) x 3.5" (H)
Notes:	Specifications in this table apply for the standard 1260 to 1620nm version over a temperature range of 23 ± 5 °C. 1. A low PDL/activation loss version (0.01 dB intrinsic) is available upon request for PDL measurement applications.

## Features:

- Multiple polarization control modes
- Tornado scrambling (quasi-uniform rate distribution)
- Real fiber SOP variation emulation (Rayleigh rate distribution)
- Discrete SOP scrambling
- Agilent 11896A scrambling emulation
- SOP modulation
- Low IL, PDL, PMD, and AL
- Bright OLED display

## Applications:

- SOP variation emulation
- PMD emulation
- Polarization scrambling
- System polarization studies
- PDL/DOP measurement
- Recirculating loop studies

## Related Products:

- Polarization Measurement System (PSGA-101)
- Multifunction Polarization Controller (MPC-203, MPC-202)
- Polarimeter (PSY-201, POD-201)
- Rack Mount Kit (RCK-001)
- Components

## Tech Info:

- What is Polarization?
- Polarization in Fiber Systems: Squeezing out More Bandwidth
- Combat Polarization Impairments with Dynamic Polarization Controllers

## FAQ:

- Polarization Controllers

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