High Speed Multifunction Polarization Controller—PolaMight™

MPC-203

The MPC-203 is a special version of General Photonics' Multifunction Polarization Controller which can reach extremely high rates of polarization change. Like other instruments in the MPC-20X family, it combines General Photonics' award winning PolaRite™ II/III polarization controller with proprietary polarization control algorithms to achieve a wide range of polarization control functionalities, including high speed continuous ('Tornado") polarization scrambling, continuous trace polarization scrambling with Rayleigh rate distribution, discrete-state polarization scrambling, sine, square, and triangle-wave SOP modulation, and manual polarization control functions. In addition to the functions it has in common with the MPC-201/202, the MPC-203 includes a modified version of GP's proprietary "Tornado" scrambling function that can reach even higher peak SOP change rates than the MPC-202. All MPC-20X instruments are useful for production or laboratory testing of polarization related functions and parameters, including passive/active component characterization, performance tests of fiber optic interferometers, sensor systems, RF photonics systems, etc.

Making Light Work Lighter
General Photonics Corporation

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Preliminary Specifications

Operating Wavelength Range	1260-1620nm (standard) or 980-1310nm
Polarization Scrambling	Tornado: 0 to 11 M rad/s. Rayleigh rate distribution: 0 to 2000 rad/s (mean) Triangle: 0 to 2000 × 2π rad/s Discrete random states: 0 to 20,000 points/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	< 0.6 dB with connectors (< 0.15 dB intrinsic)
PDL	< 0.1 dB with connectors (<0.02 dB intrinsic)
Activation Loss	< 0.1 dB with connectors
Return Loss	> 50 dB with connectors (> 65 dB intrinsic)
PMD	< 0.2 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, ¾ 19" rack width 3.5"(H) x 14" (W) x 14" (L)

Notes:
Specifications in this table apply for the standard 1260-1620nm version over a temperature range of 23±5°C.

Applications:

- SOP response test of coherent receivers
- SOP tracking speed test
- PMD and PDL related tests
- SOP variation emulation
- Polarization scrambling

Unique Features:

- High speed SOP scrambling with SOP change rate up to 11 Mrad/s
- Scrambling with Rayleigh rate distribution
- Discrete SOP scrambling
- SOP modulation
- Low IL, PDL, PMD, and AL
- Bright OLED display

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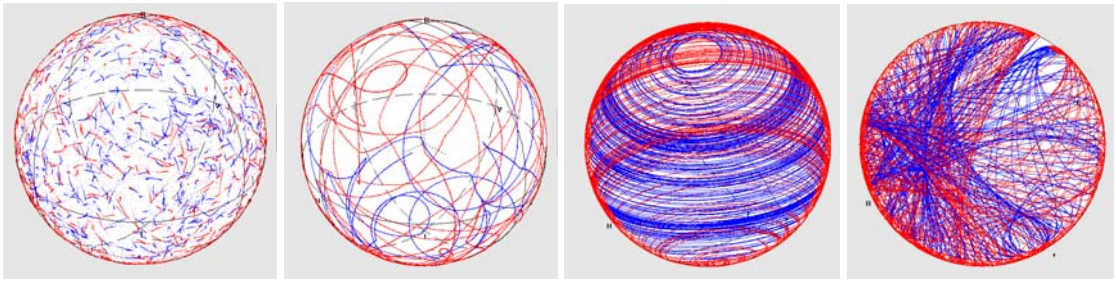
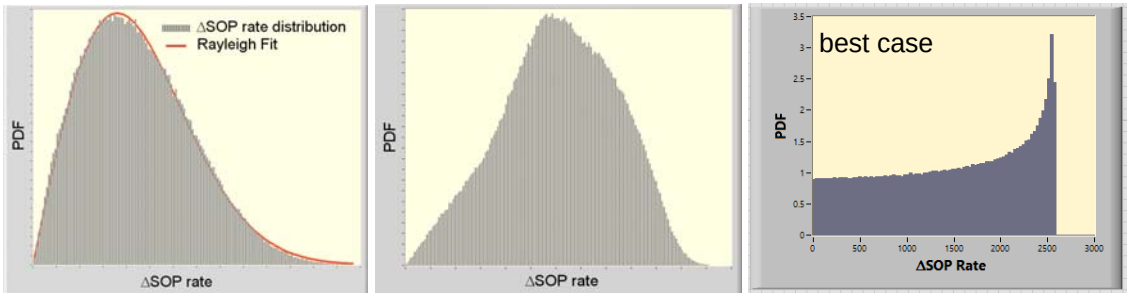


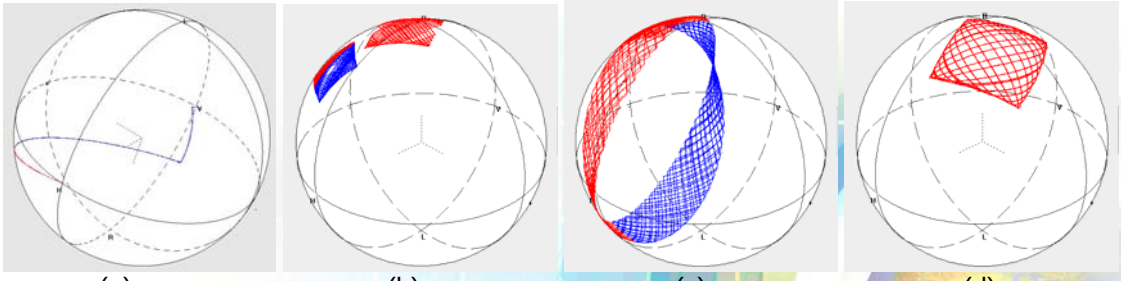
(a) (b) (c) (d)

Figure 1. Poincaré sphere SOP traces for four different scrambling methods: (a) Discrete, (b) Typical Rayleigh or Triangle trace, (c) Tornado (fixed axis), and (d) Tornado (rotating axis).



(a) (b c)

Figure 2. SOP variation rate distributions for (a) Rayleigh, (b) Triangle, and (c) Tornado scrambling methods. The Tornado distribution is input polarization dependent. The figure shows the best case.



(a) (b) (c) (d)

Figure 3. (a) Manual adjustment of SOP from H to V state. (b-d) SOP patterns generated in polarization modulation mode using different combinations of waveforms on different channels of the polarization controller.

Ordering Information:

MPC – 203 – X – XX

Wavelength Range:
1 = 1260 – 1620nm
2 = 980 – 1310nm

Connector Type:
FC/PC
FC/APC
Others specify

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GP-DS-MPC-203-10
6/15/18