IMPAIRMENT EMULATION AND POLARIZATION CONTROL

Advanced Multifunction Polarization Controller - PolaMight™ (MPC-202)

The MPC-202 is an advanced Multifunction Polarization Controller specially designed to meet the requirements of coherent receiver performance tests. It combines General Photonics' award winning PolaRite™ III polarization controller with proprietary polarization control algorithms to achieve a wide range of polarization control functionalities, including high speed quasi-uniform rate polarization scrambling, random-rate polarization scrambling with Rayleigh rate distribution, discrete-state polarization scrambling, sine, square, and triangle-wave SOP modulation, and manual polarization control functions. In particular, the "Tornado" quasi-uniform rate polarization scrambling function can achieve a high SOP scrambling rate of up to 60,000 revolutions/s (more than 360 krad/s) with a narrow rate distribution clustered around the highest rate. In short, the MPC-202 is an ideal tool 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. The quasi-uniform rate high speed scrambling function is particularly useful for SOP tracking speed testing of coherent receivers. The square wave SOP modulation function is ideal for SOP recovery time tests.

Specifications:

Operating Wavelength Range	1260 to 1620nm (standard) or 980 to 1310nm
Polarization Scrambling	Tornado (quasi-uniform rate distribution): 0.00 to 60,000 revolutions/s. Rayleigh rate distribution: 0.00 to 2000 rad/s (mean) Triangle: 0.00 to 2000 × 2π rad/s Discrete random states: 0.00 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
Slew Rate for Square Wave SOP Modulation	360 krad/s (10% to 90%, channel 3)
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 14" (L) x 14" (W) x 3.5" (H)

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

Features:

- Quasi-uniform rate SOP scrambling with SOP change rate up to 360 krad/s
- Scrambling with Rayleigh rate distribution
- Discrete SOP scrambling
- SOP modulation
- Low IL, PDL, PMD, and AL
- Bright OLED display

Applications:

- SOP response test of coherent receivers
- SOP tracking speed test
- SOP recovery time test
- Polarization deMux performance test
- PMD and PDL related tests

Related Products:

- PMD Source (PMD-1000)
- PDL Source (PDLE-101)
- Polarization Measurement System (PSGA-101)
- Multifunction Polarization Controller (MPC-203, MPC-201)
- Polarimeter (PSY-201, POD-201)
- Rack Mount Kit (RCK-001)
- Components

Tech Info:

- Combat Polarization Impairments with Dynamic Polarization Controllers
- Polarization Related Tests for Coherent Detection Systems
- A novel scheme for achieving quasi-uniform rate polarization scrambling at 752 krad/s

FAQ:

- Dynamic Polarization Controllers

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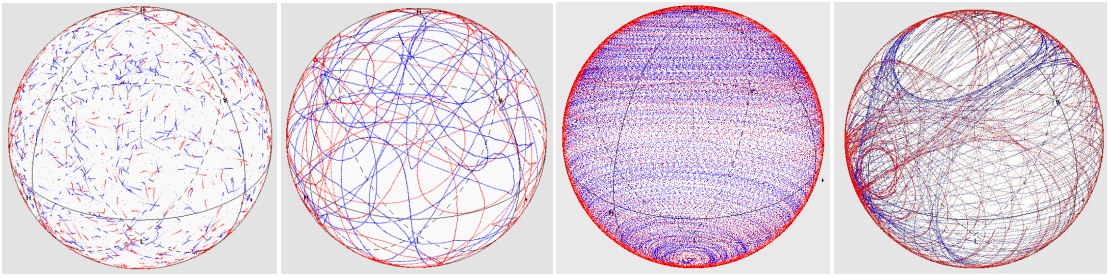
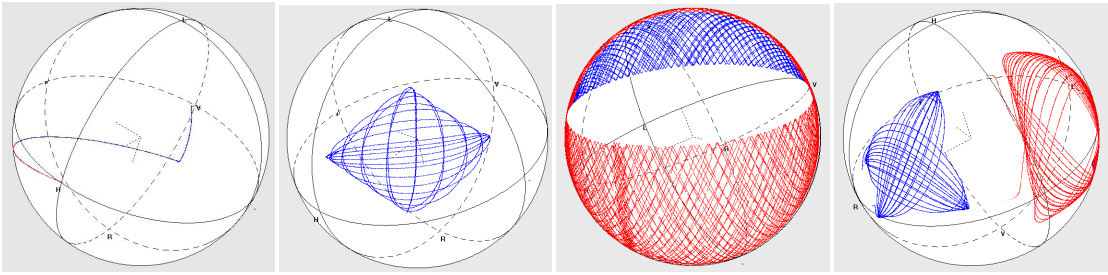


(a) (b) (c) (d)

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.



(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 — 202 — □ — □

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

Connector Type:
FC/PC
FC/APC
Others specify

Video: