The MPC-203 is a new 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 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, and RF photonics systems.

**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.

**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

**Applications:**

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

**Related Products:**

- PMD Source (PMD-1000)
- PDL Source (PDLE-101)
- Polarization Measurement System (PSGA-101)
- Multifunction Polarization Controller (MPC-202, MPC-201)
- Polarimeter (PSY-201, POD-201)
- Rack Mount Kit (RCX-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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**High Speed Multifunction Polarization Controller - PolaMight™ (MPC-203)**
**High Speed Multifunction Polarization Controller - PolaMight™ (MPC-203)**

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).

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.

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 — 

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

Connector Type:  
FC/PC  
FC/APC  
Others specify