



PMDPro™ is a breakthrough PMD source that can deterministically generate precise 1st order PMD up to 180 ps and 2nd order PMD up to 8100 ps<sup>2</sup>. Its quasi-continuous operation mode enables independent generation of first order and wavelength independent second order PMD for uniform coverage of the PMD space. It contains an automatic polarization controller and two polarimeters that monitor the state of polarization (SOP) and degree of polarization (DOP) before and after the PMD generating elements. The polarization controller can be used with the front polarimeter to automatically align and maintain the input SOP at 45° from the principal axis of the DGD element to obtain the worst-case first order PMD effect. Alternatively, the controller can automatically adjust and maintain the input SOP using the feedback from the rear polarimeter

to either minimize or maximize the output DOP for each PMD setting. Minimizing the output DOP enables testing of the worst-case total PMD effect, while maximizing the DOP turns the PMDPro™ into a PMD compensator, allowing the user to obtain optimized PMD values for PMD compensation. PMDPro™ can also perform PMD emulation by generating statistical PMD distributions. Finally, the polarization controller and polarimeters enable variable rate scrambling and deterministic polarization control functions, including trace generation and polarization stabilization at any SOP. PMDPro™ makes your PMD related systems testing simple, fast, and professional.

### Specifications:

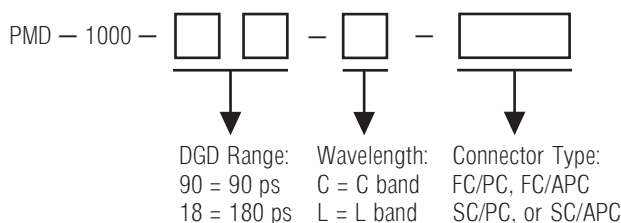
|   |   |             |              |
|---|---|-------------|--------------|
| Operating Wavelength Range <sup>1</sup> | C band or L band  |             |              |
| Insertion Loss                          | 5.0 dB (90 ps version)<br>5.5 dB (180 ps version)                         |             |              |
| Input Power Range                       | -10 to 10 dBm   |             |              |
| Return Loss                             | 50 dB   |             |              |
| PDL                                     | 0.45 dB typical (90 ps version)<br>0.5 dB typical (180 ps version)        |             |              |
| 1 <sup>st</sup> Order PMD Range         | 0 to 91 ps or<br>0.36 to 182.4 ps   |             |              |
| 1 <sup>st</sup> Order PMD Resolution    |   | 90 ps range | 180 ps range |
|   | Discrete mode   | 0.357 ps    | 0.714 ps     |
|   | Quasi-continuous mode   | 0.1 ps      | 0.2 ps       |
| 2 <sup>nd</sup> Order PMD Range         | 2000 ps <sup>2</sup> (90 ps range) or 8100 ps <sup>2</sup> (180 ps range) |             |              |
| PMD Variation Time                      | 1 ms min.   |             |              |
| SOP Alignment Accuracy <sup>2</sup>     | ± 2°  |             |              |
| SOP Tracking Speed                      | 10 π/s  |             |              |
| DOP Accuracy <sup>2</sup>               | ± 2%  |             |              |
| Optical Power Handling                  | 300 mW min.   |             |              |
| Operating Temperature                   | 10 to 50 °C   |             |              |
| Storage Temperature                     | -20 to 60 °C  |             |              |
| Communications Interfaces               | USB, RS-232, Ethernet, and GPIB   |             |              |
| Front Panel Display                     | 2 x 20 character LCD  |             |              |
| Power Supply                            | 100 – 240 VAC, 50 – 60 Hz   |             |              |
| Dimensions                              | 2U, 3/4 of 19" rack width<br>14" (L) x 14" (W) x 3.5" (H)                 |             |              |

#### Notes:

1. Standard option: C band.

2. At 23 ± 5°C.

### Ordering Information:



### Features:

- 1st & 2nd order PMD source
- 1st & 2nd order PMD emulator
- Automatic polarization alignment
- Polarization scrambling
- PMD compensation
- Rapid PMD switching: 1 ms

### Applications:

- System PMD tolerance test
- PMD compensator evaluation
- System PMD emulation
- Optimizing PMD values for PMDC
- PMD measurement instrument calibration

Tech Info: pp. 107, 135  
App Note: p. 205

### Related Products:

PDL Source/Emulator p. 9  
Polarization Measurement System p. 16

## Polarization Optimized PMD Source – PMDPro™

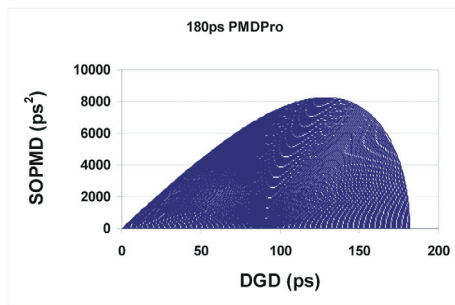


Figure 1. DGD and wavelength independent SOPMD range (180 ps PMDPro™)

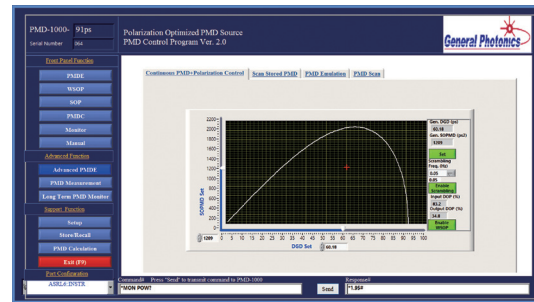


Figure 2. Quasii-continuous PMD control

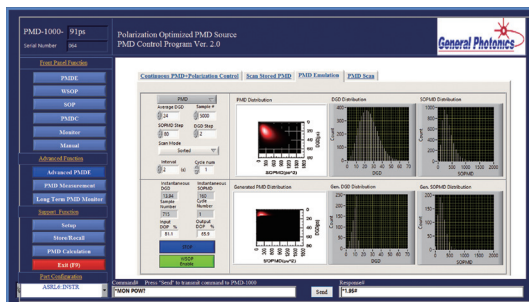


Figure 3. Maxwellian PMD emulation

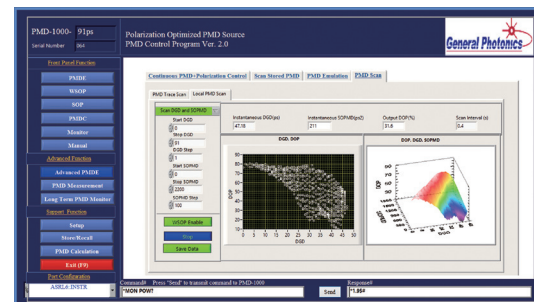


Figure 4. 3D graph display of a DGD/SOPMD scan

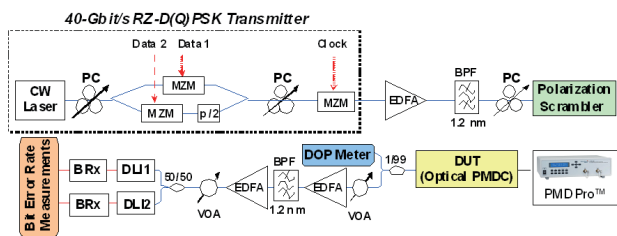


Figure 5. Experimental setup for PMD compensator performance test, using PMDPro™ as a PMD source to add DGD and SOPMD to the signal.

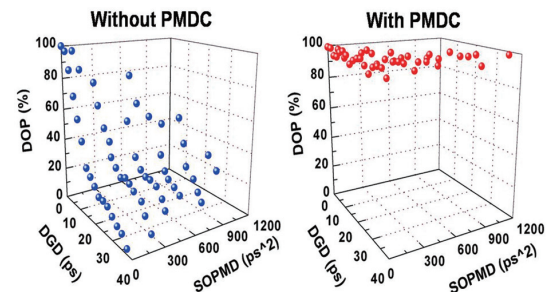


Figure 6. Measured DOP (without PMDC and with PMDC) of a 40-Gbit/s RZ-DQPSK signal versus DGD and SOPMD.

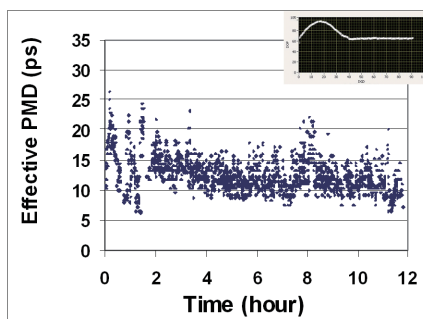
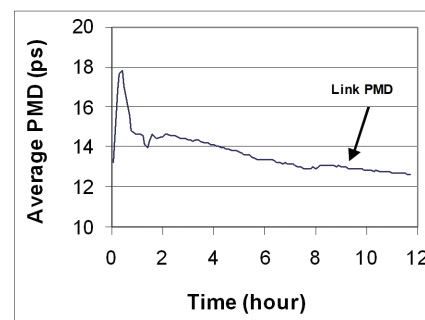
Figure 7. Long-term monitoring of PMD in an in-service link by PMDC. Instantaneous PMD vs. time.  
Inset: DOP vs. DGD plot for a single measurement.

Figure 8. Long-term monitoring of PMD in an in-service link by PMDC. Average PMD vs. time