

# Programmable Differential Group Delay Module with Enclosure

- ProDelay™

General Photonics' high-speed variable differential group delay (DGD) line provides a varied amount of group delay difference between two linear orthogonal polarization states. DGD is a key component for PMD compensation and emulation. ProDelay™ can digitally vary the amount of 1<sup>st</sup> order PMD from -45 ps to 45 ps with a resolution of 1.36 ps (6-bit resolution) in less than 250  $\mu$ s. With an integrated circuit board and a software package, the device can easily be controlled with a computer or a microprocessor. The circuit board has a 10-pin TTL digital I/O port to interface with any digital control signal, either from a control circuit board or a computer. Optional Labview PMD emulation software can also generate Maxwellian DGD distribution of any average value. In addition to PMD compensation and emulation, this patented device can also be used for precision TDM bit alignment.



## Preliminary Specifications

Insertion Loss	1.5 dB max
Return Loss	55 dB min
PDL	0.2 dB. average over all DGD values
PDL Variation	+/- 0.15 dB across all DGD values
Wavelength Dependent Loss	0.2 dB max. across C band
1 <sup>st</sup> order PMD <sup>1</sup>	-45 to + 45 ps variable, 0 to 90 ps optional
DGD Varying Resolution <sup>1</sup>	1.36 ps
2 <sup>nd</sup> order PMD	90 ps <sup>2</sup> max.
Transient DGD	1.36 ps max.
Transient Loss	0.5 dB per bit max.
Number of Control Bits	6
Delay Variation Speed	250 $\mu$ s
Wavelength	1550 +/- 50 nm
Maximum Optical Power	300 mW min.
Electrical Interface	10-pin digital port to accept any 6 bit TTL control signal, with 9V/0.6A power supply
Software	DGDPro-I for using computer printer port is included. DGDPro-II for using a digital I/O card (optional)
Operation Temperature	0° to 50° C
Dimensions	7.3" (L) x 9.0" (W) x 2.5" (H)

Note: 1. Other DGD and resolution values are available, call for details

## Applications:

- PMD compensation
- PMD emulation
- TDM bit alignment
- True-time delay for RF signal processing

## Unique Features:

- Digitally switched DGD
- 250  $\mu$ s or less delay switching speed
- $\pm$  45 ps total DGD
- 6-bit (1.36 ps) delay resolution
- Compact

## Ordering Information:

DGD- 6B1A- XX- XX- XX

13 = 1310 nm  
15 = 1550 nm

45 =  $\pm$  45 ps total DGD  
90 = 0 ~ 90 ps total DGD

FC/PC, FC/APC  
or NC = No Connectors



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