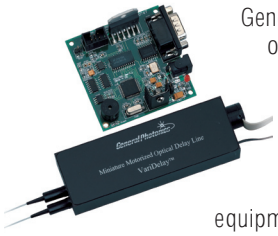
Motorized Variable Optical Delay Line – VariDelay™ II



General Photonics' motorized variable optical delay line provides precision optical path length adjustment of up to 560 ps. Driven by a DC motor with an integrated encoder, the MDL-002 has a delay resolution of less than 0.3μm (1 fs), and an extremely low backlash of less than 8 fs. In addition, its advanced motion design guarantees longevity for long-term continuous operation. Low insertion loss and high reliability make this device ideal for integration in optical coherence tomography (OCT) systems, network equipment and test instruments for precision optical path length control or timing alignment. The MDL-002 is available in three configurations: 1) an integrated unit for use as a bench-top instrument for laboratory applications, 2) with the optical head and control unit separated for easy incorporation into other equipment, and 3) an OEM version with a miniature controller board. All three versions can be remote controlled by a PC or a micro-processor through an RS-232 interface. The delay line is available with either single mode or PM fiber pigtails.

Specifications:

Operating Wavelength	SM: 1260-1650 nm PM: 1310 or 1550 nm ±50 nm
Optical Delay Range[1]	0 ~ 330 ps for 330 ps model 0 ~ 560 ps for 560 ps model
Optical Delay Resolution	0.3 μm or 1 fs per encoder count
Optical Delay Accuracy	± 0.01 ps or ± 3 μm
Optical Delay Repeatability	± 0.01 ps or ± 3 μm
Insertion Loss	1.0 dB nominal
Insertion Loss Variation	± 0.3 dB over entire range for 330 ps models ± 0.5 dB over entire range for 560 ps model
PDL	0.1 dB
Return Loss	50 dB
Extinction Ratio	> 18 dB for PM model
Optical Damage Power Threshold	300 mW
Power Supply	12 VDC / 1A max.
Control Mode	Panel keypad and RS-232 interface
Display	2 x 16 character LCD
Operating Temperature	0 ~ 40 °C
Storage Temperature	-20 ~ 60 °C
Fiber Type	Corning SMF-28 or Fujikura PM Panda fiber
Dimensions (control unit/integrated version)	330 ps model: 1.6" (H) × 4" (W) × 7" (L) 560 ps model: 1.6" (H) × 4.4" (W) × 9" (L)
Dimensions (mini controller board)	2.56" (L) × 2.56" (W) × 0.85" (H)
Dimensions (optical head)	330 ps model: 0.7" (H) x 1.46" (W) × 5.20" (L) 560 ps model: 0.7" (H) x 1.46" (W) x 6.18" (L)

Note: Values are referenced without connectors.
1. The output pigtail on either the 330 ps or 560 ps model can be replaced with an internal Faraday mirror to create a double pass device with a total range of 660 ps or 1120 ps, respectively. Contact General Photonics for details.

Features:

· Compact
· High resolution
· Low backlash
· Low insertion loss
· High stability
· Highest delay to length ratio
· Long delay: more than 560 ps

Applications:

· Optical Coherence Tomography (OCT)
· Optical Fourier spectrum analysis
· Optical interferometry
· Delay generation and measurement
· Optical time division multiplexing (OTDM)
· Fiber sensors

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TIMING/DELAY MANAGEMENT MODULES

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Typical Performance Data:

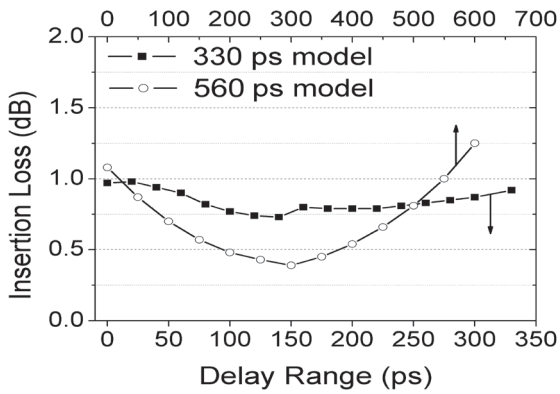
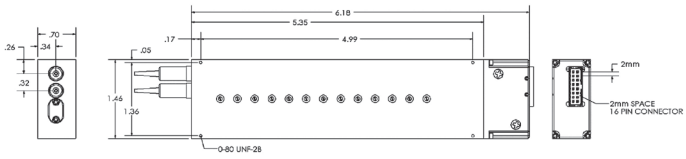
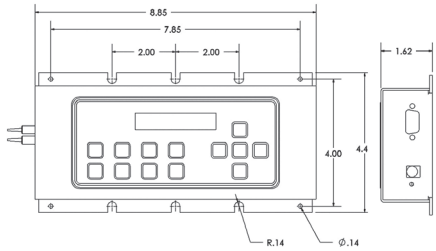


Figure 1. Insertion loss vs. optical delay.

Dimensions: (Representative drawings: 560 ps version)



Optical head:



Integrated version/control unit

Ordering Information:

MDL – 002 – □ – □□ – □□ – □□ – □□□ – □□

Configuration:
I = integrated
D = Remote head/ standard controller
O = Remote head/ mini controller board

Wavelength:
13 = 1310 nm (PM)
15 = 1550 nm (PM)
35 = 1310 & 1550 nm (SM)

Delay Range:
33 = 330 ps
56 = 560 ps

Connector type:
FC/PC, FC/APC
SC/PC, SC/APC or
NC = no connectors
Others specify

SS = SMF-28
PP = PM Panda

Note: For SM pigtails, the default configuration is 3mm jacketed. For PM pigtails, the default configuration is 900 µm loose tube jacketed.