

# Miniature Motorized Optical Variable Delay Line

MDL-003

General Photonics' motorized variable optical delay line provides low cost, precision optical path length adjustment and delay scanning functionality. This addition to the MDL product line is specifically designed for OEM applications that require continuous scanning capability and a small footprint. The standard device has a delay range of 100 ps. An internal mirror can also be installed to cause light to double pass the device, doubling the delay range. A stepper motor and two position sensors ensure precise delay control. 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.

A mini controller board is available as an accessory.



## Specifications

Operating Wavelengths <sup>2</sup>	SM: 840 ± 50nm, 1060 ± 50 nm, 1260-1650 nm PM: 840, 1060, 1310 or 1550 nm ± 50 nm
Optical Delay Range <sup>3</sup>	0 to 100 ps, single-pass
Optical Delay Resolution	30 μm, single-pass at maximum speed
Optical Delay Accuracy	± 40 μm, single-pass at maximum speed
Optical Delay Repeatability	± 40 μm, single-pass at maximum speed
Insertion Loss <sup>1</sup>	1 dB
Insertion Loss Variation <sup>1</sup>	± 0.3 dB over entire range
PDL <sup>1</sup>	0.15 dB for SM fiber
Return Loss <sup>1</sup>	55 dB
Extinction Ratio	> 18 dB for PM model
Actuation Speed	50 ps/s (single-pass) max.
Optical Damage Power Threshold	100 mW
Electrical Interface	2-phase stepper motor drive signal 2 sensor connections
Operating Temperature	0°C to 50°C
Storage Temperature	-20°C to 60°C
Fiber Type	840nm: HI780 or PM Panda 1060nm: HI1060 or PM Panda 1310 and/or 1550nm: SMF-28 or PM Panda
Dimensions	2" (L) × 1.4" (W) × 0.55" (H)

### Notes:

- Specifications in table apply for a single-pass device without connectors, measured over 1310 ± 50 nm or 1550 ± 50 nm at 23±5°C. The output pigtail can also be replaced with a Faraday mirror to create a double pass device with a total range of 200 ps. Specifications may be different for double pass devices or for wavelengths other than 1310 or 1550nm.
- Other wavelengths available upon request. Contact General Photonics for details.
- Double pass device has 200 ps delay range. Since input and output signals travel on the same pigtail, a circulator or PBS may be necessary to separate input and output signals for some applications. Double pass not available for 840 or 1060nm.

## Applications:

- Optical coherence tomography (OCT)
- Optical Fourier spectrum analysis
- Optical interferometry
- Delay generation & measurement
- Optical time division multiplexing (OTDM)
- Fiber sensors

## Unique Features:

- Compact
- Low insertion loss
- High stability
- High reliability
- Low cost

## Ordering Information:

MDL-003-XX-XX-X-XX-XXX

Wavelength:  
84 = 840 nm  
10 = 1060 nm  
13 = 1310 nm  
15 = 1550 nm  
35 = 1310/1550nm

Delay Range:  
10 = 100 ps

Connector Type:  
FC/PC, FC/APC,  
SC/PC, SC/APC or  
NC = No Connectors  
Others specify

Fiber Type:  
SS = SM  
PP = PM

### Configuration Notes:

- Wavelength: 35 option (dual-window 1310/1550nm) is available only for SM single-pass devices. PM or double-pass devices are single-window (e.g. 1310 or 1550nm) only.
- Double-pass only available with SM fiber.
- Double-pass not available for 840 or 1060nm.

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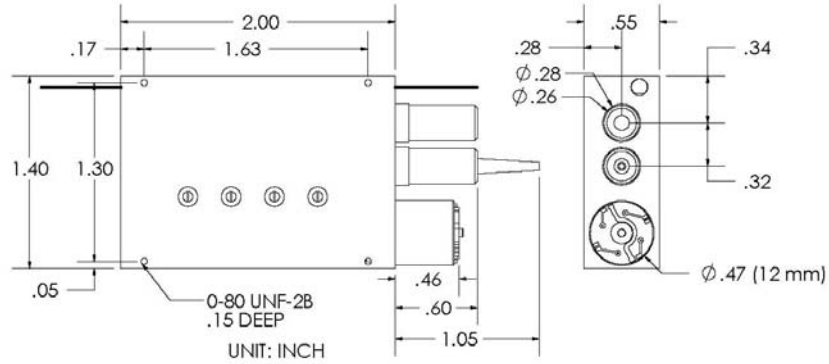
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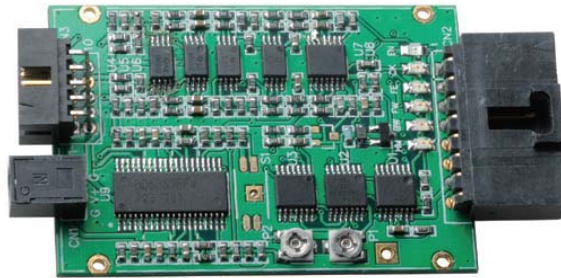
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## Dimensions:



## Optional Driver Board



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