Frequently Asked Questions for Optical Delay Lines

Motorized/Manual Optical Delay Lines (MDL/VDL)

1. Q: Is there any special gas in the variable delay line package that might influence interferometer applications?

A: There is no special gas in the standard package.

2. Q: What is the minimum (zero-state) delay of the manual variable optical delay line?

A: The minimum delay is on the order of 170 picoseconds, excluding contributions from pigtails. Each meter of the fiber pigtail will add approximately 5 nanoseconds to the delay. The standard manual delay line has a scale that reads in millimeters, with a movable vernier. The increments on the vernier correspond to 0.1 mm, which is equivalent to approximately 0.67 ps delay.

3. Q: What is the delay per turn for the manual delay lines?

A: It is about 1.8 ps/turn for single-pass models, and about 3.6 ps/turn for double-pass models.

4. Q: How much fiber is in the delay line? How much dispersion is expected to occur?

A: The actual optical delay path is mostly free space, so dispersion effects should be minimal. If dispersion is a concern, the fiber pigtail length can be minimized.

5. Q: Is driver software available for the motorized delay line?

A: There is no control program, but a remote control command list is provided in the user manual. Windows HyperTerminal or a similar program can be used to send ASCII code to the RS-232 serial port for delay control.

6. What is the operating wavelength range for the MDLs and VDLs?

A: Single-pass SM MDLs and VDLs are dual-window and function at 1310 ± 50 nm and 1550 ± 50 nm. . PM and double-pass versions are single-window and function at either 1550 ± 50 nm or 1310 ± 50 nm. Other wavelengths may also be available by special request.

7. Q: Is there a separate encoder output enabling tracking of MDL position without using serial commands?

A: This can be done for the MDL-002. Please request it when ordering. The MDL-003 uses a stepper motor, so there is no encoder output.

8. Q: Are the variable delay lines bidirectional?

A: Yes.

9. Q: What are the principal differences between the MDL/VDLs and the programmable optical delay generator (ODG)?

A: The MDLs and VDLs provide continuous optical delay variation of up to 1200 ps, with a free-space optical path. The ODG provides digitally variable optical delay of up to 500μs, single-pass, with a fiber delay path.

Time Delay Coils

10. Q: What is the fiber length tolerance of the compact time delay coils?

A: Fiber length is typically tested by OTDR.

The length tolerance is ±1m for for coil length up to about 4000m.

Tighter tolerances may be possible for shorter coils. Contact General Photonics for more information.

11. Q: What are typical fiber coil dimensions?

A: Inside coil diameter can be 2.25, 2.75, 3.0, or 3.5 inches. Generally, coils of < 2.5 km will have an inside diameter of 3.5". Coil height is typically 35 mm. The outside coil diameter depends on the fiber length. Other dimensions may be available by special request.

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