Fiber Optic Delay line Spool

Low optical loss, loss balance, zero dispersion, up to ms long delay

We uniquely produce FSPO Series Fiber Optic Delay Lines featuring low loss, accurate length control, loss compensation, and zero dispersion. Multiple fiber coils are housed in a rack mount enclosure. The fiber is coiled using an advanced fiber winding machine that eliminates internal stress to achieve the lowest loss. The optical loss can be balanced among each fiber loop or compensated with built-in attenuators for short fibers or optical amplifiers for long fibers, respectively. Zero-loss fiber delay lines can be made. Moreover, chromatic dispersion compensation fiber can be used to achieve zero-dispersion fiber optic delay lines. The fiber length thus delays time, is precisely measured and controlled using a special optical interferometer system. The Chromatic dispersion is measured using an Agilent system. These fiber spools provide precise delay time references for radar calibration applications. They can also be used in site diversity applications when system timing is critical. These spools can be used to mimic existing fiber in the ground as a transparent switch between the local and diverse sites. The FSPO Series Fiber Optic Delay Lines are designed for ease of use to provide unmatched performance for radar testing, signal processing, phased array antennas, and phase noise testing.

Features

- Zero Loss
- Zero Dispersion
- Up To ms Delay

Applications

- Radar System Testing
- Phased Array Antennas
- Signal Processing
- Electronic Warfare (EW) Systems

Specifications

Parameter	Min	Typical	Max	Unit
Center Wavelength	1310		1550	nm
Wavelength Range		± 50		nm
Delay Range	0.01		1000	µs
Delay Accuracy			0.1	ns
Attenuation (uncompensated) [1]			0.21	dB/km
Compensated Dispersion [1]		0		ps/nm-km
Return Loss	55			dB
Optical Power Handling		500	1	W
Operating Temperature	0		60	°C
Storage Temperature	-40		85	°C
Power Supply (AVC)	110		240	V
Power Consumption			250	W
Size	19" mount rack			

Notes:
[1] @ 1550nm

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Ordering Information

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Prefix	**Delay**	**Accuracy**	**Compensation [1]**	**Package**	**Amplifier [2]**	**Fiber Type**	**Connector**
FSPO-	1ns = A0001 10ns = A0010 100ns = 00001 1µs = 00010 1ms = 10000 Special = 00000	0.3% = 1 0.03% = 2 0.01% = 3	None = 1 Ps/1km = 0.5	Coil = 1 Rack = 2	No = 1 Yes = 2 Special = 0	SMF-28 = 1 Special = 0	FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/APC = 7 LC/UPC = U Special = 0

[1]. Unit is ps/km. Dispersion fiber will be incorporated to achieve the total chromatic dispersion value.
[2]. Amplifier will be set to compensate the loss to provide zero loss

Fiber Core Alignment
Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

Fiber Cleanliness
Fibers with smaller core diameters (<5 µm) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

Maximum Optical Input Power
Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the how handling by expanding the core side at the fiber ends.

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