



Applications

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

Features

- >2000 μ sec Delays - More Flexibility than Coax or Waveguide Solutions
- Switching Option Available
- Smaller Size - Conserves Rack Space
- Less Weight - Enables Airborne and Mobile Solutions
- 0.05 - 40 GHz Bandwidth - Replaces Multiple Waveguide Systems with a Single Link
- Flat Phase Response
- Minimal Triple-Transit Echoes
- Format Independence - Delay Line System Supports Changing Modulation Schemes
- Low Link Loss Options
- Low Temperature Sensitivity
- Manually and/or Computer Controlled

EMCORE's fiber optic RF & Microwave Delay Line System (DLS) offers superior performance for radar testing, signal processing and phased array antennas. Delay lengths of greater than 2,000 μ sec are available. The DLS can have a number of switchable delays as well as one permanent delay.

The DLS provides convenient RF input/outputs that connect to an internal RF transmitter and RF receiver accordingly. Internally, the RF signal is converted to an optical signal and transmitted over a fiber optic link to the receiver and provides the required signal delay time. Frequency range, delay length, and link performance requirements can be tailored over a wide range of performance levels to meet specific requirements. These options include RF amplification in the transmitter and receiver, as well as optical amplification for longer delays. The DLS can be designed with either standard single mode or dispersion shifted fibers. Dispersion compensation fibers are also available.

EMCORE's DLS offers compelling size, weight and performance advantages over traditional coax or waveguide solutions. A wide range of RF and optical performance options and packages are available. The system is supplied as a complete solution with all modules mounted in 19" racks that use standard AC power. Packaging options for the system include various rack configurations and temperature stabilized optical fiber.



Specifications

Typical RF Characteristics/Standard Features* measured with SITU3000TX and SIRU3000RX

Parameter	Value	Unit	Comments
Frequency Range	0.05-40	GHz	
Delay Range	3 to >2000	μ sec	
Delay Tolerance	< +/-2	%	
Phase Stability	$\Delta\phi \leq 2^\circ$ per 10 sec	--	Typical for 400 μ s DLS
RF Input Level	0 to 16	dBm	Typical
Deviation from Linear Phase	$\leq 10^\circ$	--	Typical (up to 18 GHz)
Amplitude Flatness	$\leq +/-3$	dB	 Typical
Amplitude Linearity	$\leq +/-1$	dB	
Gain (@ RF in = 0 dBm)	≤ -35	dB	
Return Loss/VSWR	$R_L > 15$ $\leq 1.43:1$	dB	
Spur Level	≤ -60	dBc	
Input 1 dB Compression Point	$\geq +16$	dBm	
2nd Harmonic (@ RF _{in} = 0 dBm)	≤ -45	dBc	
Noise Figure	≤ 70	dB	
RF Connectors	SMA @ F < 18 GHz K @ F > 18 GHz	--	

Typical Optical Characteristics

Parameter	Value	Unit
Optical Fiber	Single Mode	--
Optical Connectors	SC/APC	--

General Characteristics

Parameter	Value	Unit
Package	19" Rack	--
AC Input	110 or 220	V
Operating Temperature Range	+25 to +35	°C
Storage Temperature Range	0 to +50	°C

*Typical Values can be tailored to meet specific customer requirements. Please contact EMCORE with your specific needs.

EMCORE designs and builds fiber optic delay lines to address a wide range of applications, performance levels and packaging configurations. Our extensive experience in high performance RF and microwave photonics provides EMCORE with a breadth of capabilities unmatched in the industry. For a comprehensive review of your specifications and application, please contact EMCORE directly.

Laser Safety

Class IIIb Laser Product

FDA/CDRH Class IIIB laser product. All transmitter versions are Class IIIB laser products per CDRH, 21 CFR 2040 Laser Safety Requirements. All versions are Class 3B laser products IEC*60825-1:1993.

Maximum power = 10 dBm.

*Caution - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

*IEC is a registered trademark of the International Electrotechnical Commission.

