5021D External Delay System

18 GHz Fiber Delay Line, 65 μ-sec max

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Features

- Bandwidth to 18 GHz
- High Dynamic Range
- -40 to +65 C
- Delays to 65 microseconds
- Flat Frequency Response
- Low Phase Noise

Applications

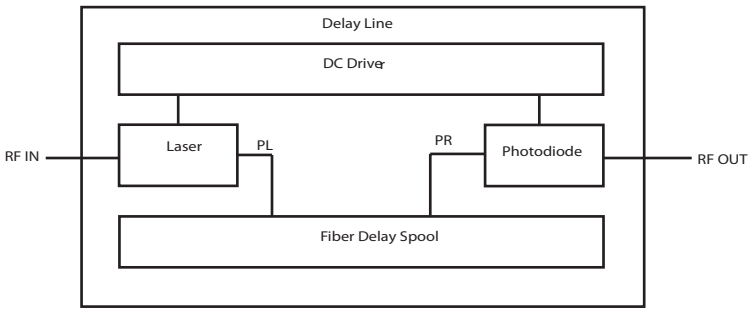
- Radar Testing
- Signal Processing
- Phased Antenna Array
- Phase Noise Processing

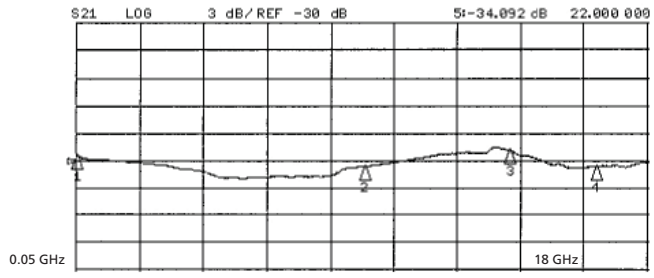
The 5021D-(X)13 / (X) 15, 18 GHz fiber optic delay line delivers unmatched performance for radar testing, signal processing, phased antenna array, and phase noise testing. This rugged device eliminates many of the problems that are inherent in alternative transceiver technologies. EMCORE's fiber-optic delay lines provide bandwidth that is essentially independent of fiber length, loss or delay, and triple transit signals that are immeasurable. In addition to enhanced electrical performance, the delay lines provide several mechanical advantages. EMCORE's technology takes advantage of the rigid yet flexible properties of fiber-optic cable to provide repeatable enhanced phase and group delay characteristics. The small size of these components allows for a long delay in a compact package with the superior temperature stability of fiber.

Ordering Information

Model Number	Description
5021D-A13-XXXXXX[1]	Delay Line, 3 GHz, SMA, Delay Time to 35 μ–sec
5021D-B13-XXXXXX[1]	Delay Line, 7 GHz, SMA, Delay Time to 35 μ–sec
5021D-C13-XXXXXX[1]	Delay Line, 13 GHz, SMA, Delay Time to 35 μ–sec
5021D-D13-XXXXXX[1]	Delay Line, 18 GHz, SMA, Delay Time to 35 μ–sec
5021D-A15-XXXXXX[1]	Delay Line, 3 GHz, SMA, Delay Time to 65 μ–sec
5021D-B15-XXXXXX[1]	Delay Line, 7 GHz, SMA, Delay Time to 65 μ–sec
5021D-C15-XXXXXX[1]	Delay Line, 13 GHz, SMA, Delay Time to 65 μ–sec
5021D-D15-XXXXXX[1]	Delay Line, 18 GHz, SMA, Delay Time to 65 μ–sec

Note 1: XXXXXX designates required delay time.
example: 5021D-A13-032550 is a 3 GHz system with 32.55 μ-sec delay





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Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Min.	Max	Unit
Operating Temperature Range of Baseplate	-40	+65	˚C
Storage Temperature	-55	+85	˚C
RF Input Power	-	20	dBm

DC Interface Characteristics

Pin Number	Min.	Typ	Max	Max Ripple	Current
1	14V	15V	16V	100 mV p-p	0.3 A max
2	4.5V	5V	5.5V	200 mV p-p	1.6 A max

Pin/Package Information

Nine-Pin, Male D-sub Connector

Pin Number	Function
1	+15 Vdc
2	+5 Vdc
3	Not Used
4	Ground
5	Ground
6	Photodiode Current Monitor
7	Alarm Common
8	Laser Current Monitor
9	Alarm

DC Monitor Voltages

- Photodiode current, pin 6:
  1V/1mA (into 1 MOhm load). Proportional to photodiode optical input power.
- Laser dc current, pin 8:
  1V/100mA (into 1 MOhm load)

Alarm Circuits

- Summary Alarm, pins 7 & 9:
- Closed when unit is OK. Open if fault or no DC power.

The alarm is a dry, form A contact. The alarm is a summary of :

1. +5 VDC regulator
2. Laser temperature
3. Laser optical output power
4. Photodiode optical input power.

Front Panel LED's

- Power on
- Laser Temperature Stable
- Laser Optical Power Stable
- Photodiode Optical Input Power

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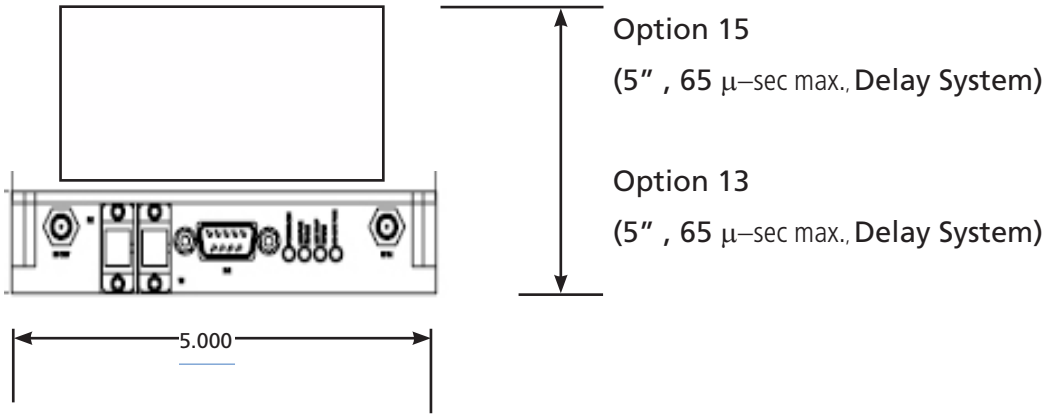
Electrical Characteristics

Parameter	5021D-A	5021D-B	5021D-C	5021D-D	Unit
Upper Band Edge Frequency	3	7	13	18	GHz
Lower Band Edge Frequency	0.05	0.05	0.05	0.05	GHz
Amplitude Flatness	4	4	5	6	dB p-p
Delay Housing -13 Housing -15 Housing			35 65		 μ–sec, max μ–sec, max
Insertion Loss @ 1 Ghz [1] 35 μ–sec (-13 housing) 65 μ–sec (-15 housing)			 -41 -46		 dB, max dB, max
Input RF Return Loss, max 0.05 - 7 GHz 7 - 18 GHz			 -7.0 -4.0		 dB dB
Output RF Return Loss , max 0.05 - 7 GHz 7 - 18 GHz			 -9.0 -6.0		 dB dB
Impedance			50		Ohm
Input 1 dB Compression, min.			+20		dBm
Input Third Order Intercept, min. 0.05 GHz – 3 GHz 3 GHz –18 GHz			 +30 +25		 dBm dBm
Noise Figure 0.05 GHz – 3 GHz 3 GHz – 7 GHz 7 GHz – 13 GHz 13 GHz – 18 GHz			 44 50 54 59		 dB dB dB dB

Outline Drawing



Option 15

(5" , 65 μ–sec max., Delay System)

Option 13

(5" , 65 μ–sec max., Delay System)

Laser Safety

This product emits no optical radiation, therefore it is considered eye safe. However it does contain a Class IIIB laser, so be serviced only by Emcore.

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