EasternOptX

Series 7000

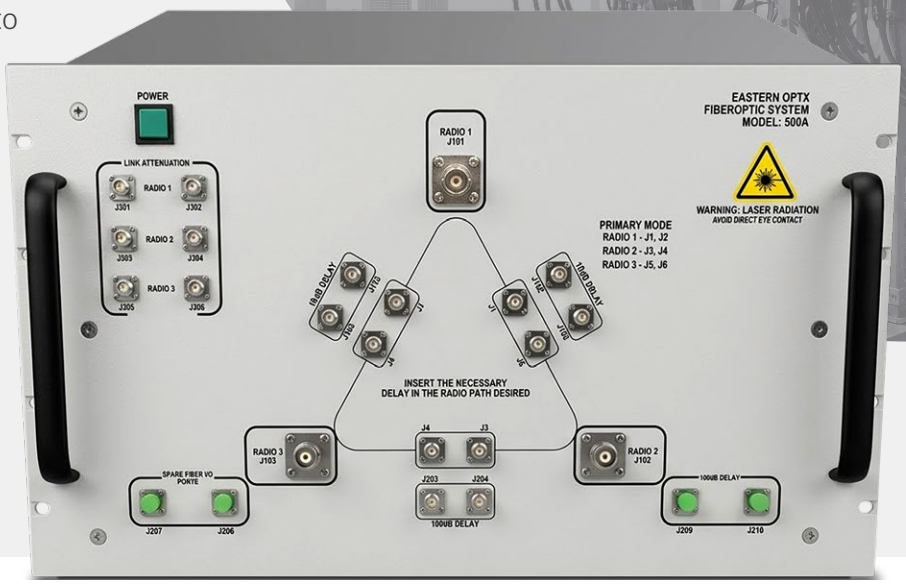
Global Provider of Test & Measurement Solutions

Series 7000 Multi-Radio Channel Replicator is a multi-radio test network that replicates the propagation path of real-world applications.

Applications

- Multi-Radio test network that replicates the propagation path of real-world applications
- Multiple radios may be connected to the network, which allows for full duplex operation
- Delays between radios may be fixed or variable, and optional amplitude control provides the appropriate propagation loss
- Doppler Option (Moving Target)

Configure Now



Series 7000 Multi-Radio Channel Replicator (Air Interface)

The Eastern OptX Series 7000 System is a multi-radio test network which replicates the propagation path of real-world applications. The system allows the user to test a variety of Air Interfaces using the same system without modification and at the same time. This is not a signal emulator. The systems use low-loss fiber optic cable to create the propagation delay associated with radio transmissions from 1 to 5000 MHz. Multiple radios may be connected to the network which allows for full duplex operation. Each radio may operate using a different or identical Air Interface. The delays between radios may be fixed or variable and optional amplitude control provides the appropriate propagation loss. The Series 7000 creates a test range right in your lab. It can be used as a design aid and as a test tool for new modulation and encryption schemes prior to expensive field testing.

Standard System Features

- 2 to 10 Radio Ports
- Radio to Radio distances from 1 to 50,000 m
- Delay Configurations: Discrete, Progressive, or Combined Discrete and Progressive.
- Multi-path Replicator Option
- Amplitude Control - Optical and/or RF
- Remote Control Interface
- Front Panel LCD Touch Screen Control
- External Delay Option for Future Expansion
- Octave Input Bandwidth (Multi-Octave systems available with automatic input frequency selector)
- Single or Multiple Air Interfaces may be tested simultaneously.
- Doppler Option (Moving Target)
- Interferer Injection (Jammer)

Eastern OptX a Raptor Scientific company
Bordentown, NJ 08505

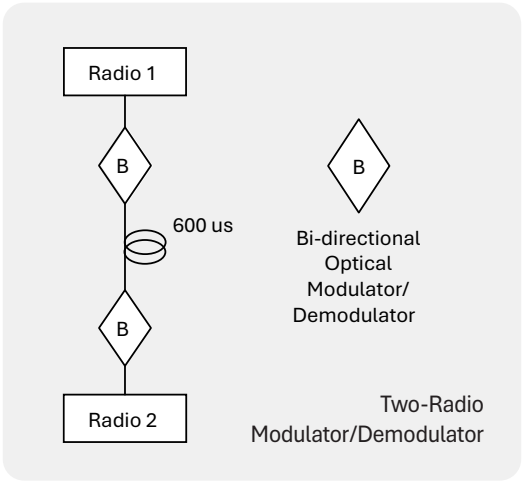
Manufactured in the USA
CAGE Code: 56N13

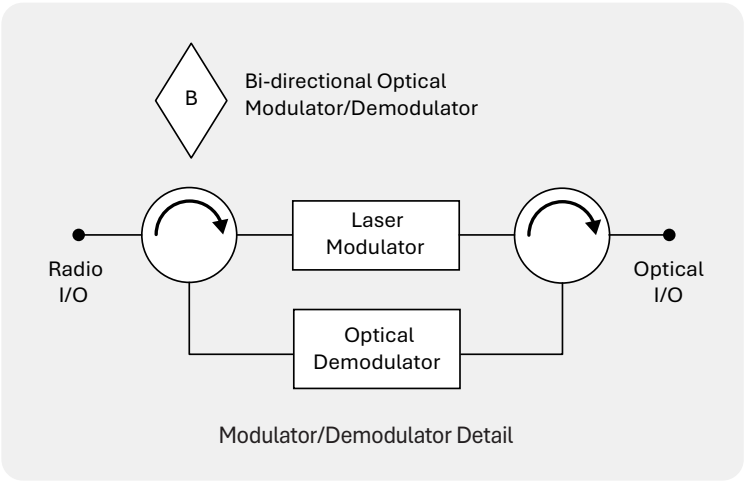
Phone: (877) 870-6789
E-mail: sales@eastern-optx.com

Series 7000 Multi-Radio Channel Replicator

System Description

A simple, two-radio system with a 600 microsecond delay is shown in Figure 1. The system consists of two bi-directional optical modulator / demodulator and a fiber optic delay. The delay may be fixed or variable and a variable attenuator may be added to replicate propagation loss. A radio is connected to ether end of the system and may transmit and receive simultaneously. Figure 2 shows the modulator / demodulator detail. The optical system is broad band (up to 18 GHz). The system bandwidth is limited by the input circulator (typically 1 octave).





Series 7000 Specifications

Parameter	Specification	Notes
Instantaneous Bandwidth	1 GHz	(Limited by input circulator)
Accuracy	1 %	Optional 0.5%
Repeatability	0.01%	At constant temperature
System RF Gain	6 dB	Typical, 50 us delay @ 5 GHz
VSWR	2 : 1	Maximum
Spurious Free Dynamic Range	100 dB/Hz$^{2/3}$	Minimum
1 dB Input Compression	-15 dBm	Minimum
Noise Figure	25 dB (13 dB Typ.)	Maximum (Lower NF optional)
Input/Output Impedance	50 Ω	Nominal
Dimensions	19” Rack Per EIA-310-D	2U, to 5U 18” - 22” depending on design

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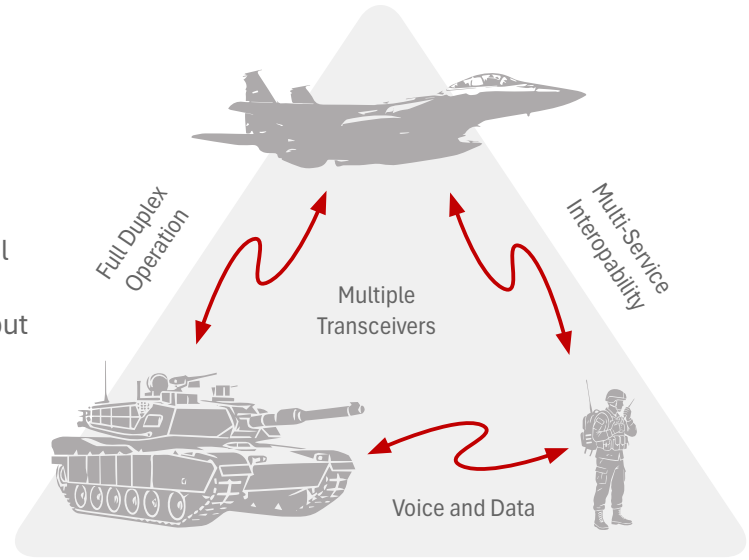
Series 7000 Multi-Radio Channel Replicator

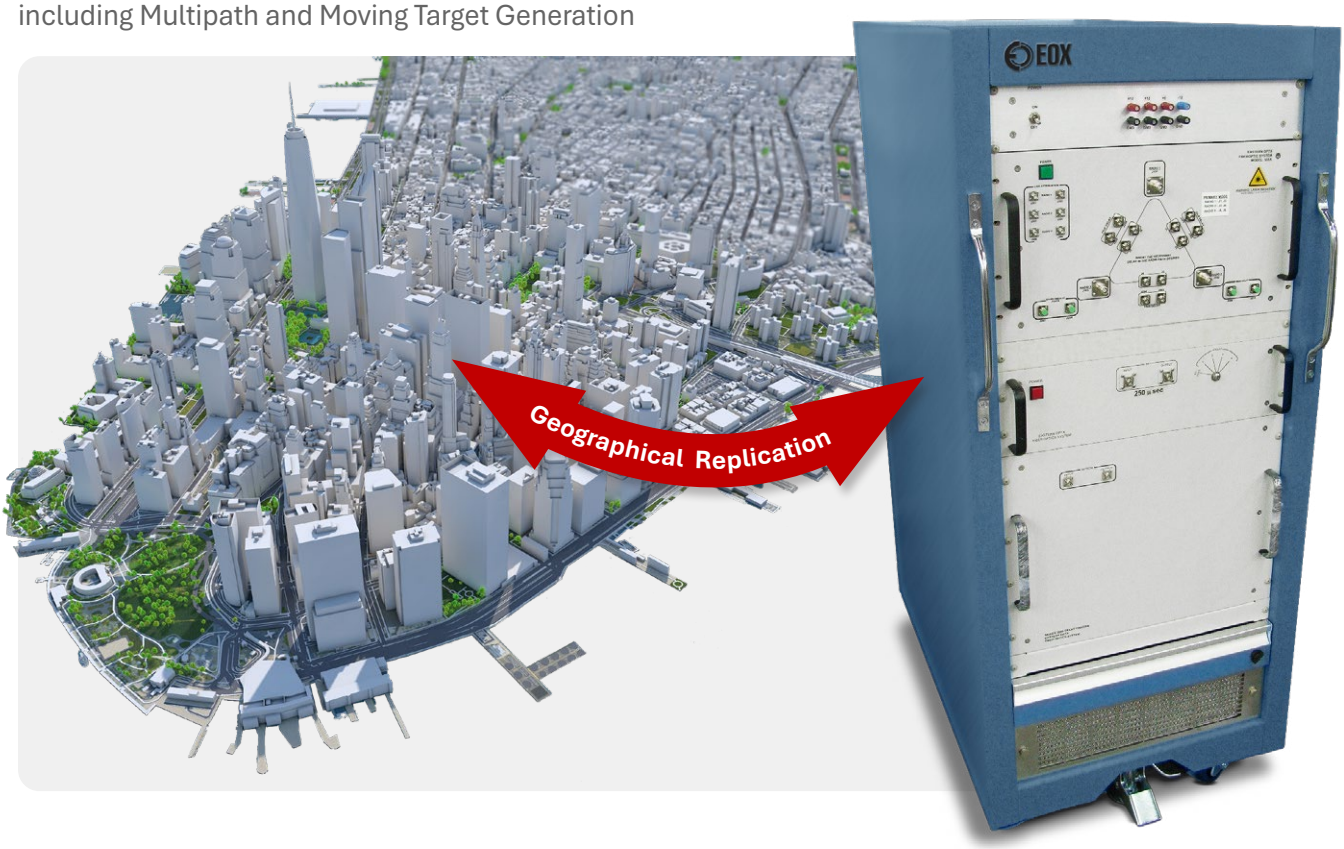
Series 7000 Options

- Frequency Bands* (3dB bandwidth):
  (1) 225 to 450 MHz
  (2) 960 to 1215 MHz
  (3) 1350 to 1850 MHz
  * Input RF Circulator BW. System BW: 0.1 to 3 GHz
- Optical Bandwidths from 0.1 to 18 GHz are available. RF input is limited to octave bandwidths by the input circulator. An optional tri-band input circulator (Part No. 535B) can automatically detect and select the proper input circulator to cover the input frequency range from 225 to 1850 MHz.
- Variable delays with Discrete or Progressive configurations
- Multipath Option (channels may be added)
- Star and Series Node Connections
- Propagation Loss Option
- Google Maps Radio Location Entry



Series 7000 Geographical Area Replication

including Multipath and Moving Target Generation



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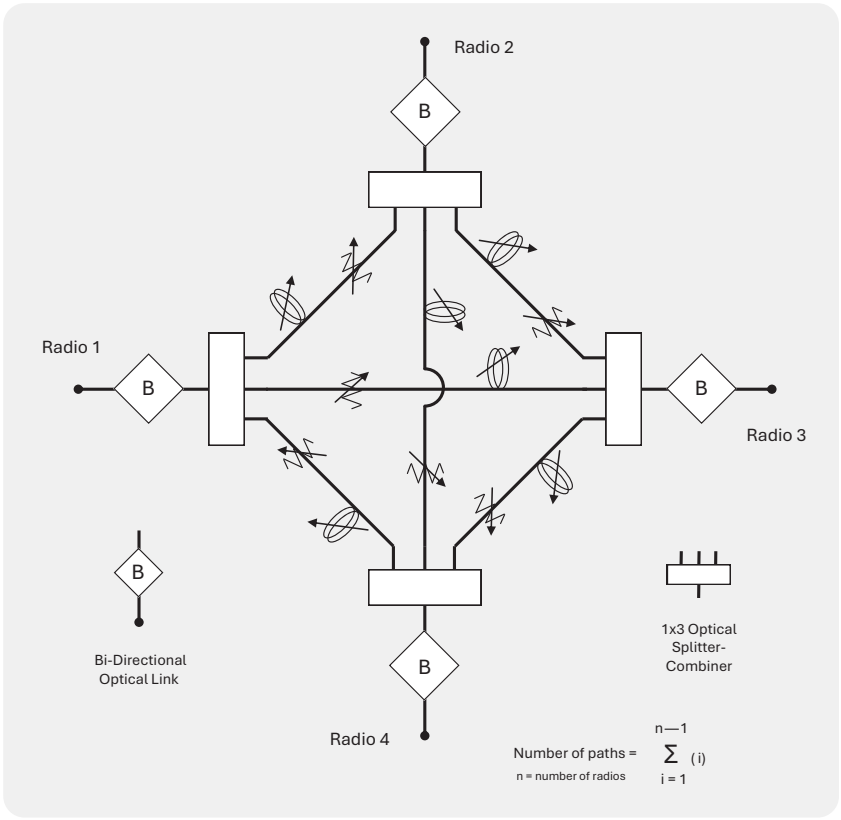
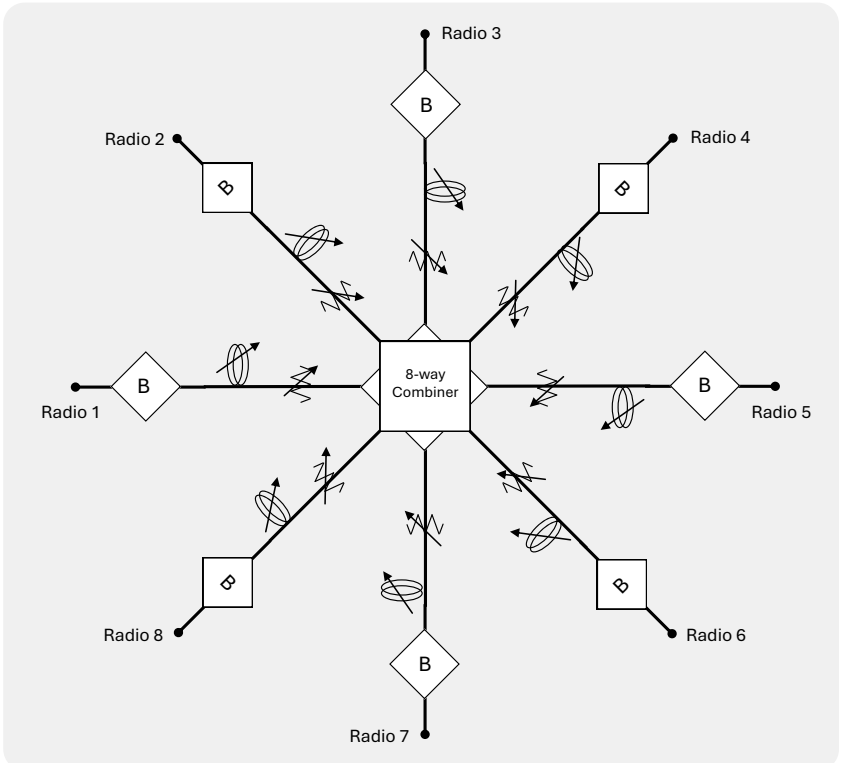
Series 7000 Multi-Radio Channel Replicator

4 Radio Modified Star Node Air Interface Tester



8 Radio Star Node Air Interface Tester



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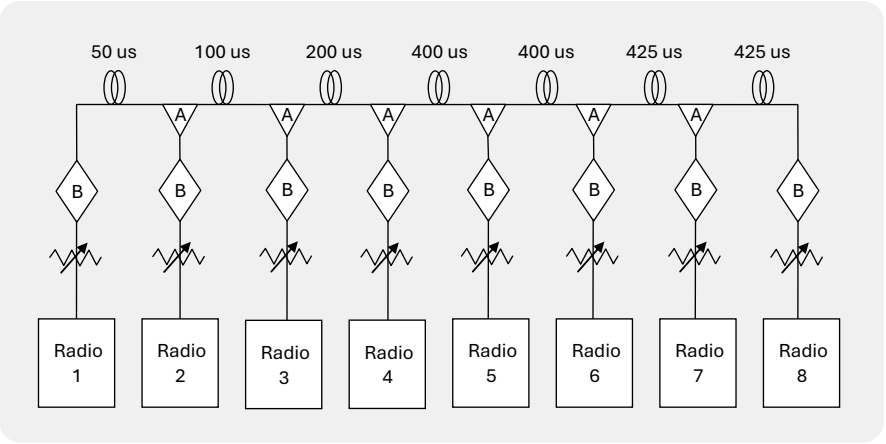
Series 7000 Multi-Radio Channel Replicator

8 Radio Series Node
Air Interface Tester



8 Radio Channel Replicator 150 NM Delays

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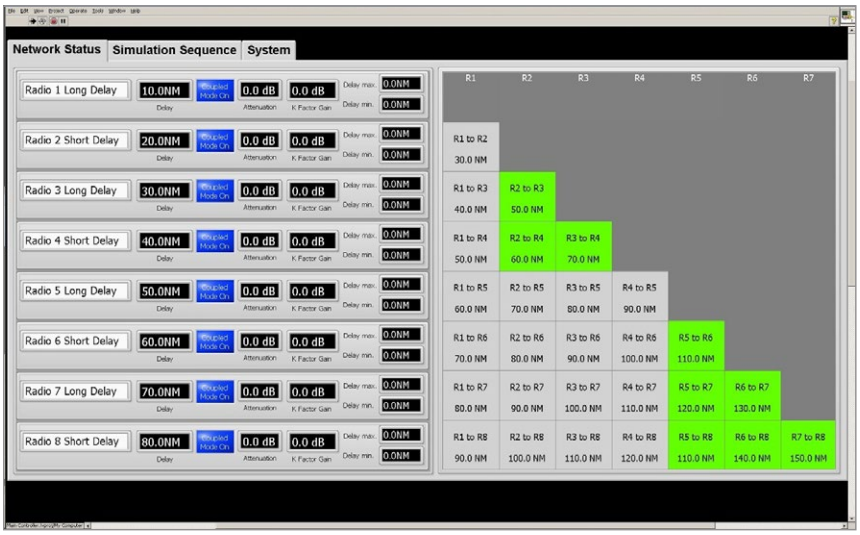
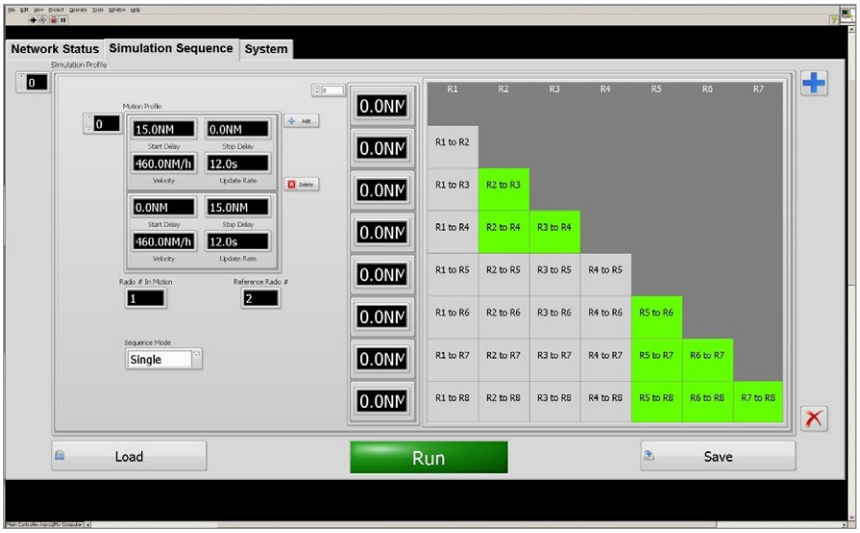
Series 7000 Multi-Radio Channel Replicator

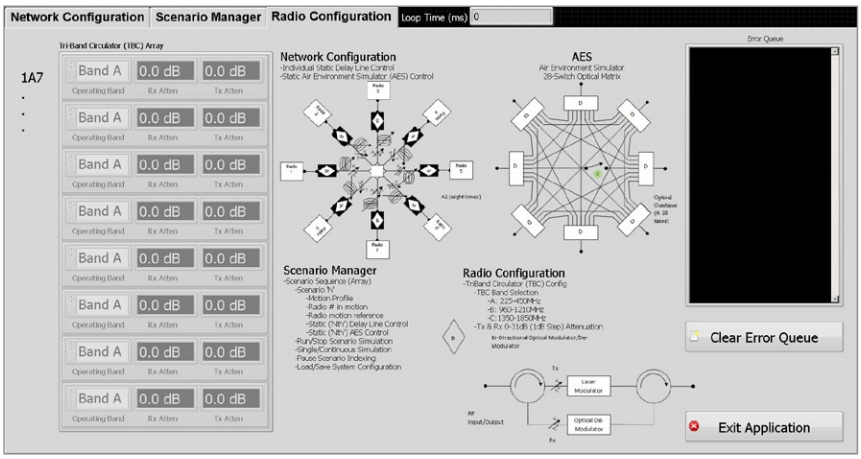
Series 7000 8 Radio Channel Replicator 150 NM Delays

GUI Features

- Individual Radio grouping and isolation capability
- Moving Target Scenario Generator
- Scenario Stacking
- Individual Radio Distance Control
- Propagation Loss Replication
- Gain Control
- Band SelectionX







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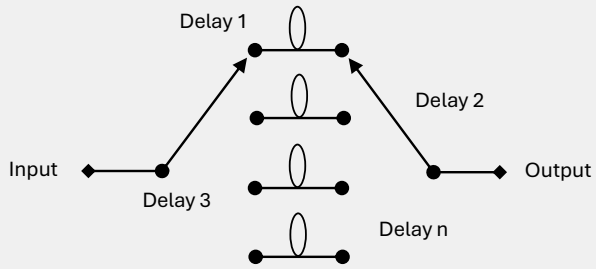
Discrete Delay



Delay Configuration Options

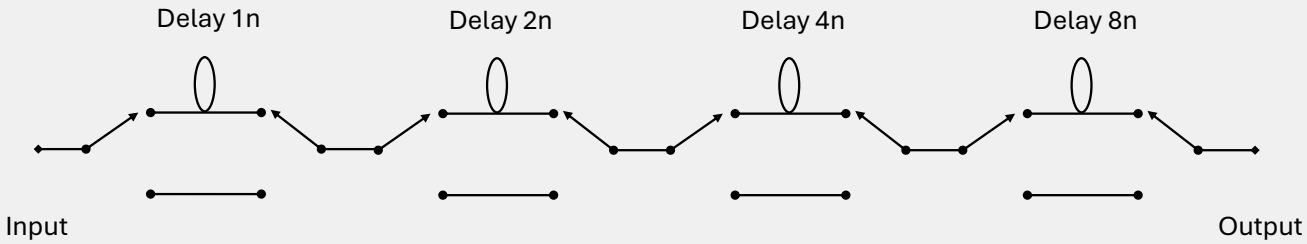
Progressive Delay

- Best solution for equally spaced delay step sizes
- Numerous possible delay combinations (Binary: 1, 2, 4, 8 etc.)
- More delays in a smaller package
- 1% overall accuracy

Discrete Delay

- Best solution for few delays or unequal delay steps sizes
- One to eight delays typical
- Better than 0.1% accuracy possible

Progressive Delay



Cell Delay Feature

- Up to eight (8) switchable delays can be configured separately
- When ordering, let the Eastern OptX salesperson know the desired total round-trip delay for each cell (in µsec)
  Example: Delay 1 (5 µsec), Delay 2 (8 µsec)...

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