

## High frequency up to 8.0 - 18GHz Optical Delay Lines



### Key Features:

- Delay 0.1 to 250  $\mu$ sec  
(Upon special request >250  $\mu$ sec)
- Supports frequencies from 0.1 GHz to 6GHz.
- Delay accuracy <1%
- Customized solution with short delivery time
- High Dynamic Range
- Excellent Phase noise
- Options
  - Fixed Gain control
  - Digital Attenuation
  - Option for fiber expansion

### Configurations:

- Fixed delay line up to 700 usec and more
- Progressive ODL up to 8 different delays
- MINI ODL up to 15  $\mu$ sec
- Other configurations upon request

### Applications:

- Radar Calibration testing
- Signal and Phase Noise processing
- Extension of radar range site
- Clutter Canceled
- EW systems
- Path Delay Simulation

RFOptic's high frequency up to 8.0GHz - 18GHz optical delay line (ODL) series provides a high performance solution for testing and calibration of radar systems, or for RF communication. The ODL converts analog RF signals to optical signals and back. The RF input signal is converted into an optical modulated signal, which is then transmitted into a single mode fiber, creating a fixed time delay defined by the fiber length. After passing through the fiber, the optical signal is converted back into an electrical RF signal, which is identical to the input RF signal.

The ODL can be purchased with a switch card supporting up to 8 predefined time delay values in a single ODL unit. For certain applications, RFOptic offers low cost ODL solutions of up to 6GHz with direct modulation, and up to 8GHz-18GHz based on indirect modulation.

We can provide any fixed time delay between 0.1 and 250  $\mu$ sec. The Optical Delay Line is operated as a standalone unit with no need for any intervention by the operator. It can be also controlled externally from a PC through various communication user interfaces. At special request, >250  $\mu$ sec is an option.

RFOptic's ODL unit is a compact solution, which provides superb performance including accurate time delay and with an ultra-silent operation.

For testing and calibrating radar systems or for RF Communication featuring accurate time delay with ultra-low noise, RFOptic offers its mini ODL solution based on direct modulation.

For short delay lines up to 15 usec, RFOptic offers MINI ODL up to 15 usec single delay lines in a compact robust box. The frequency range is between 0.1GHz up to 6GHz.

### Optical Delay Line up to 6GHz specifications:

Electrical	Unit	Specifications Typical	Note
Frequency Range	GHz	0.1 to 8GHz - 18GHz	Any frequency up to 8GHz - 18GHz
Delay Range	µsec	0.1 to 250	Any delay upon request up to 700 usec
Delay Accuracy	%	0.5	Minimum delay of 25 nsec
Delay Repeatability at +/- 5 OC variations	%	0.05	
ODL System Gain	dB	-0	Without delay and switches
1dB Compression Point	dB	> 15	
Noise Figure [1] at Zero Delay	dB/Hz <sup>2/3</sup>	104	
Gain Flatness	dB	± 2.0   2.5   3.0	for 0.1 - 8   15   18 GHz Bands
Maximum Input No damage	dBm	23	
Spurious	dBm	-100	
Phase Noise at 6 GHz at 10KHz offset	dBc/Hz	-100	
Pre/Post Amplifier		Optional	Value will be offered with the proposal
VSWR Input / Output	dBm	2.1	
Input / Output impedance [6]	Ohm	50	
<b>Optical</b>			
1310nm laser CW optical output power	mW	<5	1550 is an option
Optical Receiver	Nm	1260-1550	
Main AC Supply	VAC	220/110	DC supply is an option
RF Connectors		SMA	
Fiber Connectors	-	FC/APC	For additional fibers spools
Control – Manual (front panel)			
Control -Remote (rear panel)		RS-232 or Ethernet	
<b>Mechanical and Environmental</b>			
Operating Temperature	C°	-20 to +60	
Storage Temperature	C°	-45 to +85	
19" Rack Mounting X 19"	mm	440*450*133	

To order or for more information, please contact your local RFOptic distributor or send an email to [sales@rfoptic.com](mailto:sales@rfoptic.com)