



Applications:	Key features:	Options:
Radar Calibration & Testing	Easy Operation and Maintenance	
Signal & Phase Noise Processing	Frequency Range: L,S,C,X and Ku	
Extension of radar range site	Delay accuracy: 1% or 0.1% upon request	
RF Communications Links & Antenna remoting	Compact enclosure Full BIT support Remote control: RS-232	

**RFOptic's** optical delay line ODL series provide a high performance solution for testing and calibration of radar systems or for RF Communication. The ODL converts analog RF signals at different frequency ranges to optical signals and back, utilizing direct or indirect modulation ODL architecture. 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 the fiber, the optical signal is converted back into an electrical RF signal, which is identical to the input RF signal.

The ODL 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 RS232 or Ethernet interfaces.

RFOptic's ODL unit is a compact solution, which provides superb performance including accurate time delay, low spurious emission level, and with ultra silent operation. The ODL can be purchased with an integral switch unit supporting up to 8 predefined time delay values in one ODL unit.

Table below describes the typical specifications ODL .

Parameter	Unit	Specifications	Note
<b>RF</b>			
Frequency range [1]	GHz	L,C,S,X,Ku	
Delay time [2,3,4]	µsec	0.1-70	pre-fixed delay defined by customer
Delay accuracy [5]	%	1	Minimum accuracy of 25 ns
Delay repeatability	%	<0.01	at +/- 5 °C variations
System RF gain [6]	dB	-30	not including delay line loss
Noise Figure at 10GHz [6]	dB	40	not including delay line loss
Group Delay Variation	psec	± 100	
1dB input Compression point	dBm	> 15	
Max input RF power	dBm	+23	
Spurious	dBc	<-100	
Phase noise (at 10kHz offset)	dBc	<-100	
RF Flatness (not including amplifier) [7]	dB	± 2.0   2.5   3.0	for 0.1-8   15   18 GHz Bands
VSWR	-	2:1	
Impedance	Ohm	50	
<b>Mechanical</b>			
1550 nm laser CW optical power	mW	≤ 20	
Communication [8]	-	RS-232	
RF connectors	-	SMA	N type is available
Main AC supply	VAC	220/110	DC version is available
Enclosure (19")	mm <sup>3</sup>	220 x 250 x 55	
Operating Temperature	°C	-20 ÷ +60	
Storage	°C	(-40) ÷ +85	

- (1) L, S, C, X, Ku versions are optional.
- (2) Any fixed delay between 0.1 to 70 µsec.
- (3) RF bypass is optional.
- (4) Dispersion compensator unit for long delay / high frequency is optional.
- (5) 0.1% accuracy is optional for long delay line.
- (6) Not including delay line loss which is about 1dB per 10 µsec delay.
- (7) 20GHz ODL is optional.
- (8) TTL or Ethernet are optional.
- (9) Full BIT is optional (using signal detection at the receiver).