

## 4GHz to 6GHz Altimeter Optical Delay Line



### Key Features:

- Altitude range 83ft to 16,467ft with 1ft steps
- Display Altitude or Range, Delay, Round-trip Distance
- Minimum altitude (zero state delay) 83ft
- Imperial and metric altitude display
- Compatible with high input power.
- Output power is proportional to the altitude.
- Supports frequencies from 1MHz up to 6GHz
- Handles all altimeter signal types, encodings, and modulations, including Pulse and FMCW signals
- Delay accuracy of 1%
- Excellent Phase Noise
- Amplitude Control with 30dB LNA On/Off and 31.5dB 0.5dB step input and output step attenuators
- High dynamic range

### Options:

- RF or Optical bypass, reduced zero delay
- DC Power
- Fast altitude switching (<100us)
- Expanded altitude range and finer steps
- Built in diagnostics

### Monitoring:

- Remote management and controlled over Ethernet, USB or using a front panel navigation switch

### Applications:

- Altimeter calibration and test

RFOptic's standard Altimeter Optical Delay Line (ALT ODL) provides a high-performance solution for testing and calibration of radar altimeter systems.

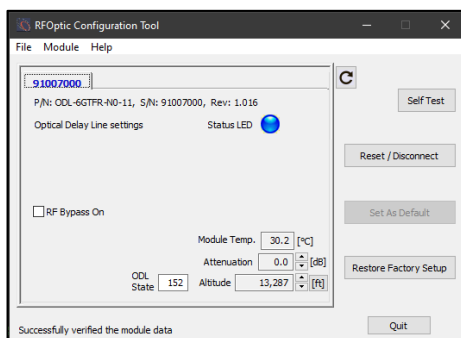
The RF input signal is converted into a modulated optical signal, which is then transmitted into a single mode fiber, creating a fixed time delay defined by the fiber length corresponding to a desired altitude. After passing through the fiber, the optical signal is converted back into an electrical RF signal, identical to the input RF signal.

The ALT ODL is configured to emulate a commonly used range of altitudes with a fine altitude step of 1ft. Metric steps and appropriate metric display is configurable.

RFOptic's Alt ODL is a compact solution, which provides superb signal performance and altitude simulation accuracy with reliable operation.

Local Control and Monitoring are provided via the front panel LCD and navigation switch. Remote M&C is available with an Ethernet webserver Interface supporting HTML, REST API and SNMP protocols. Local USB control is optional. Direct TTL altitude control option is also available when sub-millisecond fast switching is required.

The Altimeter ODL offers wide altitude coverage reaching 16.467 feet or 5Km and very high accuracy of 0.3ft (10cm) accuracy in the smallest altitude segments, high stability and resolution of 1ft. These features are provided in one 3U enclosure.



USB GUI Screen

```
Ready 29°C
Altitude:→ 4,049m
RF Bypass: Off
Amp: Off Att: 0.0dB
```

```
Stabilizing 29°C
Altitude:→ 13,287ft
RF Bypass: Off
Amp: Off Att: 0.0dB
```

LCD Panel (in m and ft.)

## Progressive Altimeter Optical Delay Line Specifications

P/N: ALT ODL-6G-S933      ERP P/N: SYSA00898

Parameter	Specification (typical)	Unit	Comments
<b>RF &amp; Optical</b>			
Frequency range	4 – 6	GHz	Full band 1MHz to 6GHz
Delay Steps (Main delays)	1,2,4,8,16,32,64,128,256, 512,1024,2048,4096,8192	ft	One-way altimeter height or range 14 main segments, 2 <sup>14</sup> 1ft steps
Delay Accuracy <sup>[1]</sup>	0.3 0.5 0.5%	ft	1, 2, 4, 8 ft segments 16, 32, 64 ft segments All others
Optical switching time	≤ 10	ms	8ms typical
ODL Internal Delay <sup>[1]</sup> (Zero state delay)	83 ± 2	ft	Zero state delay adds to all delay settings
Delay repeatability at +/- 5 °C variation	≤ 0.01	%	
ODL system Gain	-12 to -33	dB	Gain varies with altitude settings
Gain Flatness	± 0.5	dB	
1dB Input Compression Point <sup>[2]</sup>	30	dBm	Using 30dB fixed input attenuator
Gain control <sup>[3]</sup> , step attenuators/step	30, 31.5/0.5, 31.5/0.5	dB	Built-in LNA, Input (Tx), output (Rx)
SFDR	102	dB/Hz <sup>2/3</sup>	
Spurious <sup>[4]</sup>	-90	dBc	
Phase Noise at 6GHz at 10KHz Offset <sup>[3]</sup>	-135	dBc/Hz	
Spurious	≤ -80	dBm	
Max. Input RF Power	+37	dBm	
VSWR Input (max)	1.5:1	-	
<b>Mechanical, Electrical, Other</b>			
Main AC Supply	110/220 50/60	VAC Hz	
RF Connectors	SMA	-	
Display (front panel)	LCD screen	-	
Control – Manual (front panel)	Nav. Button	-	
Control – Remote communication	HTML/REST/SNMP	-	
19" Rack Mounting	(3U) 440 x 500 x 133	mm	
Operating Temperature	0 to 60	°C	

[1] Display shows accurate altitude including the Zero State Delay

[2] Up to 45dBm Input P1dBc can be set with the Tx built in step attenuator

[3] Controlled through Ethernet web interface

[4] Input signal at Ip1dBc - 3dB at 1GHz