

Altimeter Optical Delay Line



Key Features:

- Altitude range 0.5ft to 100,000ft
- Display Delay, Round-trip Distance, Range or Altitude
- Custom steps
- Supports frequencies from 0.5MHz up to 6GHz
- Handles all altimeter RF signals, encoding, and protocols, including Pulse and CW signals
- Delay accuracy of 0.1%
- Excellent Phase Noise
- Amplitude Control with 30dB LNA On/Off and 31.5dB 0.5dB step input and output attenuators
- High dynamic range

Options:

- RF and Optical bypass
- DC Power
- External Delay(s)
- Optical Power Indication
- Built in diagnostics
- Doppler modulation

Monitoring:

- Managed remotely over Ethernet, USB or manually via a navigation switch

Applications:

- Radar Calibration Testing
- Altimeter

RFOptic's high frequency Altimeter Optical Delay Line (ALT ODL) provides a high-performance solution for testing and calibration of radar altimeter systems, including simulation with Doppler modulation that simulates target movement.

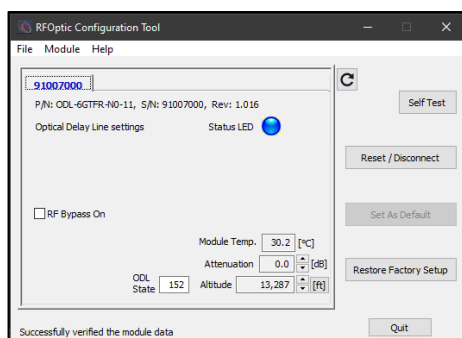
The RF input signal is converted into a modulated optical signal, which is then transmitted into a single mode fiber, creating a fixed time delay defined by the fiber length corresponding to a desired altitude. After passing through the fiber, the optical signal is converted back into an electrical RF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

The ALT ODL can be configured to emulate a single altitude or up to more than 2^{24} altitude steps (24bits) with a minimum step of 0.5ft (15cm).

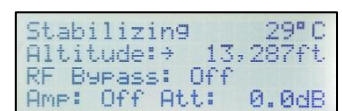
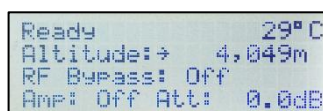
RFOptic's ODL unit is a compact solution, which provides superb signal performance and altitude simulation accuracy with an ultra-silent operation.

Local Control and Monitoring are provided via the front panel LCD and navigation switch. Remote M&C is available via a USB interface using the RFOptic App or over an Ethernet Interface using HTML/SNMP/REST protocols. For system integration, USB or REST API and MIB are provided. Direct TTL option is also available when sub-millisecond fast switching is required.

The Altimeter ODL offers very high accuracy better than 0.3ft (10cm) in the smallest main segments for altitude steps under 6ft and >0.1% above. The maximum altitude can reach 100,000 feet or 30Km in one enclosure.



USB GUI Screen



LCD Panel (in m and ft.)

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| Electrical | Unit | Specifications (typical) |
|--|----------------------|-----------------------------|
| Frequency range ^[1] | GHz | 0.1 - 6 |
| Altitude range ^[2] | ft | 1 - 100,000 |
| Altitude segments | ft | 1, 2, 4, etc. or Custom |
| Number of Altitudes | each | 1 to 2 ²⁴ |
| Altitude Accuracy | % | 0.1 |
| Altitude Repeatability at +/- 5°C variations | % | 0.01 |
| Switching time | ms | < 10, <0.1 or <1μs optional |
| Amplitude Control (Input 30dB LNA On/Off , 31.5dB/0.5dB step attenuator, Output 31.5dB/0.5dB step attenuator) | dB | 90/60dB |
| Built in software activated LNA | dB | 31 |
| 1dB Compression Point (LNA Off/LNA On) | dB | 0 to -31 |
| SFDR | dB/Hz ^{2/3} | 105 |
| Gain Flatness | dB | ±2.5 |
| Maximum Input No damage | dBm | 20 |
| Spurious (input signal at 1p1dBc - 3dB at 1GHz) ^[3] | dBm | -85 |
| Phase Noise at 6GHz at 10KHz Offset ^[3] | dBc/Hz | -135 |
| VSWR Input / Output | dBm | 2.1 |
| Input / Output impedance | Ohm | 50 |

| Optical and Electrical | | |
|--------------------------------|-----|-------------------|
| Main AC Supply | VAC | 220/110 |
| RF Connectors | | SMA or N Type |
| Control – Manual (front panel) | | Navigation Switch |
| Control – Remote (rear panel) | | USB, HTML, REST |

| Mechanical and Environmental Parameters | | |
|---|----|------------|
| Operating Temperature | C° | 0 to +60 |
| Storage Temperature | C° | -45 to +85 |

[1] Other frequencies upon request.

[2] Other Optical Delay Lines upon request.

[3] At LNA Off

[4] For an additional information of this product, see brochure of *Programable 6.0GHz RF Over Fiber*.

To order or for more information, please contact your local RFOptic distributor or [contact us](#)