VIASAT MERCURY FSO

Expeditionary Free Space Optical (FSO) Communications Terminal

Overview

The Mercury FSO system integrates state-of-the-art technology advancements to provide a resilient networking system of modem, terminal controls, and tracking mechanisms.

The system uses non-visible lasers and atmospheric effects mitigation to build a high-capacity, resilient communications network with Low Probability of Intercept and Low Probability of Detect (LPI/LPD).

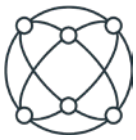
Additionally, the Mercury FSO system has Electronic Warfare (EW) resistance and a range-extendable communications system specifically tailored to operate in tactical environments with operational ranges beyond 50 km and throughput of up to 20/40 Gbps.

Optical Link Parameters

- Operates in Optical C-Band (1550 nm) and does not require any spectrum licensing
- Class 1M eye safe at the aperture
- Fast fine tracking loop algorithms compensate for high frequency beam motion caused by the atmosphere

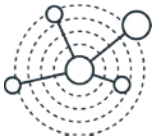
Mercury FSO Top Level Performance

- Data rates of up to 20/40 Gbps bidirectional
- Operational ranges beyond 50 km for terrestrial point-to-point links
- Robust automated acquisition
- Rapid setup and teardown



Provides a robust, persistent link of up to 20/40 Gbps, at operational ranges beyond 50 km.

Leverages existing state-of-the-art optical link technology, modified to support expeditionary environments.



High reliability gimbal mount utilizes inertial line-of-sight (LOS) stabilization with geo-referenced pointing.

Automated tracking employs a beacon and high-resolution short-wave infrared (SWIR) camera.

Robust margin to maintain operational link through poor visibility.

Automatically reestablishes link after power loss.

Viasat Mercury Free Space Optical (FSO) Communications Terminal

LINE OF SIGHT CONTROL

- Autonomous acquisition with wide angle beacon laser, with a high-resolution short-wave infrared acquisition camera
- Dual-stage continuous active line-of-sight tracking
- Provides link stability on a variety of mounts including masts, vehicles, ships, etc., including on-the-move applications

LINK ROBUSTNESS & DATA SECURITY

- Automatic link adaptation to react to variations in environmental conditions
- Adaptive throughput modem with ARQ protocol for burst error immunity
- FIPS 140-2 Type II Capable & FIPS 197 Compliant
- Low probability of intercept and low probability of detection (LPI/LPD)

MODEM

- Automatic adaptation of link parameters to optimize performance despite variations in environmental conditions

Main Components

Leverages state-of-the-art FSO terminal technology

FSO MOUNT

- FSO gimbal mount leverages high performance inertial stabilization with high resolution tracking and precision stability
- Provides +/- 167.5 degrees field of view in azimuth and +/- 30 degrees in elevation

SWaP

Size	See table
Weight	<100 lbs.
Power	48 VDC, 200.W peak

DATA AND COMMAND INTERFACES

Client Data Interfaces	1310 nm SFP+, Ethernet
Command and Control	Ethernet

ENVIRONMENTAL

Operating Temperature	-30°C to 55°C
Enclosure	Outdoor/Marine MIL-STD-810 compliant

SIZE

	Overall Dimension (inches)		
	L	W	H
Gimbal (including Payload)	23.2	24.8	24.3
Payload	15.9	11.5	5.4
Baseband Kit (Rugged 4U 19 in. rack)	26.5	22.5	11.5

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