



15378 Avenue of Science, San Diego, CA 92128

+1 858-332-0700 | sales@spacemicro.com

spacemicro.com

A HISTORY OF RELIABILITY.

20+ years in business

100+ subsystems orbited

Millions of hours of space flight heritage

Zero on-orbit failures

Securely Move High Volumes Of Data With μ LCT™ Laser Communication Terminals

High Throughput Connectivity to 400+ Gbps

Low Probability of Intercept and Detect

Resilient, Anti-Jam Alternative to RF

Configurable for GEO, MEO, LEO and Ground



Laser Communication Terminals for Multiple Applications

Space Micro offers a range of μ LCT™ solutions for civil, commercial and defense applications. Our solutions blend the best of traditional rad-hard-by-design products with fully qualified terrestrial technologies to produce leading-edge solutions. The μ LCT can be used as an OISL (Optical Inter-Satellite Link), a spacecraft to ground link, or a spacecraft to UAV link.



SINGLE APERTURE OPTICAL HEAD ASSEMBLY

Ideal for GEO Applications

- μ LCT™ provides full duplex GEO-to-GEO crosslinks at 80,000 km.
Baseline: 10 cm Optics
- Scalable implementation to support much larger systems
- Typical Field of Regard: +/- 90° azimuth; +/- 30° elevation
- Flexible Mini Bench Design
- Accommodation for Single Mode Fiber (SMF) or detector
 - Support for 1550 nm and/or 1064 nm

Example SWaP: 10 Gbps Quad Head Laser Communication System (4-OHA)

ELEMENT	QUANTITY	SIZE (HxWxD) mm	WEIGHT kg	POWER W
LTA	1	108 X 197 X 353	8.8	76
OPA (3 W Dual)	2	30 X 75 X 200	3.8	67
OHA	4	294 X 294 X 274	13.0	25
Cabling	4	N/A	0.5	N/A

Systems are tailored to specific customer needs to maximize SWaP profiles.

DUAL APERTURE OPTICAL HEAD ASSEMBLY

LEO, MEO and Applications Requiring a Wide Field of Regard



- Baseline: 7 cm Optics
- Ideal for most LEO/MEO applications
 - Smaller optics for lower SWaP, lower data rate, shorter range missions
- Typical Field of Regard: +/- 180° azimuth; +95° / -20° elevation
- Dual Refractive Optics
- Spatial diversity provides simultaneous Tx / Rx with single wavelength
 - Simplifies assembly and test for volume manufacturing
 - Integrated beam control

SECURE, HIGH-DATA-RATE COMMUNICATIONS

Laser communications applications tend to fall into two general CONOPs.

Network Data

Lasercom allows you to move information across your network at light speed, with high throughput connectivity from a few Mbps to 400+ Gbps. Other key benefits include efficient data routing with single hop delivery, and more precise control over destination and downlink targets. Laser links serve as a backbone to efficiently route data within a network:

- Constellation crosslinks
- Efficient data routing
 - Requires fewer downlinks

- Single hop data delivery
- Eliminate double hops

- Sovereign landing of information
- Control where information is brought to Earth

Source Data

Collect and move critical information from multiple sensors and platforms with security — low probability of detect or intercept — and resilience. Source data can come from sensors and other collection sources originating in space, air or on the ground.

- High throughput data offload
- Shorter connection windows needed
 - Enables new space sensors

- Increased visibility of LEOs from GEO
- Never wait for a ground station pass

- Secure and Resilient link
- Alternative to traditional RF Communications

- Ultra-long-range deep space
- Reach farther, faster

- Space based data aggregation
- Collection and processing of data to drive decisions

- LPI/LPD platform to space
- Control who sees you are communicating

LASER COMMUNICATION TERMINAL

Overview of high-level architecture. Terminals are configurable to mission-specifics.

Optical Head Assembly

Optics, System Tx / Rx, Pointing, Signal Detection
Beam Control Subsystem (Option)

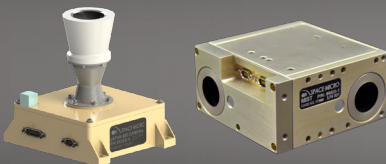


Optical Power Amplifier



Star Trackers

Attitude and Rate



Lasercom Terminal Assembly

Modem(s)
Beam Control
Power Management

