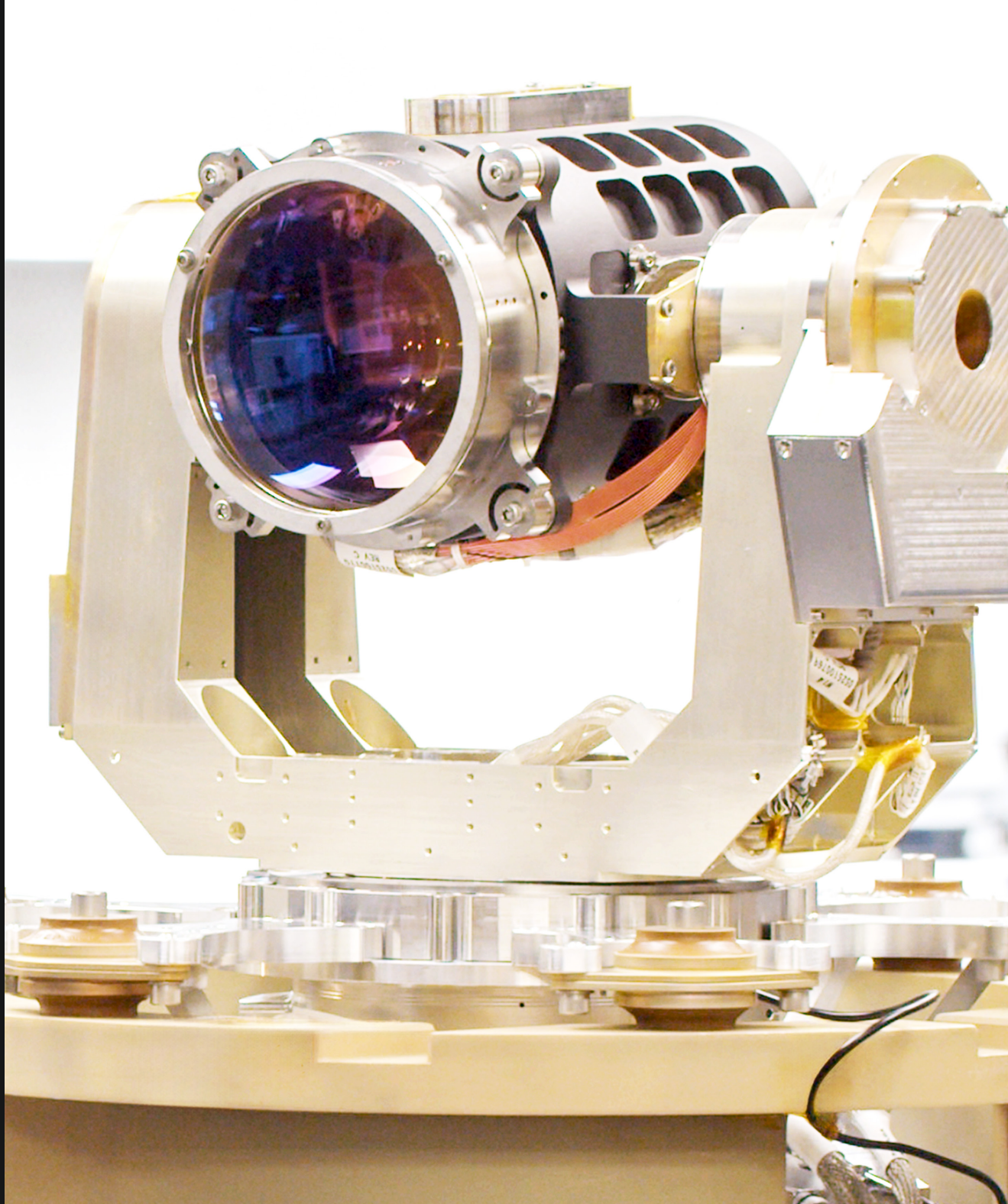


LaserComm

LASER COMMUNICATIONS TERMINALS



With 40+ years of optical communications experience, AV is the industry leader in optical jitter control and precision pointing. Our laser communication terminals incorporate our experience in precision optical and acquisition and tracking systems to maintain line-of-sight for long-haul optical communications.

AV's flexible optical designs incorporate precise measurement and mitigation of external and internal vibrational forces that precision optical systems experience in the field. Our active monitoring and control solutions have been applied in various fielded and delivered solutions, including high-energy lasers, laser communications, and optical imaging systems.

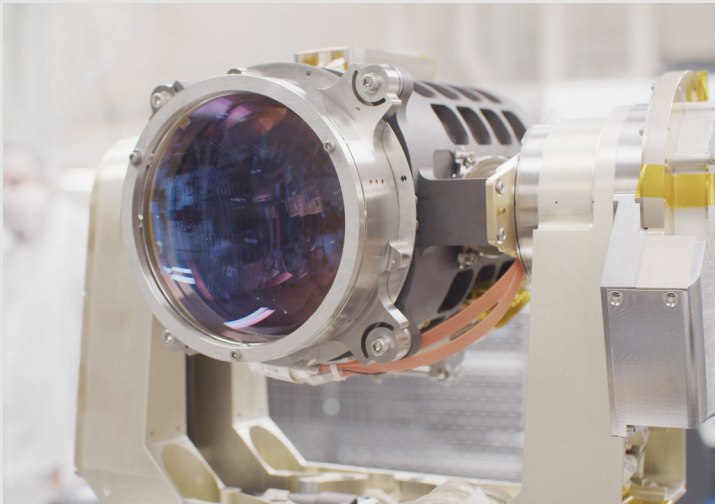
_On-Orbit Legacy

AV has provided systems and components for many laser communication missions, including NASA's Laser Communication Relay Demonstration (LCRD) and Lunar Laser Communication Demonstration (LLCD) and commercial foreign partners. These high-precision gimbals have successfully flown on orbit as part of the Massachusetts Institute of Technology Lincoln Laboratory (MIT LL) ILLUMA-T mission and are supporting Artemis II, the first manned Orion mission.

_Advancing Innovation

During a 2025 demonstration of its gimbaled long-haul laser communication system, AV successfully completed pointing, acquisition, and tracking (PAT) sequences between two terminals at an emulated distance greater than 200,000 km amidst simulated challenges experienced in space environments, including jitter, extreme temperatures and lack of atmosphere.

The demonstration's success highlights new capabilities for transferring high-bandwidth data in space enabling the secure exchange of more data at a faster rate across further distances, including LEO, MEO, GEO orbits and beyond. With the successful prototype demonstration in an operational environment, AV has matured its optical communication terminals to Technology Readiness Level (TRL) 6.



_Optical Communications Terminals (OCTs)

AV offers gimbaled OCTs with advanced line-of-sight stabilization and pointing and tracking technologies, along with an interoperable backend optics assembly to support a variety of optical modem technologies.

These terminals can support various communication waveforms to include coherent and direct detection schemes. The interoperability of our solution allows for compatibility with optical modems that utilize phase shift keying (QPSK, DPSK, and BM-DPSK) as well as other modulation schemes, including on-off keying (OOK and BMOOK), pulse position modulation (PPM), and quadrature amplitude modulation (QAM). The polarization agnostic nature of our solution allows for compatibility with both the Consultative Committee for Space Data Systems (CCSDS) and the evolving Space Development Agency (SDA) and SIS-002 standards.

AV's end-to-end suite of optical communications terminals and ground stations provides a configurable fiber-in/fiber-out solution for a vast array of mission profiles, such as mission class, data rate, range, orbit, and communications standard.

VOLUME	54 cm dia x 47cm high (Optical Head) 23 cm x 22cm x 31cm (Electronics)
MASS	Optical Head - 18 kg Electronics - 15 kg
SYSTEM POWER	29 W Standby, 61 W Steady State
WAVELENGTH CAPABILITY	C-Band
BEACON	Data Beacon
TRANSMIT POLARIZATION	Switchable right & left-handed polarized states or dual polarization
RECEIVE POLARIZATION	Accepts all polarization states
WAVEFORM STANDARDS	CCSDS(with in band beacon)/SDA/Other
INTEROPERABLE	Yes
APERTURE SIZE	Base 10cm (scalable to 12-15cm)
RANGE	GEO to GEO+
OPTICAL POWER LEVEL	up to 10 W transmit
INTENDED ORBIT	MEO/GEO+
FIELD OF REGARD (FOR)	Hemispherical
FINE TRACK LEVEL	1.5 μrad