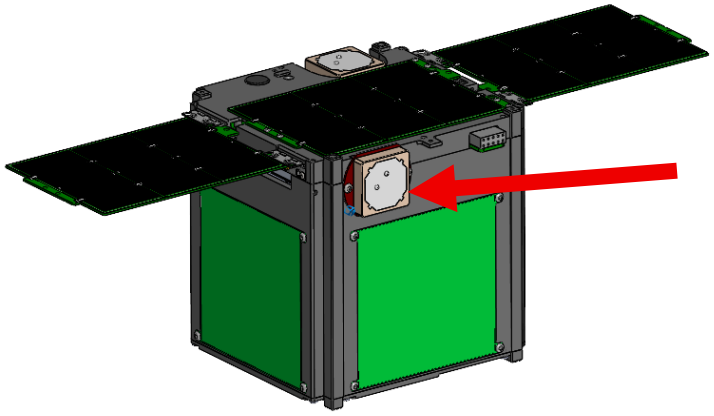
AiglonSat-1 Technical Description

AiglonSat-1 serves as both a technology demonstration platform and an educational tool, bridging the gap between classroom learning and real-world aerospace engineering. This satellite addresses a combination of research objectives, system verification tests, and STEM outreach activities, for college students.

The satellite was launched aboard Transporter 16, from Vandenburg Space Force Base, NET March 29, 2026. It was inserted into a circular orbit at 510 km, on an inclination from the equator of 97.4° (Sun-synchronous). Transmission will begin 30 minutes after deploy, and cease at the end of the mission. Atmospheric friction will slow the satellite and reduce the altitude of the orbit, until de-orbiting occurs about 2 years after launch. See the Orbital Debris Assessment Report for details. The spacecraft has dimensions of about 10 x 10 x 39 cm when deployed, and mass of 1.7 kg. See Figure 1.



AiglonSat-1 Deployed
The Red arrow is the Iridium antenna

Guidance, Navigation and Control (GNC) Subsystem: The GNC is a magnetorquer system using three torque coils built into the structure. The equipment complement of torque coils, triaxis magnetometer and an Inertial Measurement Unit, are the critical components in this subsystem.

Communications Subsystem (COMMS):

The COMMS include a EyeStar S4 radio (Nearspace Launch) and Tallysman 1600 antenna, communicating through the Iridium constellation. In conformance with § 5.107 Transmitter control requirements, all transmission from the satellite can be terminated by command from mission operations.

Electrical Power Subsystem (EPS): The EPS is a direct energy transfer system using solar arrays producing approximately 9W max power to charge the 10.5 Wh battery system. The solar arrays utilize standard MicoLink photovoltaic cells; the batteries are NSL140743 cells. The Advanced EPS board controls the charging through four MPPT modules and load switching of the system. High current switches are included to meet power requirements of the payload.

The charging circuit supplies solar power to the battery and regulators transfer battery power to the rest of the system.

Structure Subsystem: The structure is fabricated of 6061-T6 Aluminum

Propulsion Subsystem: No propulsion subsystem is included.

Payload Subsystem: The primary purpose of this satellite is to advance student-led innovation in the area of analyzing thermodynamics of CubeSats. while also supporting system-level derisking for future missions. Resistive heaters provide thermal load, and thermocouples track heat movement throughout out the bus.