

EARTH HORIZON SENSOR

Compact Earth Horizon Sensing for Precise ADCS Performance

Earth Horizon Sensor is a compact, low power attitude determination sensor designed to support reliable Earth referenced orientation for CubeSat and MicroSat missions.

MISSION BENEFITS

Continuous Earth-Pointing Reference

Provides a reliable Earth-referenced input for attitude determination, helping satellites maintain awareness of their orientation relative to Earth.

Enhanced ADCS Availability Across the Orbit

Its ability to operate in both sunlight and eclipse supports attitude determination continuity during orbital phases where other optical references may be limited.

Optimized for Small Satellite Architectures

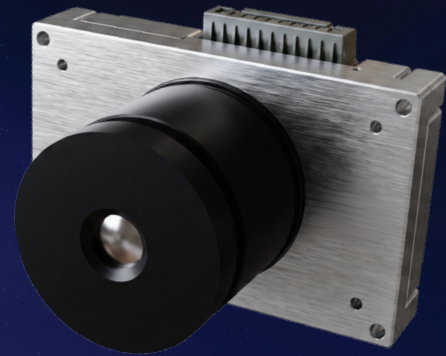
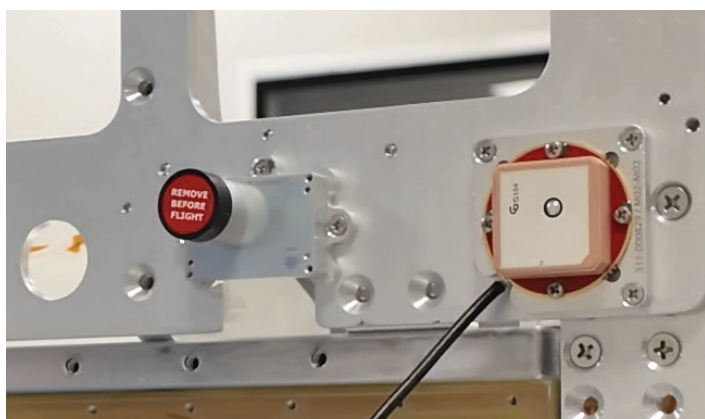
The compact size, low mass and low power consumption make the sensor well suited for mass- and power-constrained CubeSat and MicroSat missions.

Integration Flexibility Across Mission Classes

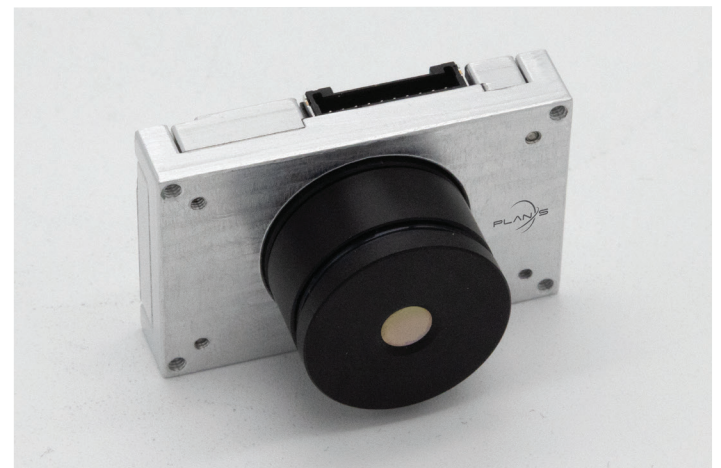
The combination of compact mechanical design & differential communication interfaces enables integration into both small satellite platforms and larger spacecraft architectures.

Robust Performance in Operational Conditions

The sensor is designed to support stable horizon detection even when foreign objects enter the field of view, with masking options available for improved operational robustness.



The sensor processes the Earth's horizon image to calculate the vector toward Earth's center, using infrared based sensing to operate reliably in both sunlight and eclipse for stable Earth-pointing missions.



KEY HIGHLIGHTS

Reliable Earth Vector Determination

Calculates the vector pointing to the center of the Earth from the image of the horizon, supporting accurate Earth referenced attitude determination.

Sunlight and Eclipse Operation

Designed to operate in both sunlight and eclipse by focusing on a specific infrared portion of the Earth albedo signal.

Compact, Low Power Design

With its small form factor, 24-gram mass and low current requirement, the sensor is suitable for CubeSat platforms as well as larger micro satellite missions.

Robust Horizon Detection

Designed to remain durable against foreign objects within the field of view, even without masking. When masking is applied, the sensor can achieve even greater robustness.

TECHNICAL FEATURES

Measurement Accuracy	1° (3σ)
Supply Voltage	5 V
Maximum Current	40 mA
Interface	2x CAN & 1x RS-485
Connector	Molex Micro-Lock Plus
Mass	24 grams
Dimensions	40 x 25 x 20 mm

HERITAGE / QUALIFICATION

- ▶ **Status:** Fully qualified; environmental qualification campaign complete.
- ▶ **TRL:** 6.
- ▶ **First Flight:** Scheduled October 2026.

STANDARDS & COMPLIANCE

- ▶ NASA-GEVS (GSFC-STD-7000) environmental verification.
- ▶ SpaceX Rideshare Payload User's Guide (Version 10, September 2024) launch-environment compatibility.

