

Modern spacecraft use a variety of sensors, located in precise positions on internal or external structures, for attitude determination and control. Each sensor is a stand-alone device, fed by dedicated power and data lines, interacting with the Attitude Determination and Control System (ADCS). This architecture increases the mass, volume, and complexity of the ADCS system, to the detriment of the main payload.

Enter D-Sense.

D-Sense is a multi-sensors module that has the capability to track the position of the Sun, the Earth's horizon, the magnetic field, and the angular rate of the spacecraft. It also includes a camera that can be used to take photos and videos, and operate as a star tracker.

Thanks to D-Sense, spacecraft designers have the opportunity to implement the ADCS by integrating a single, compact box, equipped with its own microcontroller, and fed by a single pair of power and data lines. The modules are produced in series and precisely calibrated against strict standards, ensuring performance consistency across distinct units. This feature is ideal for satellite constellations because it ensures uniform and consistent readings across all spacecraft.

### TECHNICAL SPECIFICATIONS

- Intelligent, mass produced, multi-sensors module
- Complete attitude determination coverage granted by multiple modules
  - Photodiodes for Sun sensing:
  - Thermopiles for Earth horizon sensing
  - Magnetometer for Earth magnetic field sensing
  - Gyroscope for angular rate sensing
  - Camera for photos, videos and star tracking
- Compact:
  - Mass < 200 g
  - Volume < [70 x 70 x 55] mm
- Energy efficient:
  - 300 mW in standard operative mode
  - 500 mW in camera mode
- Standard electrical interface: Can Bus
- Flexible thermal range: (from -30° to 70°)

