

LightSail 2 – The Planetary Society – 3U CubeSat

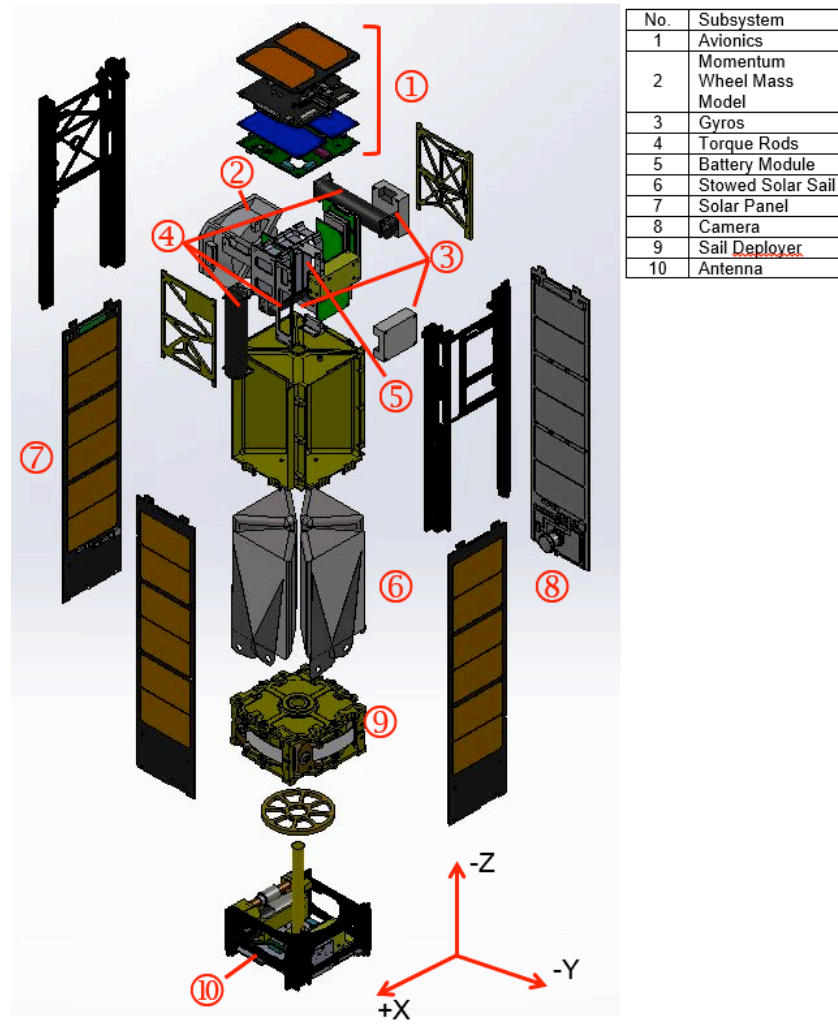


Figure 1: LightSail 2 Expanded View

LightSail 2 shown in Figure 1, is the second privately developed solar sail project conceived and led by The Planetary Society. It will deploy a $\sim 32 \text{ m}^2$ Mylar sail and demonstrate solar sailing by raising its orbit. Partners include Ecliptic Enterprises Corporate, Georgia Tech, Boreal Space, and Cal Poly SLO.

Upon ejection from the P-POD, which is stored inside the Prox-1 spacecraft, LightSail 2 will begin the boot-up sequence. After successful completion of boot-up sequence, the unit will start up the ACS and go into detumble mode. At 45 minutes after ejection, the antenna will deploy and UHF beacon will commence shortly after. The ground team will acquire and track LightSail 2 for approximately 2 weeks, verifying all parameters are within tolerance. After 2 weeks, the solar panels and solar sail will deploy. Orbit raising operations will then begin for a period of 4 weeks. During this time LS2 will downlink imagery, and track orbital change. LightSail 2 will deorbit several weeks after.

The CubeSat structure is made of Aluminum 6061-T6. It contains all standard commercial off the shelf (COTS) materials, electrical components, PCBs and solar cells. The payload consists of a 32 m² mylar solar sail with a custom metal boom.

There are no pressure vessels, hazardous or exotic materials.

The electrical power storage system consists of common lithium-polymer batteries with over-charge/current protection circuitry. The batteries are not UL listed, however the batteries were tested per AFSPCMAN 91-710 to ensure compliance with safety requirements.