

LightSail 2 – The Planetary Society – 3U CubeSat

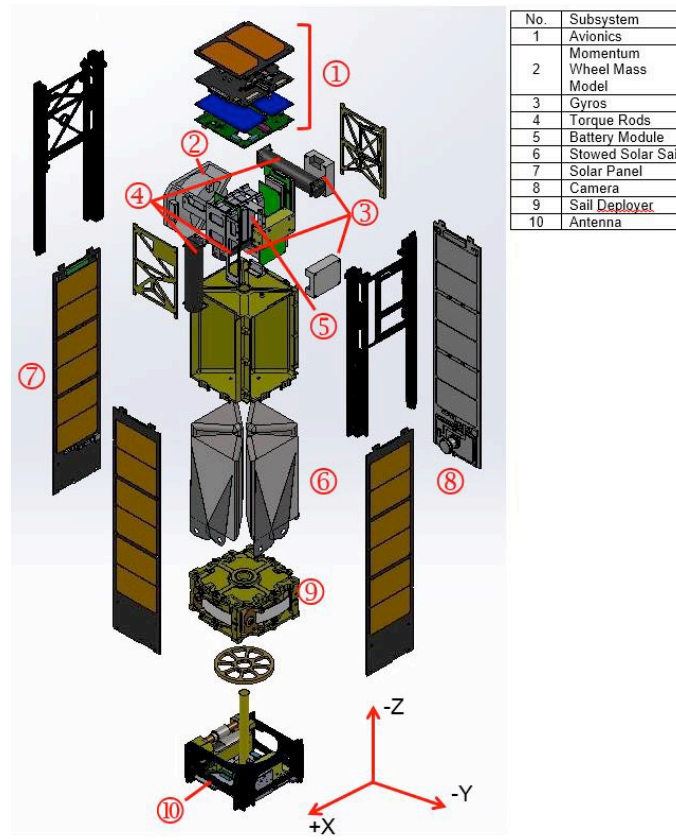


Figure 1: LightSail-A Expanded View

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 apogee. Partners include Ecliptic Enterprises Corporation, the Georgia Institute of Technology, Boreal Space, and Cal Poly SLO.

LightSail 2 will launch within a P-POD that is embedded within the Prox-1 small satellite. Upon ejection from the P-POD, 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 image, 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 m^2 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 will be tested per AFSPCMAN 91-710 to ensure compliance with safety requirements.