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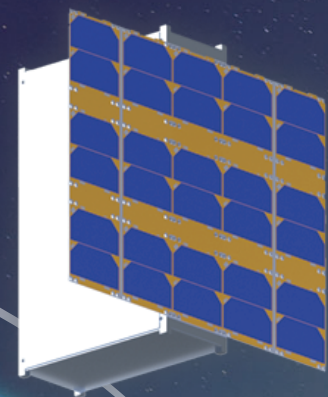


UNIVERSIDAD
NACIONAL
DE LA PLATA

ANDES

CubeSat 6U

Platform



Rideshare mission services

PERFORMANCE SPECIFICATIONS

Technical Characteristics

Bus Mass	6.01 kg
Payload Mass	5.99 kg
Bus Volume	2.9 U
Payload Volume	3.1 U
Bus Power	41.0 W
Payload Power	39.0 W

Mass Budget

Subsystem	Mass [g]
6U Structure	1,000
Batteries	670
ADCS	1,300
C&DH	65
Communications	870
RCS	1,200
Solar Arrays	905
Total Mass	6,010 g
Payload Mass Available	5,990 g

Volume Budget

Subsystem	Volume [U]
6U Structure	6
Batteries	0.5
ADCS	0.7
C&DH	0.1
Communications	0.8
RCS	0.8
Total Volume	2.9 U
Payload Volumen	3.1 U

Power Budget

Subsystem	Power [W]
Batteries	80 W
ADCS	5
C&DH	1
Communication	20
RCS	15
Total Demand	41.0 W
Available Supply	39.0 W

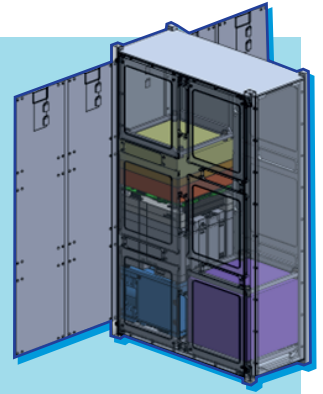
General Description

The 6U CubeSat platform described below is composed of TRL-9 COTS subsystems, with the exception of the structure, which is designed and fabricated by the CTA.

This document describes the principal characteristics of each one of the components, and also provides general mass, volume, and power budgets of the bus.

Beyond essential subsystems for a mission, we specify subsystems to be added depending on the complexity of the mission in mind, such as is the case of X-band communications.

The 6U CubeSat Bus consists in the structure of the 6U, batteries, ADCS, C&DH within the OBC, UHF and S-Band communication systems, RCS, and both fixed and deployable solar arrays.



Subsystems

Batteries

- Power Buses: 3.3 V and 5 V
- Optimized for LEO missions, with maximum altitude of 850 km
- Qualified for NASA EP-Wi-032 standards
- Working temperature: -10 °C to +50 °C

ADCS

- Three-axis control
 - 3x reaction wheels
 - 3x magnetorquers
- Integrated star tracker
 - Attitude determination accuracy: <0.1°
 - Pointing accuracy: <1°
- Slew rate: >1.57 °/s
- Working temperature: -30 °C to +60 °C

C&DH

- MRAM: 16 MB
- Efficient power usage
- Working temperature: -40°C to +80°C

Communications

UHF Transceiver

- Mass: 94 g
- Volume: 0.1 U
- Tx Power: 1 W

X-Band Transmitter

- Mass: 270 g
- Volume: 0.25 U
- Tx Power: 0.5 – 2 W
- Maximum data rate: 150 Mbps

UHF Antenna

- Mass: 85 g

X-Band Antenna

- Mass: 53 g
- RF Power Handling: 4 W

RCS

- Total impulse: 405 N-s
- Working temperature: -5°C a +30°C
- 1 × Thruster
 - Dry mass: 260 g
 - Expansion ratio: 100:1
 - Volume: 0.25U

Solar Arrays

6U Deployable Solar Array

- Mass: 757 g
- Efficiency (End of Life): +29%
- Maximum power generated: 19.2 W each array wing (in LEO)

3U Solar Panel

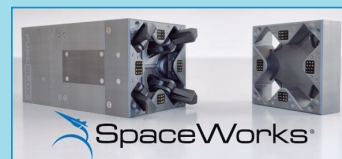
- Mass: 146 g
- Efficiency (End of Life): +29%
- Maximum power generated: 8.4 W (LEO)

Between both solar arrays (2x6U + 1x3U), the maximum generation capacity is 46.8 W

Featured Payloads

FuseBlox™

FuseBlox™ is a 2U, COTS, small-satellite docking and commodity transfer system developed by SpaceWorks. With additional transfer functions for power and GigE data, FuseBlox can enable novel missions for CubeSat RPO and in-space assembly. FuseBlox is available for commercial export under EAR licensing. For more information, visit www.SpaceWorks.aero/FuseBlox



Nanosatellite GPS Receiver

This system is designed for precise orbit determination and LEO satellite navigation. It is also capable of supporting GNSS-R and GNSS-RO applications. It includes three antenna inputs and a dual-frequency GNSS receiver, customizable for GPS and GLONASS, operating on the L1 band or both L1 and L2 bands. It delivers high-precision punctual and filtered position, velocity, and time (PVT) solutions. For more information, visit <https://senyt.ing.unlp.edu.ar/products/gnssusat/>



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