



ESEIAAT



Escola Superior d'Enginyeries Industrials,
Aeroespacial i Audiovisual de Terrassa

UNIVERSITAT POLITÈCNICA DE CATALUNYA

Cubesat Constellation Astrea

Report

Degree: Aerospace Engineering

Course: Engineering Projects

Group: G4 EA-T2016

Delivery date: 22-12-2016

Students:

Cebrián Galán, Joan

Foreman Campins, Lluís

Fuentes Muñoz, Óscar

Herrán Albelda, Fernando

Martínez Viol, Víctor

Pla Olea, Laura

Puig Ruiz, Josep

Tarroc Gil, Sergi

Urbano González, Eva María

Fontanes Molina, Pol

Fraixedas Lucea, Roger

González García, Sílvia

Kaloyanov Naydenov, Boyan

Morata Carranza, David

Pons Daza, Marina

Serra Moncunill, Josep Maria

Tió Malo, Xavier

Customer: Pérez Llera, Luís Manuel

Contents

List of Tables	ii
List of Figures	iii
1 Example	1
1.1 Example	1
1.1.1 Example	1
1.1.1.1 Example	1
2 Satellite design	2
2.1 Electrical Power System	2
2.1.1 Solar arrays	2
2.1.2 Batteries	2
2.1.3 Power management	2
2.1.4 Study of the commercial available options	2
2.2 Communication module	2

List of Tables

List of Figures

2.1 Basic schematics of the EPS [?]	2
-------------------------------------	---

1 Example

Example

1.1 Example

Example

1.1.1 Example

Example

1.1.1.1 Example

Example

2 Satellite design

2.1 Electrical Power System

The Electric Power System of the satellite must provide and manage the energy generated efficiently in order to have all the systems operating under normal conditions. The Electrical Power System of a Cubesat is, probably, the most fundamental requirement of the satellite payload, since a failure of it results in a mission failure. High level functions of the EPS are to control and distribute power to the Cubesat, to supply a continuous source of electrical power for the duration of the mission or the service provided by Astrea, to protect the satellite against bus failures and to monitor and communicate the system status to the on-board computer. The role of the EPS is very diverse and the following subsystems have to be analyzed in detail.

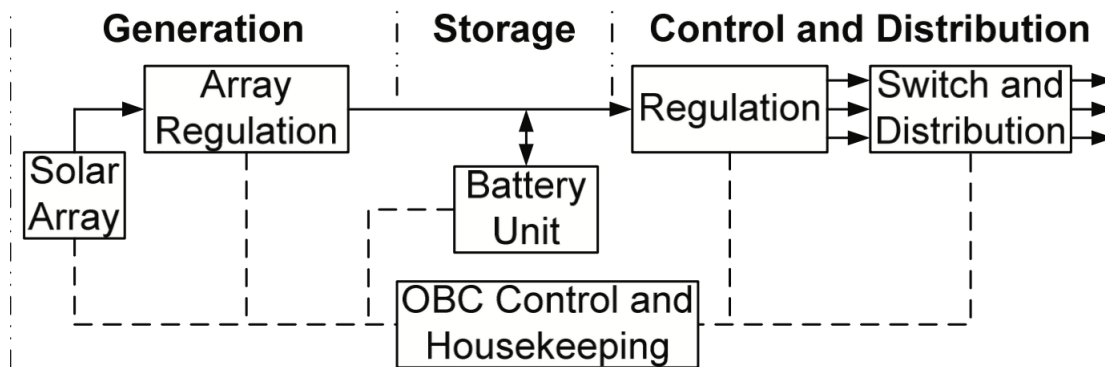


Figure 2.1: Basic schematics of the EPS [?]

2.1.1 Solar arrays

The primary source of electrical power has to be photovoltaic cells, given the size of the CubeSat.

2.1.2 Batteries

2.1.3 Power management

2.1.4 Study of the commercial available options

Several commercial options have to be studied.

2.2 Communication module

<http://gomspace.com/index.php?p=products-s100>

Links interesantes universidades:

2.2 Communication module

Convertir bad to mbps: