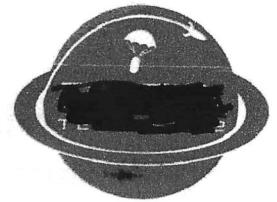


5 REQUIREMENTS

The CanSat hardware and missions must be designed to the following requirements and constraints:

- [1] All the components of the CanSat must fit inside a standard soda can (115 mm height and 66 mm diameter), with the exception of the parachute. An exemption can be made for radio antennas and GPS antennas, which can be mounted externally (on the top or bottom of the can, not on the sides), based on the design. N.B. The rocket payload area has 4.5 cm of space available per CanSat, along the can's axial dimension (i.e. height), which must accommodate all external elements including: parachute, parachute attachment hardware, and any antennas.
- [2] The antennas, transducers and other elements of the CanSat cannot extend beyond the can's diameter until it has left the launch vehicle.
- [3] The mass of the CanSat must be between 300 grams and 350 grams. CanSats that are lighter must take additional ballast with them to reach the 300 grams minimum mass limit required.
- [4] Explosives, detonators, pyrotechnics, and flammable or dangerous materials are strictly forbidden. All materials used must be safe for the personnel, the equipment and the environment. Material Safety Data Sheets (MSDS) will be requested in case of doubt.
- [5] The CanSat must be powered by a battery and/or solar panels. It must be possible for the systems to be switched on for four continuous hours.
- [6] The battery must be easily accessible in case it has to be replaced/recharged.
- [7] The CanSat must have an easily accessible master power switch.
- [8] Inclusion of a retrieval system (beeper, radio beacon, GPS, etc.) is recommended.
- [9] The CanSat should have a recovery system, such as a parachute, capable of being reused after launch. It is recommended to use bright colored fabric, which will facilitate recovery of the CanSat after landing.
- [10] The parachute connection must be able to withstand up to 1000 N of force. The strength of the parachute must be tested, to give confidence that the system will operate nominally.
- [11] For recovery reasons, a maximum flight time of 120 seconds is recommended. If attempting a directed landing then a maximum of 170 seconds flight time is recommended.



[12] A descent rate between 8 m/s and 11 m/s is recommended for recovery reasons. In case of attempting a directed landing, a lower descent rate of 6m/s is recommended.

[13] The CanSat must be able to withstand an acceleration of up to 20 g.

[14] The total budget of the final CanSat model should not exceed 500€. Ground Stations (GS) and any related non-flying item will not be considered in the budget. More information regarding the penalties in case of exceeding the stated budget can be found in the next section.

[15] In case of sponsorship, all the items obtained should be specified in the budget with the corresponding costs on the market at that moment.

[16] The CanSat must be flight-ready upon arrival to the launch campaign. A final technical inspection of the CanSats will be done by authorized personnel before launch.

In Table 10 we resume our CanSat values regarding CanSat main requirement fulfill demonstration:

Characteristics	Figure
Height of the CanSat	114mm
Mass of the CanSat	332,47 gr
Diameter of the CanSat	65 mm
Length of the recovery system	500 mm
Flight time scheduled	55,5 s
Calculated descent rate	10m/s
Radio frequency used	433,08 MHz
Power consumption	~135mA
Total cost	363,60€

Table 10