

## CanSat – A soda-can sized micro-satellite

- Incorporates all functional components of a large satellite:
  - Power system, structure, sensors, thermal, data acquisition, telemetry!
  - Students design, build and launch these CanSats to collect their experimental data. They learn and gain experience.
- A platform to perform experimental space science.
- Launched by a rocket (up to 20 miles)...
- ...ejects from launch vehicle at apogee...
- ...floats down under parachute whilst transmitting data to ground station...
- ...CanSat is recovered, and reused.

### CanSat hardware:

- Global Positioning System (GPS)
- Temperature sensor
- Pressure sensor
- Color camera (640x480)
- 20 mile wireless transceiver
- Removable on-board data storage

Astronautics is a multi-disciplinary field and as such students take classes across a broad spectrum of topics. In the Microsatellite program, students have many opportunities to test their skills, and gain valuable practical experience while developing space related hardware. Students can be involved in:

- Mechanical design and test
- Software engineering and development
- Electronics and Embedded systems engineering and development
- Systems engineering

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# CanSat Competition



2010  
TEXAS

ANNUAL CANSAT COMPETITION

The American Astronautical Society (AAS) and American Institute of Aeronautics and Astronautics (AIAA) have organized an annual student design-build-launch competition for space-related topics. The competition is available to university and college students from the United States, Canada, Mexico, and Europe. Although similar competitions exist for other fields of engineering (robots, radio-control airplanes, racing cars, etc.), most space-related competitions are paper design competitions. While these are worthwhile, they do not give students the satisfaction of being involved with the end-to-end life cycle of a complex engineering project, from conceptual design, through integration and test, actual operation of the system and concluding with a post-mission summary and debrief. This competition fulfills that need!

This annual competition allows teams from universities and colleges to design and build a space-type system, according to the specifications released by the competition organizing committee, and then compete against each at the end of two semesters to determine the winners.

Check out the [Friday Workshop](#)

Join the Yahoo Group: [cansatcomp](#)

High Schools interested in an aerospace competition, go to the [Battle of the Rockets](#)

Launch Location for 2010 is Amarillo, Texas

Updated June 19, 2009

[Contact](#)



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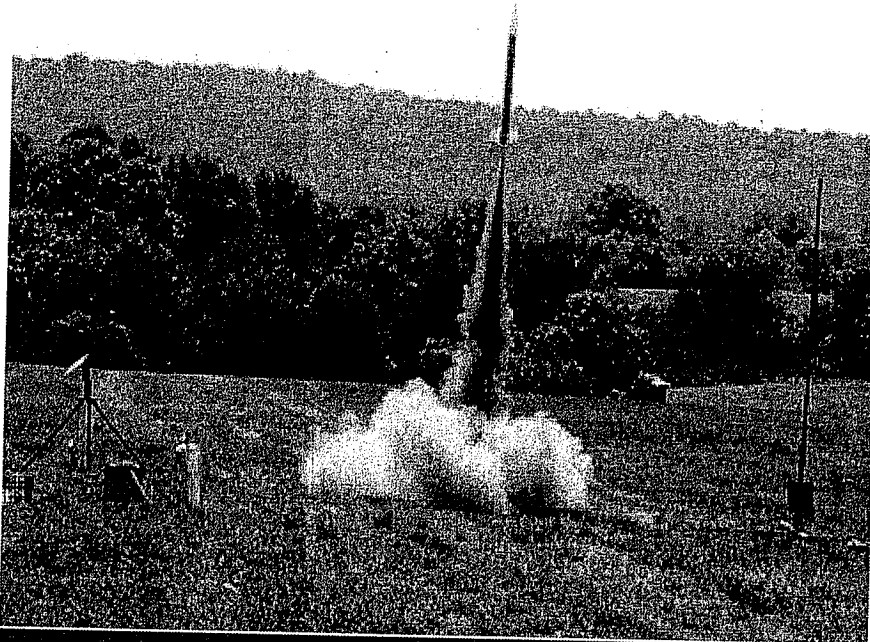
Analysis software for land, sea, air, & space



Ball Aerospace  
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# Mission



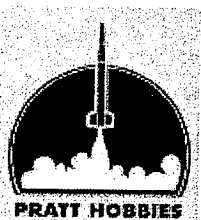
## The Mission

Design and build a cansat to be launched and deployed from a rocket at an altitude of about 450 meters. The cansat is to descend no faster than 4.6 meters per second. Measure the atmospheric pressure and air temperature during decent. Transmit the atmospheric pressure and air temperature data during decent at least once every three seconds. Monitor the acceleration of the cansat during the whole mission and detect the largest acceleration. Determine which direction to measure the greatest acceleration. Transmit the largest acceleration value along with the rest of the telemetry.

Design and build a rocket to launch the cansat to an altitude of 1500 feet or more. Rocket kits can be used and modified to launch the cansat. Rail buttons must be used. Launch lugs are not allowed. The rocket shall not have a diameter greater than 98 mm. The motor to be provided shall be a Cesaroni H153 38 mm motor.

Design and build a ground station to collect the telemetry from the cansat. The collected telemetry can be processed in real time or post processed. Results shall be displayed in graphs.

DOWNLOAD [mission\\_guide.pdf](#)

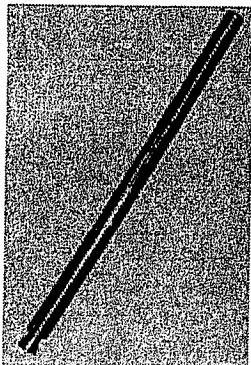


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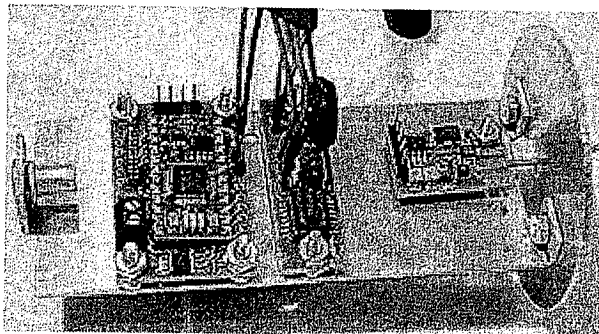
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## CANSAT Kit



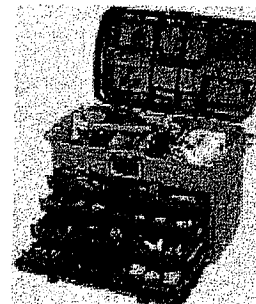
The CanSat kit includes:

- CanSat structure and all needed hardware. (Soda can is not included)
- Predrilled main board for mounting circuit boards
- Custom machined end disc for closing off the soda can
- Angle bracket for attaching a parachute
- Parachute and eyebolt
- Screws and nuts for mounting everything
- Computer board with processor and connectors for sensors, communications, and expansion.
- Programmable processor that can be programmed in BASIC and C.
- 9 volt battery connector
- Power distribution screw terminal
- Analog input connector
- Digital I/O connector
- Serial interface connector for host PC communications
- Sensor board with a pressure sensor and open sensor port
- Communications board
- Serial interface to processor board
- AX.25 data protocol at 1200 baud
- 5 milliwatts of transmit power
- Wire antenna (can be replaced with SMA connector)
- CD with all needed software and manuals
- Integrated Development Environment for easy software development
- BASIC language user manual
- 85 page lesson with plenty of examples and pictures
- Data sheets for all the components

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