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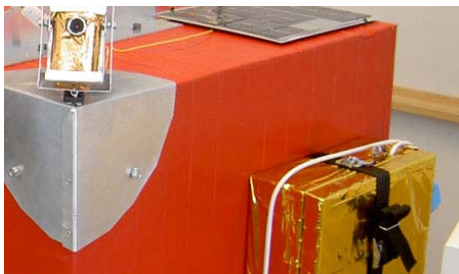
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PROJECT PROPOSAL - PEM Payload Environment Monitoring

1. Function

This experiment idea was born when the BEXUS IV box was examined. It revealed a burn in the styrofoam due to reflections from a space blanket. There seem to be higher/lower temperatures during flight than ever expected. This due to lack of atmosphere and therefore high influence from sunlight and shade.



This experiment's main purpose is to precisely and simultaneously measure the temperature outside each of the six sides of the BEXUS 5 box in combination with a photosensor.

A technique of NTC-resistors capable from -80 to $+150^{\circ}\text{C}$ will be used and will be interpreted by a microprocessor. The data storage is made on local external high capability EEPROM:s.

Much of the work will be with verification and calibration of the temperature sensors to make the experiment exact. This time we go for scientifically reliable data.

At first, the reason for the use of photosensors along with every NTC-resistor was to be able to keep track of which temperature sensor that was exposed to sunshine. But if the sample rate is high enough this also is a way to keep track of the payload's rotation relative to the sun during the flight. This rotation behaviour has yet maybe never been monitored. This part of the experiment requires 3D-programming and may not be performed, but the possibility remains. It might confirm the function of another experiment on board using a more advanced method with magnetometers.

2. Size

The experiment will fit on a 160×100 mm PCB mounted in the experiment rack inside the BEXUS 5 box with wires connected to the sensors.

3. Mass.

No more than 0,5kg.

4. Power consumption.

The experiment will only need 5V and about 250mA.