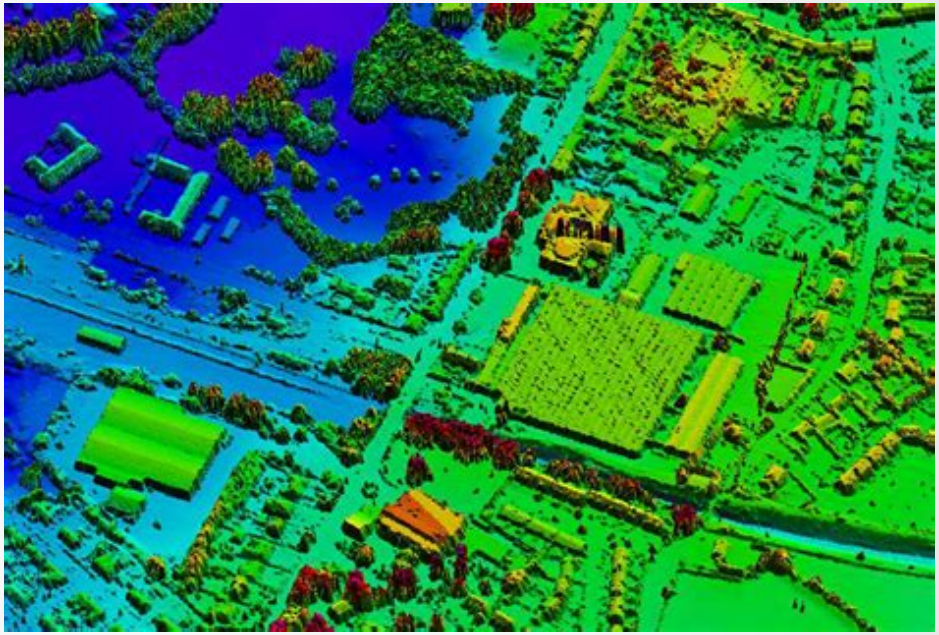
Satellite and its Subsystems

Introduction

- Yodha is a remote sensing nano satellite of mass 6 Kg.
- It rotates in sun synchronous orbit (noon-midnight).
- It is in shape of cube.
- Apart from remote sensing uses of the satellite, Yodha also acts as a experimental satellite.

Payload

- Gives images of the specific places in India which helps the government in catching the tax evaders and smugglers.
- Geoscience Laser Altimeter System (GLAS) is a LIDAR used for this purpose.



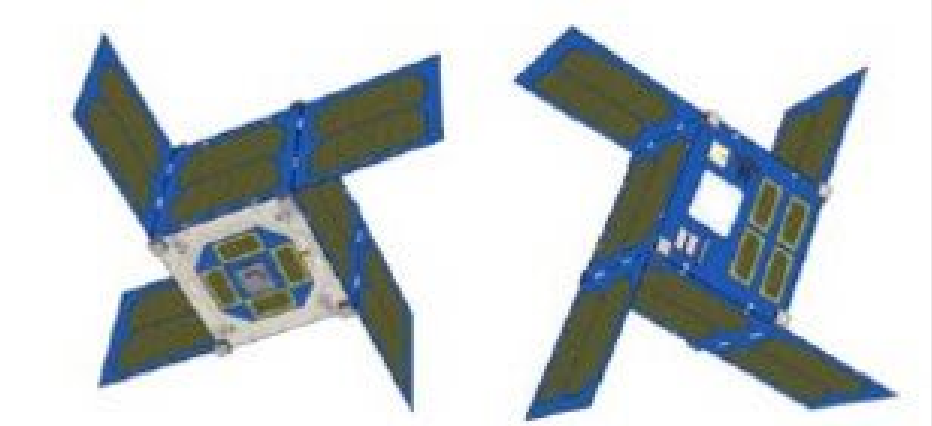
Attitude determination and Control Systems

- It is a three axis stabilized satellite.
- It has thrusters and magnetorquer to change the direction and orientation of the satellite.
- Traid of accelerometers and gyros with MEMs technology for inertial measurement.
- GPS reciever for knowing the position.
- Sun sensor for the orientation about sun.
- Piezoelectric sensor for the vibration control of satellite panels.

- We have an embedded system that controls the subsystems in satellite.
- To perform the on board autonomous attitude determination system (ADS) the algorithms are placed on a small PC computer board with Linux operational system.

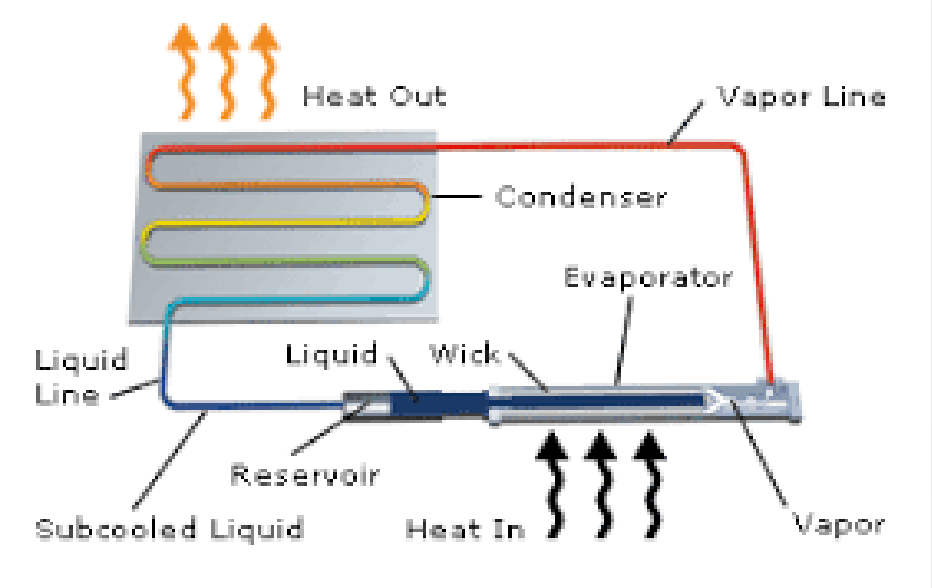
Electrical Power system

- The solar panels are placed on the faces of cube along with four extended panels. It has Li ion batteries to store power.
- These panels are basically solar arrays which contain in built sun and temperature sensors.
- They should generate about an average of 20W of power.



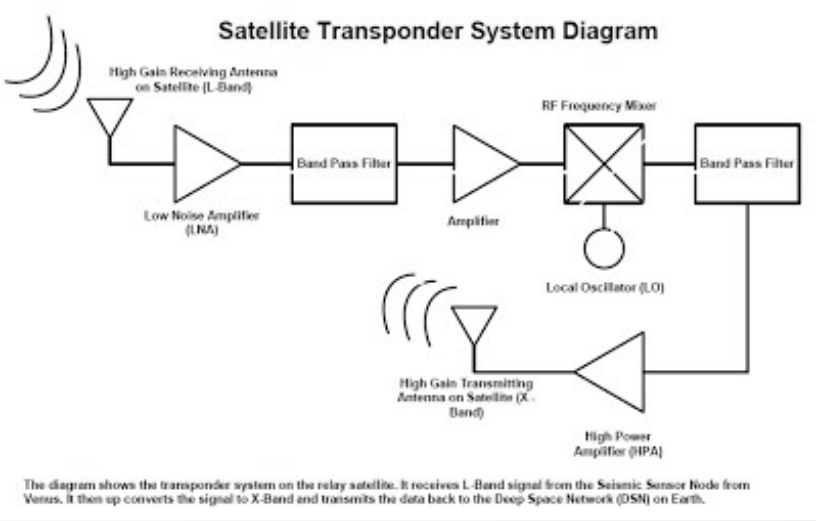
Thermal control Systems

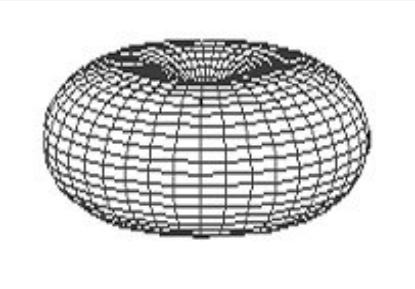
- Heater to increase the temperature of the space craft during cold eclipse phases.
- To reduce heating affect in the system we use Multi– Layer Insulation(MLI) blankets and paint on the surface with suitable coating material.
- The reduction of heat can also be done by distributing heat along the structure of the satellite by through heat pipes .



Communication System

- TT&C S band (2GHz,4GHz) is used for communication between satellite and ground station.
- For the on board communication we have omnidirectional vertical half wave dipole Antenna to receive and transmit signals.
- We have a transponder that converts the frequency of signals as required.





Done by-

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