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Author: Mr. PRAKASHA NAYAK
Student, India

Dr. Sandya S
India
Mr. Kannan Thotumugath
India
Mr. NIKIL KOTIAN
Student, India
Mr. KRISHNA KUMAR V
NMAMIT NITTE, India
Prof. DURGA PRASAD
NMAMIT NITTE, India

PAYLOAD INTERFACING AND TRIGGERING FOR COMMAND AND DATA HANDLING SUBSYSTEM FOR TWIN NANO-SATELLITE (STUDSAT-2)

Abstract

After the successful launch of the project STUDSAT-1, project STUDSAT 2 makes an attempt to test some of the cutting edge technologies such as Inter-Satellite Communication and Drag Sail Mechanism for inter satellite separation and de-orbiting respectively. Currently, team STUDSAT (STUdent SATellite) is developing Nano-Satellites for research, in order to create awareness about the design and development of satellite among students. One of the objectives of STUDSAT-2 is to get the students familiarized with the satellite imaging system involving image capture, image analysis, storage and retrieval. The objective is not to achieve high resolution earth images, but to take low resolution images, store them and successfully send them to ground station and prove inter-satellite link. A low resolution camera with low power consumption is mounted on the satellite to achieve the desired objective. This paper describes the payload interfacing and triggering for Command and data handling subsystem for Twin Nano-Satellite, "STUDSAT-2". The payload used is a multi spectral camera which is interfaced in order to monitor the vegetation. The image capturing is triggered based on location matching of satellites position with pre-stored GPS co-ordinates and it is determined using on-board Global Position System (GPS). Using GPS, the position of the spacecraft is obtained in terms of latitude, longitude and altitude. The temperature in space may vary randomly and all the electronic boards and components work within a temperature range. In order to ensure this and also to save the power, temperature sensors are used to keep the temperature level under check and see if it crosses the threshold. Followed by a command being triggered to EPS (Electronic Power System) subsystem to switch off the respective subsystem.