

ABSTRACT

Recently, the advancement of satellite technology allows satellite to be developed with various dimension and mass based on its mission. Nanosatellite is a satellite with mass ranging from 1 kg to 10 kg. Based on Cubesat satellite design, the dimension of nanosatellite is 1U or 10 cm x 10 cm x 10 cm. Nanosatellite orbits at LEO (low earth orbit), between 600 km and 1000 km above the earth surface. Nanosatellite has various functions depending on the mission. One of the nanosatellite mission is remote sensing. Components of nanosatellite with remote sensing mission are sensors, camera, and OBDH (On Board Data Handling). OBDH acts as the main processor which controls sensors of nanosatellite.

In this final project, remote sensing payload is developed by using two-camera method which is designed to accelerate the speed of ADCS (Attitude and Determination Control System) subsystem in controlling the nanosatellite position for capturing image so that the power consumption needed by the ADCS subsystem can be reduced. In two-camera method, temperature sensor and light sensor are used to determine which camera that can be activated when facing desired surface on earth.

OBDH is designed by using ARM LPC1768 which has 5 V of maximum power consumption and its current consumption is below 500 mA. This OBDH is placed at the center part of nanosatellite. OBDH used TEMPT6000 ambient light sensor obtained of at least 11580 lux and 830 lux. The analysis result for LEO (Low Earth Orbit) satellite by using some assumptions data are shown in the graph which the mount of daylight time and eclipse time.

Keywords: Microcontroller, On-Board Computer / On Board Data Handling (OBDH), Remote Sensing Payload, nanosatellit, camera.