

ABSTRACT

Satellite is a tool used by humans for specific needs that move in space by orbiting at an object. Because the space is not the same as the circumstances in which we walk on this earth. Zero gravity, vacuum, and other conditions that it is needed a control for the satellite itself in order to remain in the position that we have set. ADCS is one of the modules on nano satellite useful for controlling the attitude of the satellite.

ADCS (Attitude Determination and Control Subsystem) uses magnetic torque plant will be controlled by a microcontroller with PID control criteria. In designing the system using the PID, required looking for value proportional, integral and derivative to obtain a stable system. PID control allows to adjust the output to see current conditions and compare it to the previous condition. PID control will also organize a magnet torque in order to achieve the desired angle.

To determine the angle changes toward the nano satellites, used magnetometer sensor. After getting a good reading, the data will be processed by the PID controller to regulate the voltage on the magnet torque in order to maintain the angular orientation of nano satellites. From the calculation of the maximum value obtained large magnetic field generated by the magnet torque of $m = 0,310592 \text{ Am}^2$. PID parameters, $K_p = 3$, $K_i = 0.5$, and $K_d = 1$.

Keywords : ADCS, PID, Magnetic torque.