ABSTRACT

The development of satellite technology can be said to run quickly. Currently the kinds of satellite function are not only used for communication but capable of conducting research such as capture image of the earth's observation. One type is nanosatellites. To be able to run a nanosatellite system, several main subsystems are needed. One of the subsystems is On Board Data Handling (OBDH). The OBDH subsystem is designed to function as the main control or brain of the entire performance process in the nano satellite system.

In this Final Project, an OBDH subsystem has been designed using the ARM Cortex M3 based microcontroller as the main control. The type of microcontroller used is STM32F103. The OBDH subsystem realized on PC/104 board and implemented a Real Time Operating System (RTOS) as a support so that the system can run more efficiently. Data processing carried out included monitoring housekeeping data to determine the health performance of the nanosatellite system and communicating between other subsystems such as the payload subsystem to control camera capture.

The results of this design are, OBDH on the PC/104 board worked successfully. Testing various types of baud rate values with an error rate of 0%. OBDH able to monitor housekeeping data parameters consisting of temperature data, gyroscope and magnetometer. With the implementation of RTOS, OBDH able to run more efficiently with housekeeping data processing time of only 0.34 milliseconds and capable of taking data 141 sample in 10 seconds. Compared to non-RTOS, housekeeping data retrieval takes up to 208.36 milliseconds and gets data 117 samples in 10 seconds.

Keyword : *nanosatellite, OBDH, data housekeeping, RTOS, monitoring.*