ABSTRACT

Satellite telecommunication technology is one that is used in long-distance telecommunications. In the process, the size of the satellite is becoming ever smaller and the satellite is not only used as a means of telecommunications, but can be used as a medium of study such as capturing the image of the earth. To do a photo capture for the image of the earth, can be used On Board Data Handling system, where the system is in addition to monitoring the condition of the satellite can also perform image capture. Results from this shoot can be used as a medium for further research.

In this final project, OBDH (On Board Data Handling) device is designed using raspberry pi as a data processing unit in the space segment. By using raspberry pi, the process of taking and sending pictures and sensor readings can be done in a single board raspberry pi. Besides being used as a controller, raspberry pi is also supported by the operating system itself (Raspbian) so that the process to do the set-reset / reboot or other processes can be performed more easily. In this final project, system design of OBDH built to control the camera and can perform the function of monitoring the condition of the satellite using the MMA7455 sensor is the accelerometer sensor and sensor DS18B20 which is a temperature sensor. Camera system and the sensor system is controlled by a minicomputer raspberry pi and data that has been processed by pi raspeberry will be sent via 3DR 433 MHz RF transmitter to the ground segment (PC). At this OBDH system also uses a system of guard dogs, the system can maintain the condition of the data processing in system error.

Results of this design is, the system can work well in monitoring the direction toward the satellite to the earth and monitoring the temperature in the space segment. Delivery 6 captured image data can be carried out periodically and the system can transmit an image of the space segment to the ground segment. Results of this image data transmission takes an average of 4 minutes 11 seconds and the percentage of success monitoring systems transmit data at distances of 50, 100, and 200 meters is at 50m = 100%, 100% = 100m, 200m = 86.67%.

Keywords : image, sensor, monitoring, guard dog, raspberry pi