

ABSTRACT

Nano satellite is a small-sized satellite with a mass of 1 to 10 kg. To communicate with the ground station, it requires a communication system that serves to regulate the procedure in communication. APRS system is a communications system designed for amateur radio communications. APRS is an amateur radio based system for real-time communication directly in the local area. APRS realization for telemetry data presupposes the existence of two systems, the transmitting system and receiving system. For example, to monitor the temperature sensor, APRS as the protocol could be used in the process of data transmissions.

In this final project, a system that could monitor sensor by utilizing the Automatic Packet Reporting System (APRS) has been designed. Realtime sensor data transmitted to monitor through radio using AX.25 protocol. On the transmitter side, an APRS Tracker that has been integrated with a microprocessor ATMEGA 1284P is used to modulate the AFSK signal. The existence of this AFSK signal is used to transmit and receive telemetry data using Handy Talky. To modulate the AFSK signal, it is processed by computer using a Soundcard Interface, AGWPE Software, and UI-View32 is used to show the telemetry data.

With this research, ground station prototype has been able to build a relation with nano satellite APRS prototype. The results showed that the telemetry data to be displayed on the receiver side and acquired in real time with this format: `Callsign>BEACON,T#nnn,111,222,333,444,555`. The results showed that the accuracy of temperature sensor that is used reaches 92,97% and humidity sensor reaches 90,57% when received at the receiver side. In observation of telemetry data, there was a delay of 1 second for the reception of telemetry data directly.

Keywords : *APRS, APRS Tracker, Nano Satellite, AFSK*