

ABSTRACT

Indonesia has a very high potential against the threat of various types of natural disasters. Information related to the initial event of a disaster can usually be obtained through various sources. However, disaster can also sometimes cause very fatal damage to the telecommunications infrastructure. The purpose of this research is to design and realize disaster emergency communication systems using simple devices that are expected to be an alternative solution in the event of natural disasters where the main communication infrastructure cannot be used.

The system is a simple disaster emergency communication device system using Arduino, GPS module, and Radio LoRa and has its own power supply. Where the system can be used in times of natural disasters and major telecommunications infrastructure cannot be used because the system only uses radio waves to send text messages. The frequency used for radio communication is the amateur UHF of 433 MHz.

The results of system testing show that the system has been successfully designed and works according to the expected results. The average error from gps readings used compared to Google Maps only reached latitude errors of 0.0002272% and longitude errors of 0.0000270%. The effective distance from the system, in the field area as far as 0-140 m while in residential area as far as 0-70 m. Charging the battery can be done using a solar cell or USB. A fully charged battery can withstand the load of the device on for 100 minutes.

Keywords: Emergency, Disaster, Arduino, GPS, Radio, LoRa