

ABSTRACT

Indonesia is one of the countries with areas where landslides often occur. One of the efforts to anticipate the occurrence of landslides requires a system that can detect and provide information on ground movement. In this study, a ground motion detection system was designed using optical fiber by utilizing the principle of optical power loss due to angle-shaped macrobending equipped with a system development feature for monitoring that is capable of storing measurement data results and sending translational warning information on ground movement. The system test results show a measurement sensitivity of -1.33 cm/dBm with an average accuracy of 97.16% and an average error of 2.84% in the measurement range of 0 - 7.5 cm with a measurement resolution of 0.5 cm. The system development feature is capable of storing a number of measurement data with a memory allocation of 1-2 kilobytes (kb) through the system's data logger media as well as sending warning information through a Long Range (LoRa) communication network with a Quality of Service (QoS) index quality of 4 so it is categorized as " Very satisfy". Based on the results of the tests that have been carried out, this system has the potential to be used in anticipating the occurrence of landslides.

Keywords: *LoRa, Macrobending, Optical Fiber, Landslide.*