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IoT Based Three Phase Transmission Line Fault Detection and Analysis

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Abstract: *This project provides automatic tripping mechanism for the three phase supply system for prevention from damage due to faults. In case of temporary faults the outputs resets automatically after a brief interruption In case of permanent fault the output remains in the tripping condition. Faults like LG, LL, LLG and LLL one can be sensed and automatically disconnects the supply to avoid large scale damages to the equipments connected. Our goal is to develop efficient fault detection techniques that can quickly identify and locate faults, ensuring the uninterrupted flow of electricity. By implementing these techniques, we can enhance the reliability and stability of power transmission systems. So get ready to explore the fascinating world of fault detection and power system reliability. This paper presents an IoT-based approach for the detection and analysis of faults in three- phase transmission lines. Traditional fault detection systems encounter challenges such as labor shortages, heightened risks, and time-consuming processes. To address these issues, we propose a cost-effective and easily implementable solution suitable for modern power transmission systems. The IoT-based fault detection system swiftly identifies faults upon line breakdown, automatically interrupting power supply. Fault monitoring is conducted sequentially across R, Y, and B phases, with prompt notifications sent to the monitoring station upon detection. The system also provides detailed information on the faulty line and the distance and exact location of the fault. Furthermore, real-time line Current data transmitted to the monitoring station. Our research offers a comprehensive framework to enhance the reliability and efficiency of transmission line fault detection, contributing to the advancement of power distribution networks.*

Keywords: ESP8266 (NODE MCU), Relay, GPS Module, LCD Display, Transformer