Transmission Line Fault Detection System

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Abstract - Transmission line is the most important part of the power system. Transmission lines a principal amount of power. The requirement of power and its allegiance has grown up exponentially over the modern era, and the major role of a transmission line is to transmit electric power from the source area to the distribution network. The exploded between limited production and a tremendous claim has grown the focus on minimizing power losses.

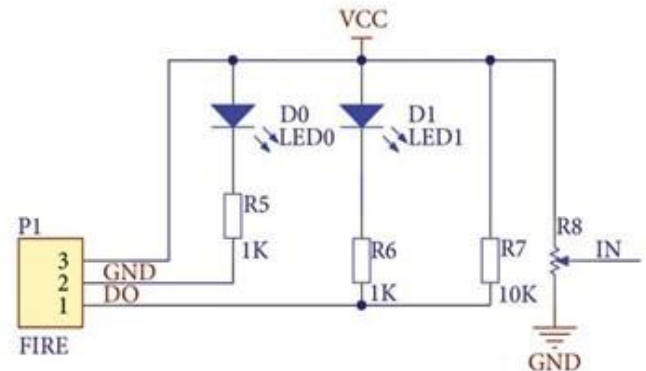*Key Words***:** Transmission, Fault, Current, Power source

Fig -1: Flame Sensor

1.INTRODUCTION

Transmission lines play a critical role in the electric power system by transmitting electrical energy from generation units to distribution networks and end-users. Ensuring the reliability and stability of these lines is essential for the uninterrupted delivery of power.

Transmission fault detection is crucial for maintaining the reliability and stability of power networks. Traditional methods often struggle to handle diverse real-world fault situations, but machine learning (ML) algorithms offer a data-centered approach that can adapt and learn from datasets.

2. Body of Paper

The detection and localization of faults in transmission lines have been a prominent research area for decades. A vast body of literature exists that explores traditional methods, modern approaches, and cutting-edge technologies for improving fault detection in power systems. This review summarizes key contributions and advancements in the field. Impedance-based fault detection techniques have been widely used due to their simplicity and reliability. These methods calculate the apparent impedance from the measurement of voltage and current at the relay location.
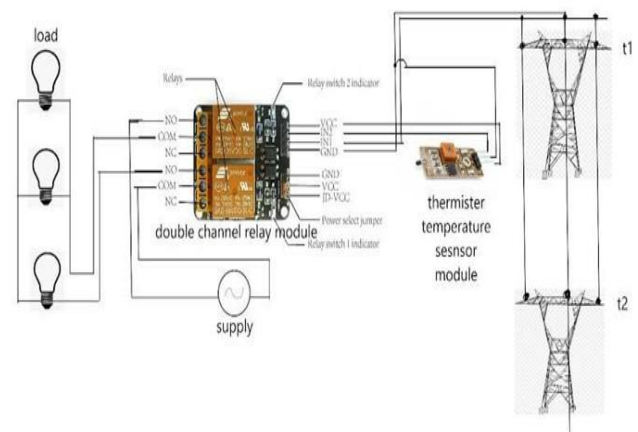

Fig -2: Circuit Diagram

TRANSMISSION LINE

3. CONCLUSIONS

Efficient and accurate transmission line fault detection is crucial for ensuring the stability, reliability, and safety of power systems. Advanced detection and real-time monitoring systems, have significantly improved the speed and precision of fault identification. By enabling prompt fault localization and isolation, these approaches minimize power disruptions, reduce system damage, and enhance overall operational efficiency.

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