

IOT BASED TRANSMISSION LINE FAULT DETECTION ALONG WITH FIRE AND SMOKE ALERT

<https://www.youtube.com/watch?v=U0RamJP2OI8>

The main aim of this project is to design a three-phase transmission line fault detection using an Arduino Nano and display the fault type on LCD module.

This system detects such types of faults line-line fault, open circuit fault, line-ground fault. This proposed model uses the concept of Ohms law to detect the faults which is quick, reliable and cost effective. This system consists of ESP8266 WI-FI module to send the data into the BLYNK APP and send the alert intimation to user mobile through blynk mobile application.

The current sensing circuit, consisting of a set of resistors, is interfaced with the Arduino Nano microcontroller through its ADC pins to convert analog signals into digital data for processing. Based on these readings, the system detects faults in transmission lines and uploads the data to the Blynk application for real-time monitoring. In case of a fault, an alert notification is sent to the user's mobile through the Blynk app. Simultaneously, the microcontroller displays the type of fault on an LCD module and activates a buzzer for audible alerts, while RED, GREEN, and YELLOW LEDs indicate the specific phase in which the fault has occurred. The system also includes fire and smoke sensors to detect hazardous conditions, triggering immediate alerts through the buzzer. All these operations are controlled by the microcontroller programmed using Embedded C, ensuring accurate and reliable performance.

Objectives:

- ⦿ Design a three-phase fault analysis system.
- ⦿ It will detect line-line fault, open circuit fault and line-ground fault.
- ⦿ R,Y,B fault indication using LEDs.
- ⦿ Automatic fire and smoke detection and alerting system.
- ⦿ Alert in abnormal condition using Buzzer.
- ⦿ Visible alerts using LCD display.

- ⦿ Monitoring and Sending alert notification using BLYNK APP.

The main blocks of this project are:

- Adapter power supply.
- Arduino Nano Microcontroller.
- Three phase transmission lines.
- Resistor.
- LCD with driver.
- Esp8266 Wi-Fi module.
- Buzzer.
- RED, GREEN, YELLOW LEDs.
- Fire sensor.
- Smoke sensor.

Software's used:

- ⦿ Embedded C programming.
- ⦿ Arduino IDE studio for dumping code into Micro controller.
- ⦿ Express SCH for Circuit design.

BLOCK DIAGRAM

