THREE PHASE TRANSMISSION LINE FAULT DETECTION, ANALYSIS AND MONITORING

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ABSTRACT

Automation of substations has end up a need of every software to boom and enhance its performance enhance the quality of the electricity provided. Fault region and distance estimation is very critical trouble in power machine engineering which will clear fault short speedy and repair power deliver as soon as viable with minimal interruption. Sensors encompass a contemporary sensor, an AC voltage sensor. every sensor is ready with an Arduino microcontroller. The Arduino Uno is running as a microcontroller inside the coordinated smart voltage and modern-day tracking machine to determine the voltage and present day sensor outcomes.
The possible faults in a three segment transmission line.

1. *LG faults – AG, BG, CG*
2. *LL faults – AB, AC, BC*
3. *LLG fault – ABG, ACG, BCG*
4. *LLL faults – ABC*
5. *LLLG faults – ABCG*

Keyword : - *ACS712 (30A), ESP8266, Arduino, Relay, GPS Module, etc.*

1. TITLE

Fault incidence in electricity structures ought to result in dropping their balance and purpose intense damages in faulted devices or adjoining wholesome gadgets. it is essential to come across the fault as early as possible this is why a kit is being made the use of microcontroller to make its technique faster. Following developments rent excessive pace virtual recording technology by using the use of the touring wave transients created by using the fault. presently, the electric electricity infrastructure is extra prone in opposition to many sorts of natural and malicious bodily activities that is without delay have an effect on the stability of grid.

2. HARDWARE COMPONENTS

- Miniature Circuit Breaker (MCB)
- Current Sensor
- Arduino Relay
- Arduino Uno
- Node MCU
- LCD Display
- Liquid Crystal Display (LCD)

3. SOFTWARE REQUIREMENT

- Embedded C++
- Arduino IDE
- Proteus Professional
- IOT Cloud Platform

4. METHODOLOGY

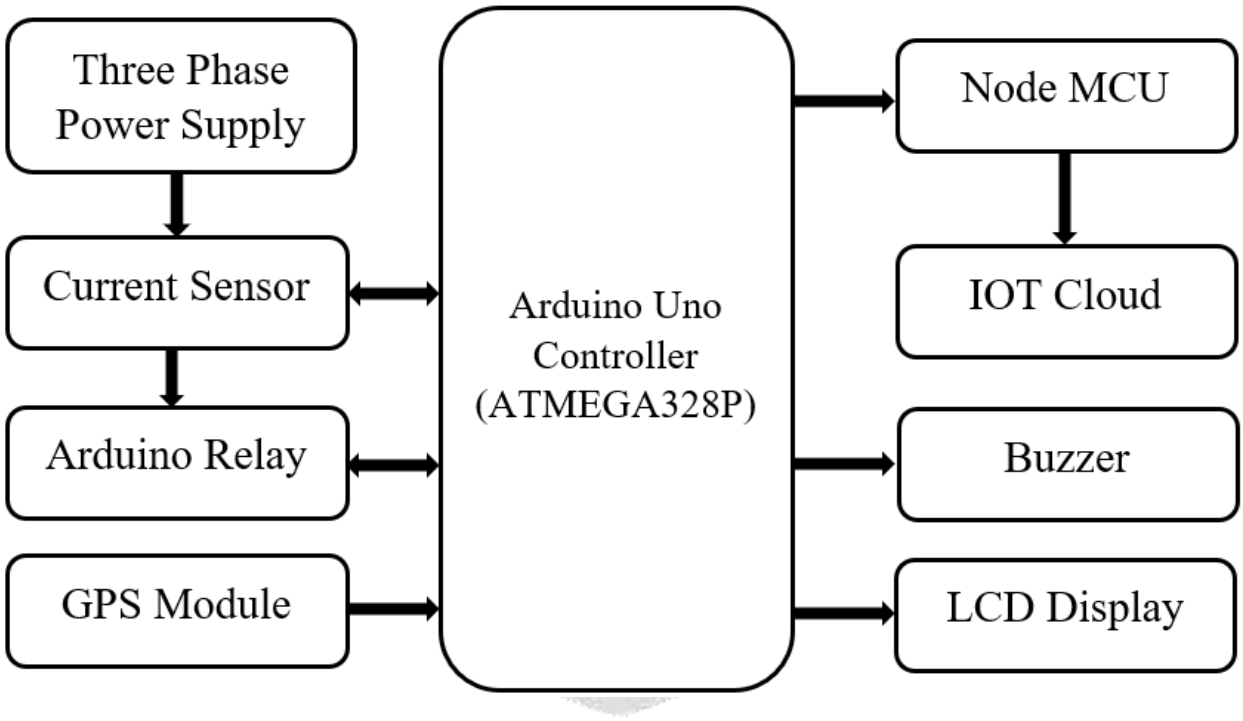


Fig. 4.1 Block diagram of Three Phase Transmission Fault Detection, Analysis and Monitoring

PREVENT DIAGRAM DESCRIPTION

1. Arduino Uno Controller
2. Current Sensor
3. Arduino Relay Module
4. GPS Module
5. Node MCU
6. IOT Cloud

Arduino Uno Controller:

Arduino Uno controller is the main element of the mission. All sensors are connected to Arduino and it controls all sensors through giving instructions. by using the use of Arduino we can do all things at low price. Arduino has analog and virtual pins through which we will manage the challenge by way of giving inputs in analog in addition to digital form.

Current Sensor:

On this task we have used ACS712 30A model. The 30 A model of the cutting-edge sensor is very touchy and accurate. It's miles related to the transmission line and Arduino. It helps to reveal accurate analyzing of cutting-edge.

Arduino Relay Module:

It's miles an electrical switch this is operated by means of an electromagnet. The electromagnet is activated through a separate low strength sign from Arduino controller. whilst it's miles activated, the electromagnet pulls to either open or near electric circuit.

GPS Module:

Global Positioning machine (GPS) is satellite based navigation system that offer area and time records. The GPS receiver calculates its role by means of precisely timing the indicators sent by GPS satellites.

Node MCU:

Node MCU is the open supply IoT based platform. The wireless firmware included on this, which runs on ESP8266 WiFi SoC. The version of Node MCU used in this challenge is 1.0 carries ESP-12E in which E stands for more advantageous.

IoT Cloud Platform:

The IoT cloud is a large community that supports IoT gadgets and programs. The platform consists of the underlying infrastructure, servers and garage, it wished for actual time operations and processing.

5. CIRCUIT DIAGRAM

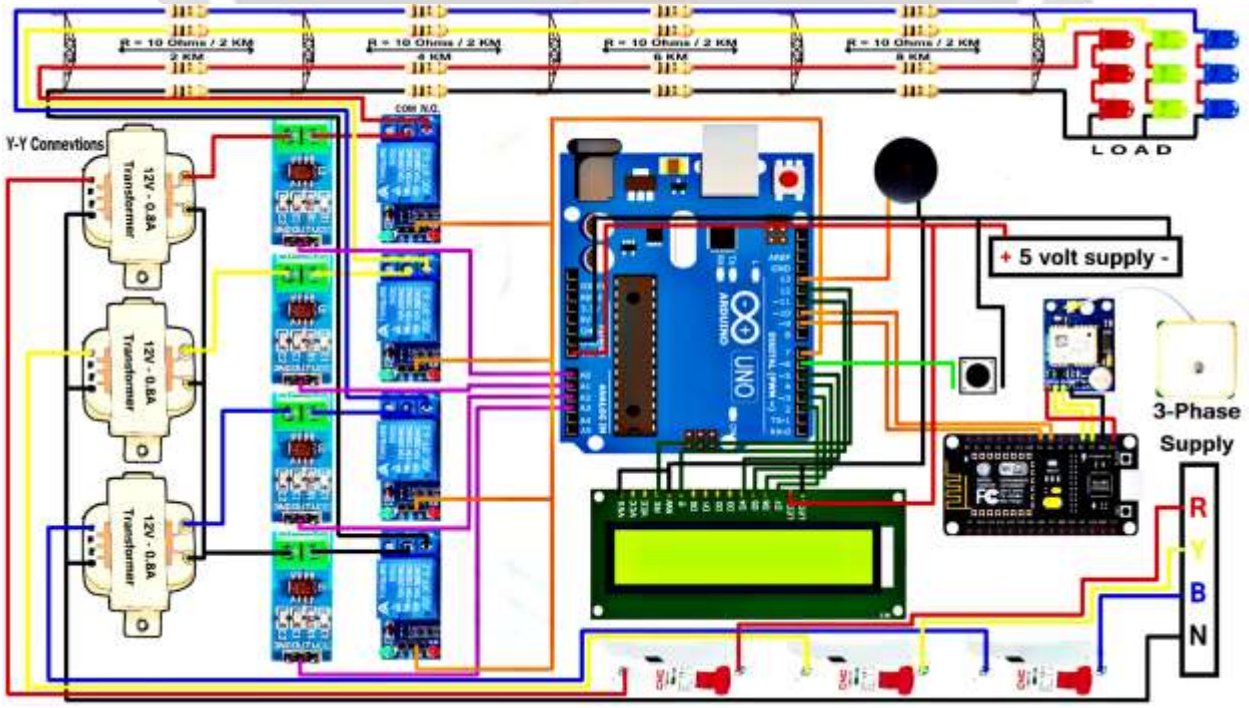
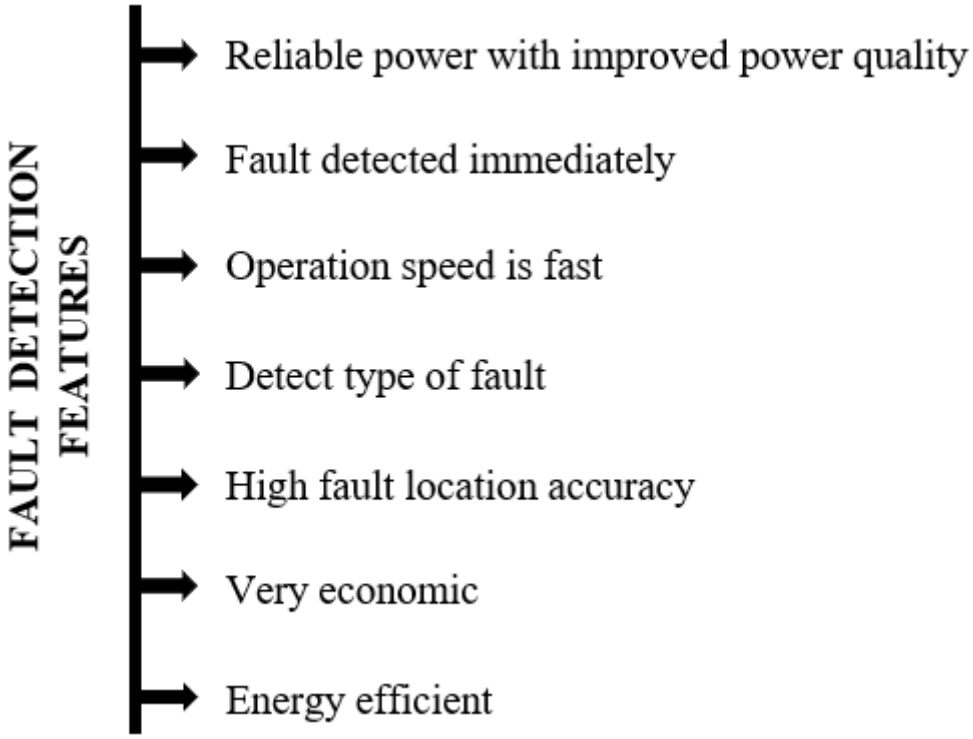


Fig. 5.1 Block diagram of Three Phase Transmission Fault Detection, Analysis and Monitoring

6. FAULT DETECTION AND ITS FEATURES



7. CONCLUSION

The version design in any such way to remedy the troubles faced through customer. by using using such approach, we are able to easily come across the fault and solve it. it's far extraordinarily reliable and discover the fault in 3 phase transmission line and additionally speculated to statistics garage. it works on actual time so we preserve all records sheet and avoid the destiny trouble in transmission line.

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