IoT Technology Based Underground Cable Fault Distance Detection System Using ATmega328P Microcontroller

ABSTRACT:-

The objective of this paper is to determine the location of fault in underground cable lines. From the source station to exact location of fault in any units, here in kilometers. Whenever a fault occurs in the underground cable line for some reason, the repairing process relating to that faulted cable becomes difficult owing to lack of proper system for tracking the exact fault location and the type of fault occurred in the cable. For this, a system has to be developed to find the exact location of the fault in the distribution line system for all the three phases R, Y & B for different type of situations of faults. Here in this paper single line to ground, double line to ground & three phase faults have been considered. Therefore, the basic concept of Ohm’s law is found suitable in principle to develop a fault location tracking system. Based on the Ohm’s Law, it is found that the resistance of the cable is proportional to its length under constant conditions of temperature and the cross section area and therefore if a low DC voltage is applied at the feeder end through a series of resistor in cable lines, the current would vary depending
developed which consists of a microcontroller, LCD display, Fault Sensing Circuit Module, IoT Wi-Fi Module and proper power supply arrangement with regulated power output. Hence, if there is a short circuit in the form of line to ground in any phase/phases, the voltage across series resistors changes accordingly and an analog signal in the form of voltage drop is generated by the fault sensing circuit of the introduced system, which is then fed to an ADC inbuilt in already programmed microcontroller to create the exact digital data and after processing the data the output will be displayed in the connected LCD with the exact location of fault occurred in kilometers from the source station and simultaneously also indicate the corresponding R, Y, B phase where fault occurred with the exact distance.

**Block diagram :-**