Journal of Electrical Power and Electronics Systems, Vol. 1 No. 2 (2019) p. 1-6

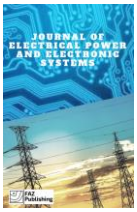
JEPES

FAZ Publishing

Journal of Electrical Power and Electronics Systems

Journal homepage: www.fazpublishing.com/jepes

e-ISSN : 2672-734X



IoT Based Three Phase Fault Analysis for Temporary and Permanent Fault Detection

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Received 01 September 2019;
Accepted 20 October 2019;
Available online 31 October 2019

Abstract: The three phase fault detector and analyse system is designed to differentiate the type of fault occur in power system, enhanced with the Internet of Things (IoT) by using the combinations of Arduino and Wi-Fi module. All sorts of electrical substation that supply the electric to the users like industrial or residential may have some failures due to fault that may be temporary or permanent. However, due to problems like system take a longer time to detect the type of fault and also required manually to reset off the fault make the existing protection system not efficient in supply energy to consumer. The system can be used three single phase transformers those are wired in star input and star output also three transformers are connected in star input and delta output that having 240 volts input and 12 volts output. Then, ESP NodeMCU is used as controller and also act as device that connect to the IoT system when fault is detected. The devices then link with the Blynk application. User will get the notification from Blynk application when the fault is occurred. Using these devices, user could find automatically after a short-lived interruption in a provisional fault from the tripped situation in case of eternal fault.

Keywords: Three Phase Fault, Internet of Things (IoT), ESP8266 NodeMCU, Blynk, and Arduino.

1.0 Introduction

In power system, fault is defined as the defect in power system due to which current is distracted from the intended path. Then, the fault creates the abnormal in power system which reduces the insulation strength between the conductor and this will cause excessive damage to the system [1]. The faults may occur for a temporary or permanent in power system and this can disturb the supply to users. Then, it is important to detect the faults occurred so that it will prevent from any damage of equipment and continue supply the energy to consumers.

From the studies, 70% to 90% of faults are occurred in overhead transmission line which are transient, such as damages of insulation, swinging wires and little time contact with other objects. The other 30% to 10% faults are occurred in overhead line which are permanent or long duration fault. This type of fault is occurred by broken wire which results one

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