iJRASET
International Journal For Research in Applied Science and Engineering Technology



# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

**Volume:** 9 **Issue:** VII **Month of publication:** July 2021

**DOI:** https://doi.org/10.22214/ijraset.2021.36421

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
*ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429*
*Volume 9 Issue VII July 2021- Available at www.ijraset.com*

# Motor Protection System with Using IoT Monitoring

Er. Smita Dinker[1], Abhishek Singh[2], Ashish Singh[3], Rahul Kumar[4], Vaibhav Pathak[5]
[1]*Assistant Professor, Electrical and Electronics, S.R.M.S.C.E.T., Bareilly, India*
[2, 3, 4, 5]*Student, Electrical and Electronics, S.R.M.S.C.E.T., Bareilly, India*

***Abstract:*** ***Motor performs very vital role in different industries. In this paper, we are talking about a system which provides different protections to the motor and also helps in controlling and monitoring various parameters of motor through IOT. We have used Node MCU 8266 Wi-Fi enabled IOT module and with the help of some transducers we can achieve our goal easily to provide protection and to control the motor as well as to monitor various parameters.***
***Index Terms: Motor, protection, IoT, node MCU 8266, transducers, etc.***

## I. INTRODUCTION

Motor plays very useful role in various applications because of their small size and also due to their wide range of speed control. In past for controlling and to operate two or more motors the operators need to go to respective location where the motor is located but now with the help of this scheme the operator can easily control the motors of the plant from a control room. We know for checking various parameters of motor like temperature and voltage we have to use measuring equipment but with the help of this project we can continuously monitor the readings of running temperature of motor on a single computer screen. Different faults like short circuit fault are very common in motors, our system provide protection to motors from these faults.

In this review paper, we are working on a system which will provide protection to motor under faulty condition. Also we can observe various conditions of motor by using this system. By this scheme we are reducing human efforts required for continuously checking the various parameters of motor for an interval of time. In today's time, IoT dependent embedded systems are usually used in various fields like technology, industries, research, space etc. So we have decided to use IoT system for providing protection, and monitoring of motors. In various plants two or more than two motors are used for different applications so maintenance of these motors was a problem for the operators in the plants. So by the use of IoT based system operator can see any motor's present status in the computer screen. Operator can record actual time reading of running temperature of motor by using IoT based system on a single computer screen.

## II. METHODOLOGY

In this entire project the main methodology depends on IoT based embedded system so all hardware is interfaced with Wi-Fi and internet connectivity plays very important role in its functioning. The whole programming is done in Node MCU 8266 board and we know that ESP 8266 IoT module is already Wi-Fi enabled, so it takes parameter from sensing device and upload it on the server. Then with the help of Wi-Fi and various sensors we have achieved the required purposes like providing protection to motor from the abnormal or faulty conditions. Also to study and observe parameter of motor like temperature of motor while running.

Another very important factor in this project is controlling of the motor. Total functioning of project in terms of block diagram is shown in the Fig 1.

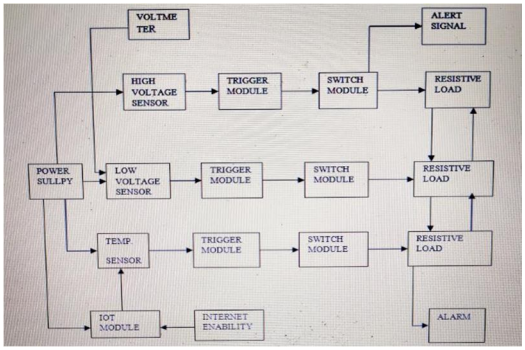


Fig 1 – Block Diagram

©IJRASET: All Rights are Reserved

*ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429*
*Volume 9 Issue VII July 2021- Available at www.ijraset.com*

## III. HARDWARE

This project is very likely an embedded system so hardware is most important part of this system. The most important hardware is such as:-

*A.* Node MCU 8266 Board
*B.* Step down transformer
*C.* Over and under voltage sensing module
*D.* Temperature sensor LM 35
*E.* Variable Transformer

## IV. LITERATURE

Many methods have been proposed during last some decades to provide proper monitoring and protection to induction machine. Therefore, brief depiction of major techniques are presented in the literature and also their pros and cons are presented in this section -

*A.* A non-intrusive and in-service motor efficiency method was proposed in 2008, where the estimation of efficiency based on Air Gap torque using only the motor terminal quantities and nameplate information, with special facility of motor condition monitoring requirements. Stator resistance and rotor speed, the difficulties of most in-service trial methods, are extracted from the motor input currents instead of being evaluated. Finally, the proposed method is authenticated by testing three induction motors with different configurations.
*B.* RF, ZigBee and Bluetooth advancements are widely preferred in easy-to-use applications due to the short range between the transmitter and the receiver, and the small volumes of data convey. The ZigBee, RF and Bluetooth wireless communication methods are generally not preferred in simple applications because of their very slow speed of communications, interspaces and data security.
*C.* SCADA programs are also used for making user interfaces. But there is a disadvantage that SCADA programs do not provide adaptability to users due to their costly libraries.
*D.* PLC SCADA based fault detection and protection system is a very successful example which gives the web based user interface and was presented to users. But the main problem is these systems are more costly than the whole system to which protection has to be provided.
*E.* Along with non-intrusive method algorithm of bacterial foraging is also applied for the efficiency estimation. But the system becomes lengthier in calculations.

The above given methods are some of the examples of control and monitoring of motors used in various industries but they have some limitations such as cost of system, long distance communication, data gathering ability, etc.
So, we require a system that can monitor the different parameters and as well as control an industrial motor from a distance.
Basically we want a system that can automatically turn off the motor if there occurs any fault in the motor and also when the motor is running all the parameters of the motor can be monitored for real time on a display to the operator.

## V. APPLICATION

*A.* To monitor the parameters and control an induction motor based on internet of Things (IoT) for safe and economic data communication in industrial fields.
*B.* The data from IoT device ESP will be uploaded to server and this data can be seen on android application.
*C.* To monitor and protect the motors used in industries.
*D.* To automatically stop the motor and raise an alarm during faulty conditions.

## VI. CONCLUSION

This project presents the concept of overall protection of motor which can be done through these schemes. Temperature, high voltage, low voltage, short circuit protection can be achieved through single scheme. This is first ever combination of all these protection along with IoT. It is very easy to have the real time parameters of the Induction motor with the help of this scheme which will helps us in various ways and also to the growth of the industry and increase working efficiency of the motor.

©IJRASET: All Rights are Reserved

## VII. ACKNOWLEDGMENT

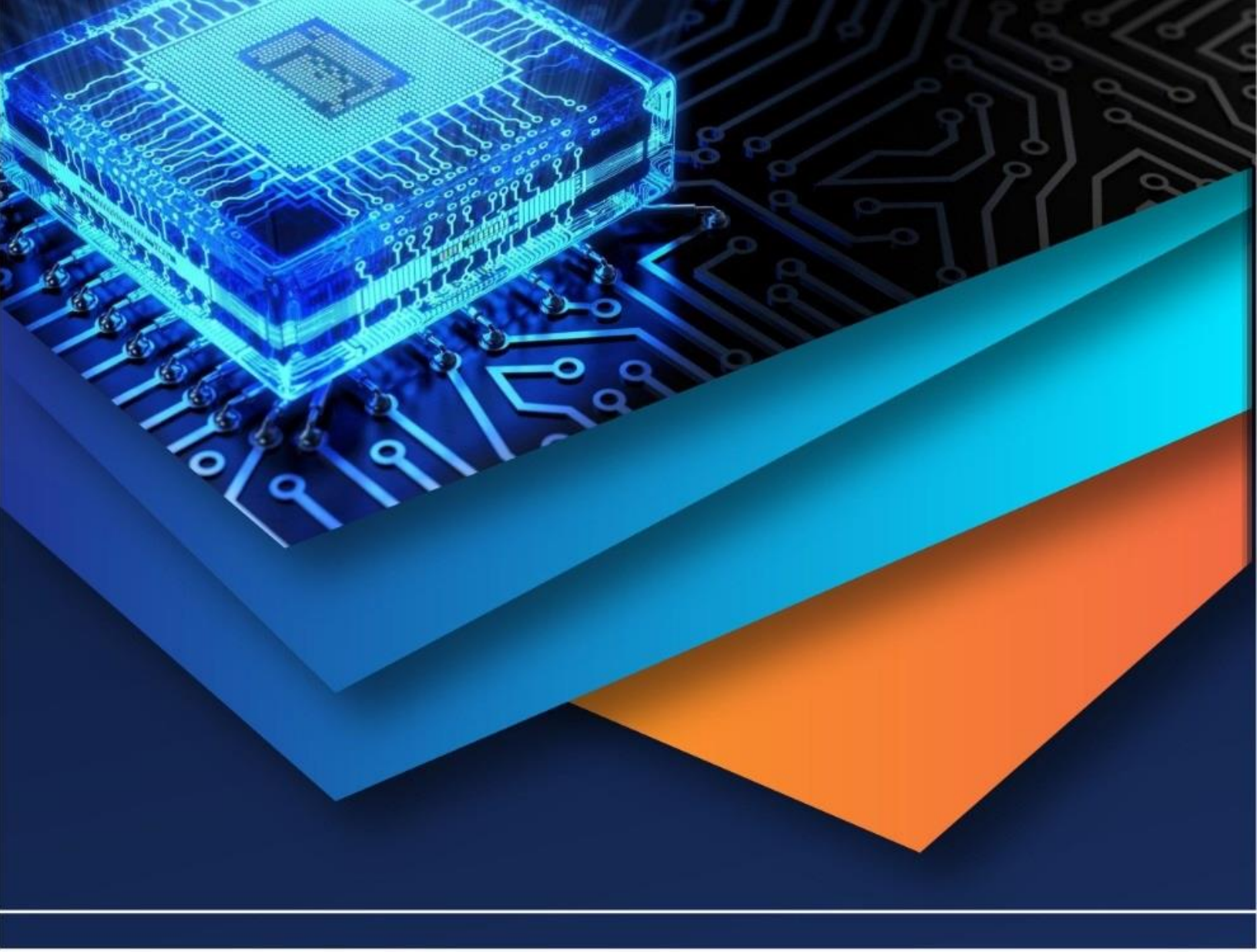
It is our privilege to express our sincerest regards to our project coordinator, Mrs. Smita Dinker for their valuable inputs, able guidance, encouragement, whole-hearted cooperation and constructive criticism throughout the duration of our project. We deeply express our sincere thanks to our Head of department DR. A.S. Yadav for encouraging and allowing us to present the project on the topic "MOTOR PROTECTION SYSTEM USING IOT MONITORING" at our department premises for the partial fulfillment of the requirements leading to the award of B.Tech degree.

We take this opportunity to thank all our lecturers who have directly or indirectly helped our project. We pay our respects and love to our parents and all other family members and friends for their love and encouragement throughout our career.

## REFERNCES

[1] www.google.co.in
[2] http://www.eeweb.com/blog/circuit_projects/temperature-controlled-electronic-relay-by-lm35.
[3] Jyotiba Gadade, Girish Bharane and Tushar Rupanwar "DC Motor Protection, Control and Monitoring," IRJET, Volume: 05, Issue: 05, May 2018.
[4] http://www.datasheetdir.com/TL431+Voltage-References.

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)