

## IOT BASED MOTOR MONITORING SYSTEM

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### ABSTRACT

Now days, the induction motor has remained the most popular type of motor for industrial applications. Monitoring and controlling of induction motor parameter is very essential in many application and also for the reliable operation there are several techniques available for the same. This paper deals with the monitoring of various parameters & control of induction motor remotely based on Internet Of Things [IOT]. A module of sensor and transducers monitors the parameters like temperature, current and voltage of induction motor and send to the processing unit which will display parameter on server. And we will fetch it on Android Application. The system also presents the automatic and manual control methods to stop or start the induction motor to avoid any system failures through server gateway. The Implementation of this scheme will increase the working efficiency of machine by continuously monitor to avoid breakdowns and also to determine the preventive maintenance.

**Keywords:** Induction Motor, IOT, Sensors, Arduino, Fault Monitoring, Programming.

### I. INTRODUCTION

In today's manufacturing industries, mechanical & electromechanical systems are driven by electric motors on the premises. The drivers of these motors are mostly on motor control and the predictive maintance schedules of the motors are not calculated. Attempts are being made to maximize efficiency by using enterprise resource planning(ERP), especially in 24/7 production enterprises. However, unexpected failures not predicated by the ERP system can cause distruptions in the production process. In this project, the temperature, current, voltage, cycle speed of single phase induction motor were read using TCP/IP protocol via wi-fi. By using the existing Internet network these parameter were read and transferred to the central software without the need of any additional wire.

### II. METHODOLOGY

The below given diagram is the basic block diagram of IoT Based Motor Monitoring System which clearly explains the working.

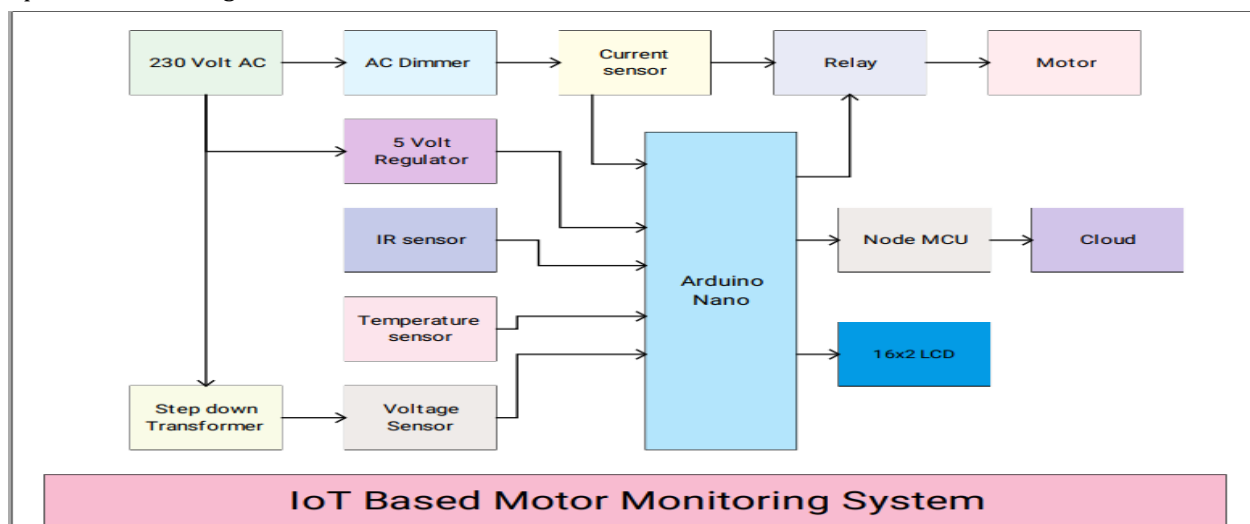


Figure 1: Block Diagram

It consists of PT and CT on induction motor to measure voltage and current respectively to find input power, also it measures temperature and rms speed by using Thermocouple sensor and IR sensor to measure parameter of induction motor all this measured value send to microcontroller. Where it process and encrypted packet are formed. This packet are transfer to server via wifi module which is attach to the main controller. The data available at server can access by remote device through encrypted connection so that data security is maintain.

#### Circuit Diagram:

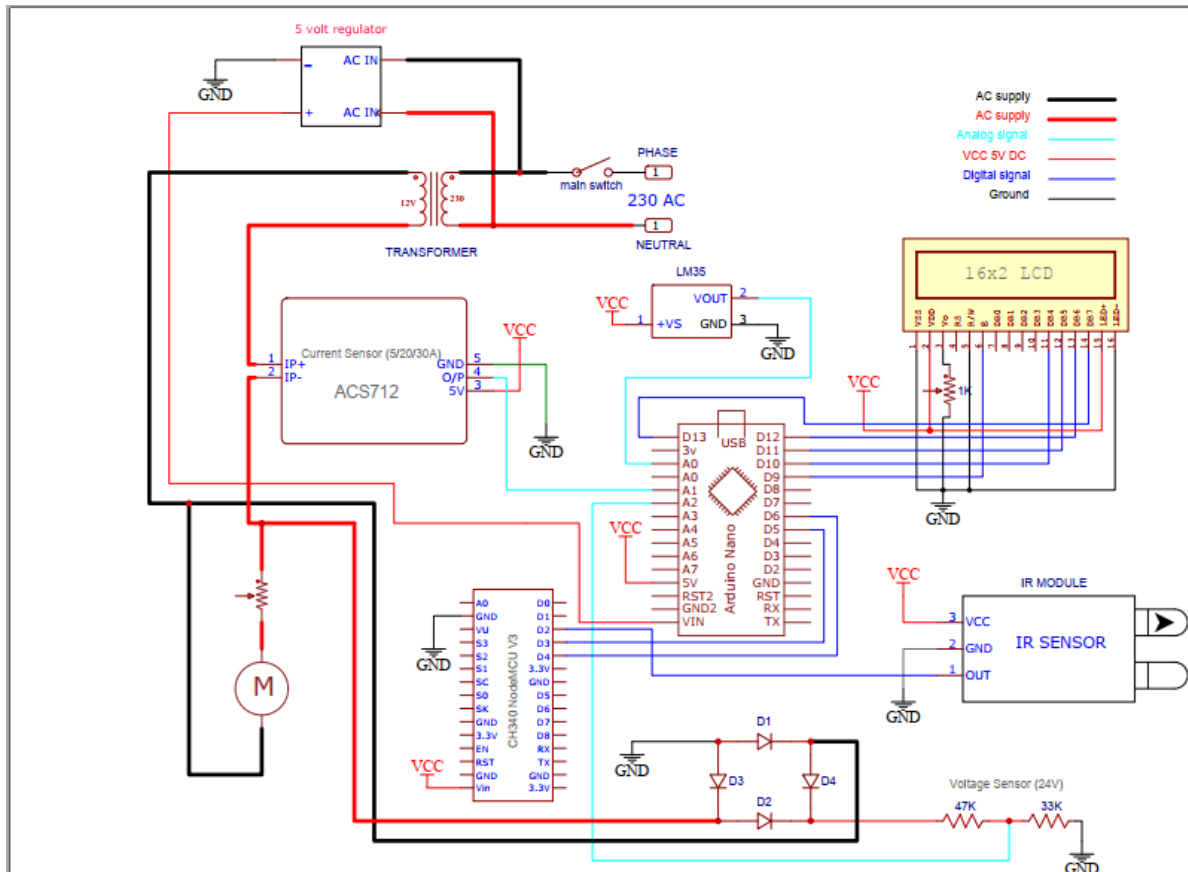


Figure 2: Circuit Diagram

### III. COMPONENTS AND SYSTEM REQUIREMENT

#### Components Required

- Arduino Nano
- Node Mcu
- Transformer(240/12)
- 5V DC regulator
- Current sensor(ACS 712)
- Temperature sensor(LM 35)
- IR sensor(HC 05)
- Single phase Induction motor
- Jumper wires
- LCD screen(16\*4)
- PCB board

#### System Required

- Operating system
- Arduino IDE
- Bylnk App

#### IV. RESULTS AND DISCUSSION

The IOT Based motor monitoring system is now interfaced with Blynk 2.0 app. We can now give Turn ON and Turn OFF commands and monitor the parameter of the motor through the android app installed on the phone. In Figure 3 given below picture of the Prototype of lot Based motor monitoring system is shown. In figure 4 the interface of Blynk 2.0 app is shown

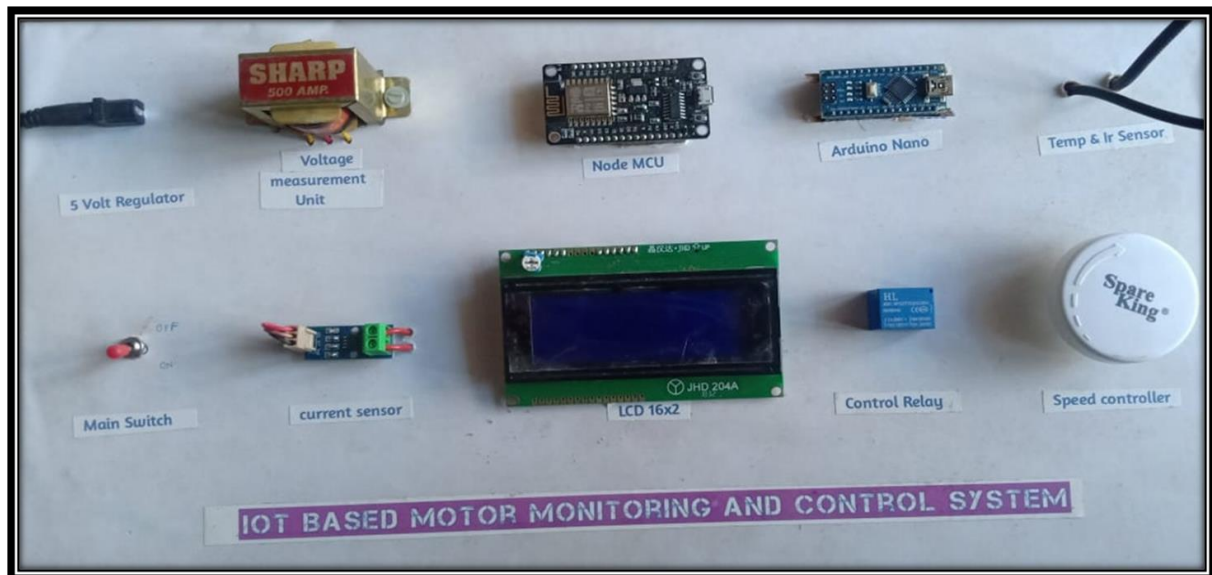


Figure 3: Prototype of IOT Based motor monitoring system

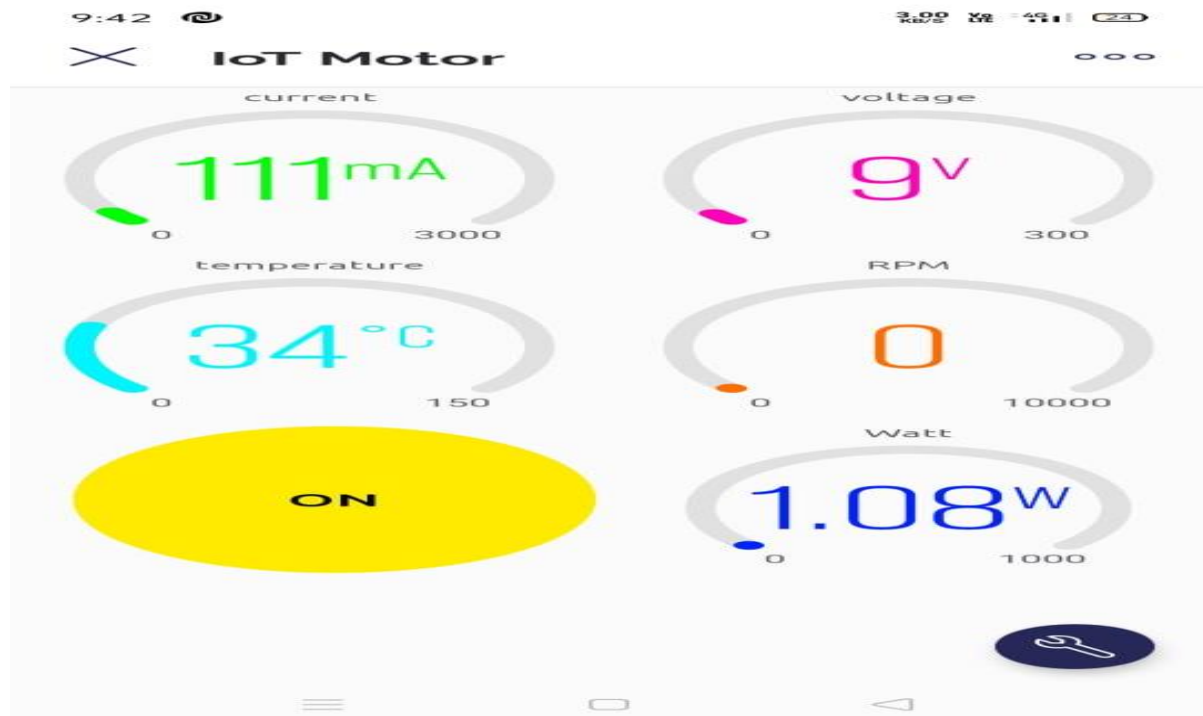


Figure 4: Mobile app interface

#### V. CONCLUSION

This project presents the concept of Internet of Things for early detection and monitoring of motor system failures remotely. The system has been designed to combine various parameter measurements in real-time, improving the detectability of different faults. The monitoring of the motor system presents the measurement of different parameters namely vibrations, temperature, voltage and current consumption. Thus, compared to conventional methods that relies solely on vibrations or temperature, this design has more information sources

which can enable an alarm. The concept of IoT is presented here for This paper presents the concept of Internet of Things for early detection and monitoring of motor system failures remotely. The system has been designed to combine various parameter measurements in real-time, improving the detectability of different faults. The monitoring of the motor system presents the measurement of different parameters namely vibrations, temperature, voltage and current consumption. Thus, compared to conventional methods that relies solely on vibrations or temperature, this design has more information sources which can enable an alarm.

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