Advancement in Data Logger System

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ABSTRACT: *This paper aims to develop a low cost, many channel data logging system which can store data for future use. ESP32 microcontroller is used to make advancement in this system. This system sends the stored data to the addressed mail through Wi-Fi. Through this device we can log any physical or environmental parameters for the particular period of time. In the old version, the data logger is physically connected to the computer. The system proposed in this paper is an advanced solution for monitoring the physical or environmental parameters at a particular place and display the information anywhere in the world. The technology behind this is Internet of Things (IoT). The system deals with monitoring and recording physical or environmental parameters and sends the information to the receiver. The data collected from this system can be accessible in the internet from anywhere in the world.*

Key Words: *Data Logger, ESP32, Wi-Fi, USB Host, IOT.*
Index Terms - *Introduction, Methodology, System Architecture, Future Scope.*

I.Introduction

In today's world there are many systems whose data is needed to be continuously collected. This data should be in form of log by which time, occurrence and other specifications can be collected at one place. All of this information is collected manually on field which consumes both time and workforce. In some situation it is not possible to retrieve this data because of extreme environment or remote location. Data logger is a different than typical data acquisition. It has ability to log data automatically on a 24-hour basis. Once it deployed and left unattended to measure and record information for the duration of monitoring period. Our project is to create a system which will be an IOT based system, so it will send all the collected data at the addressed email or network from where it can be collected at one place. This system also has a USB module to increase storage or in case of emergency retrieval. The system has its own interface which provides the user a smooth experience.

II.IMPLEMENTATION

In this project the system will accept the data from field using various sensors attached to it. The data will store in form of log after particular interval of time. This data is stored on USB drive to increase storage capacity. This allows user to quick access to logged data. The collected log data will be sent to the addressed mail or any other network without any human interventions. For the smooth operation we use microcontroller ESP32 which has inbuilt Wi-Fi.

A. *Microcontroller ESP32:*

Here the ESP32 is the heart of the whole system which takes inputs from sensors and gives the output in form of logs. We use this controller because of its features like built-in Wi-Fi and dual-mode Bluetooth. It is a low-cost and low-power microcontroller.

B. *RTC (real time clock):*

A **real-time clock** (**RTC**) is a computer clock that keeps track of the current time. Although the term often refers to the devices in personal computers, servers and embedded systems, RTCs are present in almost any electronic device which needs to keep accurate time. The use of RTC here is to show time on display of system. It is also used to display on what time the data is logged.

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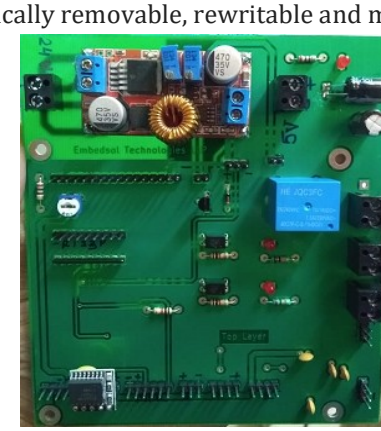
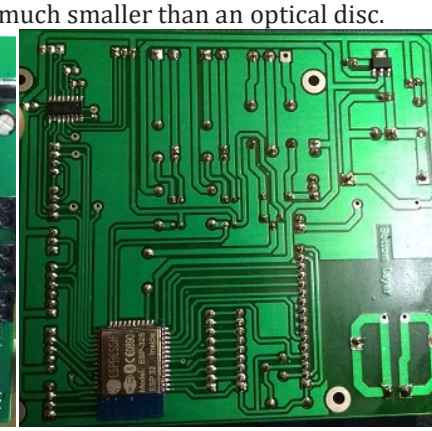
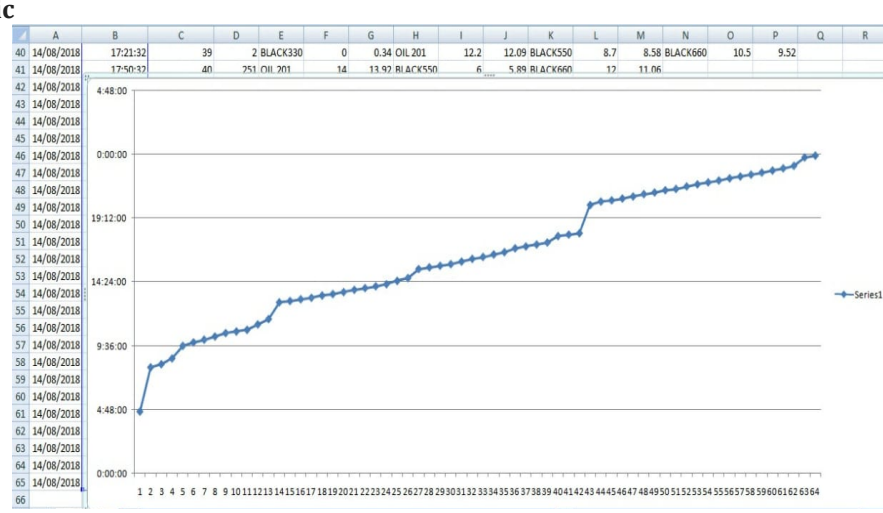
C.USB Drive:

A USB flash drive in this system is used to store data which will send. This data is used for emergency retrieval. It is typically removable, rewritable and much smaller than an optical disc.





PCB schematic



Graphical representation of logged data

There are number of data logging system we can use to log data. We can log data in different formats. Here in this system we log data in excel format. We can use this data for analysis using graphs.

III. CONCLUSION

The proposed system will be able to record data and store it directly in pen drive as storage unit and send the same in precise log format to addressed receiver. Stored data is transferred wirelessly or by wired media via debug port. No data loss is done while wireless failure hence proving its reliability also makes easy to collect data in extreme conditions without any issues.

IV. FUTURE SCOPE

Future work will based on the EEPROM. Though the power supply is off then all data will be save in

EEPROM chip and when power supply is on it will displayed on LCD. The project can also work upon GSM technology, where the information will be send to user via SMS.

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