IJARCCE

ISSN (Online) 2278-1021
ISSN (Print) 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering

Vol. 9, Issue 2, February 2020

Smart Food Storage System

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Abstract: In this project, an analogous food quality monitor are designed which will keep watch of environmental factors like temperature, humidity, and level detection. The device is constructed on Node megacycle that may be a well-liked prototyping board. The controller is interfaced with numerous sensors like DHT-11 to watch temperature and humidness and level detector. this can be Associate in Nursing IoT device Associate in Nursing sends the measured device knowledge to an IoT platform. The IoT platform used for work and watching of device knowledge is BLYNK app. With the facility of web of Things, the environmental factors poignant the food storage will be monitored from anyplace, anytime and from any device.

Keywords: Whole circuit of food system, temperature and humidity detection, fire detection, mobile and Email notification, Blynk app to show food information.

I. INTRODUCTION

Food is a main resource of a human being. we tend to reside in AN age where tasks and systems area unit fusing aboard the ability of IOT to possess tons of economical system of in operation and to execute jobs quickly! so, during this project we can check food temperature, humidity and also know get fire warning using different types of sensors. We build the food container with different types of sensors like ultrasonic sensor, DHT 21 sensor and the circuit, which we can use like a smart food storage system.

It contains following features:

- Food Level Detection
- Temperature Detection
- Humidity detection
- Fire detection
- Mobile and Email notification
- Easy circuit and code (using c language)

II. DESCRIPTION

In this project, the food quality watching system is going to be designed that may keep watch of environmental factors like temperature, humidity, and level detection. The device is constructed on NodeMcu that may be a fashionable prototyping board. The controller is interfaced with varied sensors like DHT-11 to observe temperature and wetness. we've got additionally used flame detector as a fire detector and ultrasonic sensor for food level detector. this can be an associate IoT device associated sends the measured device information to an IoT platform. The IoT platform used for work and watching of device information is the BLYNK app. we will additionally get the notification on logged on the device and registered email. With the facility of net of Things, the environmental factors touching the food storage may be monitored from anyplace, anytime and from any device.

Many such devices may be put in at a location for higher watching and internal control. The NodeMCU Sketch running over the device implements the assorted functionalities of the project like reading device information, changing them into strings.

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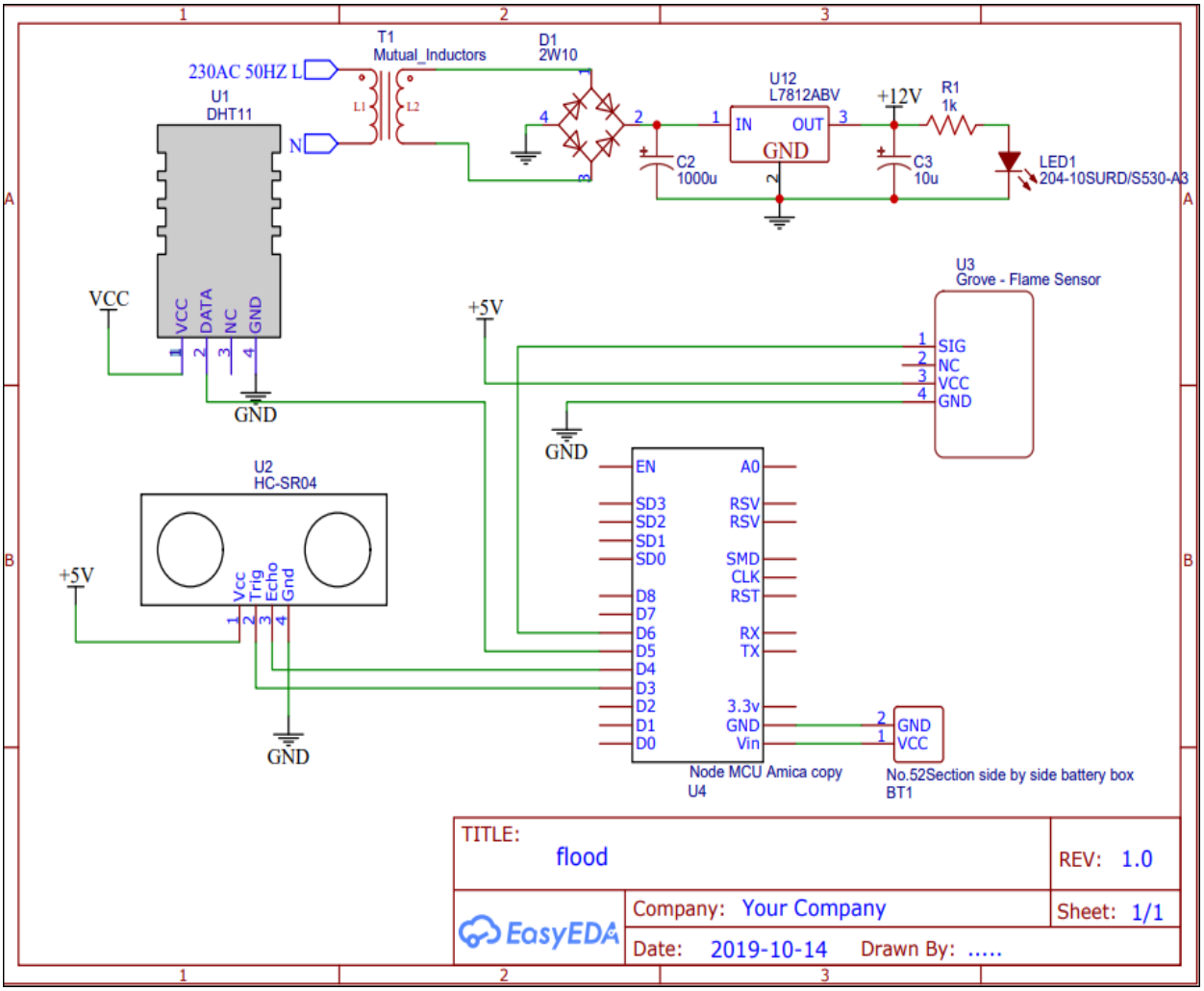
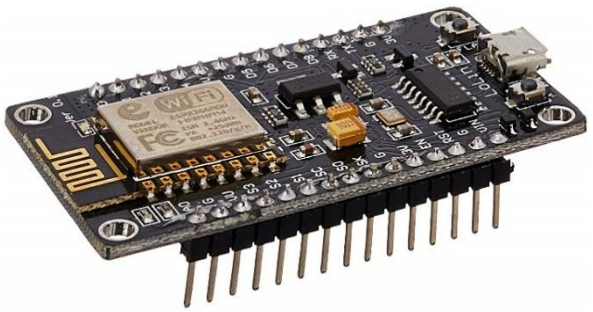


Fig. Circuit of system

III. TOOLS USED AND ITS SPECIFICATIONS

1. **NODEMCU:** is an open-source IoT device that includes firmware that runs on the ESP8266 Wi-Fi SoC from Espressif Systems and hardware that is predicated on the ESP-12 module. The term NodeMCU by default refers to the firmware instead of the development kits.

- Memory: 128kBytes
- Developer: ESP8266 Opensource Community
- Operating system: XTOS
- Storage: 4MBytes
- CPU: ESP8266(LX106)
- Power: USB



2. **HS-SR04 ULTRASONIC MODULE:** is a sensor which is used for measuring the distance between the top of the lid to the top of the food container.

- Working Voltage: DC 5V
- Working Current: 15mA
- Working Frequency: 40Hz
- Max Range: 4m
- Min Range: 2cm

3. **DTH-11:** The DHT11 could be a basic, radical affordable digital temperature and humidness sensing element. It uses an electrical phenomenon humidness sensing element and a thermal resistor to live the surrounding air, and spits out a digital signal on the data pin

- Working voltage: 3.3 or 5V DC
- Operating voltage: 3.3 or 5V DC
- Measurement range: 20-95%RH ; 0-50℃
- Resolution: 8bit（temperature), 8bit（humidity）
- Compatible interfaces: 2.54 3-pin interface and 4-pin Grove interface

4. **FLAME SENSOR:** is a sensing element designed to discover and respond to the presence of a flame or fireplace, permitting flame detection. Responses to a detected flame depend upon the installation, however will embody sounding AN alarm, deactivating a gas line, and activating a hearth suppression system.

- LM393 comparator chip
- Detection Range: 760 nm to 1100 nm
- Operating Voltage: 3.3 V to 5 V
- Maximum Output Current: 15 mA
- Digital Outputs: 0 and 1
- Detection Angle: about 60 degrees
- LED lights indicators: power (red) and digital switching output (green)

5. Blynk App - Allows to you create amazing interfaces for your projects using various widgets we provide.

- Blynk Server: responsible for all the communications between the sensible phone and hardware. you'll be able to use our Blynk Cloud or run your personal Blynk server regionally. It's ASCII text file, might simply handle thousands of devices and might even be launched on a Raspberry Pi.

IV. CONCLUSION

In this project, an integrated system of Wi-Fi modem, IoT, Ultrasonic Sensor is introduced for efficient and economic food storage system. The developed system provides improved database for stored food. We analysed the solutions currently available for the implementation of IoT. By implementing this project, we will avoid food damage from fire and temperature. The technologies which are used in the proposed system are good enough to ensure the practical and perfect for godown and containers.

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