International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 06 | June - 2021 ISSN: 2582-3930

Real Time clock And Temperature Monitor Using Arduino & RTC Module

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ABSTRACT

Arduino real clock with alarm and temperature monitor using DS3231. The DS3231 RTC features a built-in two alarm functions and a temperature sensor with a resolution of 0.25 and an accuracy of ±3°C which make this project more easier.

Hardware Required: Arduino board.

INTRODUCTION

The DS3231 may be a very low power RTC chip, it's the power to stay time with incredible accuracy such even after power has been disconnected from your product, it can run years on a connected coin cell battery. This module has the power to speak via I2C or SPI except for this tutorial we'll be using the I2C mode for communications between our arduino and therefore the DS3231. The module also comes with a quite accurate temperature sensor which we'll be using to urge temperature readings. The collected temperature and clock data is displayed on the LCD via the Arduino.

MODELING AND ANALYSIS

There are primarily four components which are used for the designing of our Real Time clock And Temperature Monitor Using Arduino & RTC Module and they are:

- Arduino Uno

The Arduino Uno is an open-source microcontroller board based on the microcontroller and developed by Arduino.cc. The board is provided with sets of digital and analog input/output pins which will be interfaced to varied expansion boards and other circuits.

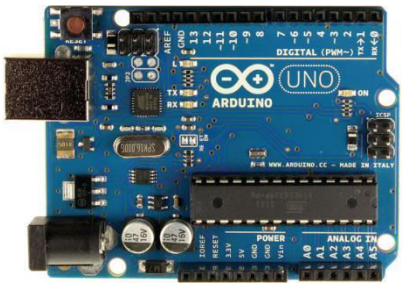

Figure 1: Arduino uno

- **LCD 16×2**

The term LCD stands for liquid display. it's one quite electronic display module utilized in an in depth range of applications like various circuits & devices like mobile phones, calculators, computers, TV sets, etc. the most benefits of using this module are inexpensive; simply programmable, animations, and there are not any limitations for displaying custom characters, special and even animation.

Figure 2: LCD Display

- **RTC DS 3231 Module**

General Description. The DS3231 could also be a low-cost, extremely accurate I2C real-time clock (RTC) with an integrated temperature- compensated crystal oscillator (TCXO) and crystal.

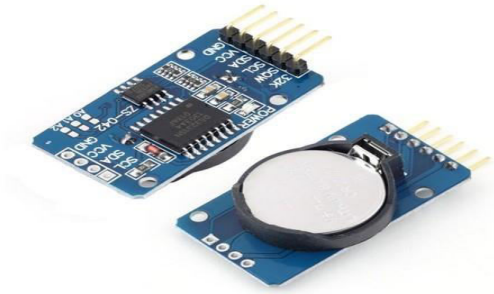

Figure 3: RTC Module

- **100R RESISTOR**

100R means 100 ohms. – Richard Crowley Jul 20 '16 at 5:17. you'll also see 6R8 or 2R2 on an inductor to represent 6.8uH or 2.2uH respectively.

Figure 4: 100R Resistor

- **Buzzer**

A buzzer or beeper is an audio device ,[1] which may be mechanical, electromechanical, or piezoelectric (piezo for short). Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input like a click or keystroke.

Figure 5: Buzzer

RESULTS AND DISCUSSION

This IOT based Arduino Real Time clock And Temperature Monitor Using DS3231 Module, we are showing the components and connected them to the power supply. This system is based for improving the Temperature Monitor . The process of displaying time and alarm we used RTC DS3231 Module for better time and for alarm we used Buzzer is used inside this project.

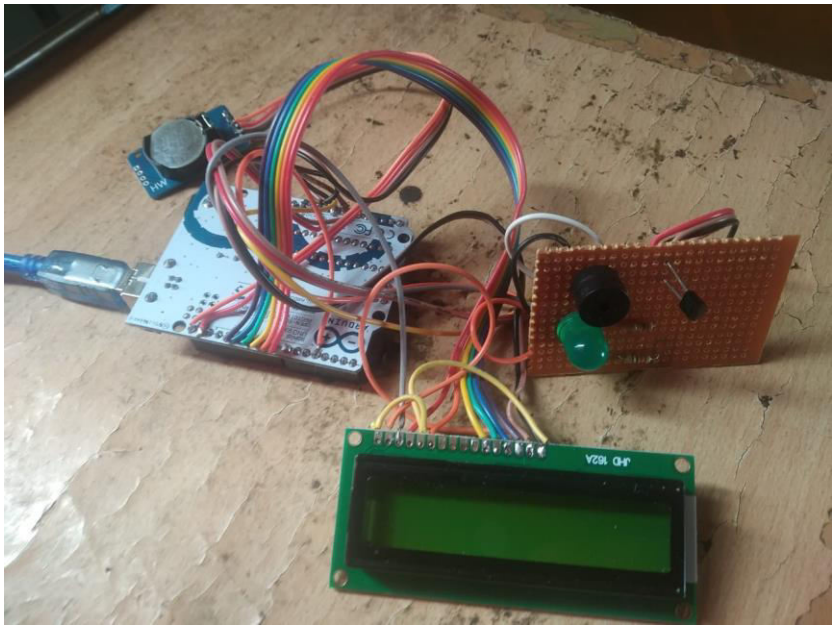

Figure 6: Connected Circuit.

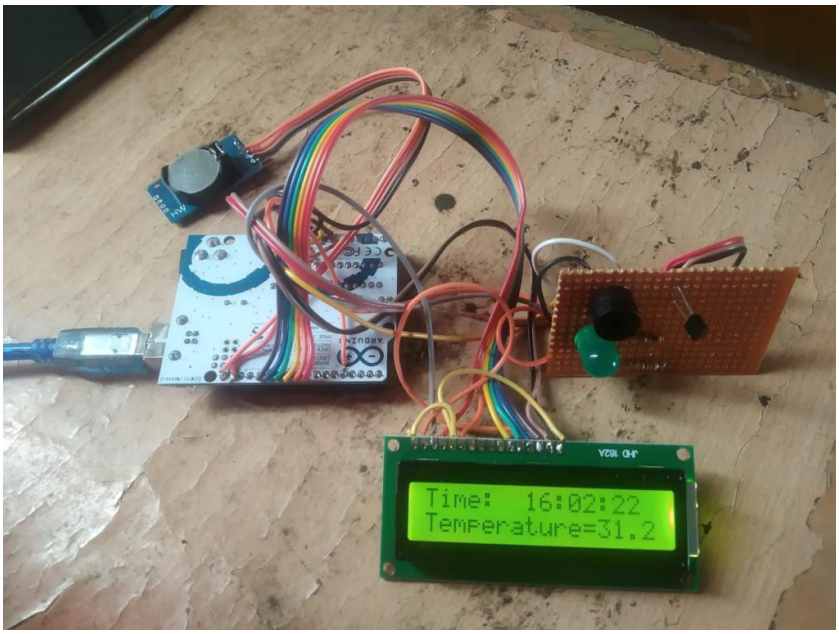

Figure 7: Actual Working Model

CONCLUSION

This is a simple Real time clock and Temperature with time, day, date using Arduino UNO board, and DS3231 module. The research project was successfully carried out. The aim of the research project was to come up with a technique which will monitor temperature in real time, record and store the data in an SD card.

ACKNOWLEDGEMENTS

We got this chance and thank all the individuals connected with this project for his or her useful direction, help and timely support which helped us to finish the project in specific time. We would actually need to precise great gratitude to our Head of Department Mr. V. S. Solanke and our project guide Mr. Vikas Solanke for their all-important support, motivation, guidance and helpful suggestions all into the project work. Lastly but not least our sincere credit goes to our family for his or her key support since we start our education and also to our group person.

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