Antitheft System For Battery

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Abstract- Here we are fabricating the antitheft system for battery which is mainly used for monitoring batteries and preventing from theft and it will also intimate using gsm module. Our main aim of this project is to protect the battery from thief and monitoring the battery failures. The system includes gsm module and voltage divider circuit which is configured with the Arduino Mega Board. The device can be mounted at any location and circulated among the mobile towers. This application allows the users to monitor the battery and to keep in touch with mobile tower. Furthermore, this application allows any theft or battery failure are happened means it gives alert message to the plant controller and the buzzer will give the sound intimation. To achieve the best performance from the arduino mega design and construction to control the full operation with voltage divider circuit.

Keywords – Watermarking, Haar Wavelet, DWT, PSNR

I. INTRODUCTION

The management of battery is one of the basic and crucial processes in mobile tower stations. The objective of this paper is to analyze and develop a portable battery antitheft system used in tower stations. Voltage divider circuit is used for measuring a voltage between each batteries and maintain the voltage between them. In case there is any voltage fluctuation between the batteries, the voltage divider circuit will analyze the voltage and feed data to arduino mega controller.

Most tower stations are concerned with batteries and their performance, because it will affect total power distribution unit, so the plant con troller monitor the batteries every day, it is a most uncomfortable for them. There are two common ways to analyze the problem. Some techniques will not that much accuracy, plant controller manually monitor the batteries and there performance. However, those non-technological methods are not efficient. The present paper aims to propose a battery monitoring process via the existing technological infrastructure with some improvements.

II. PRINCIPLES OF OPERATION

This proposed system introduces a new automatic battery monitoring system, which integrates gsm and voltage divider into the process of management for batteries. It is made up of two processes namely: protection and monitoring. The objective of the protection is to be send sms to the authorized person. And the buzzer will intimate that something went wrong in the tower station. It will alert nearby people. During battery theft, the thief will disconnect the batteries and then acquire it, when they disconnect the battery from the connection the voltage divider will inform that the particular battery voltage is less than the programmed voltage. After a voltage deviation the controller verify it and move on to the next step. The next step will be the buzzer intimation, it will works immediately when the battery is disconnected, within a few seconds the controller inform to gsm to send a sms to a mobile number that will already programmed . The power supply for the total unit is consist of external power supply and it will provide the required power to the whole circuit. Voltage divider is consist of resistance and it can reduces the voltage from the input and provide 0-5v output for the controller, because the controller can capable to withstand between 0-5v.

2.1 Literature Review –

Telecom tower corporations are increasingly more installing lithium-ion batteries for uninterrupted energy elements to their towers, with Reliance JioInfocomm a key adopter of this longer-lasting and value-powerful energy storage generation that is additionally friendlier to the surroundings in comparison with distinctive traditional alternatives.

Arduino board is an open-supply microcontroller board it is primarily based totally on Atmega 2560 microcontroller. The increase environment of this board executes the processing or wiring language. These boards have recharged the automation enterprise with their simple to utilize platform anywhere truly everybody with small otherwise no technical backdrop can begin with the aid of the use of discovering a few important capabilities to software program in addition to run the Arduino board. These forums are used to extend separate interactive items otherwise we are capable to connect to software in your PC like MaxMSP, Processing, and Flash.
The microcontroller board like "Arduino Mega" is predicated upon at the ATmega2560 microcontroller. It includes virtual input/output pins-fifty four, wherein 16 pins are analog inputs, 14 are used like PWM outputs hardware serial ports (UARTs) – 4, a crystal oscillator-16 MHz, an ICSP header, an energy jack, a USB connection, in addition to an RST button. This board especially includes the whole thing this is crucial for helping the microcontroller. So, the strength deliver of this board may be carried out by connecting it to a PC using a USB cable, or battery or an AC-DC adapter. This board may be covered from the sudden electric discharge by means of putting a base plate.

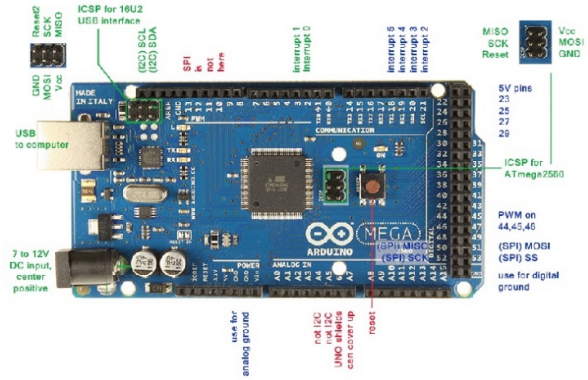


Figure 1. ArduinoMEGA Front View

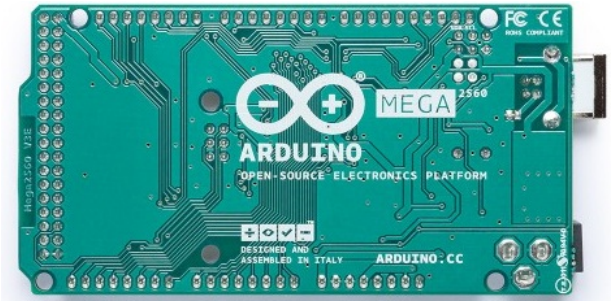


Figure 2. ArduinoMEGA Back View

Table 1. Pin Configuration

Microcontroller	Atmega**2560**
Analog pins	**16**
Clock speed	**16MHz**
SRAM	**8KB**
EEPROM	**4KB**
Input voltage	**7v-12v**
Digital I/O Pins	**54**
Flash memory	**256KB**
Operating voltage	**5v**

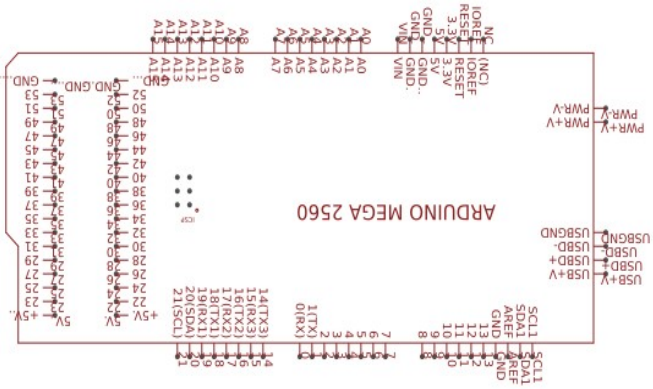


Figure 1. ArduinoMEGA Front View

2.2. GSM SIM 900A –

GSM/GPRS Modem-RS232 is made with twin Band GSM/GPRS engine- SIM900A, works on frequencies 900/ 1800 MHz. The electronic equipment is coming back with RS232 interface that permits you be part of laptop additionally to microcontroller with RS232 Chip (MAX232). The baud rate charge is configurable from 9600-115200 through AT command. The GSM/GPRS electronic equipment has inner TCP/IP stack to alter you to attach to web via GPRS. It's appropriate for SMS, Voice additionally to information transfer utility in M2M interface. The aboard Regulated Power provide permits you to connect huge vary unregulated energy deliver .Using this electronic equipment, you may build audio calls, SMS, Read SMS, attend the incoming calls and web etc., through sleek AT commands.

Figer 3. GSM Sim900A Module

Unlike mobile phones, a GSM electronic equipment doesn't have a computer keyboard and show to act with. It simply accepts bound commands through a serial interface and acknowledges for those. These commands are known as AT commands. There are an inventory of AT commands to instruct the electronic equipment to perform its functions. Each command starts with "AT". That's why they're known as AT commands. AT stands for attention.

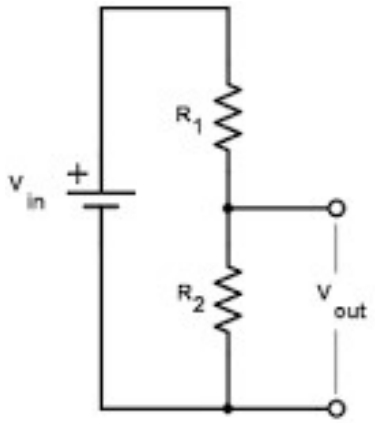
In our easy project, the program waits for the mobile range to be entered through the keyboard. Once a 10 digit mobile range is provided, the program instructs the electronic equipment to send the text message employing a sequence of AT commands.

Table 2. Pin Specification

Pin	Name	Details
1	GND	Power supply ground
2	Tx	transmitter
3	Rx	receiver
4	Line_r&Line_l	Line input
5	Spk_p&spk_n	Speaker positive & negative
6	Mic_p&mic_n	Mic positive & negative
7	DTR	Data terminal ready
8	CTS	Clear to send
9	RTS	Request to send

2.3. Voltage Divider –

A potential divider (also called a possible divider) could be a passive linear circuit that produces AN output voltage (Vout) that's a fraction of its input voltage (Vin). Voltage division is that the results of distributing the input voltage among the parts of the divider.

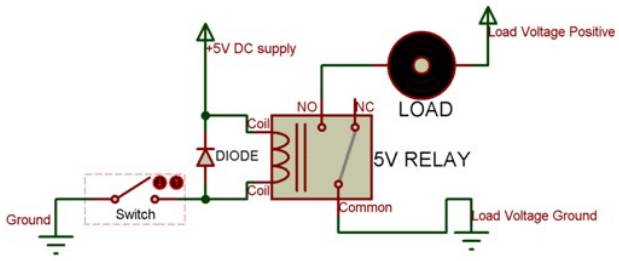


Figer 4. Voltage Divider Circuit

2.4. Relay –

Relays area unit most typically used switch device in natural philosophy. Allow us to learn the way to use one in our circuits supported the necessity of our project.

Before we have a tendency to proceed with the circuit to drive the relay we've to contemplate 2 necessary parameter of the relay. Once is that the Trigger Voltage, this is often the voltage needed to show on the relay that's to alter the contact from Common->NC to Common->NO. Our relay here has 5V trigger voltage, however you'll be able to additionally realize relays of values 3V, 6V and even 12V therefore choose one supported the accessible voltage in your project.



Figer 5. Relay Working

The opposite parameter is your Load Voltage & Current, this is often the number of voltage or current that the NC, NO or Common terminal of the relay might stand up to, in our case for DC it's most of 30V and 10A. Certify the load you're exploitation falls into this vary.

Table 3. Pin Specification

Trigger voltage	DC 5v
Trigger current	70mA
Max AC load current	10A@250/125v AC
Max DC load current	10A@30/28v DC
Operating time	10msec
Release time	5msec

2.5. Buzzer –

A buzzer or digital tool is AN audio tool, which can be mechanical, mechanical tool, or power. Typical makes use of buzzers and beepers embody alarm devices, timers and affirmation of user enter like a click or keystroke.

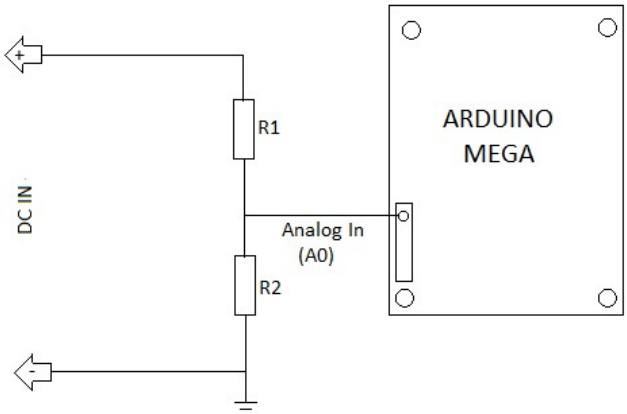
Table 4. Specification

Operating voltage	**1.5-28v DC**
Rated voltage	**24v DC**
Rated current	**20mA**
Resonant frequency	**3500Hz**
Tone	Continuous

2.5. Arduino MEGA with Voltage Divider –

Arduino internal ADC reference voltage is 5V (Vref=5V) thus most voltage that we will live while not victimization external circuit is 5V. It's having 10-bit resolution, 210=1024 values for zero to 5v scale. Zero V corresponds to 0 ADC reading and 5V corresponds to 1023. Single ADC worth represents four.88mV i.e. 1=4.88mV.

To measure higher voltages than 5V we'd like external resistor to match the ADC needs, It converters needed mensuration voltage in to zero to 5V scale. It will be created victimization 2 resistors. Here we have a tendency to area unit mensuration zero to 50V DC. During this we will live most 50V DC.



Figer 5. Arduino with Voltage Divider

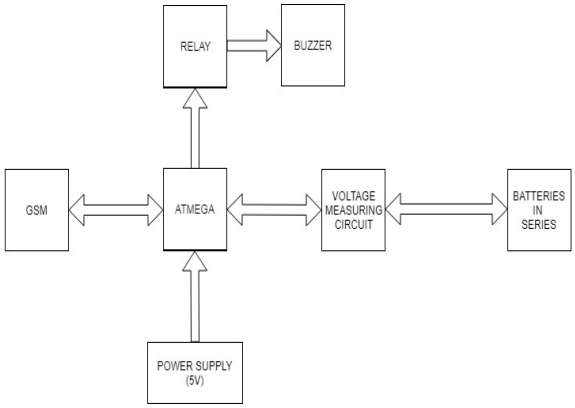
2.5. Power Supply –

The operation of power offer circuits engineered victimization filters, rectifiers, and then voltage regulators. Beginning with Associate in Nursing ac voltage, a gradual dc voltage is obtained by rectifying the ac voltage, then filtering to a dc level, and eventually, control to get a desired mounted dc voltage. The regulation is typically obtained from Associate in Nursing IC transformer unit, which takes a dc voltage and provides a somewhat lower dc voltage that remains a similar even though the input dc voltage varies, or the output load connected to the dc voltage changes.

The ac voltage, usually one hundred twenty V RMS, is connected to an electrical device that steps that ac voltage right down to the extent for the specified dc output. A diode rectifier then provides a full-wave corrected voltage that's at the start filtered by a straightforward condenser filter to provide a dc voltage. This ensuing dc voltage sometimes has some ripple or ac voltage variation. A regulator circuit will use this dc input to produce a dc voltage that not solely has a lot of less ripple voltage however conjointly remains a similar dc worth even though the input dc voltage varies somewhat, or the load connected to the output dc voltage changes. This voltage regulation is typically obtained victimization one amongst variety of widespread transformer IC units

III.RESULT AND DISCUSSION

Through GSM technology and Buzzer is employed to induce the alert messages. If somebody can attempt to disturb the battery association the microcontroller (Arduino Mega 2560) discover the voltage between the actual battery and it'll experienced the assistance of Buzzer and therefore the GSM Module connected with the microcontroller. It helps North American country to safeguard the batteries from larceny and therefore the drop happens in any battery can monitored for safety purpose.



Figer 6. Antitheft System Block Diagram

IV.CONCLUSION

The skillfulness, accuracy, precision, hardiness of digital electronic devices. Cannot be matched therewith of analog devices because the former ones area unit much more superior. Antitheft System for Battery may be a terribly straightforward example of a digital device. The disadvantage of exploitation resistance primarily based meter is that the error of measuring thus, we want multiple ranges of meter. So as to scale back the error, the quantitative relation of R1 and R2 within the resistance should be minimum. We decide R1 as 100kΩ and R2 10kΩ then it's attainable to live the voltages up to 50V. Man power isn't required to watch batteries in evening time, Battery failures area unit monitored Human intervention.

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