LED Alarm Clock Using TM1637 LED Module

Agenda

Introduction

About the Project

Project Components

Circuit Diagram

Working Circuit

Applications of Project

Introduction

Subject:-

Basic Electronics(2CSE104)

Prepared by:-

Rishit Vaitha(CS46)

Batch:-

CS13

About the Project

Alarm Clocks are very useful devices in today's busy life. They are designed to make a signal / alarm at a specific time. The use of LED alarm clocks has increased over years with development in electronics.

Using this digital alarm clock, **time can be displayed in 24 HR format using an LED display and alarm can be set to a specific time**. Alternatively, the digital alarm clock circuit can also be used to turn ON/OFF and electrical appliance after a specific time.

The advantage of digital alarm clocks over analogue alarm clocks is that they require less power, the time can be set or reset easily and displays the time in digits.
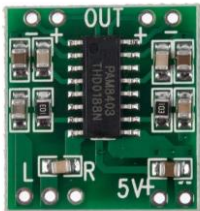
Project Components

Arduino Uno Board
Board1

TM1637 LED Module
DIS1

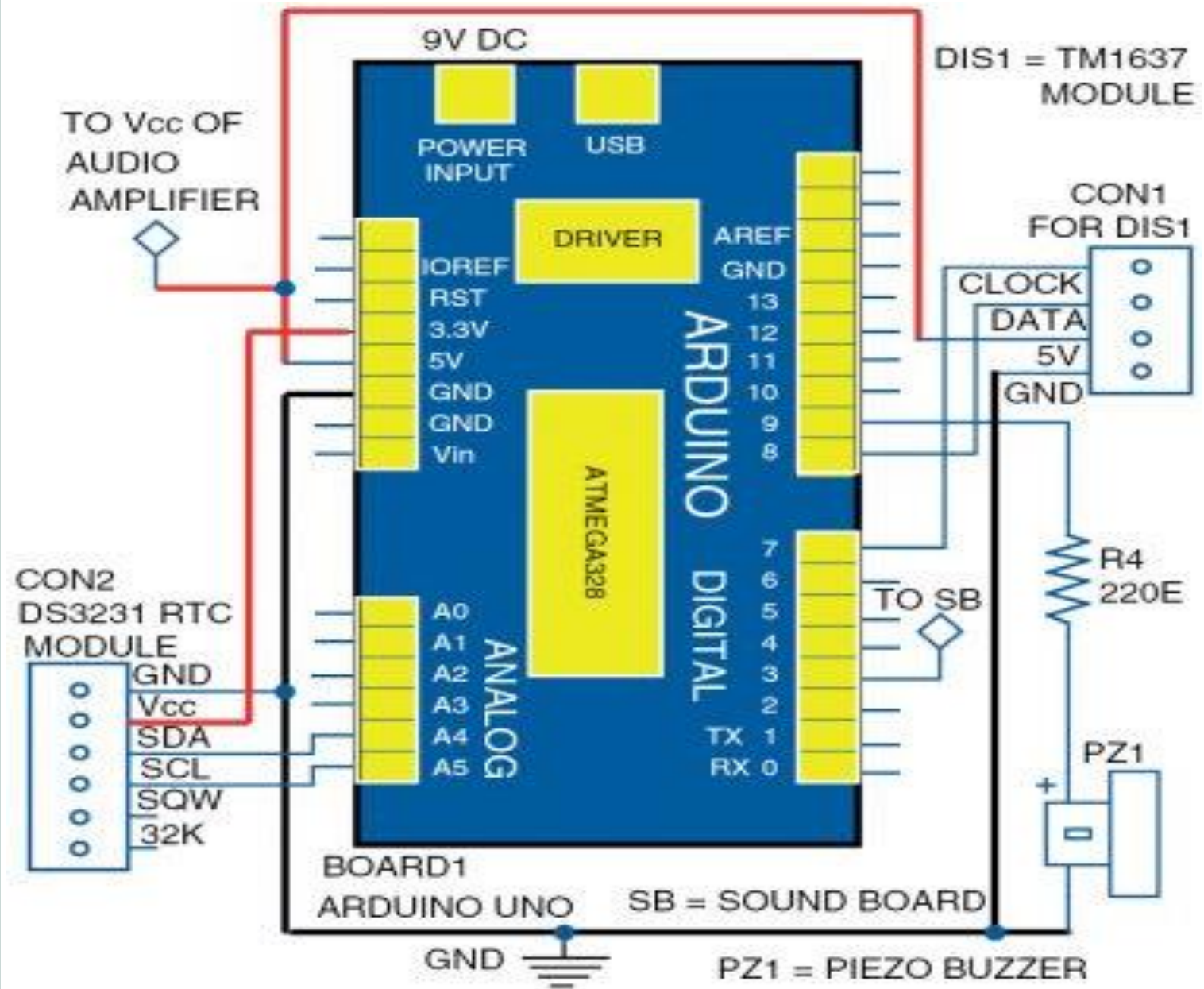**DS3231 Real-Time Clock Module**
RTC

Piezo Buzzer
PZ1

PAM8403 dual 3W Amplifier Mini Board
Sound Board

Resistor 220-ohm
R1

Circuit Diagram

Working Circuit

The TM1637 module's data and clock pins are interfaced to the Arduino board through pins 8 and 7, respectively. Other than these two wires, 5V and ground wires are also connected to Arduino. The TM1637 module displays time with a central blinking colon.

The RTC module also has just two wire connections. SCL and SDA pins of the RTC module are connected to A5 and A4 pins of Arduino board, respectively. The RTC has a 3V lithium round button cell battery like the one used in desktop computers. This fits on a round socket at the back of the module as shown in the circuit diagram.

The wire from digital pin 3 of Arduino gives sound output as a PWM signal of 10kHz frequency. This is to be filtered and amplified. Filtering takes place automatically in the amplifier. The alarm output is taken from pin 9 of Arduino, to which piezo buzzer PZ1 is connected with a series 220-ohm resistor to limit current.

Connect pin 3 of Arduino to PAM8403 board and provide 5V supply to the board.

The PAM8403 board is the size of a one-rupee coin and is thin, because all parts on this board use SMD components.

Application of Project

❖ Alarm clocks can also be helpful for **keeping sleep schedules regular**.

❖ Alarm clocks have been in use for centuries because they solve a real problem—ensuring we wake up on time.

❖ Alarm clocks are right there helping, counting down the precious minutes of sleep left until wake up time.

❖ Some alarm clocks have brightly-lit faces, and while good for seeing the time.

Thank you

Vaitha Rishit Tejaskumar

rishitvaitha22@gnu.ac.in