Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

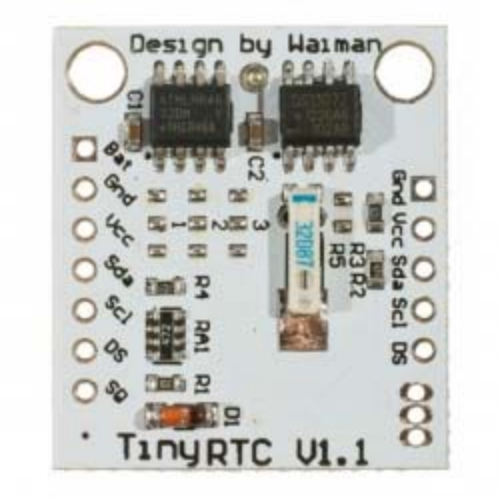
With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!


## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

# Real Time Clock Module (DS1307) V1.1 (SKU:DFR0151)




## Contents



## Introduction

The DS1307 Real Time Clock developed by one of our designers: Waiman. The module comes fully assembled and pre-programmed with the current time (ok, so it's our current time - MST). The included Lithium coin cell battery (CR1225 41mAh) will run the module for a minimum of 9 years (17 years typical) without external 5V power. The DS1307 is accessed via the I2C protocol.

Except the DS1307 real time clock, the module also integrate the I2C EEPROM chip(24C32) and the DS18B20 sensor interface. The I2C EEPROM makes it possible to save the sensor data easily without spending too much microcontroller source. And the DS18B20 interface with the pull-up resistor embeded will be helpful to extend temperature monitoring feature for your project.

## Specification

- Working voltage: 5v
- Two wire I2C interface
- Hour : Minutes : Seconds AM/PM

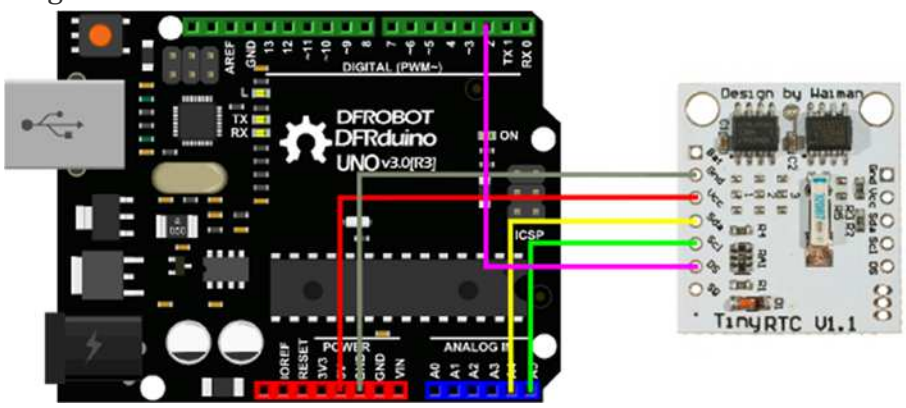
- Day Month, Date - Year
- Leap year compensation
- Accurate calendar up to year 2100
- Consumes Less than 500nA in Battery-Backup
- Battery included
- 1Hz output pin
- 56 Bytes of Non-volatile memory available to user
- provides 32,768 bits(4KB) of serial electrically erasable and programmable
- read only memory (EEPROM)
- Embed DS18B20 temperature sensor interface with the pull-up resistor
- Dimensions: 28mm x 25mm x 8mm

## Application

- Real time monitoring system
- Timer

## Tutorial

### Connection diagram




| Wiring instruction | |
|---|---|
| GND——GND | VCC——5V |
| SDA——A4 | SCL——A5 |
| DS——D2 | |

### Sample Code

Please download and install the Arduino library first.
how to install libary

http://www.dfrobot.com/image/data/DFR0151/V1.1/Arduino%20library.zip

https://www.arduino.cc/en/Guide/Libraries#.UxU8mdzF9H0

```
#include <Wire.h>
#include <DS1307.h>
/*
about set time:
format: year,month,day,week,hour,min,sec
example: 14,03,25,02,13,55,10   2014.03.25 tuesday 13:55:10
*/
String comdata = "";
int mark=0;
//store the current time data
int rtc[7];
//store the set time data
byte rr[7];
//light pin
int ledPin =  13;
//initial light
void setup()
{
  DDRC |= _BV(2) | _BV(3); // POWER:Vcc Gnd
  PORTC |= _BV(3); // VCC PINC3
  pinMode(ledPin, OUTPUT);
  //initial baudrate
  Serial.begin(9600);
  //get current time
  RTC.get(rtc, true);
  //if time is wrong reset to default time
  if (rtc[6] < 12) {
    //stop rtc time
    RTC.stop();

 RTC.set(DS1307_SEC, 1);
    RTC.set(DS1307_MIN, 27);
    RTC.set(DS1307_HR, 01);
    RTC.set(DS1307_DOW, 7);
```

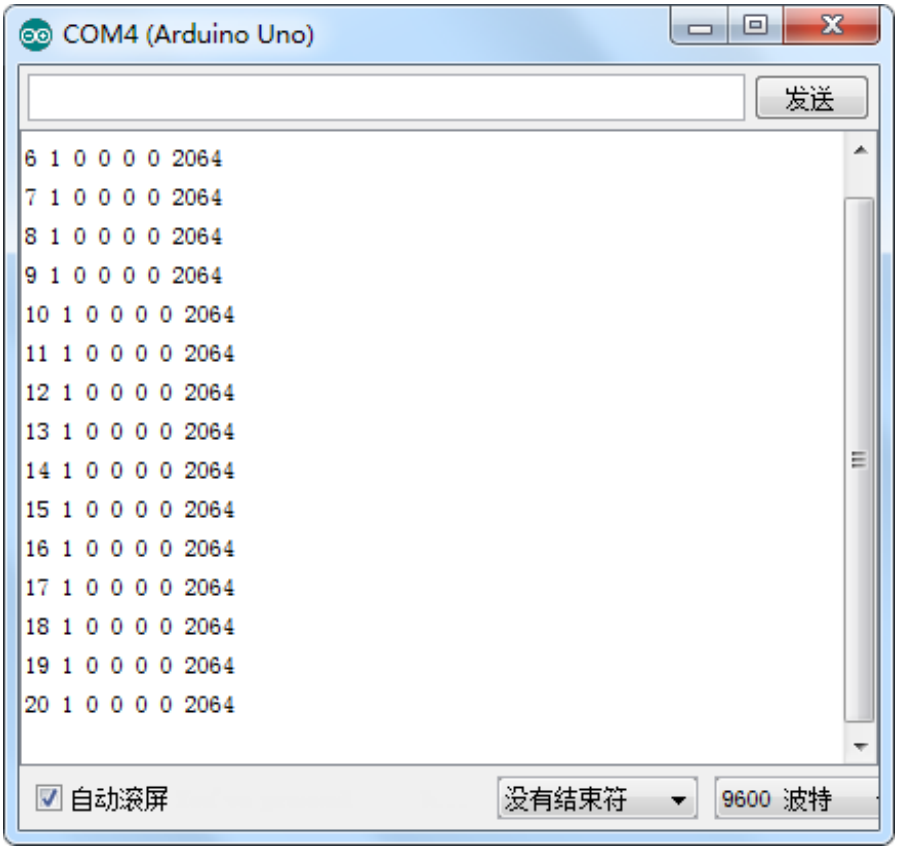
```
    RTC.set(DS1307_DATE, 12);
    RTC.set(DS1307_MTH, 2);
    RTC.set(DS1307_YR, 12);
    //start rtc time
    RTC.start();
  }
  //RTC.SetOutput(LOW);
  //RTC.SetOutput(HIGH);
  //RTC.SetOutput(DS1307_SQW1HZ);
  //RTC.SetOutput(DS1307_SQW4KHZ);
  //RTC.SetOutput(DS1307_SQW8KHZ);
  RTC.SetOutput(DS1307_SQW32KHZ);
}

void loop()
{
  int i;
  //get current time
  RTC.get(rtc, true);
  //print current time format : year month day week hour min sec
  for (i = 0; i < 7; i++)
  {
    Serial.print(rtc[i]);
    Serial.print(" ");
  }
  //blink the light
  Serial.println();
  digitalWrite(ledPin, HIGH);
  delay(500);
  digitalWrite(ledPin, LOW);
  delay(500);
  //
  int j = 0;
  //read all the data
```

```
while (Serial.available() > 0)
{
  comdata += char(Serial.read());
  delay(2);
  mark = 1;
}
//if data is all collected,then parse it
if (mark == 1)
{
  Serial.println(comdata);
  Serial.println(comdata.length());
  //parse data
  for (int i = 0; i < comdata.length() ; i++)
  {
    //if the byte is ',' jump it,and parse next value
    if (comdata[i] == ',')
    {
      j++;
    }
    else
    {
      rr[j] = rr[j] * 10 + (comdata[i] - '0');
    }
  }
  comdata = String("");
  RTC.stop();
  RTC.set(DS1307_SEC, rr[6]);
  RTC.set(DS1307_MIN, rr[5]);
  RTC.set(DS1307_HR, rr[4]);
  RTC.set(DS1307_DOW, rr[3]);
  RTC.set(DS1307_DATE, rr[2]);
  RTC.set(DS1307_MTH, rr[1]);
  RTC.set(DS1307_YR, rr[0]);
  RTC.start();
```

```
    mark = 0;
  }
}
```

Result




## Trouble shooting

Thank the guy to share this great way to update DS1307 clock through computer, in this way, you could get the precise time.

Guide Link http://www.lucadentella.it/en/2013/11/27/rtcsetup/
Download library https://github.com/adafruit/RTClib
Download sketch & pc_software https://github.com/lucadentella/RTCSetup

More question and cool idea,visit DFRobot Forum