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Gravity: I2C SD2405 RTC Module SKU: DFR0469

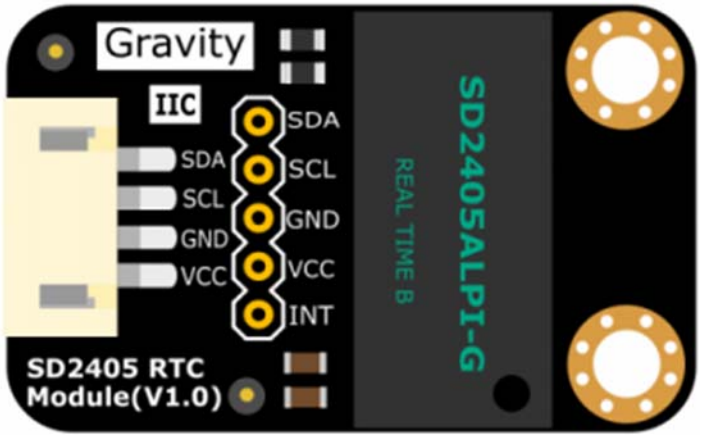
Introduction

We're glad to introduce a new member in Gravity family: Gravity I2C SD2405 RTC module. This is an extremely accurate I2C real-time clock (RTC) with crystal compensation, inner chargeable battery. The SD2405AL is available in industrial temperature ranges.
The SD2405AL is dual power supply system. When the primary power supply goes down to an assigned value or resumes from low power, the system can switch between the primary power supply and battery automatically. Even there is no external power, it can still work for 5~8 years, 1uA ultra-low power consumption (inner battery, Ta=25°C).
The SD2405AL can generates various periodic interrupt clock pulses lasting for long period (one year), and three alarm interrupts can be made by year, month, date, days of the week, hours, and minutes, seconds. It also provides a selectable 32.768KHz~1Hz clock output for an external MCU.
The product incorporates a time trimming circuit that adjusts the clock with higher precision by adjusting any errors in crystal oscillator frequencies based on signals from the CPU. A 12-bytes general SRAM is implemented in the SD2405AL.
Gravity SD2405 RTC can work as data logger, timer alarm clock and other time application. It is an ideal choice for timing project.

Specification

- Operation voltage range:3.3V~5.5V.
- Low-power:typical 1uA (inner battery, Ta=25°C)
- Timing Range: To 2099 (with leap year compensation)
- Accuracy ±5ppm from -40°C to +85°C.
- Fast (400kHz) I2C Interface(4.5~5.5V).
- Real-Time Clock Counts Seconds, Minutes,Hours, Day, Date, Month, and Year with Leap Year Compensation Valid Up to 2100.
- Time-of-Year,Month,Day,Week,Hour,Minute,Second Alarms.
- Programmable Square-Wave Output:32768hz,4096hz...1hz..1/16hz.
- Countdown timer interrupt.
- High precision time trimming circuit.
- 12-hour/24-hour time display selectable
- Dimension: 35.50 * 22.00(mm)/1.4 * 0.87 inches
- Weight: 6g

Board Overview



Gravity: I2C SD2405 RTC Module

Num	Label	Description
1	Gravity Interface	SDA: IIC Data SCL: IIC Clock GND: GND VCC: 3.3~5V
2	XH2.54 Pins	SDA: IIC Data SCL: IIC Clock GND: GND VCC: 3.3~5V INT: Interrupt

Tutorial

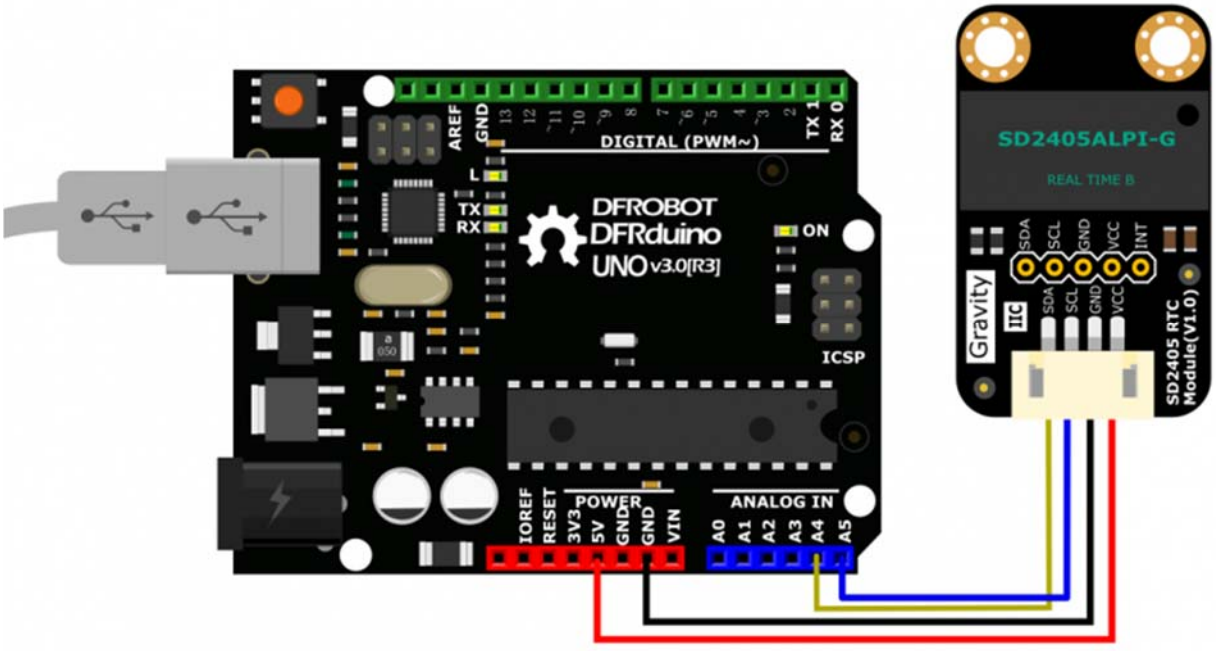
In this tutorial, you can set and read time.

Requirements

- **Hardware**
  DFRduino UNO (or similar) x 1
  Gravity: I2C SD2405 RTC Module
  M-M/F-M/F-F Jumper wires

- **Software**
  Arduino IDE, Click to Download Arduino IDE from Arduino®
  https://www.arduino.cc/en/Main/Software%7C

Connection Diagram



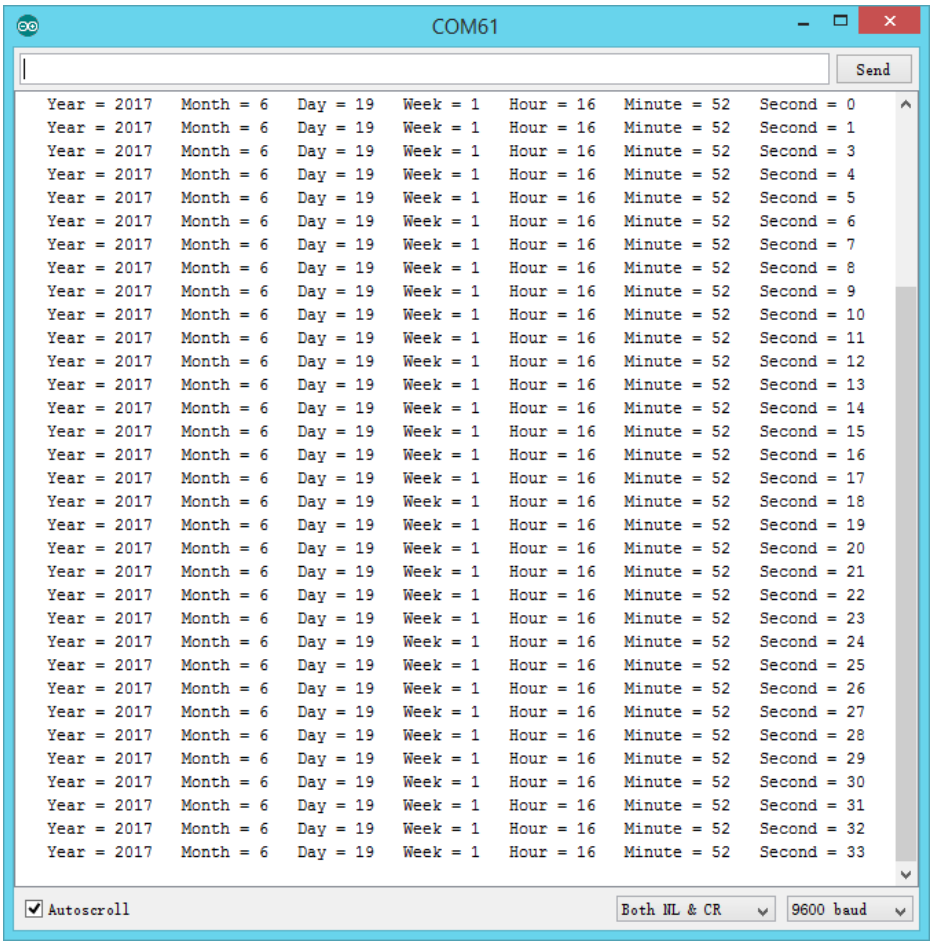
Gravity: I2C SD2405 RTC Module Arduino Connection Diagram

Sample Code

Please download Arduino RTC library. How to install Libraries in Arduino IDE
https://github.com/DFRobot/Gravity-I2C-SD2405-RTC-Module/raw/master/GravityRtc.zip
https://www.arduino.cc/en/Guide/Libraries#.UxU8mdzF9H0%7C

Note: //rtc.initRtc(2017,6,19,1,12,7,0); //Set Time: 2017/June/19th/Monday/12:07:0 am. Please comment it after you have set time successfully!!!!!!!

```
#include "GravityRtc.h"
#include "Wire.h"



GravityRtc rtc;     //RTC Initialization


void setup() {
  Serial.begin(9600);
  rtc.setup();


  //rtc.initRtc(2017,6,19,1,12,7,0);  //Set Time: 2017/June/19th/Monday/12:07
:0 am
  //Please comment it after you have set time successfully!!!!!!!


}


void loop() {
  rtc.update();
  //*************************Time*********************************
  Serial.print("   Year = ");//year
  Serial.print(rtc.year);
  Serial.print("   Month = ");//month
  Serial.print(rtc.month);
  Serial.print("   Day = ");//day
  Serial.print(rtc.day);
  Serial.print("   Week = ");//week
```

```
  Serial.print(rtc.week);
  Serial.print("    Hour = ");//hour
  Serial.print(rtc.hour);
  Serial.print("    Minute = ");//minute
  Serial.print(rtc.minute);
  Serial.print("    Second = ");//second
  Serial.println(rtc.second);
  delay(1000);

}
```

Expected Results