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Information for the DS3231 Real-Time Clock Module

Introduction

- The DS3231 is an electronic device that keeps track of time.
- Any microcontroller can control this sensor. However, this guide and the associative codes use an Arduino Uno to operate the device.
- Communicating with the device is performed via the I²C method.
- The breakout board has space for a CR2032 battery.
- The module is extremely accurate. It can take weeks until the module is one second off from the true time.

Important Notes

- The module can operate without the battery, if it is connected to an external power source (e.g., an Arduino Uno).
- If a battery is connected, the module will continue keeping time, even if it gets disconnected from the external power source.
- If the battery is removed while there is no main power source, then the module's time will be reset and lost. The time will have to be manually set again.

Links

- Datasheet:
<https://datasheets.maximintegrated.com/en/ds/DS3231.pdf>
- Arduino Code:
https://github.com/RiceAllDay22/EGI_Arduino_Collection/tree/main/DS3231

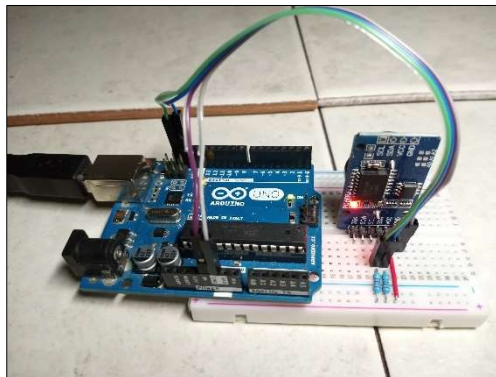


Figure 1. Picture of the module connected to an Arduino Uno

Wiring

- Communication with the module is performed via the I²C method.
- The SDA and SCL pins from the module will need to be pulled-up to the 5V line using two 5 kΩ resistors.
- Run the DS3231 code to operate.
- Below is a wiring diagram and a schematic diagram of the circuit.

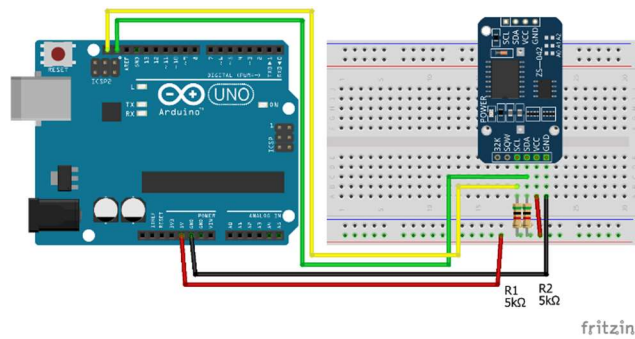


Figure 2. Wiring Diagram for the DS3231 with pull-up resistors

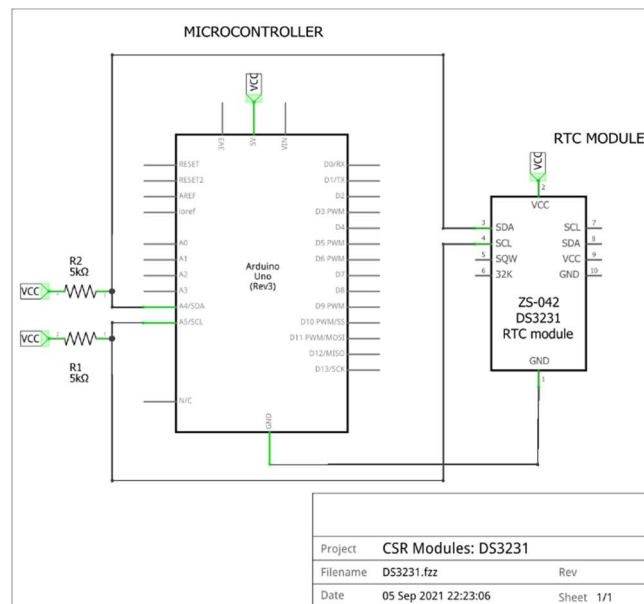


Figure 3. Schematic Diagram for the DS3231 with pull-up resistors

Contact

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