DS1307 Real Time Clock (RTC) Module

The **DS1307 Real Time Clock (RTC) Module** is a highly reliable and accurate timekeeping device for **Arduino, Raspberry Pi, and other microcontroller-based projects**. Designed to maintain the **current time, date, day, month, and year**, the DS1307 RTC module ensures that your electronics projects always have precise time information, even when powered off.

Equipped with a **backup battery holder**, this module can keep track of time for extended periods without interruption. Its I2C communication interface makes it **easy to connect and integrate** with various development boards, making it a must-have component for **data logging, time-stamping, scheduling, and alarm projects**.

Whether you are building a **data logger, clock, home automation system, or scheduling device**, the DS1307 RTC module delivers **accurate, reliable, and hassle-free timekeeping**.
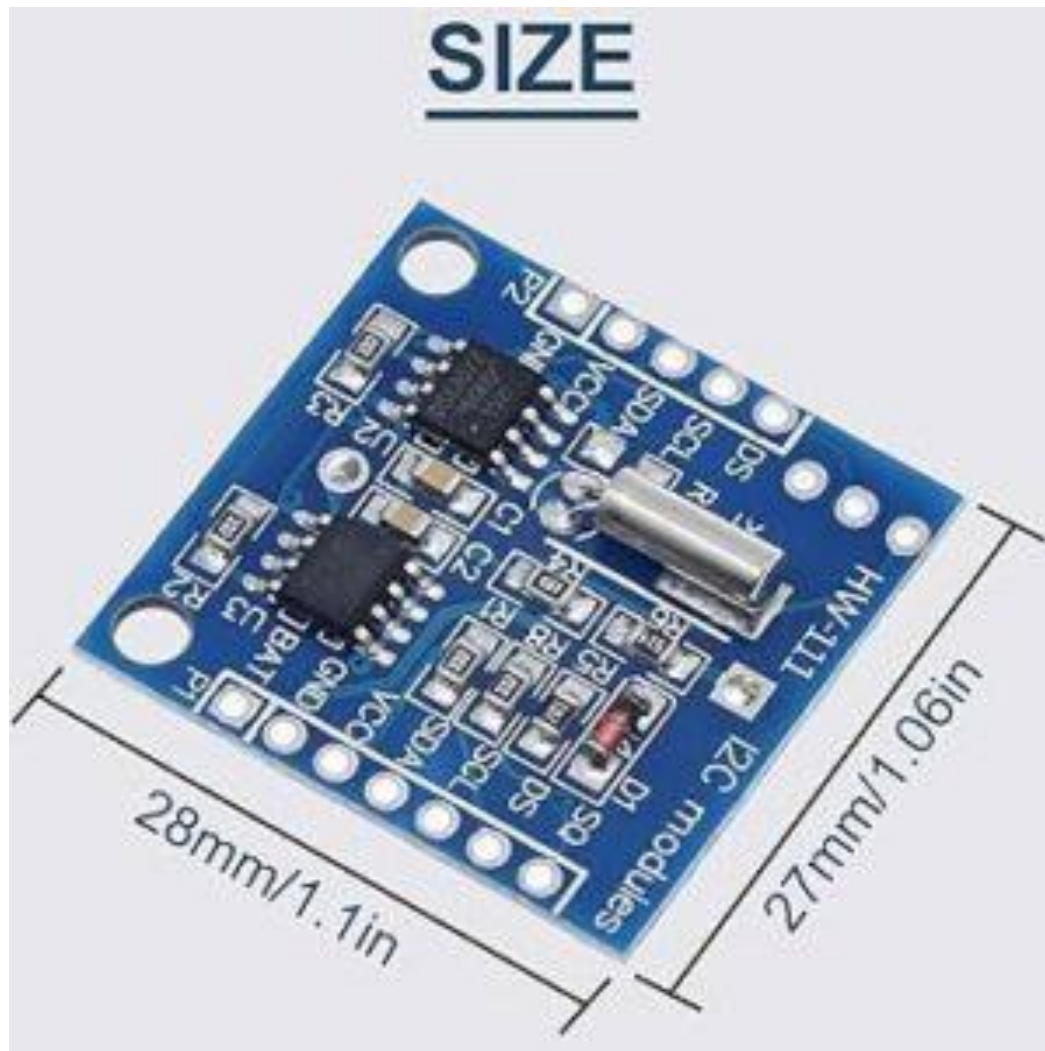
Key Features of DS1307 RTC Module

- **Real-Time Clock Functionality**: Tracks seconds, minutes, hours, day, date, month, and year.
- **I2C Interface**: Easy communication with Arduino, Raspberry Pi, and other microcontrollers.
- **Backup Battery Support**: Maintains time even during power outages.
- **Wide Operating Voltage**: Compatible with 3.3V and 5V systems.
- **High Accuracy**: ±2 minutes per month without calibration.
- **Compact Design**: Small PCB size ideal for embedded applications.
- **Easy Integration**: Connects with microcontrollers via standard SDA and SCL pins.
- **Low Power Consumption**: Efficient design suitable for long-term projects.
- **Versatile Applications**: Ideal for clocks, alarms, data loggers, and scheduling systems.

Technical Specifications

- **RTC IC**: DS1307

- **Operating Voltage**: 3.3V – 5V DC
- **Interface**: I2C (SDA, SCL)
- **Timekeeping Accuracy**: ±2 minutes per month at 25°C
- **Backup Battery**: CR2032 or equivalent (not always included)
- **Operating Temperature**: -40°C to +85°C
- **Communication Address**: 0x68 (I2C)
- **Dimensions**: Compact PCB for easy embedding
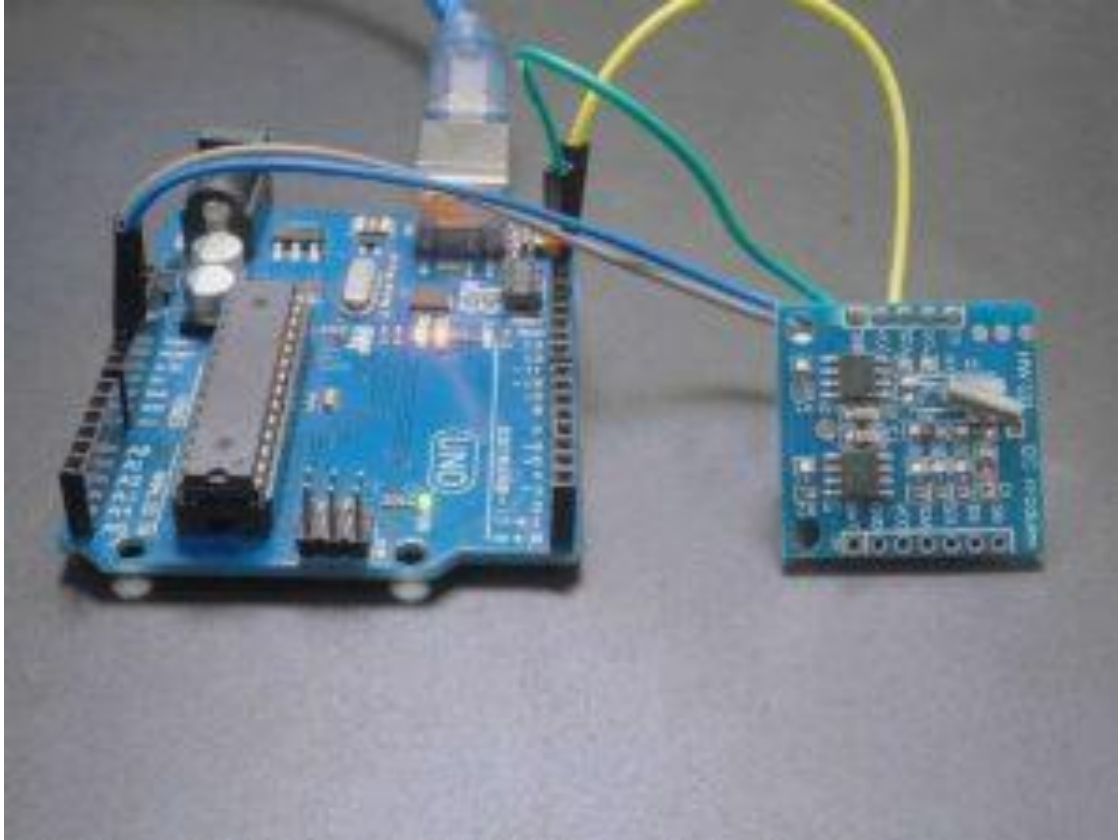- **Current Consumption**: 200µA active, 500nA standby (with battery)

Why Choose the DS1307 RTC Module?

1. **Accurate Timekeeping** – Provides precise real-time tracking for **hours, minutes, seconds, day, date, month, and year**.
2. **Battery Backup** – Keeps the clock running during power interruptions, ensuring **reliable timekeeping**.
3. **I2C Communication** – Simple integration with **Arduino, Raspberry Pi, ESP32, and other microcontrollers**.
4. **Compact and Lightweight** – Fits easily into embedded projects without taking up much space.
5. **Versatile Applications** – Perfect for **clocks, alarms, data loggers, scheduling systems, and automation projects**.

PIN DEFINITION

Tiny RTC   I2C modules

Device Select — DS
Serial Clock — SCL
Serial Data — SDA
VCC — VCC
Ground — GND

P2

SQ — Square Wave
DS — Device Select
SCL — Serial Clock
SDA — Serial Data
VCC — VCC
GND — Ground
BAT — Battery

P1

Ead out the clock pin of DS1307 to provide clock signal for single chip

Can cascade other I2C devices

Applications of DS1307 RTC Module

- **Digital Clocks**: Maintain accurate time in standalone clock projects.
- **Data Loggers**: Time-stamp sensor readings and events for analysis.
- **Home Automation**: Schedule devices such as lights, fans, or alarms.
- **Arduino and Raspberry Pi Projects**: Provide real-time tracking for DIY electronics.
- **Alarm Systems**: Trigger alarms based on specific times or intervals.
- **Time-Based Robotics Projects**: Control robot behavior based on time schedules.

How to Use the DS1307 RTC Module

1. **Connect to Microcontroller** – Wire **VCC, GND, SDA, and SCL** to the corresponding pins on Arduino, Raspberry Pi, or ESP32.
2. **Insert Backup Battery** – Place a CR2032 battery in the holder to maintain time during power loss.
3. **Install Library** – For Arduino, use the **RTClib library** or compatible library to communicate with the DS1307.
4. **Initialize Time** – Set the current date and time programmatically during initial setup.
5. **Read Time** – Use I2C commands to fetch hours, minutes, seconds, day, month, and year.
6. **Integrate into Project** – Use the time data to trigger events, log data, or display information on screens.

With these steps, developers can **easily integrate accurate real-time tracking** into any project.

Package Includes

- 1 × **DS1307 Real Time Clock (RTC) Module**
- Optional: Backup battery (check product variant)

Conclusion

The **DS1307 RTC Module** is a compact, accurate, and reliable solution for real-time tracking in **Arduino, Raspberry Pi, and other microcontroller projects**. With **I2C interface, battery backup, and precise timekeeping**, it is perfect for **data logging, alarms, clocks, scheduling, and automation systems**.

Whether you are a **hobbyist, student, or professional developer**, the DS1307 RTC module ensures that your projects have **reliable, continuous, and accurate time management**, making it an essential component for electronics and IoT applications.