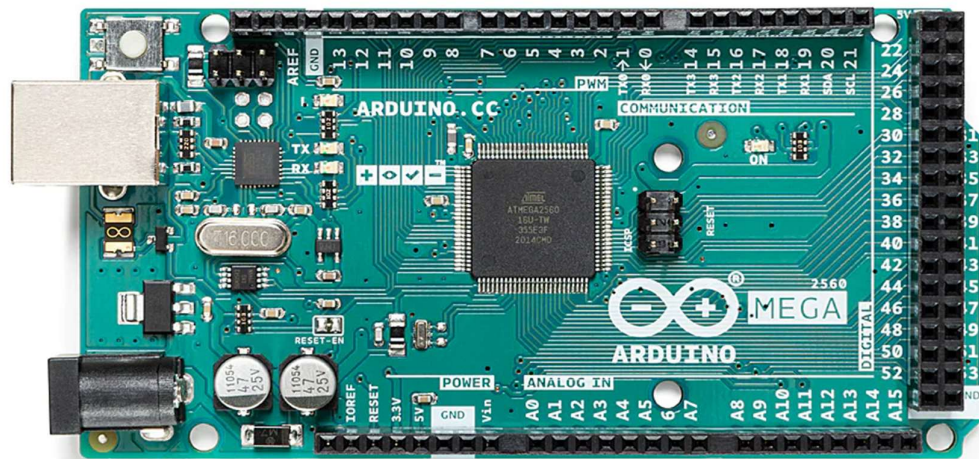


Components List

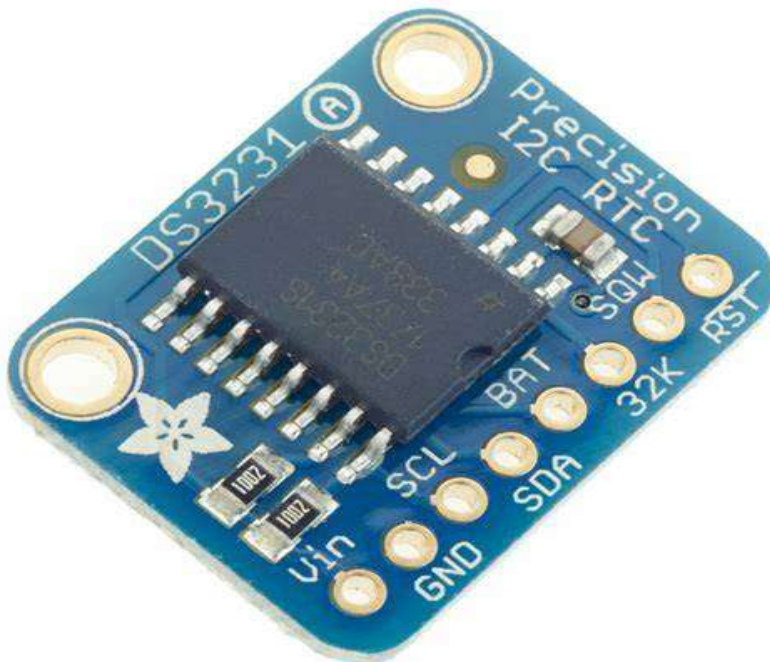
Arduino mega 2560R3 – Microcontroller

- It is the brain of the device
- ATmega2560 with 256 KB of flash memory, 8 KB of SRAM, and 4 KB of EEPROM
- Microcontrollers store their program code in flash memory
- 54 I/O pins -connect a variety of sensors ,acutators and other devices.
- Serial ports-easy communication with multiple devices like Bluetooth modules,Gps receivers..
- Cost-Arduino Mega 2560R3 for around ₹1,475 to ₹2,000



DS 3231 precision RTC break out

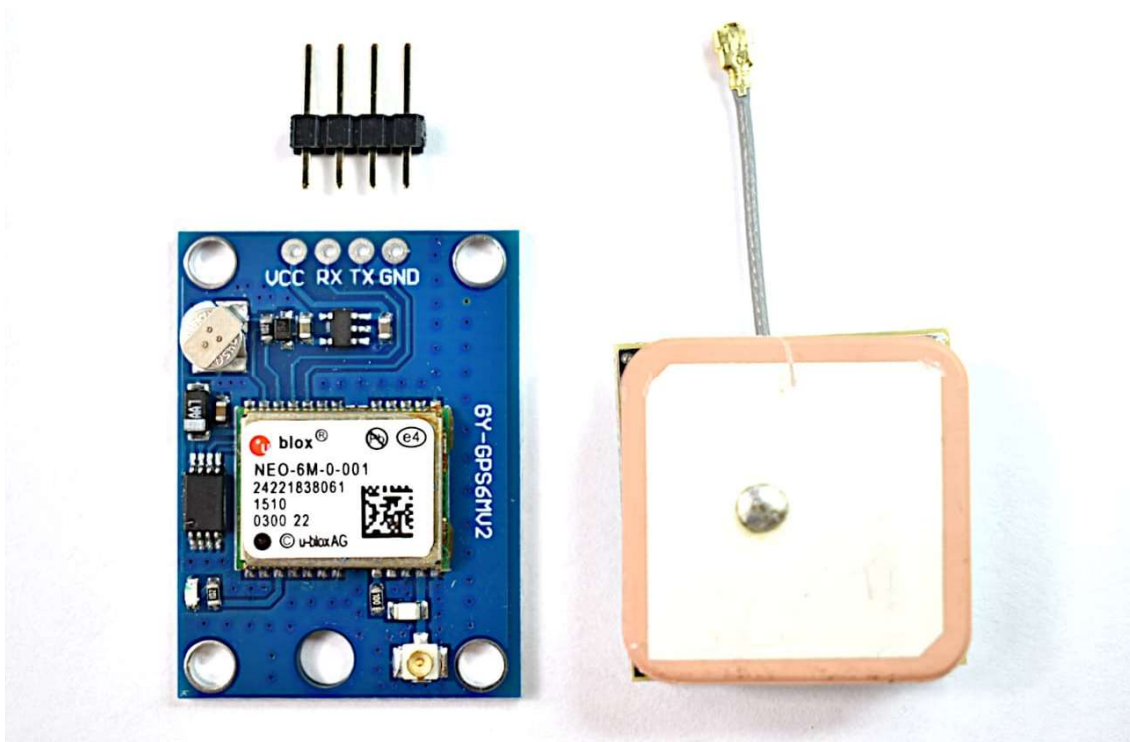
- The DS3231 Precision Real-Time Clock (RTC) Breakout Board is a highly accurate and reliable timekeeping device that provides precise date and time information
- The DS3231 chip offers a timekeeping accuracy of ± 2 ppm over the temperature range of -40°C to $+85^{\circ}\text{C}$.
- **Data Loggers:** Timestamping data points for precise time-based recording.
- **Cost-DS3231 RTC board for around ₹200 to ₹400**



NEO-6M GPS module

- It provides accurate positioning information.
- **Satellite Acquisition:** The NEO-6M searches for GPS satellites in the sky by listening for their signals. The module calculates time it takes for the signal to travel from the satellite to the receiver.

- **Triangulation:** By measuring the time difference between signals from multiple satellites, the module can triangulate its position on the Earth's surface.
- **Data Processing:** The module processes the GPS data to calculate latitude, longitude, altitude, speed, and other relevant information.
- **Output:** The GPS data is typically output in NMEA format, which is a standardized way of representing GPS data. This data can be read by a microcontroller or other device to be used for navigation or other applications.
- NEO-6M GPS module for around ₹300 to ₹500



OLED Displays :

- OLED-Organic light-emitting diode
- Size-1.3 inch 128*68 cm
- Mainly used in smart phones ,smart watches, televisions ...
- OLED displays utilize the electroluminescence of organic materials to produce light.

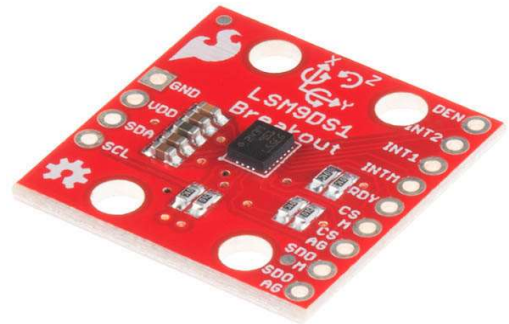
- This means that when an electric current is applied to these materials, they emit light.
- OLED displays use a combination of red, green, and blue (RGB) sub-pixels to create different colors. By controlling the intensity of each pixel, the display can produce a wide range of colors.



Accelerometer and TempLSM 9DS1

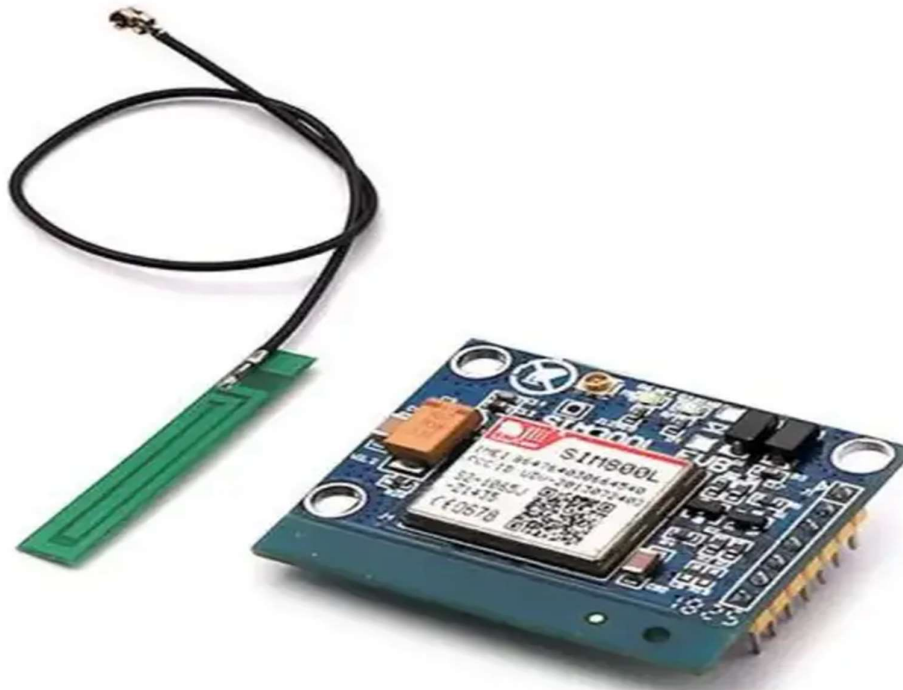
- **Accelerometer:** The accelerometer measures the force of acceleration acting on the device. This can be used to determine the device's orientation, movement, or vibration.
- The LSM9DS1 is a 9-axis inertial measurement unit (IMU) that combines a 3-axis accelerometer, 3-axis gyroscope, and 3-axis magnetometer into a single chip.
- 3-Axis Accelerometer: Measures linear acceleration along the x, y, and z axes.
- 3-Axis Gyroscope: Measures angular velocity around the x, y, and z axes.

- 3-Axis Magnetometer: Measures the Earth's magnetic field strength along the x, y, and z axes.
- Cost- LSM9DS1 for around ₹400 to ₹800



GPRS and GSM SIM800L

- SIM800L is a GSM/GPRS module that provides cellular connectivity for various applications. It supports both GSM (2G) and GPRS (2.5G networks, allowing for voice calls, SMS messaging, and data transmission.
- It's widely used in IoT devices, tracking systems, and other projects that require communication over cellular networks.
- SIM800L for around ₹400 to ₹800



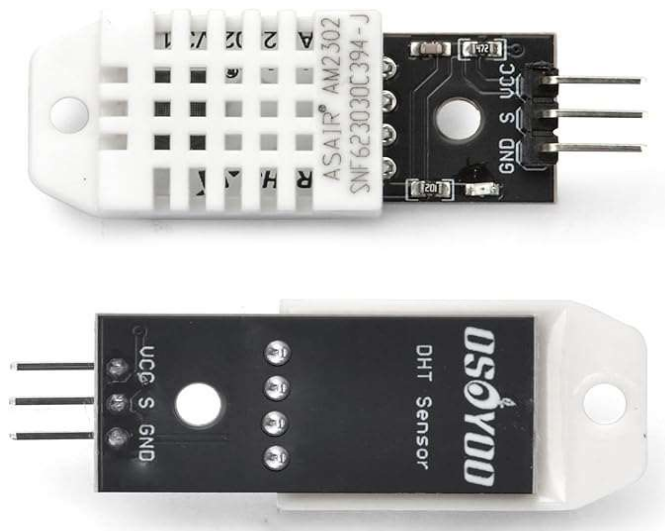
Lithium polymer battery

- A 7.4V lithium polymer battery, also known as a 2S LiPo battery, consists of two 3.7V lithium polymer cells connected in series.
- **Charging:** When a 7.4V LiPo battery is charged, lithium ions move from the anode to the cathode(**lithium cobalt oxide**).
- **Discharging:** When the battery is discharged, lithium ions move from the cathode back to the anode(**graphite**), releasing energy.
- 7.4V lithium polymer batteries ranging from ₹500 to ₹5,000



AM2302 Humidity and Temperature Sensors

- The AM2302 is a digital temperature and humidity sensor that provides accurate measurements of both temperature and relative humidity.
- **Temperature Measurement:** The AM2302 uses a capacitive sensor to measure temperature. The capacitance of the sensor changes with temperature, allowing for accurate measurement.
- In the range of -40°C to +80°C with a resolution of 0.1°C.
- **Humidity sensor:** Measures the relative humidity in the atmosphere
- In the range from 0% to 100% RH
- Cost- AM2302 Humidity and Temperature Sensors ₹150 to ₹400.



Vibration Motor

- **A vibration motor** is a small, electric motor that generates vibrations. It's commonly used in devices like smartphones, game controllers, and wearable technology to provide tactile feedback or alerts.
- **Smartphones and Tablets:** For tactile feedback and alerts.
- **Cost** – Vibration motor from ₹150 to ₹200.



Heart rate pulse sensor

- A heart rate pulse sensor is a device used to measure a person's heart rate by detecting the changes in blood flow beneath the skin. These changes are often detected as pulses or vibrations.
- **Cost** – Heart rate pulse sensor from ₹150 to ₹200

