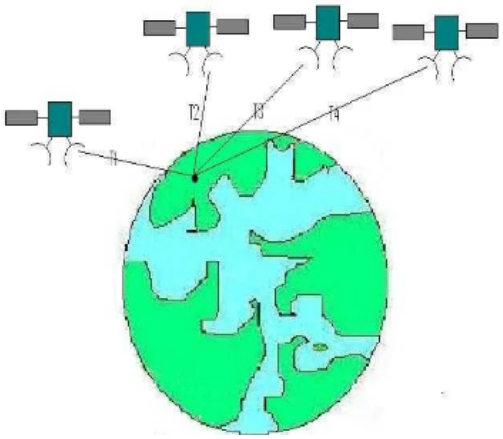
GPS SENSORS AND MODULES

GPS stands for Global Positioning System. The system contains satellites and ground based control installations. GPS sensor consists of surface mount chip which processes signals from GPS satellites using a small rectangular antenna, often mounted on the top of the GPS chip.



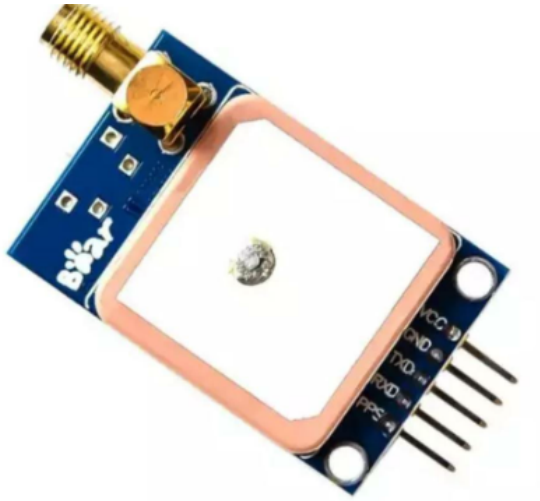
NEO-6M GPS Module

The NEO-6M GPS module is shown in the figure below. It comes with an external antenna, and does't come with header pins. The NEO-6M GPS module is also compatible with other microcontroller boards.The NEO-6M GPS module is a popular and cost-effective GPS receiver module known for its high performance and accuracy. Here are some key features and details about it:

- **Positioning Engine**: It uses the u-blox 6 positioning engine, which can track up to 22 satellites.
- **Power Supply**: It operates on a voltage range of 3V to 5V.
- **Communication**: The module communicates via RS232 TTL with a default baud rate of 9600 bps.
- **Components**: It includes an external antenna, a built-in EEPROM for storing configuration settings, and a small backup battery.
- **Compatibility**: It works well with various microcontroller boards like Arduino and ESP8266

NEO-7M GPS Module

GY-NEO-7M module is an advanced GPS module that supports **UART** communication protocol with active antenna. You can interface this module easily with any microcontroller. This module has a rechargeable battery and can also be connected directly to a computer using a **USB to TTL** converter.



The NEO-7M GPS module is a high-performance GPS receiver that supports multiple satellite systems, including GPS, GLONASS, BeiDou, and Galileo. It's known for its high sensitivity, low power consumption, and fast acquisition times, making it ideal for various applications like drones, robotics, and other navigation projects12.

Key Features:

- **High Sensitivity**: Can track weak signals, ensuring reliable performance even in challenging environments.
- **Multiple Satellite Systems**: Supports GPS, GLONASS, BeiDou, and Galileo for improved accuracy and reliability.
- **Fast Acquisition**: Quick start-up and reacquisition times.
- **Low Power Consumption**: Efficient power usage, suitable for battery-powered applications.
- **Compact Design**: Small form factor, easy to integrate into various projects.

1. Improved Signal Reception: The duck antenna can significantly enhance the GPS signal reception compared to the built-in ceramic patch antenna. This is especially useful in environments with weak GPS signals or obstructions.
2. Flexibility and Positioning: The external antenna can be positioned more optimally for better signal reception. You can place it in a location with a clearer view of the sky, which is crucial for accurate GPS readings.
3. Ease of Replacement: If the antenna gets damaged or if you need a different type of antenna for specific applications, the duck antenna can be easily replaced without needing to replace the entire GPS module

NEO-8M GPS Module

The NEO-8M GPS module is an advanced GPS module based on the u-blox M8 GNSS engine. It supports multiple satellite systems, including GPS, Galileo, GLONASS, and BeiDou, which enhances its accuracy and reliability12. Here are some key features:

- **High Sensitivity**: It has a navigation sensitivity of -167 dBm, making it highly effective even in challenging environments1.
- **Concurrent GNSS Reception**: It can receive signals from up to three GNSS systems simultaneously, improving positioning accuracy1.
- **Compatibility**: The module is compatible with various microcontrollers, including Arduino, and supports UART communication2.
- **Additional Features**: It includes an active antenna, internal memory for saving settings, and advanced jamming and spoofing detection