**NEO-6M GPS Module**

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**1. Detail:**

**The NEO-6M is a popular, low-cost GPS module designed for hobbyist and educational projects, primarily using the u-blox NEO-6M GNSS (Global Navigation Satellite System) receiver chip.**

**2. How GPS sensors work:**

**A GSM (Global System for Mobile Communications) sensor is not a single device, but a system that combines a sensor with a GSM module and a microcontroller to transmit data wirelessly over a cellular network. This allows for remote monitoring and control, especially in locations without access to a standard internet connection.**

**3.Pin Configuration:**

**VCC: Power Supply pin.**

**Connect to a 3.3V or 5V power source.**

**GND: Ground pin.**

**Connect to the ground of your microcontroller.**

**TX (Transmit): Serial Data Output pin.**

**Sends location data from the GPS module.**

**Connect to the RX (Receive) pin of your microcontroller.**

**RX (Receive): Serial Data Input pin.**

**Receives data into the GPS module, mainly for configuration.**

**Connect to the TX (Transmit) pin of your microcontroller.**

**4. Test Code:**

#include <SoftwareSerial.h>

#include <TinyGPS++.h>

// The serial connection to the GPS module

// (RX, TX) pins for the SoftwareSerial

static const int RXPin = 3, TXPin = 2;

static const uint32\_t GPSBaud = 9600; // Default baud rate of the NEO-6M

// Create TinyGPS++ and SoftwareSerial objects

TinyGPSPlus gps;

SoftwareSerial ss(RXPin, TXPin);

void setup() {

Serial.begin(115200); // Set baud rate for Serial Monitor

ss.begin(GPSBaud); // Set baud rate for GPS module

Serial.println(F("NEO-6M GPS Test Starting..."));

}

void loop() {

// Read data from the GPS module and pass it to TinyGPS++

while (ss.available() > 0) {

gps.encode(ss.read());

}

// Once the location data is updated, print the results

if (gps.location.isUpdated()) {

Serial.println("-------------------------");

Serial.print(F("Latitude : "));

Serial.println(gps.location.lat(), 6);

Serial.print(F("Longitude: "));

Serial.println(gps.location.lng(), 6);

Serial.print(F("Altitude : "));

if (gps.altitude.isValid()) {

Serial.print(gps.altitude.meters());

} else {

Serial.print(F("INVALID"));

}

Serial.println(F(" meters"));

Serial.print(F("Satellites: "));

if (gps.satellites.isValid()) {

Serial.println(gps.satellites.value());

} else {

Serial.println(F("INVALID"));

}

Serial.println();

}

// Display "NO GPS DETECTED" if no data is received after 5 seconds

if (millis() > 5000 && gps.charsProcessed() < 10) {

Serial.println(F("No GPS data detected: Check wiring or move outdoors."));

while(true);

}

}

