# lamaPLC: MPU-6050 6-axis MotionTracking device

The MPU-6050 is a widely used 6-axis MotionTracking device that combines a 3-axis gyroscope and a 3-axis accelerometer on a single silicon die. It is a Micro-Electro-Mechanical System (MEMS) designed to measure acceleration, rotational velocity, and orientation.

**Key Technical Specifications**

- **Sensor Type:** 6-axis Inertial Measurement Unit (IMU) with an integrated temperature sensor.
- **Resolution:** 16-bit analog-to-digital converters (ADCs) for all six channels, providing high-precision raw data.
- **Programmable Ranges:**
    - **Gyroscope:** ±250, ±500, ±1000, and ±2000 °/sec.
    - **Accelerometer:** ±2g, ±4g, ±8g, and ±16g.
- **Communication:** Primary interface is I2C (up to 400 kHz).
- **Operating Voltage:** 2.375V to 3.46V for the raw chip; common breakout modules like the GY-521 include a 3.3V regulator for 5V compatibility.
- **I²C Addresses:** 0x68 (default) or 0x69 (selectable via the AD0 pin).

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