

Gyroscope and Accelerometer Breakout Boards (MPU6050)

DT Workshop Equipment Reference — D&T / STEM resource for school workshops | Sensors & Modules

The MPU6050 breakout combines a 3-axis gyroscope and 3-axis accelerometer with a temperature sensor on one I2C board, measuring orientation, tilt, acceleration and rotation for balancing robots, gesture control and motion logging.

Key Features

- 6-axis IMU: gyro and accelerometer
- I2C interface, 400 kHz
- 3.3-5 V compatible
- Built-in digital motion processor
- Interrupt pin support

Typical Uses in the Workshop

- Balance and stabilise robots
- Detect tilt, shake and gestures
- Track orientation for displays
- Log acceleration for physics demos

Safe Operation

1. Wire VCC, GND, SDA and SCL
2. Set the address (0x68 or 0x69)
3. Read raw values and calibrate offsets
4. Apply filters for stable readings
5. Convert to angles with the library

SAFETY NOTES

- Do not mount near strong magnets that distort readings
- Keep the board away from static discharges
- Check wiring before powering
- Handle the tiny board with care
- Store in antistatic bags

Maintenance & Consumables

- Recalibrate after mounting changes
- Check the solder joints on the pins
- Secure the connecting cable
- Test readings against known positions
- Keep spares in stock

Specification & Buying Notes

MPU6050 breakout boards are cheap and standard. Buy a few with pin headers and a cable set. Quality boards have consistent calibration; verify the address on the board.