



Inertial Measurement Unit (IMU)

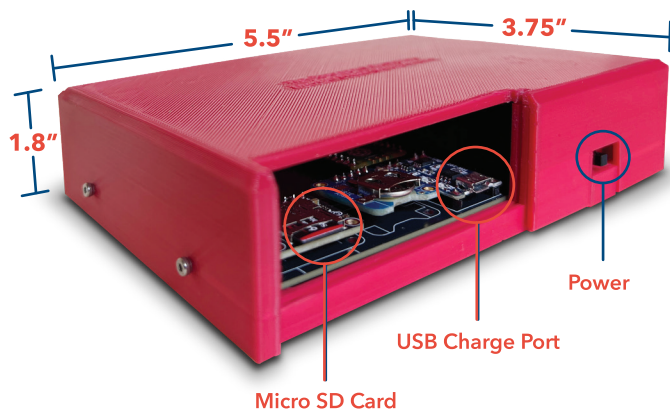
Compact. Reliable. Ready to get moving.

Capture precise movement in all directions.



TSC's IMU is a powerful, all-in-one motion and orientation tracker. Whether you're shipping delicate equipment, exploring new terrain, or gathering motion data, this compact unit captures precise movement in all directions.

At approximately 5.5" x 3.75" x 1.8", and weighing in at a little over 10.5 oz, the TSC IMU is light, compact, and easy to stick just about anywhere.



- Measures acceleration in all directions
- Track how items move during shipment
- Record acceleration and pitch/roll changes for shipping, R&D, or logistics



- Logs data to a removable microSD card—no computer needed
- Data saved as CSV files—open in Excel or any data software



- Built-in real-time clock (RTC) tracks data with accurate timestamps



- USB-rechargeable battery system supports extended operation without recharging
- Built around the RP2040 chip for low power consumption with fast and efficient logging

Applications and Industries



Aerospace & Defense



Materials Handling & Shipping



Research & Development



Trucking & Deliveries



Logistics



Inertial Measurement Unit (IMU)

- 3D accelerometer • 3D gyroscope • RTC-backed timekeeping
- SD card data storage • User-rechargeable Li-Ion battery

TSC's IMU is a complete and integrated system featuring a 3D digital linear acceleration sensor, 3D digital angular rate sensor, and 3D digital magnetic field sensor.

The core sensor, ST's LSM9DS1, possesses a linear acceleration full scale of $\pm 2g/\pm 4g/\pm 8g/\pm 16g$, a magnetic field full scale of $\pm 4/\pm 8/\pm 12/\pm 16$ gauss and an angular rate of $\pm 245/\pm 500/\pm 2000$ dps.

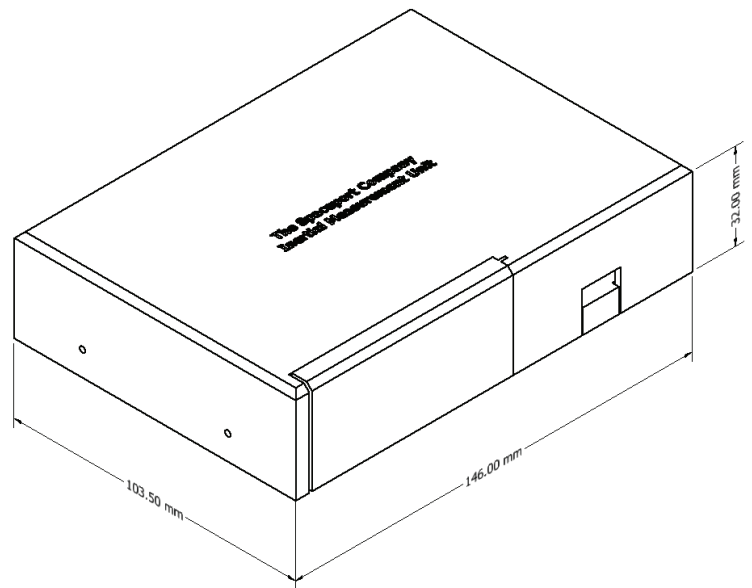
The IMU possesses an SD-card based data storage system, providing 64GB+ of logging capacity. Data is stored in real-time at a sample rate of 1 Hz. The core system is driven by 3.3V, FIFO-buffered logic.

Powered by the RP2040 SoC, TSC's IMU is fast, responsive, and consumes little power. A two-layer PCB ensures durable, reliable, and responsive operation.

Fit for applications ranging from data logging materials in transit to recording navigational data, TSC's IMU is a flexible, multi-purpose device.

Features

- Three acceleration channels, three angular rate channels, three magnetic field channels
- $\pm 2/\pm 4/\pm 8/\pm 16$ g linear acceleration full scale
- $\pm 245/\pm 500/\pm 2000$ dps angular rate full scale
- 16-bit data output
- Fast RP2040 microcontroller
- FIFO data buffering
- SPI / I2C serial interfaces
- Ultra-low power consumption
- CSV filetype output
- 400 kHz maximum bus sample rate
- 952 Hz peak sensor output data rate (ODR)
- Button cell-backed Real Time Clock
- Two 18650 Li-Ion cells
- 3.3V supply and logic



142 mm (L) x 95.76 mm (W) x 46 mm (H)