Shimmer3 200g IMU
Wireless Sensor Platform

Shimmer3 IMU & 200g board

INTRODUCTION

Shimmer3 200g is an embedded add-on board to the standard Shimmer3 IMU sensor. The Shimmer3 200g unit has the capability to measure high g force up to 200g, making it adaptable for applications measuring high g force.

PRODUCT OVERVIEW

The Shimmer3 200g unit retains all the features of the Shimmer3 IMU unit and is fully compatible with our Consensys hardware and software platform. This results in a powerful and elegant wearable wireless sensor which will provide superior data quality, adding value to your data collection process.

Shimmer3 200g offers best data quality with integrated 9DoF inertial sensing via accelerometer, gyroscope, magnetometer and altimeter, each with selectable range. Shimmer3 200g also boasts an integrated motion processor for on-board 3D orientation estimation. 5 coloured LEDs indicate device status and operating mode, as well as indicating Bluetooth streaming functionality.

KEY FEATURES

- Very low power consumption, light weight, and small form factor
- Slide-switch for powering on/off
- Readily connects via Bluetooth or local storage via an 8GB microSD card (supports up to 32GB)
- SD data bypass
- 24MHz MSP430 CPU
- Best data quality - Integrated 9DoF inertial sensing via accelerometer, gyroscope, magnetometer, and altimeter, each with selectable range
- Two accelerometers give choice between ultra-low noise or wide range measurements
- Integrated motion processor for on-board 3D orientation estimation
- 5 coloured LEDs across 2 locations to indicate device status and operating mode
- Integrated Li-ion battery management
- JTAG debugging mode available
- Expansion header for alternative radio
- Accelerometer with 10,000 g shock survival
- Excellent temperature stability

APPLICATIONS

The Shimmer unit is designed for wearable and remote sensing applications and also to be highly flexible and adaptable, easily integrating into existing systems and technologies. Shimmer is frequently used in activity monitoring, sport science, and intelligent building applications to name but a small few. Due to is flexibility, the Shimmer platform is generally application agnostic. Shimmer3 200g is currently used in the following areas:

- Concussion and head trauma detection
- High force event detection
- Blast detection
- High impact detection

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DISCOVERY IN MOTION

TECHNICAL SPECIFICATIONS

Microcontroller	**TI MSP430**	
A/D Resolution	11 Channels of 12-bit A/D: 7 free for expansion	
RAM	16KB	
Flash	256KB	
Frequency	24MHz	
Wide Range Accelerometer	**STMicro LSM303AHTR**	
Range	±2g, ±4g, ±8g, ±16g	
Sensitivity	1671 LSB/g at ±2g	
Numeric Resolution	14-bit	
Typical Operating Current	<=162 µA	
RMS Noise	0.6 mg at ±2g	
Low Noise Accelerometer	**Kionix KXTC9-2050**	
Range	±2g	
Sensitivity	660 mV/g (±20mV)	
Typical Operating Current	240 µA	
Noise Density	125 µg/√Hz	
Digital Magnetometer	**STMicro LSM303AHTR**	
Range	±49.152 gauss	
Sensitivity	667 LSB/gauss	
Numeric Resolution	16-bit	
RMS Noise	3 mgauss	
Gyroscope	**Invensense MPU9250**	
Range	±250; ±500; ±1000; ±2000 dps	
Sensitivity	131 LSB/dps at ±250	
Numeric Resolution	16-bit	
Typical Operating Current	3.2 mA	
RMS Noise	0.1 dps	
Pressure Sensor	**Bosch BMP280**	
Range	300 - 1100 hPa	
Pressure/Temp Resolution	0.16 Pa / 0.01°C	
Typical Operating Current	<=24.8 µA at 1 Hz	
RMS Noise	1.3 Pa	
200 High-g Accel	**ADXL377**	
Range	±200g (±0.5% linearity up to 180g)	
Sensitivity	≈ 6.5 mV/g	
Numeric Resolution	12-bit	
Typical Operating Current	300 µA	
Bandwidth	1300Hz on X and Y axis, 1000Hz on Z axis	
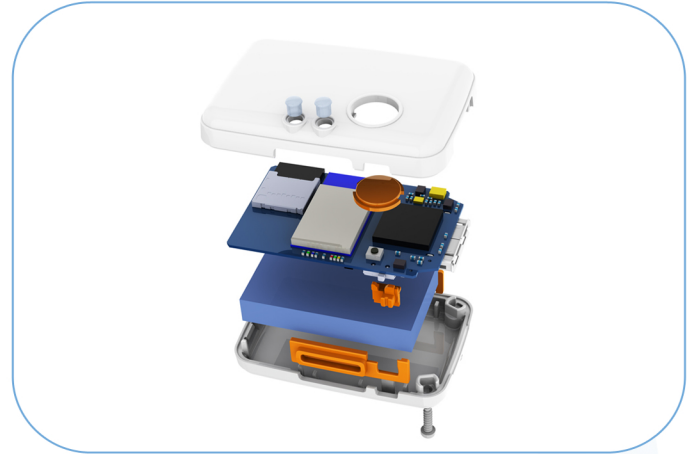
CLASS LEADING WEARABLE WIRELESS SENSING

Dimensions: 51mm x 34mm x 14mm

Weight: 23.6gms

Improved straps and quick snap clips provide full mobility, unrestricted movement and comfort for the wearer

Highly flexible and adaptable sensor platform can be applied to specific end user requirements

Highly accurate and scientifically reliable raw or calibrated data offers complete control over capture and interpretation of signals in real-time

SUPPORTING SOFTWARE

ConsensysPRO & ConsensysBASIC

Multi Shimmer Sync for Android

Shimmer LabVIEW Instrument Driver

Shimmer MATLAB Instrument Driver

Shimmer Java/Android API

Shimmer C# API

CONTACT US

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