Accelerometer (ACC)
Sensor Data Sheet

SPECIFICATIONS
> **Axis:** 3
> **Range:** ±3.6G
> **Bandwidth:** 0-50Hz
> **Consumption:** ~0.3mA

FEATURES
> Tri-axial sensing
> MEMS technology
> Pre-conditioned analog output
> Small form factor
> Raw data output
> Easy-to-use

APPLICATIONS
> Activity monitoring
> Tilt detection
> Vibration measurement
> Human-Computer interaction
> Robotics & cybernetics
> Biomechanics
> Biomedical devices prototyping

GENERAL DESCRIPTION

Our 3D accelerometer uses Micro Electro-Mechanical Systems (MEMS®) technology, and has been especially designed taking into account the requirements of applications where kinematics and motion measurements are required. T ogether with our biosignal acquisition hardware, this sensor can measure sub-milliG accelerations and provides the raw magnitude data of each axis as an independent quantity giving you full control. Either as independent channels or as a magnitude vector derived from them, this sensor can be used to measure physical activity, range of motion, vibration, shocks, tilt, among many others. Applications of this sensor include physical activity monitoring, posture assessment, vibration analysis, and evaluation of tremor in Parkinson patients. Examples:
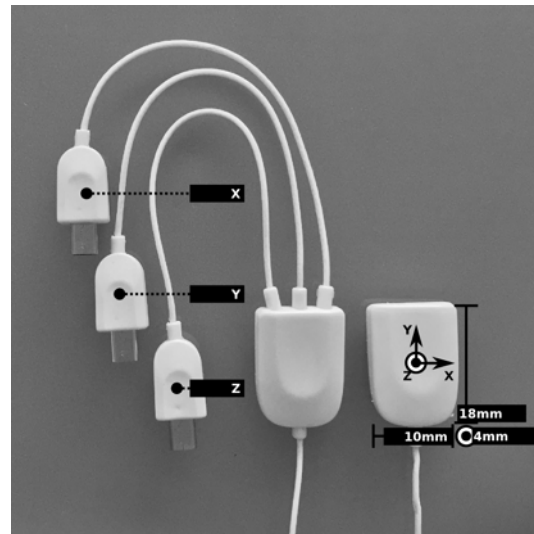

Fig. 1. Miniaturized form factor and independent analog output ports for maximum flexibility.
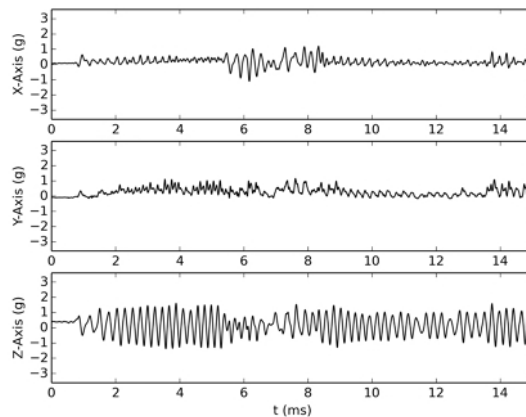

Fig. 2. Typical raw ACC data (acquired with biosignals).

REV A

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APPLICATION NOTES

This sensor requires a calibration to provide reliable measurements. The resulting calibration values (C_{min} & C_{max}) which are needed for the transfer function below are determined by performing a very slow 360° rotation of the sensor around each axis to force the accelerometer to cross the gravity-imposed −1g and 1g.

TRANSFER FUNCTION

[-3.6G, 3.6G]

$$ACC(g) = \frac{ADC - C_{min}}{C_{max} - C_{min}} \times 2 - 1$$

$ACC(g)$ − ACC value in g-force (g)
ADC − Value sampled from the channel
C_{min} − Minimum calibration value
C_{max} − Minimum calibration value

PHYSICAL CHARACTERISTICS

> **Size:** 10x18x4mm
> **Weight:** 14g
> **Cable length:** 110cm

ORDERING GUIDE

Reference	Package Description
ACC1	Accelerometer (ACC) sensor with standard physical characteristics and a random cable sleeve color.