Accelerometer (ACC)
Sensor Data Sheet

ACC 11082020

SPECIFICATIONS

> **Axis:** 3
> **Range:** ±3.60 g
> **Bandwidth:** 0-50 Hz
> C**onsumption:** ~0.35 mA

FEATURES

> Tri-axial sensing
> Unobtrusive & lightweight sensor
> MEMS technology
> Pre-conditioned analog output
> High signal-to-noise ration
> Ready-to-use and miniaturized form factor
> Medical-grade raw data output
> Raw data output

APPLICATIONS

> Life sciences studies
> Biomedical device prototyping
> Activity monitoring
> Tilt detection
> Vibration measurement
> Human-Computer interaction
> Robotics & Cybernetics
> Biomechanics

GENERAL DESCRIPTION

The biosignalsplux tri-axial Accelerometer (ACC) uses Micro-Electro-Mechanical Systems (MEMS®) technology for the acquisition of high-quality accelerometery data. This sensor can measure sub-milliG accelerations and provides raw data of each axis on individual channels, giving you full control about the acquired data.
ACC sensors are commonly found in motion tracking applications where this sensor can be used for the development of to measure physical activity, range of motion, as well as to conduct vibration analysis, which, for example, can be used to prevent ergonomic injuries or evaluate tremors of
Parkinson patients.

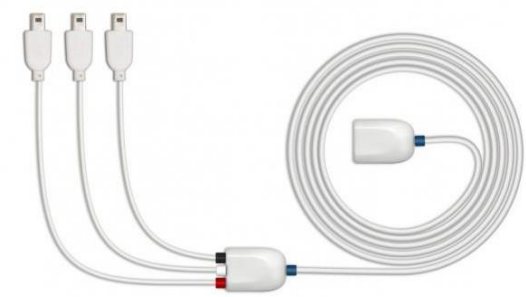

Fig. 1. ACC sensor (standard version)

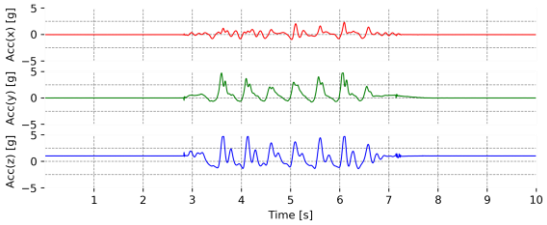

Fig. 2. Typical raw ACC data (acquired with biosignals).

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REV A

APPLICATION NOTES

This sensor requires a calibration to provide reliable measurements. The resulting calibration values ($Cmin$& $Cmax$) 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.
$Cmin$& $Cmax$ define the minimum and maximum RAW data values, respectively, registered in the axis under analysis during the calibration protocol.

TRANSFER FUNCTION

[-3.60 g, 3.60 g]

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

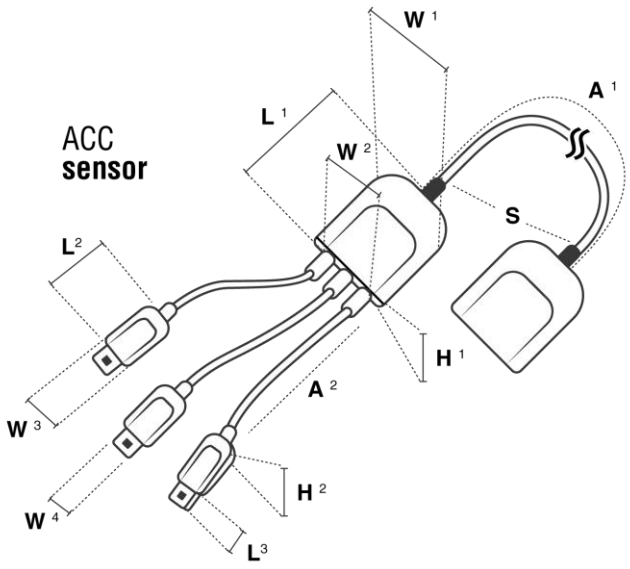
$VCC = 3V$ (operating voltage)

$ACC(g)$ – ACC value in g-force (g)
ADC – Value sampled from the sensor/channel (digital value)
C_{min} – Minimum calibration value[1]
C_{max} – Maximum calibration value

PHYSICAL CHARACTERISTICS

> **W1 x L1 x H1:**	1.6cm x 2.2cm x 0.5cm	> **W2:**	1.0±0.1cm
> **W3:**	1.0±0.1cm	> **W4:**	0.5±0.1cm
> **L2:**	1.3±0.1cm	> **L3:**	0.7±0.1cm
> **A1:**	105.0±0.5cm	> **A2:**	8.5±0.5cm
> **H2:**	0.7±0.1cm	> **S:**	0.3±0.1cm

> **Available sleeve colors:** White, Black, Blue, Green, Red, Yellow, Grey, and Brown



ORDERING GUIDE

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

[1] For more information about C_{min} and C_{max}, please, check the content of section **Application Notes.**