Electrodermal Activity (EDA) Sensor Data Sheet

EDA 080617

SPECIFICATIONS

> **Gain:** 2
> **Range:** 0-23µS (with VCC = 3.3V)
> **Bandwidth:** 0-5Hz
> **Consumption:** ~0.72mA
> **Input Voltage Range:** 1.8-5.5V

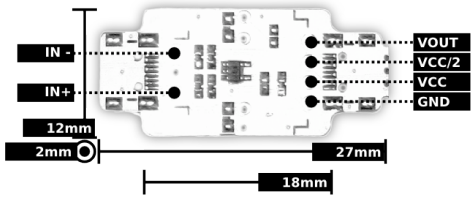

Fig. 1. Pin-out and physical dimensions.

FEATURES

> Skin resistance measurement
> Pre-conditioned analog output
> High signal-to-noise ratio
> Small form factor
> Raw data output
> Easy-to-use

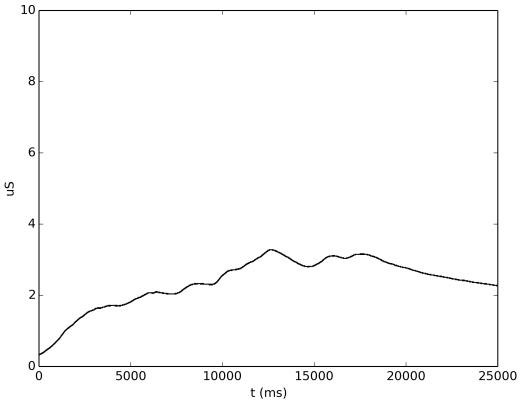

Fig. 2. Typical raw EDA data (acquired with BITalino (r)evolution).

APPLICATIONS

> Arousal detection
> Human-Computer Interaction
> Emotional cartography
> Affective computing
> Physiology studies
> Psychophysiology
> Relaxation biofeedback
> Biomedical devices prototyping

GENERAL DESCRIPTION

Sweat glands secretion is a process that allows our body to regulate its temperature, but it is also associated the sympathetic nervous system activity. Whenever we become aroused (e.g. nervous) or relaxed, that state is partially translated into the sweat production or inhibition at the glands on our hands palms and feet. This changes the resistance of our skin; Electrodermal Activity (EDA) monitoring enables the translation of these resistance changes into numerical values, allowing its use in a wide array of applications. Known uses of this sensor include emotional mapping, the polygraph test (aka lie detector), and also stress / relaxation biofeedback.

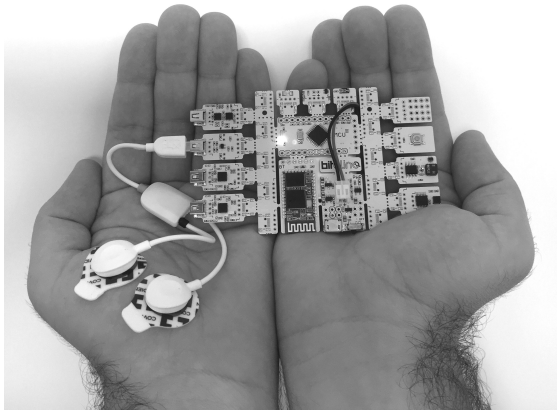

Fig. 3. Example electrode placement.

PLUX – Wireless Biosignals, S.A.
Av. 5 de Outubro, n. 70 – 8.
1050-059 Lisbon, Portugal
bitalino@plux.info
http://bitalino.com/

REV A

BEWARE: DIRECT OR INDIRECT COUPLING TO THE MAINS MAY RESULT IN SHOCKING HAZARD

Electrodermal Activity (EDA) Sensor Data Sheet

TRANSFER FUNCTION

[-4.4μS, 21μS]

$$EDA(\mu S) = \frac{\frac{ADC}{2^n}.VCC - 0.574}{0.132}$$

$$EDA(S) = EDA(\mu S).1{\times}10^{-6}$$

$R(MOhm)$ – Sensor resistance value mega-Ohm ($MOhm$)
$EDA(\mu S)$ – EDA value in micro-Siemens (μS)
ADC – Value sampled from the channel
n – Number of bits of the channel[1]

ORDERING GUIDE

Part #	Description
SENS-EDA-NC	Electrodermal Activity (EDA) sensor without connectors
SENS-EDA-UCE6	Electrodermal Activity (EDA) sensor with UC-E6 sockets on both sides for seamless plug & play connection to a BITalino (r)evolution Plugged or Core
SENS-EDA-SHER	Electrodermal Activity (EDA) sensor with a Molex Sherlock 4-pin socket on one side and a Molex Sherlock 3-pin socket on the other for easy power and signal cable connection or pin breakout using PCB wires

[1] The number of bits for each channel depends on the resolution of the Analog-to-Digital Converter (ADC); in BITalino the first four channels are sampled using 10-bit resolution ($n = 10$), while the last two may be sampled using 6-bit ($n = 6$).