Respiration (PZT)
Sensor Data Sheet

PZT 280519

SPECIFICATIONS

> **Bandwidth:** 0.59-0.9Hz
> **Consumption:** ±50μA

FEATURES

> Piezoelectric film technology
> Differential measurement
> Adjustable elastic chest strap
> UC-E6 ended connection cable
> High sensitivity
> Raw data output
> Easy-to-use

APPLICATIONS

> Thoracic or abdominal respiration analysis
> Respiratory cycles measurement
> Sleep studies
> Psychophysiology
> Biofeedback
> Biomedical devices prototyping

GENERAL DESCRIPTION

Our piezoelectric respiration sensor is an affordable option for respiratory analysis in a wide range of applications. It has a localized sensing element that measures displacement variations induced by inhaling or exhaling. The elastic strap is provided with the sensor to secure it in place, and can be adjusted in length, enabling the sensor to be applied in different anatomies (e.g. male and/or female) and body locations (e.g. thorax and/or abdomen). Typical applications include monitoring of respiratory rate, respiratory cycle regularity, relative amplitude of the cycle, and others. When multiple sensors are used simultaneously it enables diaphragmatic versus thoracic breathing assessment (e.g. for biofeedback).

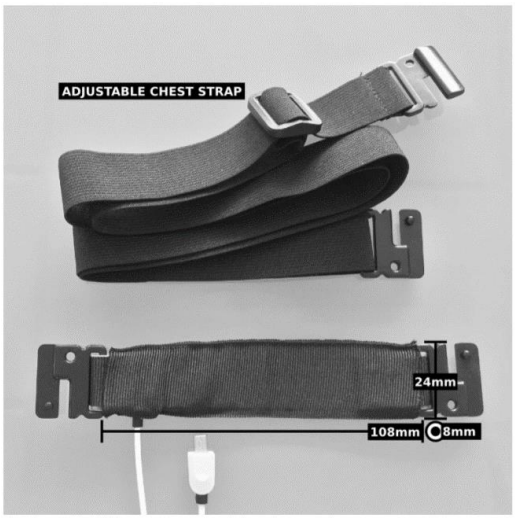

Fig. 1. The sensor is provided with a convenient elastic chest strap to secure it in place.

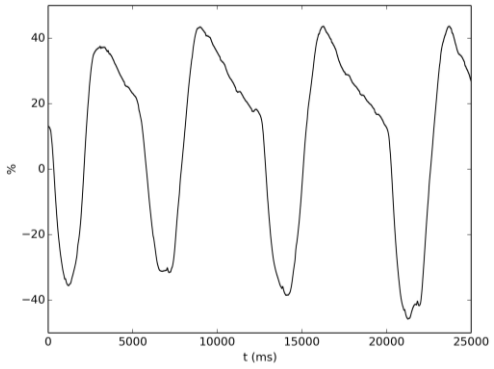

Fig. 2. Typical raw PZT data (acquired with BITalino).

Fig. 3. Example of respiration sensor used on the chest.

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REV B

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

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TRANSFER FUNCTION

[-50%, 50%]

$$PZT(\%) = \left(\frac{ADC}{2^n} - \frac{1}{2}\right) \times 100\%$$

$PZT(\%)$ – Displacement value in percentage (%) of full scale
ADC – Value sampled from the channel
n – Number of bits of the channel[1]

[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 are sampled using 6-bit ($n = 6$).